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| Customer segment :  Customer needs should be the starting point of the provision of services. To this end, Dutch Railways uses a segmentation A public transport smart card is ideal customer segmentation allows a better understanding of how customers are Estimation method for railway passengers train choice behavior with smart card transaction . | **Problems /pains:**  SMART railway or at a rail grade crossing, such as a stalled vehicle on the tracks or a crossing gate malfunction which can be found on the blue and white Emergency Notification System (ENS) sign. The Department of Transportation assigns a unique number to every smart railroad crossing for easy identification. |
| **Customer limitations:**  Smart ticketing systems and other new technologies are revolution how passengers experience rail transport with flexible remote journey planning and purchasing the order of the day. But when it comes to customer service there’s still no substitute for a friendly face writes Sarah Baxter account director | **Your solution :**  Quick diagnosis of rolling stock condition and faults. Remote equipment monitoring. Predictive data analysis. Optimization of preventative and on-demand maintenance plans. Environmental impact monitoring. Optimization of maintenance plans. Remote crew behavior monitoring. |
| **Behavior**:  The analysis is focused on the before and after comparison of travel choice behavior of passengers when the railway company changed the train timetable. The individual passenger’s passing times at the entrance and exit ticket gates of origin and destination stations were aggregated for a small discrete time interval in a day. | **Predictive maintenance**  Predictive maintenance is a powerful tool that helps track asset health, reduce unplanned downtime of equipment and minimize the high cost of unscheduled maintenance. Optical and tactile sensors such as light curtains, camera systems and dynamic pressure-sensitive mats are suited to monitoring areas near rail vehicles. |
| **Data analytics :**  The railway domain can achieve data interconnection via the train bus where most railway sub-systems and their respective sensors are accessible for global optimization. With the increase in demand for more passenger rail services and greater volumes of cargo trains, use of data and its analysis will become a primary asset for the railway sector. | **Un fare advantage:**  Lack of Flexibility to Another disadvantage of railway transport is its inflexibility. Its routes and timings cannot be adjusted to individual requirements. Lack of Door to Door Service to Rail transport cannot provide door to door service as it is tied to a particular track. Intermediate loading or unloading involves greater cost, more wear . |