

## Design and Development of Modular Storage Crates for Packers & Movers of Household Articles



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**Abstract:**

Packers and movers help relocating goods from one place to another for households, businesses and other users using moving vans, containerized vans and containers. While packing the goods for household articles care should be taken because these are exposed to different road environments while moving from one place to another. The present design of crates are generally used for all applications like storage, mass weight transfer etc., there are no specific designs for moving household items. Household items require greater care than other goods because it contains different articles including kitchenware, glass articles, clothes, books and valuables increasing the risk factor in transferring them. This project concentrates more on household articles transfer, but the design can also be adapted to transfer of other goods carried out by Packers and Movers.

In the present investigation, an initial study has been carried out to understand the existing crates and structure through literature survey and by referring existing patents. The literature survey was conducted to identify the existing processes and methods adopted to reach the households. Ethnography study and user interviews were conducted to understand the problems and requirements of the users. For concept development, the ideas were discussed with the users regarding their expectations. Three concepts were generated based on the data derived from QFD and PDS. The final concept was selected using decision matrix. In the selected concept, ergonomic simulation was carried out to justify the accessibility, handling and placement of storage crates in the vehicle for transportation.

A full scale working prototype of the storage crate was fabricated for the selected concept to highlight the aspect of modularity along with a scaled down mock-up model showing the assembly of the storage crates in the vehicle. Validation was carried out and the results obtained were satisfactory.



**Prototype & mockup model**