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VEHICLE OVERLOAD ACCIDENTS

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ABSTRACT

Overloading of commercial vehicles on highways is a danger and a burden to the exchequer, who is responsible for maintaining the road system. It not only drives up his costs but is also one of the main causes of accidents. And, more than half of the Commuter trucks travelling on our state and federal highways are overweight. Although there are legal limits for axle loads and gross vehicle weights for automobiles travelling on roadways, carriers willfully disregard these limits. Overloaded automobiles cause exponential pavement deterioration. It's estimated that an axle load twice the size of a regular axle will harm a pavement 16 times as much as the latter.

Whilst gross vehicle weight and standard axle load limitations exist, neither are strictly followed by transporters or law enforcement.. Vehicle overloading shortens the pavement's intended life. Reducing overloading benefits the concessionaire financially as well as preventing the premature breakdown of the pavement.

This essay discusses the advantages of reducing overloading in a build, operate, and transfer (BOT) in terms of toll revenue using an actual case study. According to the case study, allowing vehicles to travel with the maximum legal load on the road resulted in the highest possible revenue. In addition to the advantages already mentioned, preventing overloading lowers accidents, boosts vehicle speed, necessitates less expensive paving maintenance, and decreases operational costs.

KEYWORDS: *OVERLOAD , ACCIDENT , ROADS DAMAGE , FAILURES , COMMERCIAL VEHICLE*

I. INTRODUCTION

Overloading of the commercial vehicles is one of the causes of the early failures and subpar performance of the roads in India. Although there are legal limits for axle loads and gross vehicle weights for automobiles travelling on roadways, carriers willfully disregard these limits . Overloading has negative consequences for the truck, the lives on the road, and the safety of all other drivers.. In comparison to cars loaded within the permissible load limitations, overloaded vehicles do several times greater damage.

Through careful study, this report reveals the full range of consequences of overloading and offers some recommendations to reduce it or increase income by fining operators who compensate for accelerated pavement degradation. Based on survey information gathered during a project, this study also discusses the financial advantages of reducing overloading for a BOT Project.

II. AUTOMOBILE OVERLOAD

According to the Central Motor Vehicles Regulations, the maximum gross vehicle weight (GVW) cannot surpass the total number of maximum safe axles weights combined, subject to restriction The Indian government or the relevant authority's permitted axle loads are the real loads transported by the transporters, including those using new technology trucks, truck-trailers, tractor-trailers, etc., rarely adhere to these prescribed limits and instead tend to overburden their vehicles.

III. IMPACT ON VEHICLE DAMAGE FACTOR (VDF)

The different weights, configurations, and repetitions affect how much damage the various axle-groups inflict the surface. The damage brought on by repeating each axle load group can be measured. However, they are changed into equivalent repeats of a standard axle (ESAL), rather than analysing each axle load group separately. following commonly used formulas VDE is used to determine the destructive impact using a known as 4th law.

IV. MODERN RESEARCH

A case study from a real project is shown next, and then the goals and parameters of the current study are discussed. Finally, the enforcement of overloading is discussed. The review of the literature that is currently accessible in the context of preventing vehicle overloading follows.

V. REVIEW OF THE LITERATURE

There is a paucity of literature on the topic of overloaded vehicle control. The researchers recommended modifying the axle load arrangement. In India, two axle cars are primarily to blame for road damage. Numerous researchers recommended converting two-axle cars to three- or four-axle vehicles in order to spread large loads and lessen harmful consequences. There is virtually little literature on the advantages of a BOT project controlling overloading.

VI. OBJECTIVES AND PURPOSE OF CURRENT STUDY

In the late 1990s and early 2000s, the World Bank, the Asian Development Bank, and the Indian government sponsored the majority of highway developments. Nonetheless, at this time, private concessionaires under BOT Format are funding the majority of the projects. It is the responsibility of the concessionaires to construct a project, maintain it throughout the concession time, and then turn the roads over to the appropriate body in excellent condition. The pavement must be maintained to keep the road in good condition during its service life, and heavy vehicle movement that is not managed is the main cause of the pavement's deteriorating state. Controlling traffic can increase pavement life and benefit the concessionaire.

Depending on this goal, the following areas of research have been chosen:

1. Perform a real-world project axle load survey, analyse the results, and look for overloading.
2. Calculate the project costs for the various options to find the optimal one.
3. Determine the project's toll revenue.
4. Choosing the appropriate course of action to maximise concessionaires' financial gains
5. Provide solutions for preventing overload.

VII. CONTROLLING OF OVERLOADING

Road operators, owners, and highway authorities must guard against unneeded deterioration and wear. An operator or owner of a toll road can safeguard the investment in their infrastructure. The toll operators can set higher tolls for heavier cars and gather weight data for maintenance and planning purposes for future infrastructure. Operators may also prohibit admission to overloaded trucks and target them. For efficient operation, the toll system may be combined with a Weigh-In-Motion (WIM) system. More throughput and efficiency are possible at toll operations thanks to weigh-in-motion. Long truck lines and protracted delays could happen while using static scales. The toll system may now collect fees based on vehicle weight and vehicle classification thanks to the installation of WIM. Weight-based fare collection ensures that the vehicles causing the greatest damage pay the higher fares because

larger vehicles tend to inflict greater wear and tear on roadways.

VIII. ENFORCEMENT

Obviously, enforcement plays a crucial role in preventing big trucks from being overloaded, as well as regulating vehicle weight. By warning people who violate rules and regulations that they will be caught and punished fairly, effective enforcement can serve as a deterrent.
The main element to halt overloaded activity is an efficient discipline system, which includes fines, penalties, and sanctions. If fines and penalties are enough, the driver who was overloading has no motivation to face legal action. A full system can be created by combining monitoring, inspection, enforcement, and punishment.
Fixed inspection sites limit flexibility and may be used to refer to various overloaded enforcement measures. For a complete monitoring system, portable weighing must be used in tandem.
A weigh bridge station's handling and cost estimates are provided in Appendix B. This appendix illustrates the economic viability of installing a weigh bridge based on real traffic and maintenance cost loss over a ten-year design period. 6 years is the reduced design life. specific calculation methods are suggested by Mulyun et al (2010). The suggested calculation has been changed to take into account the case study that was used in this paper.

IX. AS PER GOVERNMENT RULES

Following are some regulations and actions taken by the Indian government to lessen or manage the overloading issue.
letting a driver take the wheel of a vehicle that is carrying more weight than it should. Ss. 113(3), 114, and 115 with S.194(1) of the MV Act. Driver of a two-wheeled vehicle or motorcycle taking additional passengers to himself.
S.128 (1) r/w S.177 of the Motor Vehicle Act.
Any driver of a vehicle that permits or carries passengers on the running board, etc. MV Acts, S. 123(1) r/w S. 177.

X. OVERLOADING EFFECTS

1. An overloaded truck cannot respond quickly to an emergency situation. This is the main reason to cause an accident.

2. Overload and overweight lead to reducing the ability of the braking of the vehicle needs more time to stop.

3. Sometimes, due to overlanding and more combustion of fuel, the engine generates more heat and can catch fire.

4. Due to overload, the vehicles may be at high risk of losing control and stability. as it automatically loses control, and overloading causes road damage as well as traffic issues. pollution in both the air and the sound.

5. The speed of the vehicle decreases due to "overloading" as the mobility of the tyre decreases.

6. Fuel combustion in the vehicle engine creates pollution, decreases the vehicle's life expectancy and durability, and costs nothing for its maintenance.

7. Overloading of vehicles, which impacts the safety measures of road accidents and the families of their victims, has also been identified as one of the most common causes of road accidents.

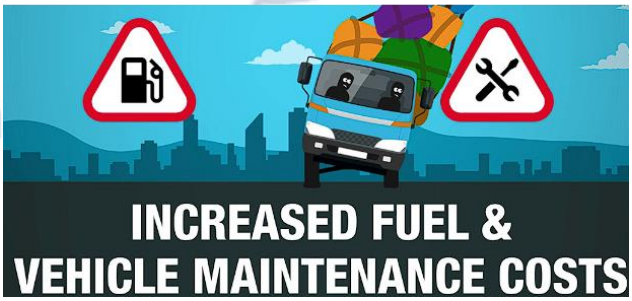
8. the overloading of the vehicles on the roads, which can create an unclear and unsafe condition on the road, which leads to accidents.

9. It creates losses and highways. Does the authority of "road transport" also reduce life expectancy? Heavy fuel usage damages the vehicles' conditions.

XI. DISADVANTAGES

1. Life expectancy and risk for the men and women who drive the vehicles and move them on roads Heavy loads cause the tyres to compress, which sometimes leads to a burst of the tyres.

2. Due to the load being greater than the paromit, it can cause the vehicles to flip over, which may cause fuel consumption.



XII. Conclusion

The following findings can be taken from the current study:

1. Initial investment is lowest if a vehicle that is overloaded is permitted to operate with the legal load, and investment rises when overloading exceeds the legal limit. It is discovered that permitting vehicles to operate at their permissible load results in an initial investment cost that is 6.2% lower than the actual traffic faced on the project ([124.4-117.1]/117.1).
2. If a vehicle is permitted to operate carrying the maximum authorised weight, the concessionaire is anticipated to make the most money. For the sake of this case study, permitting cars to operate at their maximum legal load will result in a 13.4% ([(54506-48085)/48085]) increase in revenue for the concessionaire.
3. In order to achieve the most profitable project and optimise his return, the concessionaire of build, operate, project should limit overloading vehicles by installing weigh bridges and carefully enforcing overloading rules. By preventing overloading, the project's maintenance costs might be reduced.
4. It has been determined that installing a weight bridge is economically feasible. In this study, 14 weigh bridges could be erected, one at each end of the project route.

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