

Midocean University

Program: Master of Entrepreneurship

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Research Title: The Impact of Data Analysis and Artificial Intelligence in
Building and Managing Startups

أثر تحليل البيانات والذكاء الاصطناعي في بناء وإدارة الشركات الناشئة

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Introduction:

Startups and entrepreneurial projects success depends entirely on deep analysis, innovation and attention to detail. In recent years, artificial intelligence and data analysis have become powerful tools that provide direction toward better decision making, design thinking, operational excellence and the ability to integrate in the market. This research will explore how the transition from classic entrepreneurial startup to an AI and data-based startup will impact the success rate.

My interest in this research comes from my 15 years of experience in data analysis across multiple corporations and startups in addition my sincere belief in the powerful impact of artificial intelligence and data analytics to help avoid common bottlenecks, plan solid strategies, save resources, effort and time and ultimately increase the potential for success.

Research Problem:

Despite the growth to adopt data driven and AI tools and practices, many startups still face challenges mainly due to knowledge gaps, cost impact, resource limitations and most importantly the lack of having clear strategy. This study will help to address the adoption issues and will provide clarity on how to use AI and data driven analysis throughout the startup journey into all stages starting from ideation until maturity. The study should help address several key aspects to ensure success in business analysis, feasibility, critical thinking, design thinking using AI and data analysis.

Importance of the Study

The importance of this study is relevant to a number of strategic dimensions according to my experience and according to many experts in the field of AI and data analysis. The key dimensions of this study are the following:

- 1- **Empowering better and faster decision making** by helping startups make more informed and faster decisions even if resources are limited and market conditions are unpredictable.
- 2- **Introducing additional academic insights** by contributing on using data analysis techniques and AI tools by entrepreneurs.
- 3- **Enhancing supportive ecosystem** where investors and policy makers can refer to this study to better support startups by providing better infrastructure, funding and resources to enhance success likelihood.

Study Objectives

- Present how AI and data analysis can be used to drive decisions for startups from ideation stage to maturity stage.
- Define factors and key indicators of using AI and data analysis to drive success and overcome challenges.
- Provide methodologies, insights and recommendations for startups and their stakeholders on the use of AI and data analysis to ensure success and common understanding.

Research Questions:

- What are the key challenges that startups face to adopt AI tools and data analysis techniques?
- What AI and data analysis tools and techniques are mostly commonly used in startups?
- What factors and performance indicators can be used to measure startup overall success and the success of every stage of the lifecycle when using AI and data analysis?
- How ROI can be calculated when investing in AI and data analysis tools?
- What are the barriers, limitations and risks of adopting AI and data analysis in startups?

Previous Studies:

- **Giuggioli & Pellegrini (2023)**, “Artificial intelligence as an enabler for entrepreneurs “: A regular review showing how AI can support entrepreneurs by enhancing opportunity finding, decision-making, performance, education and research.
- **Uriarte et al. (2025)**, “**Artificial intelligence technologies and entrepreneurship: a hybrid literature review** “: A review of existing research on AI-based technologies in entrepreneurial practice.
- **Schiavone et al. (2023)**, “**Designing AI implications in the venture creation process**”: An analysis of issues startups generally face during the creation process and exploration of how AI solutions impact startups creation process.
- **Pati et al. (2024)**, “**The Impact Of Artificial Intelligence On Startup Business Models: A Comparative Analysis**”: A study paper of the impact of AI on startup business models. A comparative analysis and evaluation of the adoption of AI.
- **Lee et al. (2024)**, “**Enhancing the Competitiveness of AI Technology-Based Startups in the Digital Era**” This study provides an analysis of the impact of using AI in startups to strengthen competitiveness in the market.

Theoretical Frameworks:

- **Lean AI Growth Loop**: Provides an iterative methodology to apply AI to a particular number of growth challenges impacting prioritization, learning, optimization and scalability using data analysis tools.
- **The Operational Efficiency Engine**: This framework provides the methodology to use AI for optimizing internal operations to allow human resources to focus on strategic task.
- **The Democratization of Artificial Intelligence**: Provides comprehensive insights into challenges and strategies around the transformation and adoption AI.

Research Hypotheses

Growth:

- 1- Startups that adopt and integrate AI and data analytics are likely to achieve higher rates of success and growth than the ones that use classic approaches.
- 2- Utilizing AI and data analytics for predictivity is associated with improved market growth.

Strategic decision making:

- 1- Adoption of AI can lead to more accurate strategic prediction and planning.
- 2- AI analytics can support startups adapt faster to market challenges and changes.

Efficiency:

- 1- Adopting AI can lead to significant optimization of performance, resource, budget and cost management.

Adoption Challenges:

- 1- Knowledge limitation and experience can negatively impact the adoption and execution of AI and data analytics applications.
- 2- Cost is a major factor that limit the adoption of AI and data analysis solutions specially in the early stages of startups.

Privacy and Ethics:

- 1- Prioritizing code of conduct when using AI to gain customers, investors and partners trust and reputation.

Research Methodology and Methods:

This research paper will mainly adopt an approach of quantitative research methodologies which will focus on identifying patterns in startups across the world as per the following key methods:

- Online Surveys.
- Past research results.
- Statistics and performance metrics analysis.
- Various BI and AI analysis tools and techniques.

Data Collection Tools:

To ensure reliable research findings, a number of traditional and AI tools will be used as following:

- Online questionnaires using google forms. Questions will be of multiple-choice type which will later be analyzed in BI tools such as Power BI and Excel.
- Online startup databases for performance and operations.

Study Sample:

- 15 to 30 startups worldwide with focus on at least 5 startups in Saudi Arabia.
- 2 to 5-year-old startups in technology and healthcare industries.

List of References and Sources:

- **Giuggioli & Pellegrini (2023)**, “Artificial intelligence as an enabler for entrepreneurs
- **Uriarte et al. (2025)**, “Artificial intelligence technologies and entrepreneurship: a hybrid literature review”.
- **Schiavone et al. (2023)**, “Designing AI implications in the venture creation process.
- **Pati et al. (2024)**, “The Impact Of Artificial Intelligence On Startup Business Models: A Comparative Analysis”.
- **Lee et al. (2024)**, “Enhancing the Competitiveness of AI Technology-Based Startups in the Digital Era”.