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Rethinking supply chains in the age of digitalisation

Digitalisation is the use and adoption of external digital technologies (i.e. resources (such as machine learning, IoT, big data and blockchain)) by organizations, to improve their supply chain and operational performance. Whilst there is a lot of emphasis on the strategic adoption of digital technologies the work on operational feasibility, maturity and supply chain implementation is scarce. Where it does exist, the work to date, we believe to be speculative and more concerned with "*readiness*". There is a dearth of operational evidence of genuine cases of product/process implementation. Therefore, the scope of this special issue is focused on the contribution that PPC methods can play in understanding digitalisation, its feasibility, maturity and integration into operations and supply chain management. Furthermore, the focus is on understanding the organizational conditions facilitating supply chain and production digitalisation and its role in performance improvement. All of the articles submitted and included in the special issue went through a single-blind review process. Initially we had 23 original submissions, these were reduced down to 11 papers that met PPC quality and editorial requirements. They covered a variety of topics including: "*sea land supply chains*"; "*manufacturing*"; "*performance measurement*"; "*business intelligence*"; "*service supply chains*"; "*relational mechanisms*"; "*value creation*" and "*service quality*".

This introductory article was reviewed and handled by the editor-in-chief of the journal.

The papers were initially dived by research method. We had two literature-based papers, seven paper's which were case study focused (which reflected the exploratory nature of the field) and two survey-based papers. Then we sub-categorized the empirical paper's by topic area. Therefore, in total we have two literature review paper's on supply chain digitalization (one generic, one specialised on fin tech), four that are related to the field of manufacturing, three on "*relational mechanisms*" and three, on performance. What we found to be very encouraging was that we have a range of international submissions from many different countries, and, also from multi-disciplinary perspectives, provided by researchers working in a wide variety of organizational settings. It was encouraging to see such a rich diversity of theoretical approaches, scopes, organizational settings and research contexts.

In order to provide an indication of where the field is and to find out who the most important (highly cited) authors are in the evolution of digitalization, we have started the special issue with a review paper. In "*Supply Chain Digitalisation: Past, Present, and Future*" the authors Zahra Seyedghorban, Hossein Tahernejad, Roy Meriton and Gary Graham set out to provide a comprehensive literature review. Uniquely they adopt a mixture of quantitative and qualitative review methods including the use of Citespace software to track citation burst activity. To identify those seminal articles which have changed the scientific landscape in this area. Whilst the first review article was very generic in approach, in the second paper: "*Bitcoin, Blockchain, and FinTech: A Systematic Review and Case Studies in the Supply Chain*" the authors Samuel Fosso Wamba, Jean Robert Kala Kamdjoug, Ransome Epie Bawack and John G. Keogh paper uses a systematic review of 149 peer-reviewed articles published from 2010 – 2017 and three case studies to explain Bitcoin, Blockchain and FinTech concepts and their potential for value creation.

As the two literature reviews testify, this field is still in its infancy. There is therefore a need to identify theoretical gaps, advance conceptualization and to begin to make a valid knowledge contribution. It was not a great surprise then that we attracted a healthy range of exploratory case study investigations. The "*value-added*" contribution of digitalisation to the

manufacturing sector was evident. We have four papers in this category. In their paper: "*Moving Towards Digitalization: a Multiple Case Study in Manufacturing*" the authors Andrea Zangiacomi, Elena Pessot, Rosanna Fornasiero, Massimiliano Bertetti and Marco Sacco's work aimed to investigate managerial practices for the adoption of Industry 4.0 technologies. Then, in the paper: "*A Framework for Food Supply Chain Digitalisation: Lessons from Thailand*" the authors Pichawadee Kittipanya-ngam and Kim Hua Tan use three leading companies in the food sector to explore the practices, challenges, and opportunities faced by Thai food manufacturers digitalising their food supply chains.

In their manufacturing paper: "*Business Intelligence and Analytics Value Creation in Industry 4.0: A Multiple Case Study in Manufacturing Medium Enterprises*" the authors Fanny-Eve Bordeleau, Elaine Mosconi and Luis Antonio De Santa-Eulalia present a multiple case study that explores factors influencing business value creation from Business Intelligence and Analytics activities. Finally, in the second group of articles focused on manufacturing, in the paper: "*Cloud Platforms for Remote Monitoring System: A Comparative Case Study*" the authors Yuqiuge Hao, Petri Helo and Angappa Gunasekaran show how cloud-based solutions support the remote monitoring and sequentially support the servitization at different business levels in the manufacturing industry.

An interesting theme of the third grouping is that of the role to be played by "*relational mechanisms*" in the supply chain integration of digital technologies. In their paper: "*The Impact of the Internet of Things (IoT) on Servitisation: An Exploration of Changing Supply Relationships*" the authors Julius Boehmer, Manish Shukla, Dharm Kapletia and Manoj Tiwari explore the emerging potential of IoT technology as an enabler for manufacturers seeking to exploit opportunities for new production, business and operating models. This is followed by the paper: "*Digitalization in the Sea-Land Supply Chain: Experiences from Italy in Rethinking the Port Operations within Inter-Organizational Relationship*" in which, the authors Assunta Di Vaio and Luisa Varriale rethink and redesign data management for port operations in the sea-land supply chain through the adoption of digital platforms. In the third paper: "*Connecting Relational Mechanisms to Performance Measurement in a Digital Service Supply Chain"* the authors Juhani Ukko, Minna Saunila and Tero Rantala examine the connection between relational mechanisms and performance measurement in digital service supply chains, exploring the relational mechanisms that facilitate closer collaboration in performance measurement

The two empirical papers were focused on digitalisation and performance. In one of these paper's: "*The Influence of Green Supply Chain Management on Manufacturing Enterprise Performance: Moderating Effect of Collaborative Communication*" the authors Xiongfeng Pan, Xianyou Pan, Malin Song and Ranran Guo suggest that new patterns of emission reduction have profound impacts on knowledge management (KM) of SMEs, in particular, knowledge sharing and knowledge transfer. The final paper of our SI was entitled: "*Performance Measurement of India-based Third-Party Logistics Sector: An Empirical Study of User versus Provider Perspectives*" the authors Smriti Asthana and Ashish Dwivedi focus on how relationship management (such as the development of guanxi, trust, and commitment) drives improvements in 3PL service quality and how better service quality enhances competitiveness of the 3PL service users'.

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