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## Big data cloud computing framework for low carbon supplier selection in the beef supply chain

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### Abstract

**Purpose** – With the rapid economic development of nations across the globe, there is proportionate increment in corresponding carbon footprint. There are numerous counter measures proposed to mitigate it in terms of legislation and policy framing. However, they have a shortsighted vision of predominantly focusing on manufacturing and transportation industry thereby neglecting one of the significant contributor of global emissions- agricultural industry. Among all the agri-food products, beef has the highest carbon footprint and majority of its emission are generated in beef farms. The issue is more intensive in developing nations where most of global cattle are raised and simultaneously farmers are less informed and aware of resources/technology to address emissions from their farms. Therefore, there is need to raise awareness among farmers and thereby incorporate carbon footprint as a major cattle supplier selection attribute by abattoir and processor and integrate it as a standard practice in procurement of cattle.

**Design/ methodology** – A novel framework based on big data cloud computing technology is developed for eco-friendly cattle supplier selection. It is capable of measuring greenhouse gas emissions in farms and assimilate into the cattle supplier selection process. Fuzzy AHP, DEMATEL and TOPSIS method is employed to make an optimum tradeoff between conventional quality attributes and carbon footprint generated in farms to select the most appropriate supplier.

**Findings** – The proposed framework would assist in shedding the environmental burden of beef supply chain as the majority of carbon footprint is generated in beef farms. Moreover, the vertical coordination in the supply chain among farmers and abattoir, processor would be strengthened. The execution of the framework is depicted in case study section.

**Originality**- The literature is deficient of ecofriendly supplier selection in the agri-food sector particularly in developing countries. This study bridges the gap in the literature by proposing a novel framework to incorporate carbon footprint into traditional supplier selection process via an amalgamation of big data, ICT and Operations Research. The proposed framework would assist in mitigating the carbon footprint of beef products as they have highest emissions among all agri-food products. This framework is generic in nature and can be implemented in any food supply chain.

**Keywords** - Beef supply chain, supplier selection, carbon footprint, emerging economies, Big data.

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