

# Industrial Engineering Indicator | Arab Region

2024



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Educational Market research and Opinion polls department

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# 1

## Introduction

# 1

## Introduction

### IEOI 2024 Report

The Industrial Engineers Opinion Indicator (IEOI) 2024 Report provides a comprehensive analysis of the state of industrial engineering across 17 Arab countries where industrial engineering is actively studied and practiced. This report aims to shed light on the challenges faced, achievements realized, and data-driven insights shaping the field in the Arab world.

In recent years, industrial engineering has emerged as a cornerstone of economic and industrial growth across the region. With its interdisciplinary approach that blends engineering principles with management strategies, industrial engineering has played a pivotal role in optimizing operations, reducing costs, and improving efficiency in both public and private sectors. This report seeks to underscore these contributions while identifying areas for improvement to ensure the continued growth and evolution of the field.

The Arab world presents a diverse landscape for industrial engineering, reflecting the unique economic, cultural, and educational contexts of its countries. From the oil-rich economies of the Gulf Cooperation Council (GCC) to the resource-constrained nations in North Africa, the field has adapted to meet distinct regional needs. By analyzing these variations, the IEOI 2024 Report offers a nuanced understanding of how industrial engineering is practiced and perceived across different nations.

Furthermore, this report highlights the vital role of industrial engineers in addressing pressing challenges such as sustainability, technological adoption, and workforce development. By leveraging quantitative data and qualitative insights, the report not only celebrates the achievements of 2024 but also sets the stage for a forward-looking strategy that aligns with global trends and regional aspirations.

Through a detailed examination of enrollment trends, employment statistics, and sectoral contributions, the IEOI 2024 Report aspires to inform decision-makers, educators, and practitioners. By doing so, it aims to foster a culture of innovation, collaboration, and excellence in industrial engineering, ultimately driving sustainable economic growth and societal advancement across the Arab world.



# 2

## Who We Are

# 2

## Who We Are

IEOI Report 2024

The Arab Institute for Industrial Engineering and Management (AIEM) is a pioneering organization dedicated to the advancement, development, and promotion of industrial engineering across the Arab world. Established with a clear mission to empower professionals and organizations, AIEM aims to be a transformative force in bridging the gap between academia and industry, fostering innovation, and addressing the region's unique challenges in engineering and management.

AIEM offers a broad range of services, including specialized training programs, cutting-edge research initiatives, and tailored consultancy services. These offerings are designed to enhance operational excellence, promote efficiency, and drive sustainable economic growth. By equipping industrial engineers with the tools, knowledge, and support they need, AIEM ensures that they are prepared to meet the demands of a rapidly evolving global economy.

As a key player in the industrial engineering ecosystem, AIEM collaborates extensively with academic institutions, industry leaders, and government entities. These partnerships facilitate the development of innovative solutions, the exchange of knowledge, and the promotion of best practices across the region.

AIEM is also committed to nurturing the next generation of industrial engineers. Through scholarships, mentorship programs, and youth-focused competitions, the institute actively supports aspiring engineers in their academic and professional journeys. By investing in talent development, AIEM contributes to building a robust and capable workforce that can tackle future challenges with confidence and creativity.

# 3

## Data Insights

# 3

## Data Insights

IEOI Report 2024

The following data highlights the current landscape of industrial engineering across the 17 Arab countries:









# 3

## Data Insights

IEOI Report 2024

Number of Universities Offering Industrial Engineering Programs:





Country	Number of Universities
	12
	9
	6
	5
Others	Vary between 1-4 universities

# 3

## Data Insights

IEOI Report 2024

Distribution of Industrial Engineers by Country (%):

Country	Percentage
	25%
	20%
	10%
	15%
Others	30%

# 3

## Data Insights

IEOI Report 2024

### Enrollment Trends in Industrial Engineering Programs (2018-2024):



Have seen a steady increase in enrollment, with over 10,000 students currently enrolled in IE programs.



Show moderate growth, averaging 5-7% annual increases.



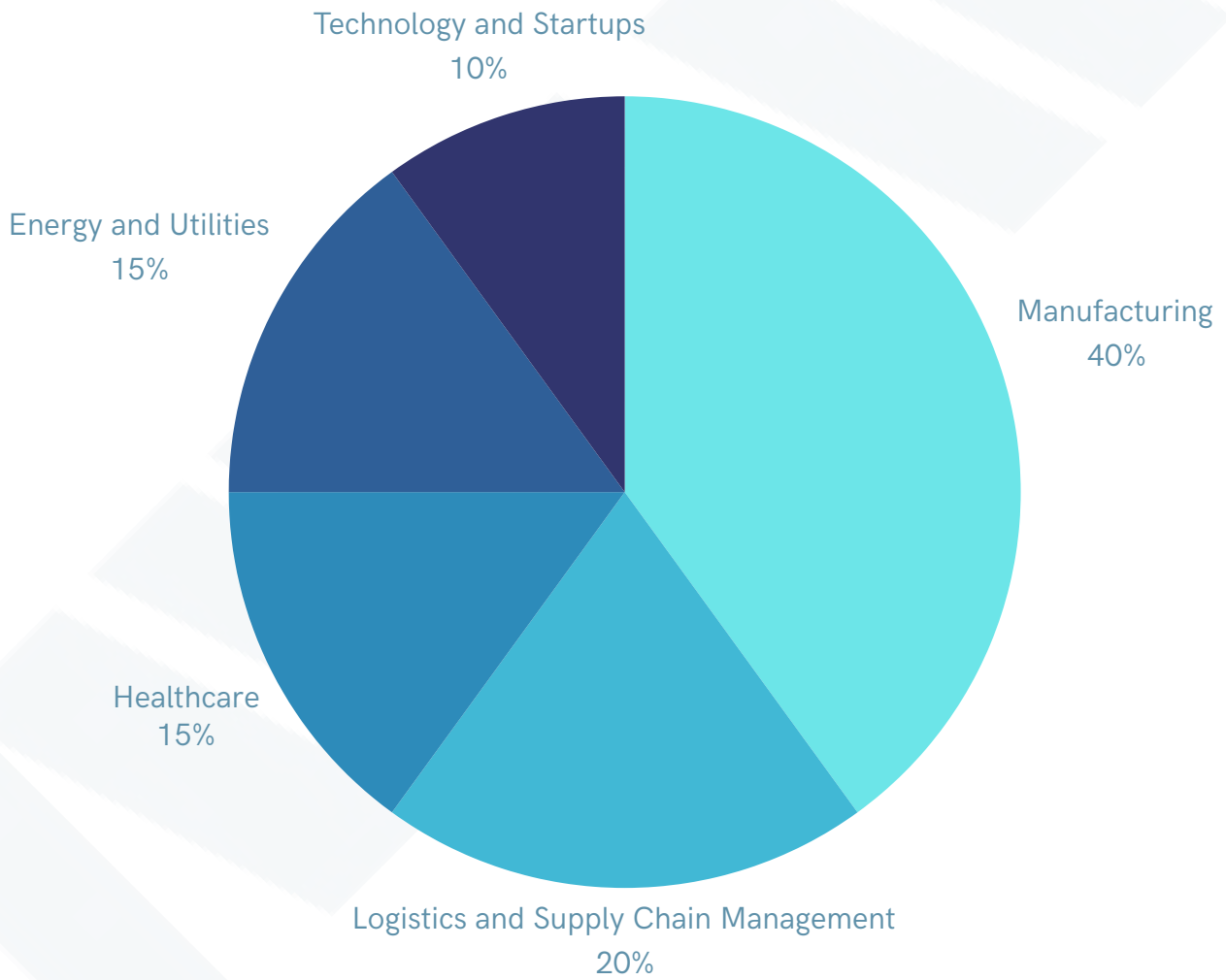
Emerging participation in Oman and Sudan with growth rates exceeding 10% annually.

# 3

## Data Insights

IEOI Report 2024

### Key Employment Sectors for Industrial Engineers:

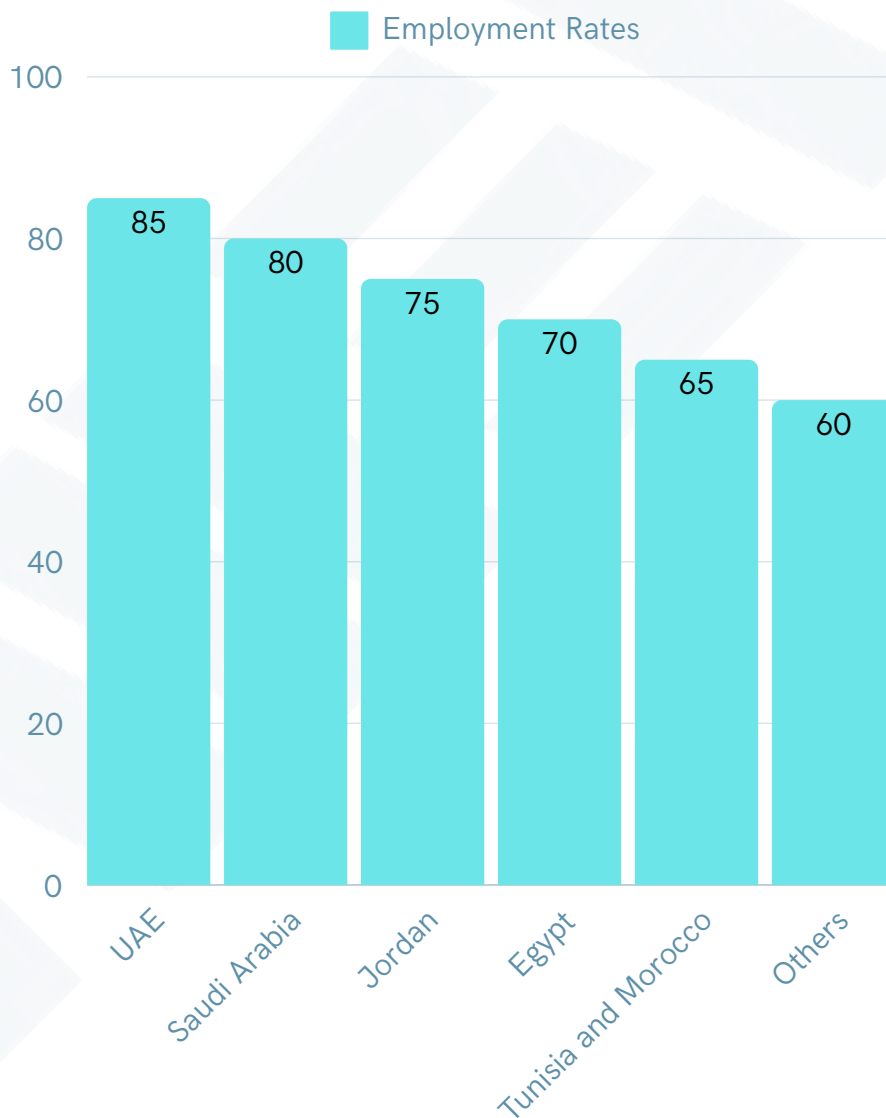


# 3

## Data Insights

IEOI Report 2024

### Graduate Employment Rates by Country:



# Challenges of 2024 for Industrial Engineering

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## Challenges of 2024 for Industrial Engineering

IEOI Report 2024

- **Skill Gaps:**

- A significant mismatch persists between industry requirements and academic curricula, particularly in emerging technologies like AI and IoT.
- Survey Insight: 60% of employers in the region highlight the need for advanced technical skills in graduates.

- **Technology Adoption:**

- Many traditional industries are slow to adopt Industry 4.0 technologies.
- Data: Only 35% of surveyed firms have implemented AI or machine learning in operations.

- **Economic Pressures:**

- Budget constraints continue to impact research funding and innovation, particularly in developing nations.
- Data: Research expenditure as a percentage of GDP remains below 0.5% in most countries.

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## Challenges of 2024 for Industrial Engineering

IEOI Report 2024

- **Brain Drain:**

- High rates of emigration among skilled industrial engineers seeking better opportunities abroad.
- Insight: Countries like Lebanon and Iraq report over 40% of skilled engineers moving abroad annually.

- **Lack of Collaboration:**

- Limited cooperation between academia, industry, and government in many countries restricts innovation and practical application.

Key Indicator

- **Gender Disparity:**

- Female engineers face barriers in career progression and equal opportunities.
- Data: Female industrial engineers make up only 20% of the workforce in countries like Algeria and Iraq.



# **Achievements of 2024 for Industrial Engineering**

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## Achievements of 2024 for Industrial Engineering

IEOI Report 2024

### • Educational Advancements:

- New IE programs were launched in Oman and Sudan, adding an estimated 500 graduates annually.
- Enhanced curriculum updates focusing on digital transformation in Jordan and Egypt.

### • Technological Milestones:

- Successful implementation of lean management and Six Sigma practices in key manufacturing sectors in Morocco and Tunisia.
- Case Study: A Tunisian automotive plant improved production efficiency by 20% through lean methodologies.

### • Increased Female Participation:

Key Indicators

- Female representation in industrial engineering programs increased to 30% in Bahrain and 35% in the UAE.
- Initiative Highlight: Saudi Arabia launched the "Empower Her" program to support women in engineering.

### • Conferences and Collaborations:

- Over 10 regional conferences held, including the Arab Industrial Engineering Summit 2024 in Saudi Arabia, which attracted 1,200 participants.
- Partnerships: Joint research initiatives between universities in Qatar and Tunisia focused on sustainability in logistics.

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## Achievements of 2024 for Industrial Engineering

IEOI Report 2024

- **Sustainability Focus:**
  - Adoption of green engineering practices in logistics and manufacturing, particularly in Jordan and Qatar.
  - Data Insight: 25% of logistics firms in Jordan reported adopting eco-friendly practices in 2024.
- **Youth Engagement:**
  - Growing participation in IE competitions and hackathons across the region.
  - Highlight: Over 500 students competed in the "Green Innovation Challenge" held in Morocco.

Key Indicators

# 6 Future Trends in Industrial Engineering

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## Future Trends in Industrial Engineering

IEOI Report 2024

Industrial engineering in the Arab world is poised for significant transformations as it aligns with global trends. Emerging technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), and robotics are set to redefine the field, making processes more efficient and adaptive. By 2030, these technologies are expected to be integrated into sectors like manufacturing, logistics, and healthcare, driving innovations in supply chain management and production systems.

### Emerging Technologies Adoption by 2030

- AI: Expected to impact 65% of industrial engineering processes.
- IoT: Integration in 50% of logistics and manufacturing systems.
- Robotics: Adoption rate expected to rise to 40% across industries.

### Focus on Sustainability

- Energy-efficient systems: 70% of companies expected to adopt by 2030.
- Circular economy practices: 35% of industrial engineering projects projected to include these practices.

### Workforce Adaptation

- 85% of educational institutions to update curricula with future-focused content by 2028.

# Gender and Diversity in Industrial Engineering

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## Gender and Diversity in Industrial Engineering

IEOI Report 2024

The representation of women and diverse groups in industrial engineering across the Arab world has shown promising growth. In 2024, women accounted for approximately 30% of industrial engineering students in the region, with notable progress in countries like Jordan, where female enrollment reached 40%. Efforts to enhance diversity include scholarships targeted at underrepresented groups and initiatives encouraging participation in STEM fields.

### Female Representation in Education (2024)

Regional average

30%



40%

### Female Workforce Participation

Regional average

20%

### Diversity Initiatives

institutions implementing targeted scholarships

50%

institutions implementing targeted scholarships

60%

# 8

**Comparative  
Analysis**



# 8

## Comparative Analysis

IEOI Report 2024

When compared to global standards, industrial engineering in the Arab world demonstrates both strengths and areas for improvement. The region excels in leveraging industrial engineering principles in sectors like oil and gas, where process optimization and resource management are critical. However, there is a noticeable gap in digital transformation adoption compared to advanced economies.

### Digital Transformation Gap

Global average

Arab world

75% adoption

55% adoption

### Sectoral Excellence

- Oil and Gas: Efficiency practices utilized in 80% of projects.
- Logistics and Supply Chain: Optimization techniques implemented in 60% of operations.

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## Call to Action

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## Call to Action

IEOI Report 2024

The IEOI 2024 Report underscores the need for collective efforts to advance industrial engineering in the Arab world. Stakeholders, including governments, academic institutions, industry leaders, and professional organizations, must collaborate to address challenges and seize opportunities.

We call on decision-makers to prioritize investments in education, research, and technology to equip industrial engineers with the skills and tools needed for the future. By fostering a culture of innovation, inclusivity, and collaboration, we can unlock the full potential of industrial engineering to drive sustainable development and economic growth across the region. Let us work together to shape a future where industrial engineers lead the way in creating a prosperous and resilient Arab world.

### Investment Priorities

- Education: 40% increase in funding required by 2025.
- Research and Development: 35% of GDP allocation recommended for STEM sectors.

### Collaboration Goals

- Target: 90% industry-academia partnerships established by 2030.

# 10

## Conclusion

# 10

## Conclusion

IEOI Report 2024

The Industrial Engineers Opinion Indicator (IEOI) 2024 Report serves as both a reflection on the current state of industrial engineering in the Arab world and a blueprint for its future. Across 17 countries, the field has demonstrated remarkable adaptability and progress, contributing to critical sectors such as oil and gas, logistics, and manufacturing. However, the challenges of 2024—ranging from digital transformation gaps to sustainability and inclusivity—underscore the need for continued investment and collaboration.

The data presented in this report highlights significant achievements, including increased female participation in education and targeted diversity initiatives. Furthermore, the adoption of emerging technologies and a growing emphasis on sustainable practices indicate that industrial engineering in the Arab world is on the cusp of a transformative era. AIEM remains committed to supporting these efforts through training, research, and partnerships. By addressing gaps in education, fostering industry-academia collaboration, and promoting best practices, the region can elevate its standing in the global industrial engineering community.

As we move forward, the call to action is clear: all stakeholders must work together to empower industrial engineers and drive innovation. With a unified approach, the Arab world can harness the full potential of industrial engineering to achieve sustainable economic growth and societal progress. This report is not only a testament to what has been accomplished but also a reminder of the work that lies ahead.



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