


# Chapter 12

## The Role of AI-Driven Decision Support Systems (DSS) in Enhancing Organizational Performance: A Qualitative Study of Morocco's Automotive Industry

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### **ABSTRACT**

*The rapid advancement of Artificial Intelligence (AI) necessitates its integration into decision-making, particularly through AI-driven Decision Support Systems (DSS). These systems enhance efficiency, automate analytical tasks, and provide predictive insights to improve decision accuracy. This chapter examines the impact of AI-powered DSS within Morocco's automotive industry, a sector marked by rapid growth, increasing data complexity, and evolving market dynamics. Using a qualitative methodology, the study analyzes interviews with DSS users, employing Nvivo for thematic analysis, word frequency mapping, and cross-tabulation. Findings indicate*

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*that AI-enhanced DSS improve resource allocation, organizational responsiveness, and innovation capacity, strengthening overall performance and competitiveness. By contributing to AI-driven business transformation discourse, this chapter highlights AI's role in fostering industrial competitiveness. Future research should explore AI's long-term implications and conduct cross-sectoral analyses to refine AI-driven decision-making frameworks.*

## **INTRODUCTION**

Because technology is developing so quickly, organizations must constantly adapt by incorporating new technologies like artificial intelligence (AI) (Taherdoost, 2023). The incorporation of AI through business roles reveals its increasing role in restructuring processes, decreasing manual effort, and pushing measurable gains in corporate efficiency (Mantouzi et al., 2024; Mantouzi & Said, 2023). The increasing incorporation of artificial intelligence (AI) into business plans highlights its importance in optimizing processes and boosting output. Because of AI's ability to process enormous amounts of data and turn it into insights that can be employed, organizations can lower risks and uncertainties related to both internal and external environments. (Mantouzi et al., 2024; Mantouzi & Said, 2023).

According to (Russell & Norvig, 2010), Artificial Intelligence (AI) is a subfield of information technology that focuses on creating machines that can perform tasks that are typically associated with human cognitive processes, like learning, perception, decision-making, and natural language interpretation. (Nilsson, 2005) adds that mechanizing human intelligence in the long run is AI's ultimate goal. AI greatly improves organizational performance, changes business models, and strengthens human decision-making (Ali et al., 2018; Chi et al., 2020; Lugano, 2017; Mettler et al., 2017).

Decision Support Systems (DSS) serve as essential technological tools that organize and analyze large datasets to help managers make decisions. (Inmon, 1996) defines DSS as organized databases of integrated, time-sensitive, non-volatile, and thematic data that aid in managerial decision-making. These systems serve as essential management tools, encouraging the creation of control mechanisms and analytical dashboards to maximize organizational decision-making. DSS are sophisticated instruments that use data-driven analysis to deliver customized operational solutions. They are crucial in overseeing decision-making processes and can combine information from various sources to support choices in a range of operational contexts (Terribile et al., 2015; Yazdani et al., 2017; Zhai et al., 2020). The integration of AI into DSS significantly increases its utility by improving data processing efficiency and enabling the analysis of vast and complex datasets (Asolo et al., 2024). AI-driven

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