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The Role of Data Analytics in Enhancing Decision-Making in Engineering Management

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Abstract

In the evolving landscape of engineering management, data analytics has become a crucial instrument for enhancing decision-making and driving performance. The integration of big data and advanced analytical techniques has led to marked improvements in project outcomes and operational efficiency across various sectors. This paper delves into the multifaceted applications of data analytics within engineering management, emphasizing its role in optimizing project management, streamlining operational processes, and enhancing resource allocation. By examining relevant case studies and industry examples, we illustrate not only the significant benefits derived from implementing data-driven strategies but also the challenges organizations face in adopting these technologies. Ultimately, this paper aims to provide a comprehensive understanding of how data analytics can be effectively leveraged to achieve strategic objectives and foster innovation in engineering management.

Keywords:
Engineering management, data analytics, big data, project management, predictive maintenance.

Biographies

Dr. Hitham Yami, Dr. Hitham Ali Yami is a seasoned expert in business administration, with a rich background in both academia and industry. He earned his Ph.D. in Business Administration from the University of Sfax, Tunisia, where his dissertation focused on the intricacies of electronic management within Libyan oil companies. His academic credentials are further strengthened by a Master's degree in Business Administration from the University of Malaya, Malaysia, and a Bachelor's degree in Foreign Languages with a specialization in English and simultaneous interpretation from the University of Sirt. Dr. Yami has made significant contributions to the fields of business management and infrastructure development. He successfully managed a high-profile dam construction project for SAID Company, overseeing a team of 650 employees and completing the project within budget and on schedule. His leadership skills extend to the public sector, where he played a pivotal role in the Ministry of Tourism, Egypt, contributing to the development of key tourism strategies. A dedicated scholar, Dr. Yami has also contributed to academia through various publications and research. His career is marked by a blend of technical expertise and

strategic vision, making him a valuable asset in both governmental and private sector initiatives. Dr. Yami's diverse experiences underscore his ability to navigate complex challenges and lead teams to success.

Mr. Ibrahim , Ibrahim Salam is a seasoned expert in CAN and LIN protocols with over seven years of specialized experience in the automotive industry. His expertise spans coding, verification, and validation across cutting-edge automotive technologies, including ADAS, Bluetooth, powertrain, and passive entry systems. Ibrahim's career includes pivotal roles at industry leaders such as Roush, ESG, and General Motors (GM), where his contributions have been instrumental in advancing vehicle safety and functionality.
He holds a Bachelor's degree in Computer Science from the Royal University of Dhaka, graduating with honors in 2022, and is currently pursuing a Master of Engineering Management at Lawrence Technological University to deepen his leadership and project management skills. As the Vehicle Test Lead Engineer at Valeo Company since June 2023, Ibrahim continues to drive innovation in automotive testing, leveraging his extensive technical background to ensure the reliability and safety of modern vehicles.