

# A study on the manufacturing decision-making and optimization of hybrid-channel supply chain for original equipment manufacturer

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## ABSTRACT

OEM production model can achieve an effective integration of internal and external resources, and the brand owner's brand premium and manufacturer's production advantage are the key elements of the model. When manufacturers have both OEM channels and direct sales, the competition and cooperation relationships between them and the brand owners become even more complicated when the hybrid channels exist. In order to better study the operation and management of the supply chains of OEM production with the hybrid channels, the operating conditions and optimization mechanism for the supply chain of OEM production with the hybrid channels were analyzed under both a centralized and decentralized decision making scenarios through the construction of a two-stage closed-loop supply chain model involving both manufacturers and brand owners. We found that the existence of hybrid channel depends on the brand owner's premium level which is limited by the manufacturer's production costs. There is a section on the premium level of brand owner and the hybrid channel exists in both a decentralized and a centralized decision making paradigms. By optimizing manufacturers' production costs and brand owner's premium level, the profits of both parties involved in the supply chain of OEM production with the hybrid channels, as well as the general profit of the system, can be improved. The system profit under a centralized decision making scenario is greater than that of a decentralized case. If the redistribution is made for the increase in the optimized system profit by leveraging the profit stratified ratio of OEM channels of a decentralized decision making approach, then there is a possibility of achieving the Pareto optimization.

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## Študija odločanja v proizvodnji in optimizacija hibridnih kanalov dobave verige za izvirnega proizvajalca opreme

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### POVZETEK

Proizvodni model izvirnega proizvajalca opreme (angl. OEM) v katerem sta kakovost znamke lastnika znamke in proizvodne prednosti proizvajalca ključna faktorja, lahko učinkovito poveže razpoložljiva notranja in zunanja sredstva. Kadar proizvajalec hkrati obvladuje OEM kanale in direktno prodajo in kadar obstajajo hibridni kanali postaneta tekmovalnost in sodelovanje med proizvajalcem in lastnikom znamke še bolj zapletena. Da lahko proučimo delovanje in upravljanje dobavnih verig OEM proizvodnje s hibridnimi kanali, so delovni pogoji in optimizacijski mehanizmi dobavne verige OME proizvodnje s hibridnimi kanali analizirani v centraliziranih in decentraliziranih odločevalnih scenarijih s pomočjo izgradnje dvostopenjskega zaprto zančnega modela dobavnih verig, ki vključuje tako proizvajalca kot tudi lastnika znamke. Ugotovljeno je bilo, da je obstoj hibridnih kanalov odvisen od stopnje kakovosti znamke, ki pa je omejena s proizvodnimi stroški proizvajalca. Z optimizacijo stroškov proizvodnje in stopnje kakovosti znamke, se dobiček obeh udeležencev v dobavni verigi OME proizvodnje s hibridnimi kanali poveča, prav tako pa tudi skupni dobiček sistema. S centraliziranim odločanjem je dobiček celotnega sistema večji kot pa pri uporabi decentraliziranega sistema. S prerazporeditvijo s ciljem povečanja optimalnega dobička celotnega sistema z izkoriščanjem stratificiranega razmerja OEM kanalov v pristopu decentraliziranega odločanja obstaja možnost doseganja Pareto optimalnosti.

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### PODATKI O ČLANKU

*Ključne besede:*

Proizvodnja  
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Upravljanje dobavne verige  
Izvirni proizvajalec opreme  
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