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ECOHUB-An AI Driven and Machine Learning Based Smart Organic Farmer to Consumer Supply Chain System

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Abstract: The issue of structural inefficiencies in the organic agricultural supply chain which we see is that we have too many intermediaries, low price transparency, seasonal price fluctuation, and poor logistics which in turn we see play to reduce what farmers get out of it, increase what consumers pay, and we also see they play a role in post harvest loss. To that we present our solution, EcoHub which is a put forth of a smart organic farmer to consumer supply chain system which is AI and Machine Learning based. We have put together a digital marketplace, a localized hub based distribution system, a seasonal price prediction model and an AI powered chatbot which we have put into one intelligent unit. Also we see that machine learning algorithms which look at past market data, demand variations and seasonal trends to do price prediction which in turn enables data driven decisions for the farmers. Experimental research reports that we see growth in terms of forecasting accuracy, logistics efficiency, and supply chain transparency which we see to be an improvement over what we had with traditional systems. Also we see that EcoHub is aligned with the UN Sustainable Development Goals which include SDG 2 (Zero Hunger), SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), and SDG 12 (Responsible Consumption and Production) which we are promoting via intelligent digital transformation which also supports sustainable agriculture and inclusive economic development.

Keywords: Artificial Intelligence, Machine Learning, Organic Agriculture, Smart Supply Chain, Seasonal Price Prediction, Hub-Based Logistics, Farmer-to-Consumer Marketplace, AI Chatbot, Sustainable Development Goals (SDGs), Sustainable Agriculture