

Resource efficiency: Creating a route to logistics and the circular economy

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Abstract

Purpose:

Resource productivity needs to increase by 30% toward 2030, delivering a purported increase in employment while delivering a net benefit to GDP of 1% (European Commission, 2014). The Europe 2020 strategy will necessitate changes in product and service delivery (lightweighting) and a requirement for systems to support the flows of materials at end of life for collection, separation and re-use. There is a demand for resource efficiency improvements across a range of industrial sectors and a need for whole supply chain cooperation to ensure maximum impact of the circular economy concept.

However with current challenges over quality and quantity of products moving through reverse logistics networks (Niknejad & Petrovic, 2014), this will undoubtedly place a need on current infrastructure [logistics] to review working practices. Innovative solutions will be required by industry to deliver sustainable networks that support aligned flows of manufacturing processes delivering supply chain surplus (Zhong, 2009).

This research is based on two research questions:

- RQ1. What are the factors that have caused a lack of uptake in resource efficient reverse logistics?
- RQ2. What are the tools, methods, processes that can increase resource efficiency in the supply chain?

Research approach:

The research is qualitative in its approach and is conducted across two stages.

The first stage comprises a literature review on reverse and waste logistics demonstrating the challenges faced within current logistics and supply chains. The second stage consists of secondary data analysis of case studies from published literature and industry examples within the logistics, supply chain and waste sectors.

The methodology utilises a bibliometric analysis of peer reviewed literature across the areas of logistics, supply chain and waste, with an accompanying focus on case studies in the area of resource efficiency, reverse logistics and electronic waste collection. The literature and case study analysis will be evaluated to illustrate current systems and their validity in meeting the Europe 2020 targets. This paper also presents a conceptual framework for further research in the area of logistics, supply chain and waste in order to support the need for innovation within this sector.

Findings and Originality: (expected)

The case studies are currently being reviewed to understand the detailed workings of reverse logistics and waste efficient supply chains. It is expected that the analysis will provide insight into resource efficient supply chains and reverse supply chains. The paper also presents a conceptual framework that discusses the factors within the domain of circular economy and the Europe 2020 strategy.

Research impact:

The research outcomes will assist academics and practitioners gain an understanding of the current landscape of reverse logistics and how innovative change can bring about more efficiency in terms of connected logistics, supply chain and waste.

Practical impact:

Resource efficiency in logistics and supply chain will become a focus as the complexity of sourcing increases in a circular economy and this paper will deliver a targeted emphasis on key areas of future development to support this need.

Keywords: Reverse logistics, Supply chain efficiency, Resource efficiency, Logistics circular economy

References:

European Commission (2014) *Towards a circular economy: A zero waste programme for Europe*, Brussels:EC0398 Available from: <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1415352499863&uri=CELEX:52014DC0398R%2801%29> (Accessed: 22nd April 2015)

Niknejad, A., Petrovic, D. (2014) Optimization of Integrated Reverse Logistics Networks with Different Product Recovery Routes, *European Journal of Operational Research*, 238 (1) Available at: <http://www.sciencedirect.com/science/article/pii/S0377221714002732> (Accessed: 23rd April 2015)

Zhong, C. (2014) Material flow and circular economy, *Systems Research and Behavioral Science*, 26 (2). Available at: <http://onlinelibrary.wiley.com.ezproxy.northampton.ac.uk/doi/10.1002/sres.968/abstract> (Accessed:22nd April 2015)