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Be an entrepreneur: Empowering with Data-Driven Decisions

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[Sánchez-Gómez, Juan Sebastián](#)

Universidad ECCI, Colombia

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Abstract

In the contemporary digital era, small business owners encounter mounting pressure to adapt to evolving market demands, frequently with constrained access to data analytics resources. This study investigates how Knime, a complementary data analytics platform, enables entrepreneurs to make informed, evidence-based decisions by analyzing customer behavior, market trends, and operational efficiency. By employing Knime, businesses can optimize processes, personalize services, and identify growth opportunities. This study examines the integration of Knime training into the Be an Entrepreneur program, highlighting its role in fostering innovation, improving decision-making, and enhancing the competitiveness of new ventures in Colombia's dynamic business environment. The project aims to equip engineering students with essential data analysis skills to prepare them for the modern labor market. The study's specific objectives are as follows: to promote evidence-based decision-making, to improve customer-focused product customization, to generate competitive advantage, to improve decision-making under uncertain conditions, and to promote continuous quality improvement. The curriculum is being updated to meet the demands of the labor market and technological advances. The methodology includes identifying educational needs, setting clear objectives, designing and implementing the curriculum, and continuously evaluating its impact for improvement. Research findings have indicated a substantial enhancement in students' capacity to formulate data-driven decisions through the utilization of the Knime platform. A notable 30% increase has been observed in students' critical thinking skills, particularly in the domain of evaluating complex arguments. Practical scenarios, such as the prediction of car theft patterns in Medellín, have exemplified how data analysis can facilitate informed decision making in real-world contexts. The study also highlighted the importance of gaining a competitive advantage, adapting to market changes, and embracing continuous improvement—all critical skills for entrepreneurs in today's fast-paced business environment. The successful curriculum update provided students with relevant skills in data analysis, enabling them to make strategic business decisions. It emphasized the role of data-driven insights in improving business performance, increasing efficiency, and maintaining market relevance. The study concluded that data analysis is a powerful tool that drives innovation and deepens understanding of critical business and societal factors. The study demonstrated the effectiveness of using Knime to enable data-driven decision making and gain a competitive advantage. The study underscored the importance of adaptability, continuous improvement, and informed decision-making in sustaining long-term business success. The integration of Knime into the Be an Entrepreneur program has been demonstrated to be a viable method of equipping students with essential technical skills and preparing them for the challenges of the modern business environment. Updating the curriculum also supports ongoing relevance in the rapidly changing labor market, ensuring that entrepreneurs are equipped with the tools they need to succeed. © American Society for Engineering Education, 2025.

Author keywords

Competitive advantage; Curriculum development; Data-driven decision-making; Entrepreneurship education

Indexed keywords

Engineering controlled terms

Behavioral research; Commerce; Curricula; Data Analytics; Data handling; Employment; Engineering education; Information analysis; Personnel training; Students

Engineering uncontrolled terms

Competitive advantage; Curriculum development; Data analytics; Data driven decision; Data-driven decision-making; Decisions makings; Entrepreneurship education; Evidence- based decisions; Informed decision; Labour market

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Corresponding authors

Corresponding author

Affiliation

J.S. Sánchez-Gómez
Universidad ECCI, Colombia

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