

Application of structural equation modelling to analyse the impacts of logistics services on risk perception, agility and customer service level

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ABSTRACT

Logistics services of manufacturing enterprises help to improve transport, delivery of materials and finished products. This paper presents a causal model to identify the influence that has the availability of logistics services on the risk perception, on agility and on customer service level of manufacturing companies. A questionnaire was developed, validated and applied to 225 employees of different industrial sectors. Information is integrated in a structural equation model for test seven hypotheses using partial least squares to calculate the regression coefficient between variables using 95 % confidence level. The results mainly indicated that the availability of logistics services have a positive and direct effect on risk in demand and in supplier's risk; but in addition, agility and transportation also have effects over them. All these variables have direct or indirect contributions on customer service level and can explain 45 % of its variability. On the other hand, it is also identified that transportation performance has a direct effect on agility 0.42 standard deviation units. Findings in this paper demonstrate quantitatively through a statistical analysis the importance of infrastructure for logistic services available in the regions, the role of transportation and its impact on risk in suppliers and agility, and how customer services can be improved increasing supply chain agility and diminishing the risk in demand.

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