

Strategy to Achieve Soybean Price Stability: System Dynamics Approach (Study in Central Java Province, Indonesia)

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Abstract

Soybean price fluctuations become an important problem in Indonesia every year. The demand for soybeans increases every year in line with population growth and the soybean processing industry. The current problem is that soybean demand is increasing, but domestic production cannot match it, local soybean production is still low and cannot meet demand. The problems that arise in the logistics of the Central Java soybean supply chain are interrelated. Another logistical obstacle often faced by farmers in the long chain of the trade from farmers to consumers is the distribution and marketing of soybeans. In terms of distribution of market price competition, the price of imported soybeans is much cheaper than local soybeans. Soybean dependence on imported products has consequences on local soybean prices that are not able to compete, resulting in price instability. This study will develop a dynamic system model that aims to support soybean price stability with several policy simulations (case study: in Central Java Province). The relationship between variables that will be simulated with a dynamic system is about food needs (demand), total soybean availability (supply), and soybean prices (distribution) using a dynamic system framework. The result of the model scenario is the Bulog intervention policy (re-functioning Bulog's role as a soybean procurement agency). These policies can be used as supporting material for government and stakeholder decisions in developing strategies for

implementation to increase the competitiveness of local soybeans in the national market and stabilize soybean commodity prices.

Keywords

System dynamics, Simulation, Price Stability, Supply Chain, Soybean.

Biographies

Isna Nugraha is a lecturer at the Department of Industrial Engineering, Universitas Pembangunan Nasional Veteran Jawa Timur, Surabaya, Indonesia. She obtained her Master of Industrial Engineering from Universitas Sebelas Maret in 2021 and a Bachelor of Engineering in Industrial Engineering from Universitas Islam Indonesia, Yogyakarta, Indonesia in 2017. She is the coordinator for the Research and Community Service of the Department Industrial Engineering, Universitas Pembangunan Nasional Veteran Jawa Timur Indonesia from 2021 until now. Her research interests are Logistics and Supply Chain Management, Distribution Systems, System modeling and optimization, Simulation, Dynamic system, Business and Sustainable Development.

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Muhammad Hisjam is a teaching staff in the Department of Industrial Engineering, Faculty of Engineering, Universitas Sebelas Maret, since 1998. He received his bachelor's degree from Universitas Gadjah Mada in 1986 and a master's degree from Institute Technology Bandung in 2002. He received his Ph.D. in Environmental Science from Universitas Gadjah Mada in 2016, with his dissertation title is "Sustainable Supply Chain Model in Export Oriented Furniture Industry in Indonesia (Case in Perum Perhutani)". His research interests are in the supply chain, logistics, business, and sustainable development. He has published some papers in his research area. He and his colleagues have initiated and maintained some collaborations between his institution with some abroad universities, such as Ehime University, Japan, and University Technology Malaysia.