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Supply chain coordination based on the probability optimization of target profit

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ABSTRACT

Supply chain management decision-making study mainly based on the expected utility theory and most of the studies are obtaining the average values in the statistical sense. For Supply Chain (SC) decision-making individuals the statistical-based optimal profitability brings decision conflicts in the particular market within a specific period. Moreover, the small and medium outsourcing participants face unexpected outcomes which are the main cause of SCs disruption. This study proposes a contractual coordination model that maximizes the probability of a pre-determined Profit Target (PT). The purpose of this paper is to reduce the influence of demand uncertainty with the high risk of unexpected outcomes. We constructed the Revenue Sharing (RS) and buyback contract models within the SC participants' PT conditions and then discussed the SC overall performance. We simulated and analyzed the coordination conditions and the decision-making preferences of SC participants under the two contracts. From the comparison, under the PT strategy, the retailer is more willing to adopt the RS contract rather than the buyback contract. But the SC upstream supplier's contract selection decision depends on the specific contract parameters. Finally, numerical results indicated the contract selection decisions with the given PT of both SC participants.

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Supply chain;
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Izvirni znanstveni članek

Koordinacija dobavne verige na podlagi optimizacije verjetnosti zagotovitve ciljnega dobička

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POVZETEK

Študije upravljanja dobavne verige temeljijo predvsem na teoriji pričakovane uporabnosti, večina študij pa pridobiva povprečne statistične vrednosti. Za posameznike, ki sprejemajo odločitve v dobavni verigi, povzroča optimalna dobičkonosnost, ki temelji na statističnih podatkih konflikte pri sprejemanju odločitev na določenem trgu v določenem obdobju. Poleg tega se mali in srednje veliki udeleženci soočajo z nepričakovanimi izidi, ki so glavni vzrok za motnje v dobavni verigi. Ta študija predlaga model usklajevanja pogodb, ki maksimira verjetnost zagotovitve vnaprej določenega dobička. Namen prispevka je zmanjšati vpliv negotovosti povpraševanja, ki povzroči visoko tveganje nepričakovanih izidov. Razvili smo model pogodbe o delitvi prihodkov in model odkupne pogodbe z upoštevanjem pogojev ciljnega dobička deležnikov in razpravljali o splošni uspešnosti dobavne verige. Simulirali in analizirali smo pogoje usklajevanja in preference pri odločanju deležnikov v okviru obeh pogodb. Glede na primerjavo je v okviru strategije ciljnega dobička trgovec bolj pripravljen sprejeti pogodbo o delitvi prihodkov kot odkupno pogodbo. Višje v dobavni verigi pa je odločitev o izbiri pogodbe z dobaviteljem odvisna od posebnih pogodbenih parametrov. Številčni rezultati nakažejo izbiro pogodbe z upoštevanjem ciljnega dobička za dva udeleženca v dobavni verigi.

PODATKI O ČLANKU

Ključne besede:
Dobavna veriga;
Koordinacija;
Usklajevanje pogodb;
Pogodba o delitvi prihodkov;
Odkupna pogodba;
Ciljni dobiček;
Optimizacija;
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