Design of Three Wheeler Vehicle for Physically Challenged People

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Abstract:

In today's world, transportation has become one of the prime requirements of people for moving self and/or goods from one place to another. With expansion of cities, mobility has thus become necessary for leading a normal life and also for earning a living. This has brought many developments and improvements in the area of vehicles. Unfortunately, in this development, meeting need for mobility of physically challenged people has lagged behind. Many physically challenged people find it hard to commute to perform their day to day activities like working, education, shopping etc. as they have to constantly depend on others for getting assistance to alight and board the vehicle. In this project, a feasible design solution in form of a user friendly three wheeler vehicle, which allows physically challenged people to commute on their own and perform their activities without anyone's assistance has been proposed.

The activity was started with customer survey and market study. The questionnaire was framed keeping the needs of physically challenged people in mind. The major inputs received from this study were related to ingress/egress issues, ergonomics, utility space and carrying wheel chair. Considering these inputs from the survey, two concepts, namely - Chariot and Sholay, were created. Using Pugh matrix, Sholay concept was finalised for carrying out the detail design. The layout and detail design were carried out using CATIA. The final model was analysed to validate the stiffness using CAE. Using inputs from this, the model was modified. To take care of the ergonomic issues, ergonomics study using Jack software was also carried out for 5th and 95th percentile manikins. After finalising the design, prototype building activity was initiated. A full scale working proto model was fabricated for physical validation of the design function.

The major outcome of this project is the solution for the problem of transport for physically challenged community. This will allow them to commute easily and lead an independent and normal life.