

International Journal of Industrial Engineering and Management



## Supply chain risk prioritization using AHP and framework development: A perspective of the automotive industry

M. Zaidi<sup>a,\*</sup>, S. M. Hasan<sup>a</sup>

<sup>a</sup> NED University of Engineering and Technology, Department of Industrial and Manufacturing Engineering, Karachi, Pakistan

## References

- G. A. Zsidisin, "Managerial perceptions of supply risk," Journal of Supply Chain Management, vol. 39, no. 4, pp. 14-26, 2006, doi: 10.1111/j.1745-493X.2003.tb00146.x.
- [2] T. Moyaux, B. Chaib-draa, and S. D'Amours, "The impact of information sharing on the efficiency of an ordering approach in reducing the bullwhip effect," IEEE Transactions on Systems, Man, and Cybernetics, Part C (SMC-C), vol. 37, no. 3, pp. 396-409, 2007, doi: 10.1109/TSMCC.2006.887014.
- [3] S. Fazli and A. Masoumi, "Assessing the vulnerability of supply chain using Analytic Network Process approach," International Research Journal of Applied and Basic Sciences, vol. 3, no. 13, pp. 2763-2771, 2012.
- [4] M. Punniyamoorthy, N. Thamaraiselvan, and L. Manikandan, "Assessment of supply chain risk: scale development and validation," Benchmarking: An International Journal, vol. 20, no. 1, pp. 79-105, 2013, doi: 10.1108/14635771311299506.
- [5] F. Aqlan and S. Lam, "Supply chain risk modelling and mitigation," International Journal of Production Research, vol. 53, no. 18, pp. 5640-5656, 2015, doi: 10.1080/00207543.2015.1047975.
- [6] S. Ambulkar, J. Blackhurst, and S. J. Grawe, "Firm's resilience to supply chain disruptions: Scale development and empirical examination," Journal of operations management, vol. 33, pp. 111-122, 2015, doi: 10.1016/J.JOM.2014.11.002.
- [7] A. Andjelkovic, "Proactive supply chain risk management approach The case of Serbia," Economic Annals, vol. 62, no. 214, pp. 121-137, 2017, doi: 10.2298/EKA1714121A.
- T. Sawik, "A portfolio approach to supply chain disruption management," International Journal of Production Research, vol. 55, no. 7, pp. 1970-1991, 2017, doi: 10.1080/00207543.2016.1249432.
- [9] M. Pavlović, U. Marjanović, S. Rakić, N. Tasić, and B. Lalić, "The Big Potential of Big Data in Manufacturing: Evidence from Emerging Economies," in: B. Lalic, V. Majstorovic, U. Marjanovic, G. von Cieminski, D. Romero (Eds.), Advances in Production Management Systems. Towards Smart and Digital Manufacturing, 2020, vol. AICT 592, pp. 100-107, doi: 10.1007/978-3-030-57997-5\_12.
- [10] J. Zhou, G. Bi, H. Liu, Y. Fang, and Z. Hua, "Understanding employee competence, operational IS alignment, and organizational agility – An ambidexterity perspective," Information & Management, vol. 55, no. 6, pp. 695-708, 2018, doi: 10.1016/j. im.2018.02.002.
- [11] Y. Ju, H. Hou, and J. Yang, "Integration quality, value co-creation and resilience in logistics service supply chains: moderating role of digital technology," Industrial Management & Data Systems, vol. 121, no. 2, pp. 364-380, 2021, doi: 10.1108/IMDS-08-2020-0445.
- [12] Z. J. H. Tarigan, J. Mochtar, S. R. Basana, and H. Siagian, "The effect of competency management on organizational performance through supply chain integration and quality," Uncertain Supply Chain Management, vol. 9, no. 2, pp. 283-294, 2021, doi: 10.5267/j.uscm.2021.3.004.
- [13] S. Chakraborty, S. Bhattacharya, and D. D. Dobrzykowski, "Impact of supply chain collaboration on value co-creation and firm performance: a healthcare service sector perspective," Procedia Economics and Finance, vol. 11, pp. 676-694, 2014, doi: 10.1016/S2212-5671(14)00233-0.
- [14] B. Gaudenzi and A. Borghesi, "Managing risks in the supply chain using the AHP method," The International Journal of Logistics Management, vol. 17, no. 1, pp. 114-136, 2006, doi: 10.1108/09574090610663464.
- [15] O. Khan and B. Burnes, "Risk and supply chain management: creating a research agenda," The International Journal of Logistics Management, vol. 18, no. 2, pp. 197-216, 2007, doi: 10.1108/09574090710816931.
- [16] S. Jaffee, P. Siegel, and C. Andrews, "Rapid agricultural supply chain risk assessment: A conceptual framework," The World Bank, Washington, DC, USA: Agriculture and Rural Development Department, 2010.

- [17] G. Tuncel and G. Alpan, "Risk assessment and management for supply chain networks: A case study," Computers in Industry, vol. 61, no. 3, pp. 250-259, 2010, doi: 10.1016/j.compind.2009.09.008.
- [18] I. Manuj and J. T. Mentzer, "Global supply chain risk management strategies," International Journal of Physical Distribution & Logistics Management, vol. 38 no. 3, pp. 192-223, 2008, doi: 10.1108/09600030810866986.
- [19] G. Schimdt and W. E. Wilhelm, "Strategic, tactical and operational decisions in multi-national logistics networks: A review and discussion of modelling issues," International Journal of Production Research, vol. 38, no. 7, pp. 1501-1523, 2000.
- [20] U. Juttner, H. Peck and M. Christopher, "Supply chain risk management: outlining an agenda for future research," International Journal of Logistics Research and Applications, vol. 6, no. 4, pp. 197-210, 2003, doi: 10.1080/13675560310001627016.
- [21] J. L. Cavinato, "Supply chain logistics risks: From the back room to the board room," International Journal of Physical Distribution & Logistics Management, vol. 34, no. 5, pp. 383-387, 2004, doi: 10.1108/09600030410545427.
- [22] D. Bogataj and M. Bogataj, "Measuring the supply chain risk and vulnerability in frequency space," International Journal of Production Economics, vol. 108, no. 1-2, pp. 291-301, 2007, doi: 10.1016/j.ijpe.2006.12.017.
- [23] C. Harland, R. Brenchley and H. Walker, "Risk in supply networks," Journal of Purchasing and Supply Management, vol. 9, no. 2, pp. 51-62, 2003, doi: 10.1016/S1478-4092(03)00004-9.
- [24] P. R. Kleindorfer and G. H. Saad, "Managing disruption risks in supply chains," Production and operations management, vol. 14, no. 1, pp. 53-68, 2005, doi: 10.1111/j.1937-5956.2005.tb00009.x.
- [25] M. Christopher and H. Peck, "Building the resilient supply chain," International Journal of Logistics Management, vol. 15, no. 2, pp. 1-13, 2004, doi: 10.1108/09574090410700275.
- [26] S. Tangen, "Analysing the requirements of performance measurement systems," Measuring Business Excellence, vol. 9, no. 4, pp. 46-54, 2005, doi: 10.1108/13683040510634835.
- [27] B. Ritchie and C. Brindley, "Supply chain risk management and performance: A guiding framework for future development," International Journal of Operations & Production Management, vol. 27, no. 3, pp. 303-322, 2007, doi: 10.1108/01443570710725563.
- [28] R. S. Gaonkar and N. Viswanadham, "Analytical Framework for the Management of Risk in Supply Chains," IEEE Transactions on Automation Science and Engineering, vol. 4, no. 2, pp. 265-273, 2007, doi: 10.1109/TASE.2006.880540.
- [29] S. M. Wagner and C. Bode, "An empirical examination of supply chain performance along several dimensions of risk," Journal of business logistics, vol. 29, no. 1, pp. 307-325, 2008. doi: 10.1002/j.2158-1592.2008.tb00081.x.
- [30] M. Urbaniak and D. Zimon, "Operational processes that the manufacturing companies expect to be improved by suppliers," Int. J. Qual. Res., vol. 16, no. 3, pp. 891–904, 2022, doi: 10.24874/IJQR16.03-16.
- [31] F. Duhamel, V. Carbone, and V. Moatti, "The impact of internal and external collaboration on the performance of supply chain risk management," International Journal of Logistics Systems and Management, vol. 23, no. 4, pp. 534-557, 2016, doi: 10.1504/ IJLSM.2016.075212.
- [32] M. Zubair and N. A. Mufti, "Identification and assessment of supply chain risks associated with dairy products sector," Journal of Basic and Applied Sciences, vol. 11, pp. 167-175, 2015, doi: 10.6000/1927-5129.2015.11.25.
- [33] R. C. Basole, M. A. Bellamy, H. Park, and J. Putrevu, "Computational analysis and visualization of global supply network risks," IEEE Transactions on Industrial Informatics, vol. 12, no. 3, pp. 1206-1213, 2016, doi: 10.1109/TII.2016.2549268.
- [34] C. S. Singh, G. Soni, and G. K. Badhotiya, "Performance indicators for supply chain resilience: review and conceptual framework," Journal of Industrial Engineering International, vol. 15, no. 1, pp. 105-117, 2019, doi: 10.1007/s40092-019-00322-2.
- [35] Y. C. J. Wu, T.P. Dong, C. L. Chang, and Y. C. Liao, "A collaborative learning lesson from using effective information technology combinations," Computers in Human Behavior, vol. 51, pp. 986-993, 2015, doi: 10.1016/j.chb.2014.10.008.
- [36] M. S. Shahbaz, B. A. Othman, P. M. Salman, D. A. Memon, and R. Z. B. R. M. Rasi, "A proposed conceptual action plan for identification, assessment and mitigation of supply chain risks," International Journal of Advanced Operations Management, vol. 12, no. 1, pp. 65-80, 2020, doi: 10.1504/IJAOM.2020.10029735.
- [37] S. Musa, "Supply Chain Risk Management: Identification, Evaluation and Mitigation Techniques", Ph.D. dissertation, Linköping University, Linköping, Sweden, 2012.
- [38] R. Rostamzadeh, M. K. Ghorabaee, K. Govindan, A. Esmaeili, and H. B. K. Nobar, "Evaluation of sustainable supply chain risk management using an integrated fuzzy TOPSIS-CRITIC approach," Journal of Cleaner Production, vol. 175, pp. 651-669, 2018, doi: 10.1016/j.jclepro.2017.12.071.
- [39] D. K. Mburu, P. K. Ngugi and K. Ogollah, "An assessment of effect of risk identification management strategy on supply chain performance in manufacturing companies in kenya," International Journal of Economics, Commerce and Management, vol. 3, no. 4, pp. 1-17, 2015.
- [40] D. Zimon, J. Tyan, and R. Sroufe, "Drivers of sustainable supply chain management: Practices to alignment with un sustainable development goals," Int. J. Qual. Res., vol. 14, no. 1, pp. 219–236, 2020, doi: 10.24874/IJQR14.01-14.
- [41] J. L. Cavinato, "Supply chain logistics risks: From the back room to the board room," International Journal of Physical Distribution and Logistics Management, vol. 34, no. 5, pp. 383-387, 2004, doi: 10.1108/09600030410545427.
- [42] L. A. Deleris and F. Erhun, "Risk management in a supply network: A case study based on engineering risk analysis concepts," in International Series in Operations Research and Management Science: Handbook of production planning, K. Kempf, P. Keskinocak, and R. Uzsoy, Eds. Alphen aan den Rijn, Netherlands: Kluwer Academic Publishers, 2007.
- [43] J. Ramos, D. Manotas, and J. Osorio, "Operational supply chain risk identification and prioritization using the SCOR model," Ing. Univ., vol. 23, no. 1, pp. 1-20, 2019, doi: 10.11144/Javeriana.iyu23-1.oscr.
- [44] P. Singhal, G. Agarwal, and M. L. Mittal, "Supply chain risk management: review, classification and future research directions," International Journal of Business Science & Applied Management, vol. 6, no. 3, pp. 15-42, 2011.
- [45] J. Barry, "Supply chain risk in an uncertain global supply chain environment," International Journal of Physical Distribution and Logistics Management, vol. 34, no. 9, pp. 695-697, 2004, doi: 10.1108/09600030410567469.
- [46] S. Chopra and M. S. Sodhi, "Managing risk to avoid supply-chain breakdown," MIT Sloan Management Review, vol. 46, no. 1, pp. 53-61, 2004.
- [47] S. C. Lo and R. W. Hall, "Effects of the Los Angeles transit strike on highway congestion," Transportation Research Part A: Policy and Practice, vol. 40, no. 10. pp. 903-917, 2006, doi: 10.1016/j.tra.2006.03.001.

- [48] S. K. Canbakis, M. Karabas, H. S. Kilic, S. Koseoglu, and U. Ezgi, "A risk assessment model for supply chains," PressAcademia Procedia, vol. 7, no. 1, pp. 122-125, 2018, doi: 10.17261/Pressacademia.2018.866.
- [49] J. Liu, P. E. D. Love, J. Smith, M. Regan, and M. Sutrisna, "Public-private partnerships: A review of theory and practice of performance measurement," International Journal of Productivity and Performance Management, vol. 63, no. 4, pp. 499-512, 2014, doi: 10.1108/IJPPM-09-2013-0154.
- [50] R. Freeman and R. Baldwin, "Risks and global supply chains: What we know and what we need to know," Annual Review of Economics, vol. 14, pp. 153-180, 2022, doi: 10.1146/annurev-economics-051420-113737.
- [51] M. Jemmali, L. Hidri, and A. Alourani, "Two-stage hybrid flowshop scheduling problem with independent setup times," International Journal of Simulation Modelling, vol. 21, no. 1, pp. 5-16, 2022, doi: 10.2507/IJSIMM21-1-577.
- [52] T. L. Saaty, "How to make a decision: the analytic hierarchy process," European journal of operational research, vol. 48, no. 1, pp. 9-26, 1990, doi: 10.1016/0377-2217(90)90057-I.