Supply Chain Digitalisation in the Australian Agribusiness

Supervisor: A/Professor Ferry Jie, PhD

Abstract:

The dynamic landscape of supply chain digitization in the Australian agribusiness sector is the focus of this research project. Agribusinesses are increasingly resorting to creative solutions to improve efficiency, transparency, and sustainability throughout the supply chain as a result of the rapid evolution of digital technologies. In order to streamline operations from farm to plate, this research analyses the comprehensive integration of digital tools, such as blockchain, IoT and Sensors devices, robotics and automation, data analytics, AI or Machine Learning, drone, cloud computing and cyber security. The research examines how these technologies affect global market access, collaboration, traceability and transparency, and data-driven decision-making. It also looks at how government programmes might encourage the adoption of digital solutions. This research offers important insights into how supply chain digitalization is changing the Australian agribusiness sector through a thorough review of the existing situation and emerging trends.

Background of this research project:

Generally, supply chain management is the integration of suppliers, manufacturing, distribution and customers, in which raw materials run from suppliers to manufacturers who assemble them into finished products and organise delivery into the hands of customers. Integrated supply chain management, a complete linking from producers through to consumers, gives many advantages for companies, including improved delivery performance, reduction of lead time, and reduction of inventory, improved flexibility, responsiveness, efficiency and capacity realisation and improved asset usage.

This research focused on the Australian Agribusiness Supply Chain orientation. The definition of the Australian Agribusiness supply chain is the chain or sequence of all activities from the farm to plate.

The Australian Agribusiness is undergoing rapid change as a result of globalisation and the rapid evolution of digital technologies. A highly competitive local and export market, increased production efficiency, and a quicker production cycle and delivery times are all contributing factors to this change. A trend towards more outsourcing of activities, and the rapid development of applications dependent on information technology (IT) have also played a role in increased efficiencies.

The following research questions for this research:

1. What is the impact of the adoption of digital technologies, such as blockchain, IoT and sensor devices, robotics and automation, data analytics, AI or machine learning, drones, cloud computing, and cyber security, on enhancing global market access for Australian agribusiness products?
2. How does collaboration between various stakeholders in the Australian agribusiness sector change as a result of the integration of digital tools such as blockchain, IoT and sensor devices, robots and automation, data analytics, AI or machine learning, drones, cloud computing, and cyber security?
3. How much is the Australian agribusiness supply chain's traceability and transparency impacted by the use of digital technologies like blockchain, IoT and sensor devices, robotics and automation, data analytics, AI or machine learning, drones, cloud computing, and cyber security?
4. How do government initiatives to promote the use of digital solutions affect how quickly and effectively digital technologies are adopted in the Australian agribusiness sector?

Several lists of recent publications are useful for this project:

Selected Publications:

- Lioutas, E. D., Charatsari, C., & De Rosa, M. (2021). Digitalization of agriculture: A way to solve the food problem or a trolley dilemma?. *Technology in Society*, 67, 101744. https://doi.org/10.1016/j.techsoc.2021.101744
- Nakandala, D., & Lau, H. C. (2019). Innovative adoption of hybrid supply chain strategies in urban local fresh food supply chain. *Supply Chain Management: An International Journal*, 24(2), 241-255. https://doi/10.1108/SCM-09-2017-0287/full/html
- Fielke, S., Taylor, B., & Jakku, E. (2020). Digitalisation of agricultural knowledge and advice networks: A state-of-the-art review. *Agricultural Systems*, 180, 102763. https://doi.org/10.1016/j.agsy.2019.102763
- Kayikci, Y., Subramanian, N., Dora, M., & Bhatia, M. S. (2022). Food supply chain in the era of Industry 4.0: Blockchain technology implementation opportunities and impediments from the perspective of people, process, performance, and technology. *Production planning & control*, 33(2-3), 301-321. https://doi.org/10.1080/09537287.2020.1810757
- Rejeb, A., Rejeb, K., Abdollahi, A., Zailani, S., Iranmanesh, M., & Ghobakhloo, M. (2021). Digitalization in food supply chains: A bibliometric review and key-route main path analysis. *Sustainability*, 14(1), 83. https://doi.org/10.3390/su14010083
- Mufadhol, M., Mustafid, M., Jie, F., Hidayah, YN. (2022). The New Model for Medicine Distribution By Combining of Supply Chain and Expert System using Rule Based Reasoning Method. *International Journal of Artificial Intelligence*, 12(1), 295-304. https://doi.org/10.11591/ijai.v12.i1.pp295-304
- Jie, F., Masudin, I., Widayat , W. (2020). Impact of halal supplier service quality and staff readiness to adopt halal technology on halal logistics performance: a study of Indonesian halal meat supply chain. *International Journal of Agile Systems and Management*, 13(3), 315 - 338. https://doi.org/10.1504/IJASM.2020.109258.
- Antoni, D., Jie, F., Abareshi, A. (2020). Critical Factors in Information Technology Capability for Enhancing Firms Environmental Performance: Case of Indonesian ICT Sector. *International Journal of Agile Systems and Management*, 13(2), 159-181. https://doi.org/10.1504/IJASM.2020.107907.
- Maman, U., Mahbubi, A., Jie, F. (2018). Halal Risk Mitigation in the Australian–Indonesian Red Meat Supply Chain. *Journal of Islamic Marketing*, 9(1), 60-79. https://doi.org/10.1108/JIMA-12-2015-0095.