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Supply chain information coordination based on blockchain technology: A comparative study with the traditional approach

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ABSTRACT

Blockchain technology has subverted traditional supply chain operational models and transformed information interactions along supply chains. This paper examines the impact of blockchain technology on supply chain information collaboration and operating costs. This paper develops a three-level supply chain model based on blockchain technology that incorporates retailer sensitivity to information. First, the manufacturer's profit function is developed, and the optimal information-sharing quantity and supply chain pricing decisions are analysed. Then, cost models for both the traditional supply chain and the novel supply chain using blockchain technology are developed and the impact of blockchain technology on supply chain operating costs is determined. The results demonstrate that blockchain technology can effectively reduce supply chain operating costs. In addition, this study has an interesting finding that if blockchain adoption is valuable for the supply chain, the quantity of information-sensitive should be moderate. Too many or too few information-sensitive retailers can reduce the value of the blockchain's use. This is because blockchain is implementation will increase the privacy concerns of supply chain companies.

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Usklajevanje informacij o dobavni verigi na podlagi tehnologije veriženja blokov: Primerjalna študija s tradicionalnim pristopom

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POVZETEK

Tehnologija veriženja blokov je prevetrila tradicionalne operativne modele dobavnih verig in preoblikovala interakcije informacij vzdolž dobavne verige. Ta prispevek preučuje vpliv tehnologije veriženja blokov na sodelovanje informacij o dobavni verigi in stroške poslovanja. V članku je opisan razvoj tristopenjskega modela dobavne verige, ki temelji na tehnologiji veriženja blokov in vključuje občutljivost trgovca na informacije. Najprej se razvije funkcija dobička proizvajalca. Analizirajo se optimalna količina izmenjave informacij in odločitve o cenah v dobavni verigi. Nato se razvijeta stroškovna modela za tradicionalno dobavno verigo in novo dobavno verigo, ki uporablja tehnologijo veriženja blokov. Nadalje se določi vpliv tehnologije veriženja blokov na operativne stroške dobavne verige. Rezultati kažejo, da lahko uporaba tehnologije veriženja blokov učinkovito zmanjša operativne stroške dobavne verige. Študija poda zanimivo ugotovitev, da mora biti količina podjetij, občutljivih na informacije, zmerna, da je tehnologija veriženja blokov pomembna za dobavno verigo. Preveč ali premalo podjetij, ki so občutljiva na informacije, lahko zmanjša prednost uporabe tehnologije veriženja blokov, saj uvedba tehnologije veriženja blokov poveča pomisleke glede zasebnosti podjetij, ki sodelujejo v dobavni verigi.

PODATKI O ČLANKU

Ključne besede:
Dobavna veriga, ki temelji na veriženju blokov;
Upravljanje dobavne verige;
Upravljanje informacij;
Upravljanje operacij;
Občutljivost na informacije;
Stroški

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