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Impact of fuel price and emissions on inventory policies

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# <sup>1</sup> Impact of fuel price and emissions on inventory policies

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9 Abstract: The purpose of this paper is to analyze the impact of changes in fuel prices 10 and the imposition of a carbon tax on emissions from transport on shipment lot sizes 11 and supply chain costs. An analysis is done to show that increases in fuel prices should 12 be dealt with differently than other costs. Further, a function to calculate future fuel 13 prices has been developed. This function has been used to calculate transport cost in 14 the future. The EOQ models have been modified to include increasing transport cost 15 and emission tax to demonstrate its impact on various inventory policies. Due to 16 increases in fuel prices, the cost of every subsequent order will also increase, thus 17 resulting in an increase of average order cost for all the shipments in a production 18 cycle. Organizations that have their vendors in relatively close proximity will be at an 19 advantageous position in managing their supply chain costs more effectively in the 20 future. On the other hand, organizations that have invested heavily in global supply 21 chains will need to re-examine their supply chain strategy to overcome cost 22 challenges. This research presents a new challenge for supply chains/logistics 23 management strategies for organizations with global supply chains.

#### 25 Article Classification: Research paper

Keywords: Order cost, Global supply chain, Economic Order Quantity (EOQ), Inventory
 policy, Fossil fuel, Fuel price.

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### 32 **1. Introduction**

33 There is a growing emphasis on the search for substitutes of fossil fuel that generate less 34 pollution, are available in abundant quantities and as efficient or more efficient as fossil fuel. 35 Nowadays, newspapers in many countries are full of news and editorials about the possible 36 depletion of the world's fossil fuel reservoirs and the future of fuel prices. Many of the available 37 inventory management models, such as the economic order quantity (EOQ), developed over the 38 past century were based on the false assumptions that fossil fuel is abundant and that greenhouse 39 gas (GHG) emissions from manufacturing and logistics operations have no implicit effects [1]. 40 Literature on EOQ, its application under varying degrees of shelf-life, yield and its limitations Download English Version:

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