عنوان مقاله:

A new dynamical behaviour modeling for a four-level supply chain: control and synchronization of hyperchaotic

محل انتشار:

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نویسندگان:

Seyyed Mohamad Hamidzadeh - *Department of Industrial Engineering, University of Science and Technology of Mazandaran, Behshahr, Iran.*

Mohsen Rezaei - *Department of Industrial Engineering, University of Science and Technology of Mazandaran, Behshahr, Iran.*

Mehdi Ranjbar-Bourani - *Department of Industrial Engineering, University of Science and Technology of Mazandaran, Behshahr, Iran.*

خلاصه مقاله:

This paper, presents a mathematical model of a four-level supply chain under hyperchaos circumstances. The analysis of this model shows that the hyper-chaotic supply chain has an unstable equilibrium point. Using Lyapunov's theory of stability, the problem of designing a hyperchaotic supply chain control is investigated. The design of the nonlinear controller is performed first to synchronize two identical hyper-chaotic systems with different initial conditions and then to eliminate the chaotic behavior in the supply chain and move to one of unstable equilibrium points, as well as different desired values at different times. A different supply chain is predicted to demonstrate the performance of the controller. In the next part of numerical simulation, with the control of the distributor as the center of gravity of the model, the stability of the entire chaotic supply chain can be achieved. The most important point in designing a control strategy is the ability to implement it in the real world. Numerical simulation results in all stages show that the applied nonlinear control policy can provide supply chain stability in a short period of time, also, the behavior of control signals has low amplitude and oscillations. In other words, it represents a low cost to control the hyperchaotic supply chain network.

کلمات کلیدی:

Supply chain, Hyperchaotic, Nonlinear, Stability, Lyapunove