

# Benefits of fleet management data integration

[Business](#), [Management](#)



Abstract Huffman Trucking maintains extensive vehicle fleet maintenance logs, with data on vehicles, parts, tires, maintenance, warranty, costs and dates of service. Management wants to know whether it would be strategically advisable to integrate this information into their current data warehouse and how to leverage it. Investigation shows that there could be significant benefits in efficiency and cost reduction by this consolidation and the appropriate analysis techniques.

Regression analysis is recommended for this data mining, to understand the relationships among independent and dependent variables across large numbers of components and their associated data. Off the shelf software for this purpose was not evaluated, but white papers issued by these companies provided significant data about potential advantages to be gained. The study committee recommends that the data integration and mining be approved for implementation without delay. Benefits of Fleet Management Data Integration Huffman Trucking owns extensive fleet truck maintenance information which is not being fully utilized.

This data should be mined and analyzed to provide the business intelligence which the company needs to improve efficiencies and fleet performance. Managers need this information about their operations to use in their decision-making. "All the records in the world won't do a thing for you if you don't analyze the data," says Robert Johnson, fleet management liaison for the National Truck Equipment Association (NTEA). <https://www.roadandtrack.com/articulation/optimizing>. PDF Regression analysis is recommended for this data mining, to understand the relationships among independent and dependent variables across large amounts of data.

<https://assignbuster.com/benefits-of-fleet-management-data-integration/>

For example, the analysis could show the relationship of tire lifetime costs to the frequency of rotation, the vendor and the vehicle type. This same type of analysis could be used to determine the reliability and costs of any of thousands of parts, including the warranty coverage and costs. This could drive a change in vendors, how often the tires are rotated and the inspection of parts - ensuring that proactive maintenance is provided only as often as needed and failures are minimized. Such analysis for a particular part could correlate the quantity on hand required to avoid out of stock issues with the cost savings of quantity purchases.

This could be used to in procurement and avoiding excess inventory. There are operational advantages to be gained by knowing the optimal maintenance intervals for vehicles and using that to reduce downtime and unscheduled repairs. Regression analysis against the fleet maintenance data should provide the organization a new means to objectively measure the effects of planned maintenance to engineer optimal maintenance plans (Allen, 1997). Knowing just how often a particular type of scheduled, or preventative, maintenance is required and ensuring its completion will maximize the useful life of the vehicles.

Corrective maintenance (repairs due to failure), scheduled maintenance and date of service records would be examined for their relationships to costs, usage and vendor. Sub-optimal maintenance schedules can also drive indirect costs in vehicle downtime and unavailability. In addition to scheduled maintenance, running costs (fuel consumption, engine oil

consumption, tire costs, etc) are significant expenditures and good targets for full data analysis using control charts and regression techniques.

Such operational research techniques can manage the correlation of hundreds to thousands of pieces of equipment, groups, asset types, far more than less robust types of information reporting. The data can also be used to track warranty, failure rate and return information. Are warranties cost-justified for their coverage of failures? Are certain core parts specific to a vendor prone to failure? Are defective parts returns being handled properly? Too frequent scheduled inspections and maintenance increase labor costs. Poor scheduling can result in fleet support staff being over or under-utilized.

Due to the highly skilled personnel involved, there could be significant costs involved in not understanding the best use of their time. The vehicle fleet and its operational support is the major cost driver in this industry. Optimal management is critical. There has been much written on the different approaches to such data mining as described above. Much is available from the vendors of data management and analysis software, including some customized for fleet management. The company could decide to use one of these packages or utilize in-house personnel to report against the new data in the expanded database. Oracle, Collective Data) The United States Navy Submarine Maintenance Engineering, Planning and Procurement (SUBSUME) completed a study in 1962 in which the majority of components analyzed by SUBSUME did not demonstrate an age and reliability relationship and consequently, many existing time directed component overhauls have been deleted from class maintenance plans, eliminating significant costs and

downtime (Allen, 1997). Regression analysis against Huffman fleet maintenance data could discover NY relationships in scheduled maintenance and failure rates.

Because all data manipulation and analysis have limitations, the literature emphasizes that the construction of the database and the regression analysis reports should involve those who understand the data and the business it represents, to ensure that the results are derived and interpreted correctly. Used correctly, these powerful optimization algorithms can be invaluable. With the implementation of the database and its analysis, management must commit to full use of the results to gain the expected benefits. Conclusions and Future Study into the data warehouse.