

Navarat Thitinunpong 2012: An Analysis of Return on Investment in Cassava Chip Production Business Using Monte Carlo Simulation Technique. Master of Science (Agro-Industry Technology Management), Major Field: Agro – Industry Technology Management, Department of Agro-Industry Technology. Thesis Advisor: Assistant Professor Parthana Parthanadee, Ph.D. 165 pages.

The objective of this research was to analyze the return on investment in cassava chip production business to support the decision making for the location selection of a cassava chip production facility by using the Monte Carlo simulation technique. The locations of interest included those in Amphoe Bamnet Narong, Chaiphum; Amphoe Thep Sathit, Chaiphum; and Amphoe Sikhio, Nakhon Ratchasima. The model was simulated for 60 months (5 years) and considered the return on investment in terms of the Net Present Value (NPV), the Internal Rate of Return (IRR) and the payback periods, by analyzing the revenues from selling the cassava chips to the exporters in Chon Buri and Phra Nakhon Si Ayutthaya provinces and the costs of raw material, inventory holding, transportation and investment. The study also considered the uncertainties in the parameters, which were the buying prices of fresh roots, the selling prices of chips, the amount of fresh roots procured, the percent of starch in the roots, the diesel prices, and so on, in order to keep the model conform to situations in the real system. From the analysis results, it could be concluded that the most appropriate location was that in Sikhio, Nakhon Ratchasima with the highest NPV of 42.06 million baht, the IRR of 82.20% and the payback period of 14 months or 15 months in term of a discounted payback period. The sensitivity analysis results revealed that the NPVs of the projects would become negative if the root buying prices increased for 8-10% or the chips selling prices decreased for 8-9%, while changes in the diesel prices affect the NPVs very little. Therefore, the entrepreneurs should pay a close attention to the raw-material cost management, in order to keep these costs at competitive levels and should also track the chip prices closely.

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Thesis Advisor's signature