

## Design of A Multi-Purpose Produce Carrying Device for Rural Applications



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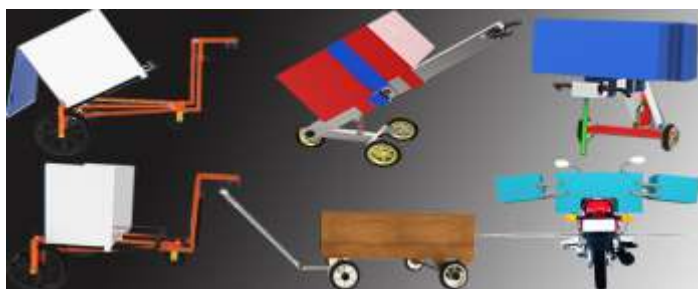
**Keywords:** Push-Pull, Telescopic, Attachable and Detachable, Tipping, DFMA, QFD

**Abstract:**

Now a days agriculture sector in our country is growing at a great pace. Instead of farming it has been renamed as agriculture industry. Specialized farming equipment made farming an easy job. In such condition a specially designed multipurpose produce carrier will help farmers to improve comfort and profit. Our Indian rural area is facing lot of problems because of transportation. The aim is to develop an equipment that can operate by one man can carry lot of crops from fields to market.

Ethnographic research was essential to find out existing problems of the farmers, who use produce carriers. Study has been done in different rural areas in Kerala where different crop carrying methods are used. The personal interviews were carried out with some of the farmers in rural area. Ergonomic study was done to ensure designs complement the strengths and abilities of people and minimize the effects of their limitations, rather than forcing them to adapt. For achieving this aim, it became necessary to understand and design for the variability represented in the population, for attributes such as age, size, strength, prior experience, cultural expectations and goals. QFD and PDS were generated based upon data analyzed. Concepts were generated according to the outcome. One concept was short listed as per weighted ranking method.

Final concept design was fine tuned for production. Some modifications are made in the design according to DFMA considerations. Product validation was done and the results were positive. Feature like user friendly, easily attachable and detachable (vehicle), push-pull setup, telescopic storage space (0.46 m<sup>3</sup> - 0.26 m<sup>3</sup>), and tipping mechanism, were appreciated. Final product was mainly meant to be used by farmers to transport their agricultural goods from their fields to market. The proposed product also reduces the effort required to handle a load of 300 kg.



**Various concepts of produce carrying device**



**Final Product**



**Final rendered model**