

Risk-Averse Newsboy Problem with Incomplete Demand Information

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Abstract

In the traditional inventory control literature, it is a quite common assumption that the probability distribution of the demand is completely known to the risk-neutral decision maker. However, in reality, there are ample evidences where the demand distribution is not known with certainty because of several factors such as availability of substitute products, competitors' prices, economic conditions, market regulations, etc. which are beyond the control of the firm. In order to cope with the practical situation, it is, therefore, necessary to investigate inventory models with available incomplete information. This contributes to the literature by providing a solution of the newsboy problem when the demand distribution is not perfectly known and decision maker is risk averse. We derive a forecast cost for the period based on sample observation used to set the value of an unknown parameter of the distribution. From numerical study we observe that the expected forecast cost increases when less information about demand is available and that the risk-averse inventory manager incurs higher cost than risk-neutral manager.

Keywords

Newsboy problem; risk aversion; incomplete demand information

Biography

B.C. Giri is an Associate Professor in the Department of Mathematics, Jadavpur University, Kolkata, India. He did his M.S. in Mathematics and Ph. D. in Operations Research both from Jadavpur University, Kolkata, India. His research interests include inventory/supply chain management, production planning and scheduling, reliability and maintenance, and his research papers have appeared in *Naval Research Logistics*, *International Journal of Production Research*, *OMEGA*, *Journal of the Operational Research Society*, *European Journal of Operational Research*, *International Journal of Production Economics* and other journals. He was a JSPS Research Fellow at Hiroshima University, Japan during the period 2002-2004, Humboldt Research Fellow at Mannheim University, Germany during the period 2007-2008 and a Fulbright Senior Research Fellow at Louisiana State University, USA in the year 2012.