Invited Speaker at Scotland Manufacturing Conference

25 October 2023

Glasgow

Short bio: Michael W. Zhang is a Reader in International Strategy at Nottingham Trent University. He majored in mechanical engineering and graduated from Tsinghua University in Beijing, China. Upon graduation he joined Tianjin-Daihatsu Motors Group and went to Japan for a technological transfer programme. The Japanese management system inspired him to study his master's degree in a UK-Japan exchange programme based at the University of Essex. Following the successful completion of the master programme he continued academic pursuit with a scholarship from the University of Sheffield to conduct a comparative study between China and Japan. Immediately after the doctoral research, Michael was awarded a prestigious United Nations University Postdoctoral Fellowship to work on a project at the Institute of Advanced Studies, UNU in Tokyo, Japan.

Thereafter he continued his research interest in business and management and took up research and teaching positions in Manchester and Nottingham. He has since published more than seventy research outputs in the fields of strategic management, international strategy, technological change, and entrepreneurial innovation, and more recently sustainability transitions. He acted as an Editor-in-Chief of the *Journal of Sustainable Mobility* for a term of three years (2014-2016). The research and editorial experience culminated in his editing two books, one on international strategic alliances with Routledge in 2018, and a recent volume on sustainability transitions with Routledge, to be published in December 2023. He is an experienced presenter and speaker at various venues, both academic and industry, in Asia, Europe and North America.

Speech Title: Sustaining trustworthy partner relationships throughout the manufacturing supply chains: A network perspective

Synopsis: Based on his 2018 book on trust building and boundary spanning in international business networks, Michael and his associates (2021) further researched on the inter-partner relationships through the theoretical lenses of trust and distrust using empirical evidence from the international automotive industry.

In light of the fast-paced technological changes, businesses have become increasingly knowledge-intensive. They face the challenges of discerning blurred organisational boundaries amongst the inter-organisational relationships and throughout supply chains, reconfiguring the existing control mechanisms, integrating diversified resources and specialised knowledge, as well as coordinating inter-organisational collaboration in time and space. Integrating highly specialised knowledge across national borders and organisational boundaries requires firms to enhance their capabilities to deploy resources and coordinate activates in line with any intended micro-structural changes. And creating trustworthiness is pivotal for efficient flow of tacit dimension of knowledge at the boundaries of inter-partner or inter-organisational relationships. Any innovative activities require collaborative processes of organisational learning and trusting relationships that will result in enhancing interdependence and mutual expectations. Trust is an important factor in enabling collaborative innovation activity in inter-partner relationships and in supply chain management. Whereas trustworthiness is the antecedent to trust providing the basis for trust

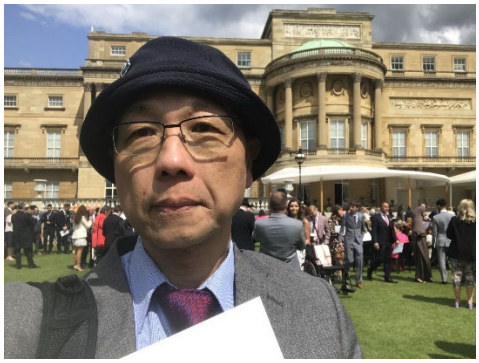
to develop, distrust manifests itself as a separate and linked concept to trust. Cooperative relationships can also benefit from distrust, including for monitoring purposes. Both trust and distrust can play an important role in a healthy supply chain collaborative relationship. A better understanding of the process of building mechanisms of trust and distrust, and the functions of boundary spanning will enhance the management of knowledge transfer and integration, augmentation of social capital, bridging trust gaps in global value chains, responding to formal and informal isomorphic forces, and effective leadership. A core boundary spanning function is to build inter-partner trust relationships, first at personal level before institutionalising it at the organisational level. I will provide an analytical framework from the perspective of network analysis to specifically assess the issues of ownership, governance, and commitment in the process of building trust. More like horizontal rather than vertical integration, network approach helps identify collaborative opportunities and better manage inter-partner relationships.

Han, W., Huang, Y., Hughes, M. and Zhang, M., 2021. The trade-off between trust and distrust in supply chain collaboration. *Industrial Marketing Management*, 98, pp. 93-104. ISSN 0019-8501

Jamili, N., van den Berg, P. and Koster, R. 2022. Quantifying the impact of sharing resources in a collaborative warehouse. *European Journal of Operational Research*, *302*, 518–529.

Mason, S., Ribera, P., Farris, J., and Kirk, R. 2003. Integrating the warehousing and transportation functions of the supply chain. *Transportation Research Part E*, *39,* 141–159.

Zhang, M., 2018. Trust and distrust — the microstructural ties connecting cross-border inter-partner relationships. In: M. Zhang, ed., *Trust building and boundary spanning in cross-border management.* Routledge studies in trust research. New York: Routledge, pp. 17-31. ISBN 9780415347563



Sustaining trustworthy partner relationships throughout the manufacturing supply chains: A network perspective

Michael Zhang

Scotland Manufacturing & Supply Chain Conference

Glasgow, 25 October 2023

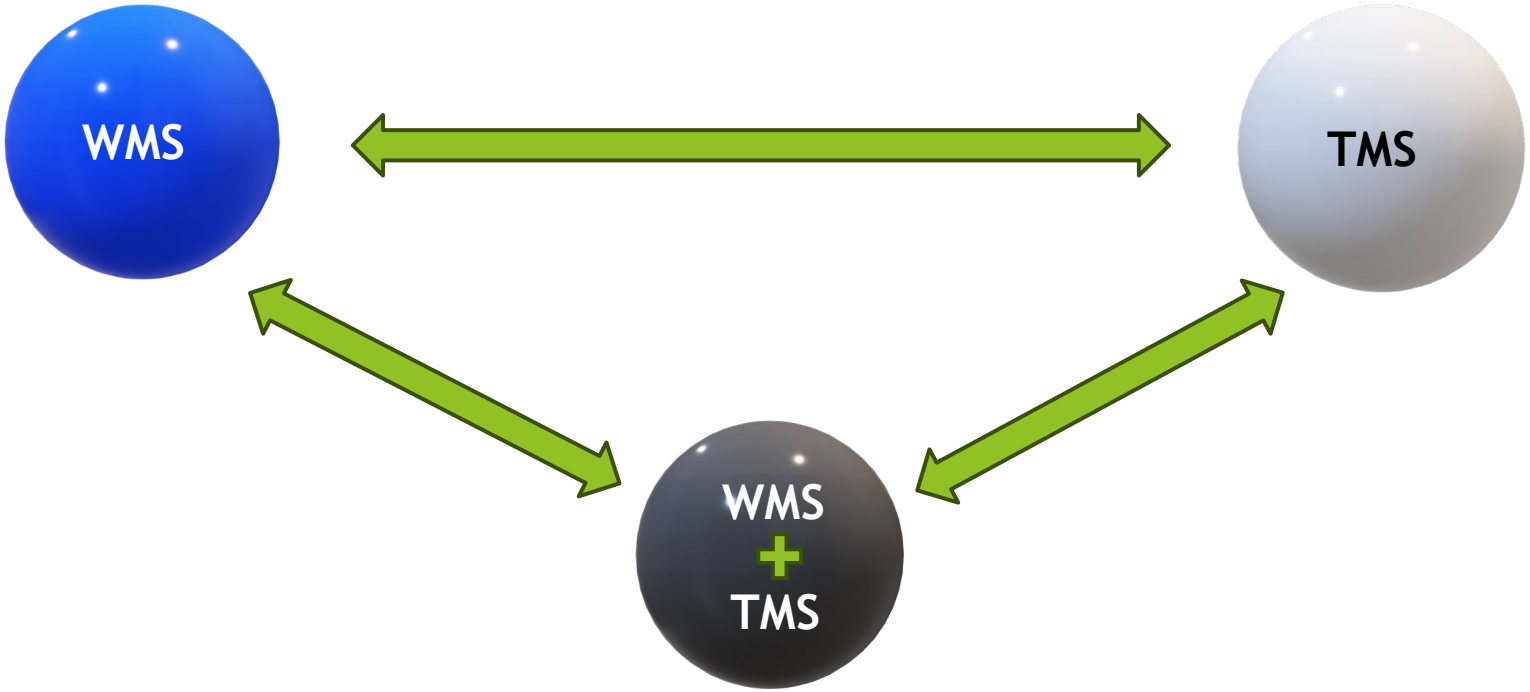
The context

- In recent years there have been improvements in operational efficiency in both warehouse management systems (WMS) and transportation management systems (TMS), and we witness growing integration of the WMS and TMS in some supply chains (Mason et al., 2003 see the diagram on next slide)
- Technologies, especially the Internet, have fundamentally changed the way warehouse operates (Mason et al., 2003)
- Increasing uncertainty (pandemic, trade wars, global climate change, etc.) causes disruptions in global supply chains (Supply Chain Quarterly, October 2023)
- For many businesses, a potential strategic option is “reshoring” to relocate their core manufacturing activities back to the home country

NB Integrating highly specialised knowledge across organisational boundaries requires firms to enhance their capabilities to deploy resources and coordinate activates in line with any intended micro-structural changes in control mechanisms, resource commitment, and relationship management

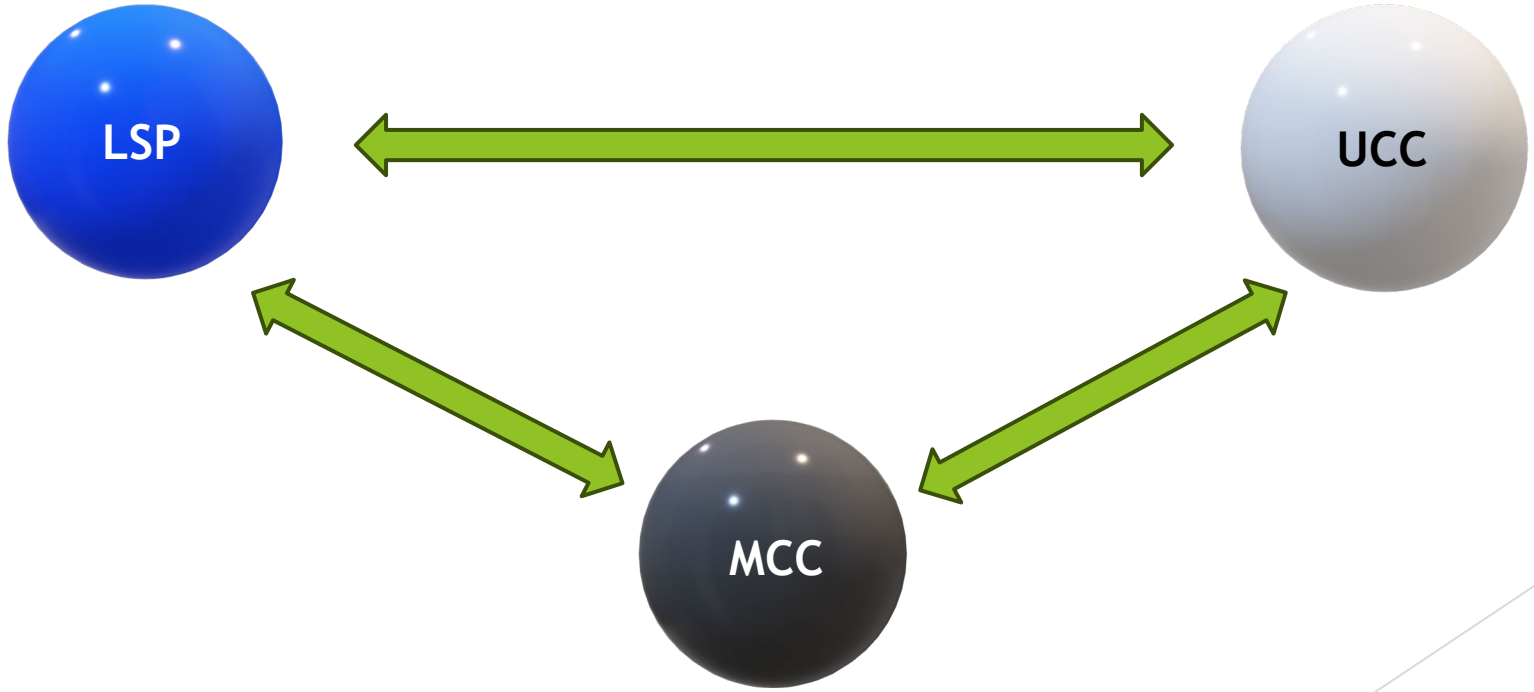
Integration of WMS and TMS

Adapted from Mason et al. (2003)

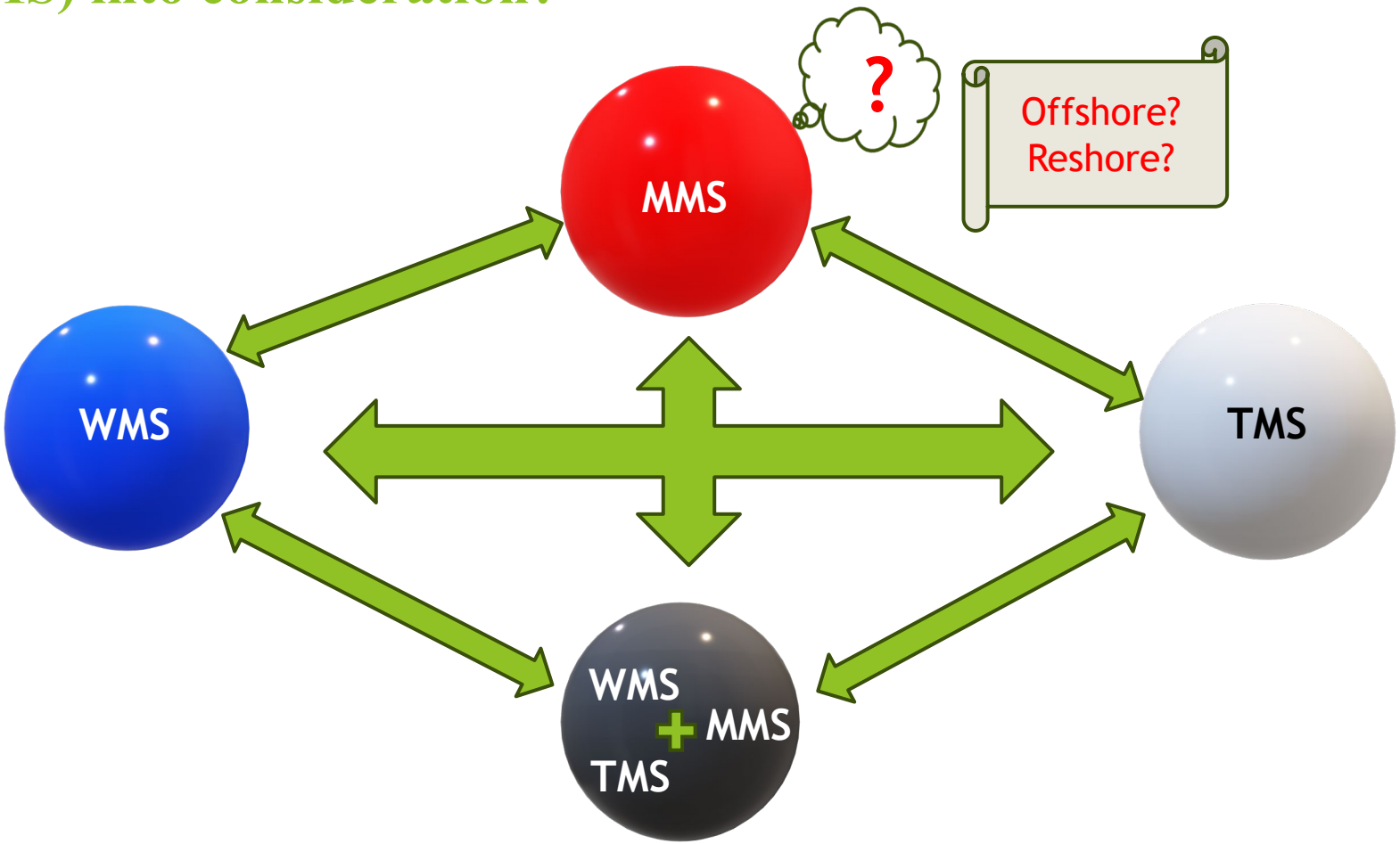


Forms of collaborative warehousing (Jamili et al., 2022)

- Shared warehouse: retailers can find a logistic service provider (LSP) to establish a horizontal collaboration (Kimberly-Clark and Unilever collaborated with Kuehne+Nagel, whereby a joint manufacturing consolidation centre (MCC) was created)
- Retailers and manufacturers can also use urban consolidation centres (UCCs) created by many local authorities, akin to the business model of Last Mile Delivery services in one of my studies (Zhang, 2019)



What if we bring the manufacturing management system (MMS) into consideration?



What are MMS' strategies and behaviour?

- Manufacturing companies, especially large MNCs, have firm-specific advantages (FSAs) with proprietary resources and capabilities (Verbeke, 2013)
- Four types of location-bound FSAs: (1) natural resource seeking; (2) market seeking; (3) efficiency seeking; and (4) strategic resource seeking, which is the search of specific bundles of knowledge resources, both upstream and downstream, complementary to their existing knowledge base

Integrating and sustaining trustworthy relationships between the partners: A network perspective

- More like horizontal rather than vertical integration, network approach helps identify collaborative opportunities and better manage inter-partner relationships amongst the three partner systems
- Collaboration between WMS and TMS can improve operational efficiency and sustainability (Jamili et al., 2022). In their study of order picking and dock door scheduling, Jamili et al (2022) find that collaboration between the two activities leads to 32% decrease in the total tardiness of shipping trucks and an average 61% overall improvement.
- Any innovative activities require collaborative processes of organisational learning and trusting relationships that will result in enhanced interdependence and mutual expectations
- Trust is an important factor in enabling collaborative innovation activity in inter-partner relationships and in supply chain management

Trust and trustworthiness (Zhang, 2018)

- Trustworthiness is the antecedent to trust providing the basis for trust to develop. Butler (1991) and Mayer et al., (1995) propose three attributes that can explain the degree of a person's or organisational trustworthiness: ability, integrity, and benevolence
- Trust can reduce transaction costs and the level of risk, discourage opportunistic behaviour, and improve partner cooperation (Williamson, 1993; Zaheer et al., 1998; Zhang, 2018).
- A better understanding of the process of building trust, and the functions of boundary spanning will enhance the management of knowledge transfer and integration, augmentation of social capital, and effective leadership
- In the process of building trust, I recommend considering the following strategic factors from the perspective of network analysis (a) network governance; (b) ownership structure; (c) resource commitment; and (d) inter-partner relationship management

History: Japanese railway achievement with contribution through the Glasgow-connection from the beginning 1872-2014

1872

Source: Nostalgic Car, 2022

1964

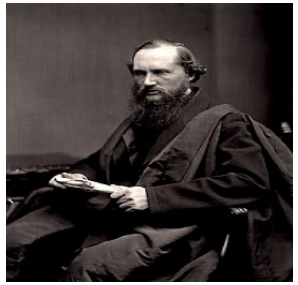
Source: The New York Times, 2014

2014

Source: The Telegraph, 2014

Henry Dyer

Sir Professor William Thomson



Professor John Rankine

Source: Scottish Engineering Hall of Fame

In the 19th century 'Scottish merchants, businessmen, and bankers had, however, fostered links with Scottish universities which had become highly regarded by the Japanese' (Latimer, 2008, p.213).

Now a Scottish manufacturing renaissance?

Thank you for your attention!
Any questions?