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Revolutionizing Land-Based Vehicle Parts Management: Basis for a Unified Digital Platform for Auto Parts Information Systems

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Abstract: *The study provides the basis for a much-needed digital platform one that is consumer-friendly by examining current practices, pain points, and stakeholder requirements. This marketplace aims to aggregate the information of all of the autoparts dealers, suppliers, distributors, and manufacturers centrally for collaboration. Our goal is to reduce TCO and time associated with data access/wait times for real-time insights around inventory management, supply chain visibility, and actionable insights. This study is designed to save the face of the land and rarity-based car parts management at the end, foster efficiency in the automotive industry while taking on sustainability. To be a highly effective, secure and scalable "Autohub System" the design is implemented using several strategies and tactics in database domain.In order to reduce redundancy, this entails using a Relational Database Management System (RDBMS) such as MySQL and implementing strategies such table definition, relationship building, and normalization. Indexing helps enhance efficiency while looking for information and to model the autoparts ecosystem we use Entity-Relationship Diagrams (ERD). For stronger security against attacks and availability of data some methods used are concurrency control, adequate back-up and recovery procedures, and encryption of data. Performance tuning and considering scalability are other topics as they focus on the efficiency of work and further increase in the company's possibilities, whereas data auditing gives them accountability. Altogether these strategies can accurately set the database to cater for the goals that the autoparts management system has to accomplish. It's the exact same concept with the Autohub System which revolutionizes the conventional autoparts management sector by producing IoT and predictive maintenance, making operations smoother while eliminating waste. It is beneficial for many businesses as they experience reduced costs, less downtime, and an overall increase in productivity. This is true because the indicated system enhances earth-friendly causes since the automotive industry it fosters is more competitive because of worldwide cooperation. The newly introduced system, the Autohub System, has posed a major change in the ways businesses within the autoparts management industry operate today. This is achieved through offering real-time information, supplier control and a clear and user-friendly front-end in order to ensure that it facilitates the tends, procurement and cooperation. Through sustained supplier dynamics, buy order optimization, and analytical proficiency, decision making becomes enhanced tremendously. The long-term feasibility is guaranteed by the very fact of the opportunity to expand on it and adapt to new needs. This technology takes autoparts management to a new level because it has an overall positive impact on the functions of decreasing downtime, improving supplier interaction, and improving the supply chain. Summing up, The Model T exemplifies the milestone in progress toward sustainability and efficiency that shapes the future of the automobile industry.*

Keywords: Vehicle Parts Management, Digital Platform, Auto Parts Information Systems, Supply Chain Optimization, and Data Integration.

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