

Project Ideas for Post-Harvest Loss Prevention Institute – Udatta S. Palekar, Dept. of Business Administration, College of Business.

I am interested in working on two projects. The first project would develop a hands-on technique to help analyze post-harvest loss at a micro-level. This is based on repurposing a successful technique from Lean manufacturing. The second project would consider more systemic causes of post-harvest loss by studying the supply chain model in a game theoretic context.

Value Stream Mapping for Post Harvest Loss mitigation:

Value stream mapping is a process mapping technique that is used for reducing waste in manufacturing operations. The creation of a process map helps identify the sources of waste and helps plan an improved future state process plan. I would like to adapt the value stream mapping technique to the agricultural supply chain. The technique itself will be agnostic in terms of both the type of produce and the region where it is applied. I am envisaging an assessment protocol that can be applied across different stages of any agricultural supply chain to identify the sources of post harvest loss at a local level. The technique could then be applied by trained practitioners working at local levels to analyze, at a micro level, the sources of harvest loss and suggest remedies or spin-off continuous improvement projects. Because the technique will be equally applicable regardless of the product or location it will have more universal appeal while providing rigor to assessment and mitigation techniques.

Value stream mapping has been very successful in manufacturing and I believe that we could make a significant contribution to reducing post-harvest loss by suitably repurposing the technique.

Modeling the Agricultural Supply Chain:

In this project I want to look at mathematical models of the Agricultural supply chain. The model would be a game theoretic model to explore the issues of channel conflict and ways to co-ordinate the supply chain. The supply chain models will consider producers (farmers), processors and intermediaries and explore the nature of equilibrium solutions. The project goal is to understand systemic causes of post-harvest loss. The study will consider conflicting objectives of the channel members, effects of the structure of the supply chain, and the role technological and legislative intervention to solve the harvest loss problem.

The resulting models, which may depend on the structure of the supply chain, will also be parameterized so that they can be used to model supply chains for specific agricultural products. I expect this to be a multi-year project that allows us to explore different co-ordination mechanisms, study the problems associated with technology adoption, and understand the effect of legislative remedies.