

DATA MANAGEMENT AND ANALYSIS: CHALLENGES, STRATEGIES, AND THE ROLE OF TRAINING IN ENHANCING PERFORMANCE IN THE RAILWAY SECTOR

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Summary: The connection between data and decision-making is undeniable, as it is ubiquitous in every sector including railways. Nevertheless, it is not uncommon for companies to prioritise decision-making while neglecting the importance of data. It is essential to recognise that data lays the foundation for the decision-making process, ultimately impacting the quality and effects of the decisions made [1]. Considering this, three major steps of dealing with data will be addressed, and recommendations will be proposed to manage data. These recommendations are intended to improve overall system performance, reduce costs, enhance safety, and improve the quality of client service in the railway sector.

Initially, the importance of data in decision-making will be discussed. It should be noted that in light of recent advancements in data science, data is growing in importance. When talking about data a fundamental first step is to understand how it was obtained, how it was gathered, and if the measurements reflect what is intended to be measured. Secondly, after having collected the data, it is essential to ensure that it is quality data and that it has the potential to answer key questions [2]. For this, several dimensions of data quality and how to achieve them will be addressed. In addition, issues related to data literacy will be analysed, such as how it impacts decision-making and the barriers companies face to becoming more literate.

After exploring the importance of data and the challenges associated with data collection, data quality, and its proper use, particularly in the railway sector, some recommendations on how to deal with these issues will be presented. These recommendations emphasise the crucial role played by training and meaningful learning [2], [3]. Training is perceived as essential in enhancing how people deal with data, and ultimately in improving the decision-making process and its results. Finally, recent advancements in the Portuguese railway sector addressing these challenges will be highlighted. Current initiatives involve the synergetic development of various solutions by multiple institutions. These solutions target different levels of the EQF scale and diverse areas of expertise all within the railway sector. The goal is to establish a Portuguese Railway Academy.

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