



ERF - GCC High Level Policy Seminar
**The potential of the fourth industrial revolution on the economic
transformation of GCC countries**

15 - 16 October, 2024, Dubai, UAE



CONTEXT

The dawn of the fourth industrial revolution, often termed Industry 4.0, heralds a transformative era characterized by rapid technological advancements and accelerated innovation. The infusion of smart technologies into various sectors is revolutionizing the manufacturing landscape globally. In the Middle East and North Africa (MENA) region, particularly the Gulf Cooperation Council (GCC) countries, this transformation is both imminent and impactful. Industry 4.0 introduces smart manufacturing, smart cities, smart homes, and smart lifestyles, fostering an increasingly interconnected economy and society. By embracing these advancements, GCC countries are poised to diversify their economies, enhance global competitiveness, and achieve sustainable economic growth.

The manufacturing sector within the GCC is evolving into a global powerhouse, leveraging its strategic geographical location and significant investments from both domestic and multinational corporations. Countries like Bahrain, the UAE, and Saudi Arabia are witnessing substantial growth in their manufacturing sectors, driven by the adoption of advanced manufacturing technologies and smart factory initiatives. The advent of Industry 4.0 technologies has given rise to the concept of smart factories, where automation, data exchange, and advanced manufacturing technologies converge to create more efficient, flexible, and intelligent production systems. By investing in advanced manufacturing technologies, these nations can build a more resilient and diversified industrial base.

The Gulf has emerged as a significant global manufacturing hub, largely due to its advantageous geographical position between Europe, Asia, and Africa. Prominent domestic businesses such as Bahrain's BFG International and the United Arab Emirates' AquaChemie are becoming increasingly significant as global players, while multinational corporations such as Mondelez and Honeywell are making significant investments in the region. These developments have led to a 4.9% growth in Bahrain's manufacturing sector in 2022, an 8.7% increase in the UAE's manufacturing production, and a 18.5% rise in Saudi Arabia's manufacturing activity in December 2022 compared to the same month the previous year.

Large-scale enterprises that utilise sophisticated manufacturing techniques, such as those employed in the production of petrochemicals, aluminium, and refining, have been among the earliest adopters of these novel technologies. In a pioneering Industry 4.0 initiative in the region, BFG International collaborated with Bahrain's Labour Fund Tamkeen and the Bahrain Economic Development Board (Bahrain EDB). The project, which is supported by Tamkeen, is creating digital twins of factory operations in real time and integrating and interpreting the data into a single AI-driven real-time software

optimisation platform that provides total performance transparency and a real-time improvement roadmap. In Saudi Arabia, the Raqtan Group collaborated with MODON, the government's industrial property authority, to introduce solutions that utilise robotic process automation, artificial intelligence, and cloud software. Such instances are becoming increasingly prevalent throughout the region. Furthermore, Bahrain has established 300 smart factories in a mere two years.

The GCC smart city initiatives have been extensively documented. The e-Government 2020 initiative in Qatar is focused on enhancing government services through digital innovations, including the use of mobile apps and cloud infrastructure. The Lusail Smart City exemplifies this approach, integrating advanced technologies for the delivery of services and the management of crises. The country's commitment to the development of smart cities aligns with the National Vision 2030, which emphasises the quality of life of residents and the development of a digital economy. Similarly, Saudi Arabia has set itself the goal of transforming its cities into smart urban centres. This is to be achieved through the implementation of initiatives such as the digital traffic control system, which is being driven by the National Transformation Program and Vision 2030. The Neom project, a prominent example of a smart city initiative, encompasses a diverse range of sectors and is backed by an investment of approximately \$500 billion. In the United Arab Emirates, Dubai is at the vanguard of smart city initiatives, with the Smart Dubai strategy prioritising efficiency, safety, and a seamless urban experience. The UAE has demonstrated a commitment to sustainability, advanced technology, and collaboration with the private sector in smart city development through projects such as Masdar City and Zayed Smart City.

The implementation of smart factories and smart cities in GCC and MENA countries offers considerable potential for economic diversification, job creation, and enhanced global competitiveness. While challenges such as infrastructure constraints and a shortage of skilled labour exist, strategic investments and policy frameworks can mitigate these hurdles. It is imperative that MENA nations seize the opportunities presented by smart manufacturing to drive sustainable economic growth and position themselves as leaders in the Fourth Industrial Revolution.

OBJECTIVES

The aim of the conference is to provide a comprehensive understanding of the adoption and implications of Industry 4.0 within the GCC countries. This event aims to bring together academia, industry professionals, and decision-makers in GCC countries with the knowledge and skills required to harness the potential of Industry 4.0 technologies. The conference will focus on the 4th industrial revolution, smart factories, smart cities, entrepreneurship and labor market in specific sectors. The specific objectives are:

- Understanding the recent progress in the adoption of Industry 4.0 in GCC Countries • Analyzing the current and potential impacts of Industry 4.0 technologies in the process of economic diversification of GCC
- Learn from case studies showcasing successful digital transformations in manufacturing and smart factories in GCC
- Identifying key challenges and opportunities for Industry 4.0 technologies in GCC
- Customized strategies for the unique challenges and opportunities in GCC
- Showing the sectoral transformation due to application of Industry 4.0

DRAFT AGENDA

DAY 1 - 15 October	
08:30 - 09:00	Registration of participants
09:00 - 09:45	<p>Session 1: Opening Remarks</p> <p>Moderator: Dr. Hassan Aly, Economic Research Forum (ERF) – Confirmed</p> <ul style="list-style-type: none"> ○ Dr. Ibrahim Elbadawi, Economic Research Forum (ERF) - <i>Confirmed</i> ○ H.E. Dr. Ali Bin Sebaa Al Marri, Mohammed Bin Rashid School of Government (MBRSG) – <i>Confirmed</i> ○ Dr. Abdallah Al Dardari, Regional Bureau for Arab States (RBAS), UNDP <i>Confirmed Online</i> ○ H.E. Dr. Fahad M. Alturki, Arab Monetary Fund – <i>Confirmed</i>
09:45-10:00	Coffee break – Group Photo
<p>Session 1: The potential of Industry 4.0 and Artificial Intelligence in fostering economic growth and diversification of the GCC</p> <p>Moderator: Dr. Sama MBANG (Mercedes Smart Factory, Carlsruhe University) - Confirmed</p>	
10:00 – 12:00	<p>This session explores the potentialities of Industry 4.0 for the GCC, focusing on strengthening existing economic sectors and facilitating economic diversification. It will concentrate on the energy and tourism sectors, examining how technologies like AI, IoT, VR, and digital twins can enhance efficiency, sustainability, and visitor experiences. By integrating smart grids, predictive maintenance, and immersive experiences, the GCC can revolutionize these key sectors and maintain their global leadership in energy while attracting more tourists with unique, high-quality experiences. Furthermore, the session will discuss the potential of the GCC to become a global hub for Industry 4.0 services through strategic investments in R&D, infrastructure, and talent. This would drive economic growth, create high-skilled job opportunities, and foster innovation ecosystems as well as enhancing the regional progress specifically towards SDG#9: Industry, Innovation and Infrastructure and within an integrated approach seeking synergetic acceleration of related SDGs at large. Key research questions include the applications of Industry 4.0 in the GCC, strategies for effective integration, contributions to sustainable development goals, and addressing challenges and barriers to implementation. The session aims to provide actionable insights for policymakers, industry leaders, and stakeholders to harness the transformative potential of Industry 4.0.</p> <p>Introduction talk: Dr. Isabelle GALY (OTESIA, France) (15') – Confirmed</p> <p>Panel discussion:</p> <ul style="list-style-type: none"> ○ Dr. Lanouar CHARFEDDINE (Qatar University) and Adelina ZEQRIRI (University of Côte d’Azur): Industry 4.0 and the transformation of the Tourism Sector in GCC <i>Confirmed</i> ○ Dr. Sarah NAJM (Newcastle University Business School) – <i>Confirmed Online</i> ○ Dr. Saoussen BEN ROMDHANE (International Trade Center): <i>Confirmed</i> ○ Dr. Nizar JOUINI (Doha Institute, Qatar) <i>Confirmed</i>

12:00- 12:30	Coffee Break
Session 2: Entrepreneurship in the era of the fourth industrial revolution in GCC Moderator: Dr. Virginia BODOLICA , American University of Sharjah - <i>Confirmed</i>	
12:30- 14:00	<p>The objective of this session is to examine the landscape of entrepreneurship in the GCC within the context of the Fourth Industrial Revolution. The session will explore the development of entrepreneurial ecosystems in the GCC, focusing on the opportunities and challenges presented by Industry 4.0 technologies. By delving into the intentions of entrepreneurs in the region, identifying critical success factors, and sharing best practices from smart factories in emerging economies and BRICS nations, the session aims to provide a comprehensive overview of the entrepreneurial landscape.</p> <p>Key topics to be discussed include the current state and evolution of GCC entrepreneurial ecosystems in the context of Industry 4.0, highlighting how advanced technologies are shaping new business opportunities and driving innovation. The session will also examine the entrepreneurial intentions of individuals in the region, analyzing their motivations, goals, and readiness to embrace Industry 4.0 technologies. Critical success factors for entrepreneurs in the era of the Fourth Industrial Revolution will be identified, such as access to funding, supportive regulatory frameworks, and the availability of skilled talent. Additionally, the session will present best practices from smart factories in emerging economies and BRICS nations, offering valuable insights and lessons that can be applied to enhance the entrepreneurial environment in the GCC.</p> <p>Introduction talk: Dr. Virginia BODOLICA, American University of Sharjah - <i>Confirmed (15')</i></p> <p>Lead Commentators:</p> <ul style="list-style-type: none"> ○ H.E. Sara AL NUAIMI - CEO - of Sharjah Entrepreneurship Center (Shera) - <i>Confirmed</i> ○ Dr. Adnane MAALAOUI – Prince Mohammed Bin Salman College of Business & Entrepreneurship (MBSC), KAEC, KSA – <i>Confirmed</i> ○ Dr. Issam MEJRI, EDC, Paris – France – <i>Confirmed</i>
14:00 - 15:00	Lunch
15:00 -15:45	<p>Keynote Speaker: Prof. Wim Naude (Aachen University, ASC Leiden University, ISDC, and University of Johannesburg) – <i>Confirmed Online</i></p> <p>Industry 4.0, Artificial Intelligence and Entrepreneurship https://scholar.google.com/citations?user=8ixtGsIAAAAJ&hl=en</p>
15:45 - 17:30	<p>Session 3: The potential of Smart Cities in fostering economic growth and wellbeing in GCC countries</p> <p>Moderator: Dr. Jihad FARAH (Arab Urban Development Institute, KSA) -<i>Confirmed</i></p>
	<p>The objective of this session is to examine the potential of smart and sustainable cities to serve as catalysts for economic growth and to enhance the well-being of residents in GCC countries. The session will explore various aspects of smart city initiatives, including the integration of renewable energy, the creation of green jobs, and the use of augmented reality to boost the tourism and hospitality sectors. By presenting and discussing the progress made towards smart</p>

cities in the GCC, the session aims to identify the skills and job opportunities needed for sustainable and inclusive urban development, and to examine innovative approaches to leveraging technology for urban enhancement.

Key topics to be discussed include the role of smart and sustainable cities in driving economic growth and well-being in the GCC, the current progress towards these goals, and the green jobs and skills required for sustainable urban development. Additionally, the session will explore the concept of "The City as a Service," focusing on how augmented reality can unlock potential in tourism and hospitality. The integration of renewable energies in GCC cities and the role of Industry 4.0 technologies in this process will also be examined, highlighting how these advancements contribute to the region's broader economic and environmental objectives.

Introduction talk: Dr. Fateh BELAID (KAPSARC - Kingdom of Saudi Arabia) - Presentation of the Book Smart Cities (15') - *Confirmed Online*

Panel discussion:

- **Dr. Fateh BELAID** (KAPSARC, KSA) – *Confirmed Online*
- **Dr. Jihad FARAH** (Arab Urban Development Institute, KSA) -*Confirmed*
- **Dr. Boumediene RAMDANI** (Qatar University, Qatar) – *Confirmed*
- **Dr. Arman ESHRAGHI** (Cardiff Business School) - *Confirmed*

DAY 2 - 16 October 2024	
Session 4: Smart Factories in GCC Countries: facts, trends and potential (Round Table)	
Moderator: Dr. Adel BEN YOUSSEF (University Côte d'Azur and ERF)	
09:30- 11:45	<p>The objective of this session is to examine the industrialization of the GCC and the potential of Industry 4.0 to facilitate the emergence of these countries as industrialized nations. In light of recent initiatives such as Saudi Arabia's Vision 2030 and the UAE's Vision 2035, which emphasize the role of industrialization and smart factories, this session will provide an overview of recent progress in this direction. It will delve into how these initiatives are transforming traditional industries through the integration of advanced technologies, driving economic diversification, and fostering a sustainable and innovation-driven economic landscape.</p> <p>Furthermore, the session will explore the broader impact of advancements in AI and Industry 4.0 technologies on economic and social life in the GCC. By positioning the region as a global hub for AI, virtual reality, and other cutting-edge technologies, these advancements are reshaping industries and creating new opportunities. Topics to be discussed include the readiness of the GCC for the implementation of smart factories, future of work: labor replacement and augmentation, specific developments in the UAE's smart factory initiatives, and the strategic alignment of Saudi Arabia's Vision 2030 with the adoption of smart manufacturing practices. Through these discussions, the session aims to highlight the transformative potential of Industry 4.0 in establishing the GCC as a leader in the global industrial landscape.</p> <p>Introduction talk: Raimund KLEIN (INCIT) SIRI measurements for Industry 4.0 (with a focus on GCC) (15') <i>Confirmed</i></p> <p>Lead Commentators:</p> <ul style="list-style-type: none"> ○ Rafik FEKI (UNIDO) - <i>Confirmed online</i> ○ Dr. Shripard LALE, (India) – <i>Confirmed</i> ○ Dr. Antonio FERACO - Abu Dhabi Department of Economic Development (DED)- <i>Confirmed</i>
11:45 – 12:00	<i>Dr. Fadi SALEM and Dr. Keertana SUBRAMANI – Mohammed Bin Rashid School of Government (MBRSG) - The 2024 Global Economic Diversification Index (GEDI)</i>
12:00 – 12:30	Coffee Break

Session 5: Skills and Impacts on the Labor Market

Moderator: [Prof. Christian HAEFKE \(New York University Abu Dhabi\)](#) - *Confirmed*

12:30- 14:15

The objective of this session is to examine the pivotal shifts in the labor market that have emerged as a consequence of the implementation of Smart Manufacturing and Industry 4.0 technologies in GCC countries. The session will analyze how the requisite skill sets are evolving, assess the efforts of GCC countries in developing these essential skills, and evaluate the adaptability of the education system in responding to these changes. Furthermore, the session will examine the potential of talent immigration to address the shortage of critical skills and the capacity of the gig economy to empower women through digitalization.

Key topics to be discussed include the future skills requirements in the GCC labor market, focusing on the new competencies and technical proficiencies needed to thrive in an Industry 4.0 environment. The impact of automation and AI on employment in GCC countries will be explored, highlighting the shifts in job roles, the creation of new opportunities, and the potential displacement of certain jobs. The session will also delve into the potential of the gig economy in empowering women, leveraging digital platforms to provide flexible work opportunities and enhance economic participation. Lastly, initiatives and policies for bridging the skills gap in the GCC will be evaluated, examining how governments, educational institutions, and industry stakeholders are collaborating to develop a skilled workforce capable of meeting the demands of the Fourth Industrial Revolution.

Introduction talk:

[Dr. Adel BEN YOUSSEF](#) (University Côte d'Azur, AISMA and ERF) – *Confirmed* (15')

Lead Commentators:

- [Dr. Emmanuelle WALKOWIAK](#) (RMIT, Australia) – *Confirmed Online*
- [Dr. Simone VANNUCCINI](#) (University Côte d'Azur, France) - *Confirmed Online*

14:15 -15:00 - Key Takeaways and Closing Ceremony

- **Dr. Ibrahim Elbadawi, Economic Research Forum**
- **Dr. Adel Ben Youssef, University Côte d'Azur**

15:00 - Lunch