

“Design and Analysis of adjustable facility for cattle transport vehicles”

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ABSTRACT

India had the largest cattle inventory in the world in 2021. India's cattle's inventory was reported as 305 million head in 2021, accounting for roughly 30% of the world inventory. In spite of such supreme importance of cattle, it is regrettable that the attention paid to it by the state and the Public is scanty. While transporting cattle, the priority shall be cattle wellbeing and health, which is not considered due to unavailability of special facility for cattle transportation. Illegal transportation (overloading of cattle) has caused accidents. Cattle are injured and diseased during transportation due to unavailability of safe cattle transport facility and due to lack of awareness about law enforcements.

By considering above problems the need and importance in development of cattle transport facility is shown the report by studying literature review and survey we understood the problem statement and need for advancement in cattle transportation.

1. PROBLEM STATEMENT

- 1 India had the largest cattle inventory in the world in 2021 followed by Brazil and China. India's cattle's inventory was reported as 305.5 million head in 2021, accounting for roughly 30% of the world inventory.
- 2 The cattle, on the other hand are loaded so densely in trucks that their movement is barely possible. The Animal Welfare Board of India, with multiple others animal welfare organization have been gathering evidence of widespread abuse of cattle while transportation throughout the country. These organizations concluded that there have been high levels of overcrowding leading to grave injuries and fatalities being caused to animals.
- 3 Even though there are directives from the state government and also public assurances made by government officials over several years, the evidence collected by these organizations clearly show that there has been no improvement in the treatment of animals during transport.



Fig.01. Overloading of cattle



Fig.02. Improper loading facility

1.2 Factors causing transportation stress [1]

The most pervasive factors with long transportation of cattle include

- Loading and unloading i.e., bad handling
- Climatic conditions
- Insufficient ventilation
- Disease transmission
- Water and food deprivation

Table -1. Stressors in cattle transportation

Stress	Stressor	Effect
Behavioral	Overcrowding	Fear
		Aggressive interaction
Nutritional	Fasting	Dehydration & hunger
Physical	Overloading	Bruising & injuries
	Improper Facilities	
Infectious	Dust, Exposure	Diseases

2. OBJECTIVE

From the survey we have observed that there is need of cattle transport facility, also safety considerations during transportation are not taken because of non-availability of facility. Hence our objective of this project

- To design hydraulic system for ramp cum door.
- To design adjustable facility with partition for cattle transport vehicles.
- To design and analysis the performance for new facility under loading condition on transport vehicle.

3. SCOPE

1. Specialized cattle transportation vehicle
2. Cattle Ambulance
3. Animal rescue vehicle for injured animals

4. LITERATURE REVIEW

We reviewed 42 research papers in a set of years, we observed most of researchers work on cost effective cattle transportation but rarely concern about safe transportation facility design and development.

Table -2. Total no. of review papers based on year

Year	Total no of research papers
2020-2021	16
2015-2019	9
2005-2015	8
>2005	4

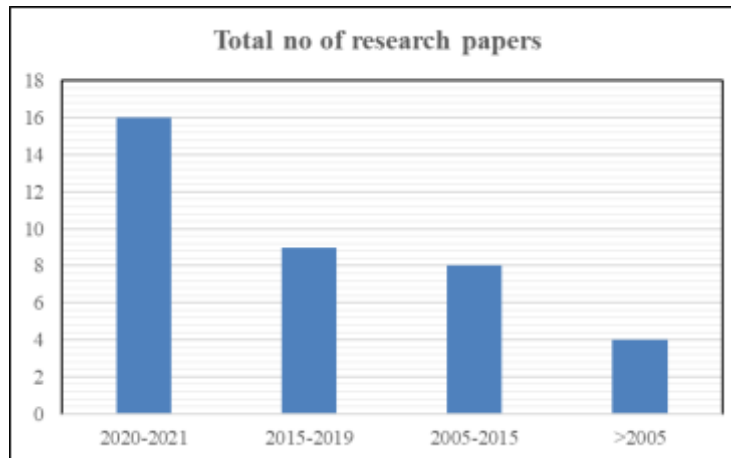


Chart -1 No. of review papers published based on year

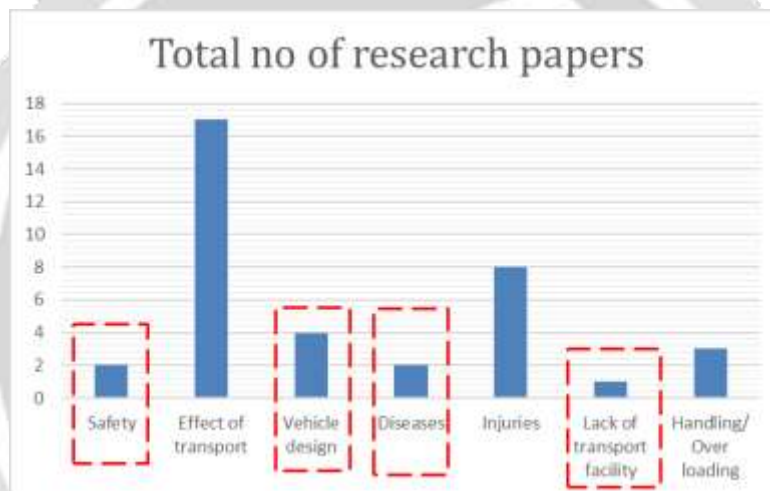


Chart -2 No. of review papers published based objective consideration

According to the literature review, above highlighted areas show that work on objectives like Safety, Vehicle design, diseases and lack of transport facility is having less focus than objectives like Effect of transport and injuries.

5. ADVANTAGES

1. Facility for transportation is flexible and can attached to different transportation vehicles like tractor trolley, pickup truck.
2. Standard cattle transport facility will be designed by considering traffic rules and animal welfare laws so, no violation will be there after implementation of the adjustable cattle transport facility.
3. Minimized or negligible chances of transmission of diseases and injuries to the cattle.
4. Convenient and efficient loading of cattle.
5. Emergency hospitalization of cattle can be done.
6. No need of different deck supports for loading of cattle as facility will have ramp for loading.

5. LIMITATIONS

1. Initial cost of the facility is expensive for domestic/ small scale dairy owners or farmers.
2. Bad weather conditions can affect the carriage and cause rusting which can increase maintenance cost.

6. CONCLUSION

The cattle transport industry in India will show preparedness to adopt innovative change that improves animal welfare in transit. It is recognized that good handling and transport practices result in positive outcome for animals.

All laws and reinforcements provided by the Indian Government and Department of animal husbandry welfare will be followed automatically by the implementation of the cattle transport facility. Stressors in transportation like overloading, loading/ unloading, injuries, accidents, fatalities will be completely eliminated after implementation. Medical health care of cattle will be taken into consideration which is often neglected.

7. ACKNOWLEDGEMENT

We feel great pleasure to present the project stage I entitled “**Design and Analysis of adjustable facility for cattle transport vehicles**”. But it would be unfair on our part if we do not acknowledge efforts of some of the people without the support of whom, this project work would not have been a success.

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