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Gender Equity in Construction and Engineering

Insights from female Emirati professionals

An exploratory study by Jacobs in partnership with the Centre of Excellence in Smart and Sustainable Construction (CES²C) at Heriot-Watt University



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Prepared by

Dr. Karima Hamani

Heriot-Watt University,
Associate Professor of
Construction Management
and Surveying

Reem Habib

Jacobs, Graduate
Environmental Consultant,
Middle East

Friba Hossaini

Jacobs, Senior Tunnel
Engineer and Regional
STEAM Lead, Middle East

Priyanka Mishra

Heriot-Watt University, MSc
Graduate in Construction
Project Management

Editors / Reviewers

Prof. Lynne B Jack

Heriot-Watt University,
Associate Principal
(International Research)
Director, Centre of
Excellence in Smart
and Sustainable
Construction, CES²C

Harry Sealy

Jacobs, Technical Director
for Environmental
Management Services,
Middle East

Nikolas Karagkounis

Jacobs, Market Solutions
Director and Tunnels
and Ground Engineering
Lead, Middle East

Dr. Olisanwendu Ogwuda

Heriot-Watt University,
Associate Professor
(Civil Engineering)
Institute of Sustainable
Built Environment, Center
Manager CES²C

Alexandra Windass

Jacobs, Senior Marketing
Manager, Middle East

Linsey Thomson

Heriot-Watt University,
Associate Professor
(Architectural Engineering)

Design

Georgina Brown

Jacobs, Senior Graphic
Designer, Asia Pacific
and Middle East

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Glossary

Term	Definition
CES²C	Centre of Excellence in Smart and Sustainable Construction
CIOB	Chartered Institute of Building
COP	Conference of Parties
E&C	Engineering and Construction
EDI	Equity, Diversity, and Inclusion
GBC	Gender Balance Council
GCC	Gulf Cooperation Council
GIS	Geographic Information Systems
GWU	General Women's Union
HWU	Heriot-Watt University
ICE	Institution of Civil Engineers
IEEE	Institute of Electrical and Electronics Engineers
JWN	Jacobs Women's Network
KPI	Key Performance Indicator
LFPR	Labor Force Participation Rate
LI	Landscape Institute
OECD	Organisation for Economic Co-operation and Development
RIBA	Royal Institute of British Architects

RICS	Royal Institution of Chartered Surveyors
RTPI	Royal Town Planning Institute
SDG	Sustainable Development Goals
STEAM	Science, Technology, Engineering, Arts and Mathematics
STEM	Science, Technology, Engineering and Mathematics
UAE	United Arab Emirates
UIS	UNESCO Institute for Statistics
UN	United Nations
UNCCC	United Nations Climate Change Conference
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNICEF	United Nations International Children's Emergency Fund
UN WOMEN	United Nations Entity for Gender Equality and the Empowerment of Women

Executive summary

“ We have moved beyond the phase of empowering women. Indeed, we are empowering society through women.

— **Sheikh Mohammed bin Rashid Al Maktoum**

Vice President and Prime Minister of the UAE and Ruler of Dubai

This profound statement reflects the United Arab Emirates (UAE) commitment to not just advancing women’s roles but integrating their contributions into the broader national development. The UAE has made significant strides in gender equity, as evidenced by the World Economic Forum’s Global Gender Gap Report 2023, where the UAE ranks 1st in the Arab world and 71st globally. The UAE is also ranked 1st globally in tertiary education enrollment and women in parliament, demonstrating its leadership in fostering gender parity. This commitment is further reinforced by the National Policy for Empowerment of Emirati Women - 2031, launched in 2023, which aims to enhance the participation of women across all sectors of society and ensure their contributions to national development are maximized.

Building on these significant advancements, this study focuses on the nuanced landscape of gender equity within the engineering and construction industry, spotlighting the pivotal role and experiences of Emirati women.

المخلص التنفيذي

“نحن تجاوزنا مرحلة تمكين المرأة، نحن نمكن المجتمع عن طريق المرأة“

الشيخ محمد بن راشد آل مكتوم، نائب رئيس الدولة رئيس مجلس الوزراء حاكم دبي.

تعكس هذه العبارة العميقة التزام دولة الإمارات العربية المتحدة ليس فقط بتعزيز دور المرأة، بل بدمج مساهماتها في التنمية الوطنية الشاملة. لقد حققت دولة الإمارات العربية المتحدة تقدمًا كبيرًا في تحقيق التوازن بين الجنسين، كما يتضح من تقرير الفجوة بين الجنسين العالمي للمنتدى الاقتصادي العالمي لعام 2023، حيث احتلت الإمارات العربية المتحدة المرتبة الأولى في العالم العربي والمرتبة 71 عالميًا. كما تحتل الإمارات المرتبة الأولى عالميًا في نسبة الالتحاق بالتعليم العالي ونسبة النساء في مجلس النواب، مما يوضح قيادتها في تعزيز المساواة بين الجنسين. يتعزز هذا الالتزام من خلال السياسة الوطنية لتمكين المرأة الإماراتية - 2031، التي أطلقت في عام 2023، والتي تهدف إلى تعزيز مشاركة المرأة الإماراتية في جميع قطاعات المجتمع وضمان تحقيق أقصى استفادة من مساهماتها في التنمية الوطنية.

بالاستناد إلى هذه التطورات الهامة، تركز هذه الدراسة على المشهد الدقيق للمساواة بين الجنسين في مجال الهندسة والبناء، مسلطين الضوء على الدور المحوري وتجارب النساء الإماراتيات.

مع الاستفادة من التقدم في الفرص التعليمية للنساء في مجالات العلوم والتكنولوجيا والهندسة والفنون والرياضيات (STEAM)، هناك تحول واعد نحو زيادة الفرص المهنية وتمثيل النساء الإماراتيات، بما في ذلك المناصب القيادية، تلك المجالات التي كان يهيمن عليها الرجال لفترة طويلة. يعتمد هذا التقرير على رؤى تم جمعها من مقابلات شبه منظمة مع نساء إماراتيات عاملات بمجال الهندسة والبناء يختلفن بشكل واسع في خلفياتهن ومراحل مسيرتهن المهنية. سلطت هذه المقابلات الضوء على العوامل المتعددة التي أثرت على مساراتهن المهنية في الهندسة والبناء، بما في ذلك الشغف الشخصي، والتأثيرات العائلية، والأثر الكبير

Leveraging the progress in educational opportunities for women in Science, Technology, Engineering, the Arts, and Mathematics (STEAM), there is a promising shift towards increasing professional opportunities and representation for Emirati women, including in leadership positions, within these traditionally male-dominated fields.

This report is anchored in the insights gathered from semi-structured interviews with female Emirati professionals who vary widely in their background and career stages. These interviews shed light on the multifaceted factors that influenced their career paths in engineering and construction, including personal passions, family influences, and the significant impact of role models and mentors. These narratives underscore the dynamic interplay between individual aspirations and the broader socio-cultural and organizational landscapes that shape these aspirations.

The findings reveal that the interviewed Emirati women in the construction and engineering sectors have had positive experiences and most of them gained early access to leadership roles. This is testament to the supportive environment fostered by the UAE. While there are reported challenges such as work-life balance, navigating construction sites and workplace cultures, subconscious biases and underrepresentation in the industry, the resilience, and achievements of these women within the industry are both inspiring and transformative.

للاشخاص الملهمين والمرشدين. تؤكد هذه الروايات على التفاعل الديناميكي بين الطموحات الفردية والمظاهر الاجتماعية والثقافية والتنظيمية التي تشكل هذه الطموحات.

تكشف النتائج أن النساء الإماراتيات اللاتي تمت مقابلتهن في قطاع الهندسة والبناء قد خضن تجارب إيجابية ومعظمهن حصلن على فرص قيادية في وقت مبكر من مسارهن المهني. هذا دليل على البيئة الداعمة التي تعززها دولة الإمارات. أظهرت المقابلات كذلك بعض التحديات مثل التوازن بين العمل والحياة، والتنقل في مواقع البناء وثقافات بيئة العمل والتحيزات اللاواعية والتمثيل الناقص للنساء في القطاع. إن صمود وإنجازات هؤلاء النساء تعتبر ملهمة ومؤثرة. مع الدعم المستمر والمبادرات التي تقدمها القيادة الإماراتية، بالإضافة إلى الدعم القوي من القيادات المؤسسية في القطاعين الخاص والعام، تمكن عدد من النساء المشاركات في هذه الدراسة من الصعود إلى أدوار قيادية، قادوا مشاريع محورية وابتكروا ممارسات جديدة تتحدى الوضع الراهن وتمهد الطريق للأجيال القادمة. إن نجاحات هؤلاء النساء الطموحات لا تسهم فقط في نمو قطاع الهندسة والبناء بل تبرز أيضًا الفوائد الكبيرة لبيئات العمل التي تعزز التنوع والإدماج والتي تستفيد من المواهب والآراء المتنوعة.

ولتعزيب المساواة بين الجنسين في قطاعي الهندسة والبناء، توصي الرؤية المستخلصة من هذه الدراسة بمزيد من التدخلات الاستراتيجية. دعت المشاركات في هذه الدراسة إلى إصلاحات سياسية مصممة خصيصا لتلبية احتياجات النساء العاملات في القطاع، مثل تحسين قوانين إجازة الأمومة خاصة في القطاع الخاص، وتوفير ظروف العمل المرنة، وتنفيذ إجراءات صارمة لمكافحة التمييز. كما أكدن على أهمية زيادة إبراز المرأة الإماراتية الناجحة في هذا القطاع، والتي يمكن أن تكون دافعًا قويًا للتغيير والتحفيز للنساء اللاتي يطمحن بالعمل في نفس المجال. بالإضافة إلى ذلك، فإن تعزيز ثقافة تنظيمية داعمة، وإنشاء برامج تطوير مهني شاملة، وبناء شبكات مهنية قوية تعتبر ضرورية لتعزيز



With unceasing support and initiatives introduced by the UAE leadership, as well as strong backing from corporate leadership in both the private and public sectors, they have ascended to leadership roles, spearheaded major projects, and pioneered innovative practices, thereby challenging the status quo, and paving the way for future generations. Their successes not only contribute to the industry's growth but also highlight the significant benefits of an inclusive environment that harnesses diverse talents and perspectives.

وتمكين المواهب النسائية في الهندسة والبناء.
بناءً على النجاحات والإنجازات الحالية في مبادرات
المساواة بين الجنسين وتمكين المرأة في الدولة،
يعد الالتزام المؤسسي على جميع المستويات
- من الهيئات الحكومية إلى الكيانات المؤسسية
والمؤسسات التعليمية - أمرًا ضروريًا. دمج المساواة
بين الجنسين في السياسات المؤسسية والمناهج
التعليمية، وتعزيز الممارسات الشاملة بشكل فعال
يمكن أن يخلق تأثيرًا فعالًا واسع النطاق. مما سيعزز
من مكانة النساء الإماراتيات في مجالاتهن ويساهم
بشكل كبير في النسيج الاجتماعي والاقتصادي والتنمية
المتجددة لدولة الإمارات.



As we navigate the ever-evolving landscape of construction and engineering, it is imperative that we address the critical issue of gender equity. This paper delves into the significance of promoting gender balance within these fields and explores how it aligns with Jacobs' core values.

Historically, construction and engineering have been male-dominated domains. However, the tide is shifting, and organizations worldwide are recognizing the immense value that diversity brings. Gender equity is not merely a matter of fairness; it is a strategic imperative. When we empower women to participate fully in these industries, we unlock untapped potential, creativity, and innovation.

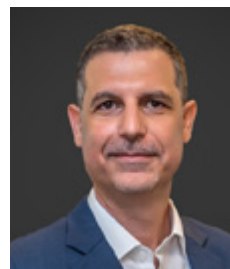
Research consistently demonstrates that diverse teams outperform homogeneous ones. Not only companies like Jacobs, but organizations generally that prioritize gender equity benefit from:

- **Enhanced creativity:** Diverse perspectives lead to more innovative solutions. In construction and engineering, where complex challenges abound, creativity is our greatest asset.
- **Improved decision-making:** A mix of viewpoints ensures well-rounded decisions. Gender-balanced teams consider a broader range of factors, leading to better outcomes.
- **Talent attraction and retention:** Organizations that foster an inclusive environment attract top talent. Women seek workplaces where they can thrive and contribute meaningfully. In addition, males that recognise the previous points on enhanced creativity/decision making, may be more attracted to entities actively demonstrating principles of gender equity and equality.

- **Client Satisfaction:** In consultancy, our clients represent diverse backgrounds and needs. Gender equity enables us to better understand and serve them. Similarly, in other sectors, whether it be a product, a service or a function, the client/end-user can safely assume it comes from a place of higher quality, more thorough consideration.

At Jacobs, we recognize that our success hinges on embracing diversity. Our core values—integrity, safety, collaboration, and excellence—align seamlessly with the pursuit of gender equity. We are committed to inclusion, equity and empowerment. Jacobs are proud to have initiated this journey, working in tandem from the outset with our partners Heriot-Watt University CES²C, with whom we share the same values, to deliver this important research.

This paper sheds light on the critical intersection of gender equity, construction, and engineering. As we move forward, let us champion diversity, break down barriers, and build a more equitable, regenerative future—one where every individual, regardless of gender, can thrive and contribute to our collective success.



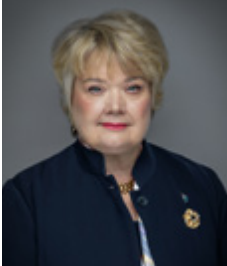
Zaher Abu Hijleh

Jacobs, Vice President and General Manager, Middle East

At Heriot-Watt University, we are passionate about driving positive change and about fostering an inclusive environment where our students, staff and graduates can thrive. Our own inclusion policies ensure that diversity is respected and celebrated, and we seek to support initiatives that endeavour to replicate this in our wider society. We know from our own work in this area that across the GCC, only 5% of board seats in public listed companies are held by women. In the UAE, significant progress in this space means that 11% of Board Directors are women. We also know that the engineering and construction sector faces a persistent and significant gender imbalance, although it is pleasing to see that the range of initiatives activity promoted within the UAE are beginning to effect positive change here too.

With much still to do, our efforts in promoting gender equality, and enhancing representation and leadership remain a top priority. We are delighted to have collaborated with Jacobs, a key industry partner of our Centre of Excellence in Smart and Sustainable Construction (CES²C) on this research; work that has been carried out with the overarching aim of supporting inclusive growth and sustainable practices within the construction industry.

The findings of this report highlight the importance of creating supportive environments for female Emiratis in the engineering and construction industry through further policies that support work-life balance, enhance the visibility of role models, and develop mentoring programs at educational and career levels. Heriot-Watt University is proud to contribute to this ongoing dialogue and to support the advancement of women. By collaborating with our students, alumni, and industry partners, we can drive meaningful change and create a future where gender equity is the norm, not the exception.



Heather McGregor

Professor Dame Heather McGregor

Heriot-Watt University, Provost and Vice Principal, Dubai



1

Introduction

1.1 The essential nature of gender equity

Effectively understanding and implementing strategies for gender-related issues necessitates a clear differentiation between gender equity and gender equality. Gender equity, as defined by the United Nations International Children's Fund (UNICEF), is the process of ensuring fairness for all genders—men, women, boys, and girls—with a focus on achieving equality of outcomes and results (UNICEF, 2017). Gender equality, on the other hand refers to the state of being equal, especially in status, rights, and opportunities. The United Nations Development Programme emphasizes the transformative power of gender equality in its Gender Equality Strategy annual report 2022-2025 (UNDP 2023), highlighting that gender equality should be integrated into all areas of development support, rather than being treated as a separate issue. By embedding gender equality into every aspect of development, the UNDP aims to leverage its full potential to drive sustainable progress.

Gender equity is about being fair to both women and men according to their respective needs. To ensure fairness, it is essential to implement strategies and measures that compensate for women's historical and social disadvantages, preventing them from operating on a level playing field with men. These strategies might include targeted support, policy changes, and initiatives aimed at creating equal opportunities, thereby promoting an inclusive and equitable environment for all genders (McKinsey & Company, 2022).

The necessity of achieving gender equity is highlighted by its inclusion in the United Nations Sustainable Development Goals (SDGs), specifically Goal 5, which focuses on gender equality. Despite global efforts, progress remains slow, with the UN-SDG 2022 report projecting another 40 years before women and men achieve equal representation in national political leadership if current trends continue (United Nations, 2022). This highlights the urgent need for actionable plans with clear Key Performance Indicators (KPIs) to advance gender equity. Beyond moral imperatives, gender equity significantly impacts productivity, economic growth, financial independence, and family well-being. McKinsey & Company (2020) emphasizes that gender equity is a strategic necessity for inclusive and sustainable development. Addressing systemic biases and promoting fairness are essential for unlocking the full potential of human capital, leading to a more equitable and prosperous future.



1.2 Gender equity in engineering and construction: A global overview

Gender equity in engineering and construction is a global concern within the sector, gaining widespread attention as industries and societies strive to dismantle entrenched barriers and harness the power of diversity. Globally, the engineering and construction industry faces persistent gender imbalances. For instance, in the United States and the United Kingdom, women's participation in the construction industry remains low, with rates of around 14% and 12%, respectively (Bureau of Labor Statistics, 2022). Similarly, in Australia, women comprise approximately 18% of the workforce in construction and engineering roles (Workplace Gender Equality Agency, 2022). In Canada, women represent around 13% of the engineering sector (Engineers Canada, 2022).

The Global Gender Gap Report (2023) shows that only around 29.2% of the STEM workforce in 146 countries are women (World Economic Forum, 2023). Although there has been a slight increase of 1.58% in female STEM workers from 2015 to 2023, there is still a noticeable imbalance. Women also face difficulties in reaching leadership positions in STEM; for instance, they hold only 12.4% of C-suite roles despite making up nearly 30% of senior positions (World Economic Forum, 2023).

Additionally, the International Labour Organization has raised concerns about the underrepresentation of women in engineering roles globally, which is not merely a matter of educational access but also of professional inclusion and advancement.

It is thus crucial for organizations, governments, educational institutions, and the wider scientific and technological community to collaborate and address the barriers that prevent women from progressing in STEM careers.

Despite increasing numbers of female graduates in STEM fields, a notable "leaky pipeline" phenomenon is evident where women drop out at various career stages. LinkedIn data shows that women constitute nearly half (49.3%) of the workforce in non-STEM occupations but only 29.2% in STEM roles (World Economic Forum, 2023). Globally, women constitute about 40% of STEM graduates but only around 20% of the engineering workforce and even fewer in senior leadership roles (UNESCO, 2021). The retention rates for women in STEM decline sharply after graduation, with women making up 29.4% of entry-level workers but only 17.8% of VPs and 12.4% of C-suite executives (World Economic Forum, 2023). This highlights the systemic barriers and biases that women face, leading to low retention and to a loss of talent and diversity in these fields.



Societal norms and unconscious biases play a crucial role in these disparities. Gender stereotypes and cultural expectations often discourage women from pursuing or continuing careers in engineering and construction. For instance, societal expectations regarding family roles can limit women's availability for demanding jobs in these sectors (World Economic Forum, 2023). Additionally, structural impediments such as the lack of flexible work arrangements and adequate mentorship programs further restrict women's career advancement in engineering and construction (Engineering Institute of Technology, 2023).

Inflexible work environments are particularly challenging for women with family responsibilities, leading to higher attrition rates. Research by McKinsey & Company (2021) supports this, noting that companies with flexible working policies see improved retention and advancement of female employees. Moreover, the literature highlights that gendered cultures in STEM workplaces and hierarchical career paths create additional barriers, with stereotypes influencing job descriptions and assessments of candidates, thus perpetuating gender disparities (Royal Academy of Engineering, 2023).

Considerable progress has been made in various regions and organizations to address these gender disparities. A study by Smith et al. (2023) highlighted the effectiveness of gender equity initiatives, emphasizing that universal initiatives, such as subconscious bias training, are well supported and help change the environment rather than expecting women to adapt. In mid-2022, six leading professional membership bodies from the built environment sector—The Chartered Institute of Building (CIOB), The Institution of Civil Engineers (ICE), The Landscape Institute (LI), The Royal Institute of British Architects (RIBA), The Royal Institution of Chartered Surveyors (RICS), and The Royal Town Planning Institute (RTPI)—

launched a collaborative 45-point action plan specifically aimed at promoting equity, diversity, and inclusion (EDI), with a strong focus on gender equity (ICE, 2022). This action plan aims to understand the transition from education to employment, and raise the sector's standards of EDI knowledge, behaviors, and practice.

Despite these positive steps, continuous efforts are needed to maintain and build on these achievements. The variability in progress across different regions and organizations underscores the importance of tailored strategies that consider local cultural, economic, and institutional contexts.

To properly address the subject of gender equity within the realms of construction and engineering for United Arab Emirates (UAE) nationals in-country, it is imperative to commence with an examination of the demographic composition and gender balance of the UAE, particularly the ratio of Emirati nationals by gender.



1.3 Demographic context and gender balance in the UAE

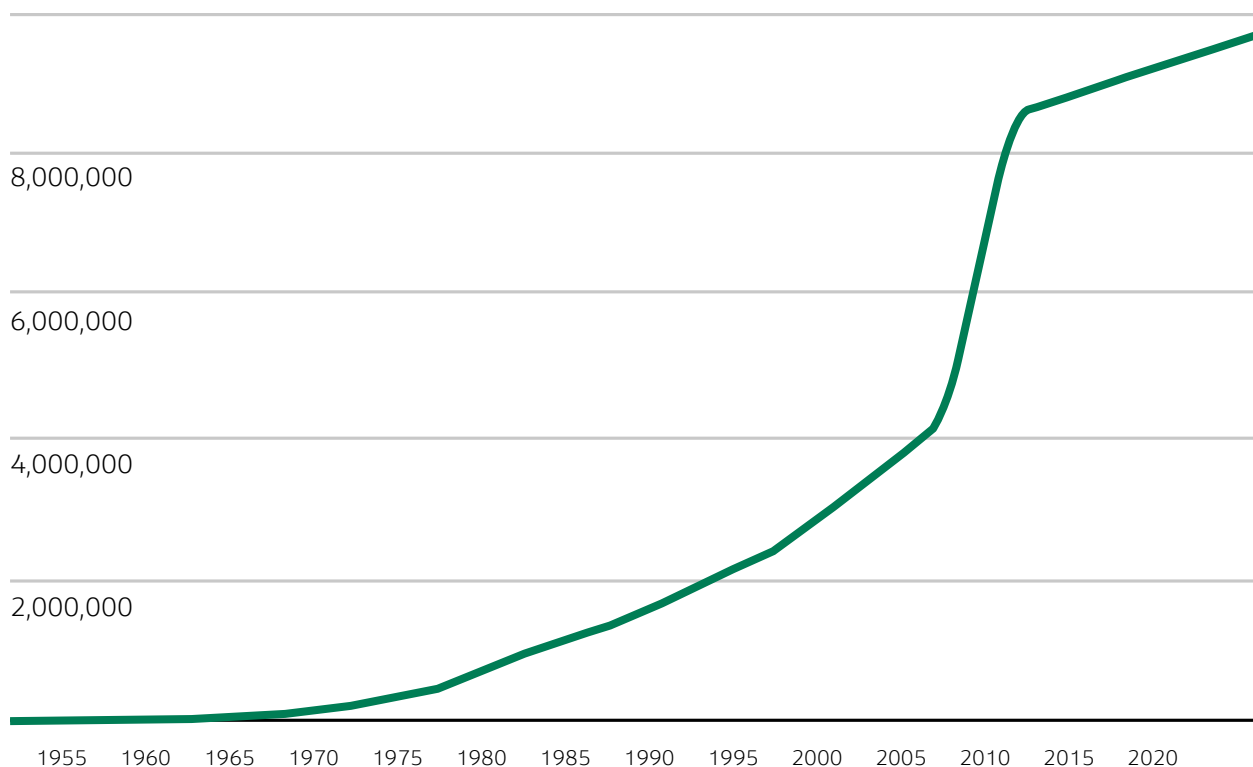
As of May 18, 2024, the population of the UAE, as per Worldometer's data, stands at 9,583,042 (Figure 1). Data from 2020 suggests that UAE nationals comprise merely 11% of the overall population, equating to approximately 1.15 million individuals.

Historically, the gender ratio among UAE nationals has been balanced, but the influx of male expatriate laborers in the construction and service sectors has created a significant male majority in the overall population. As of 2020, the male-to-female ratio in the UAE was 2.2 to 1, with males constituting about 72% of the total population (World Bank, 2020). Despite these demographic shifts, the UAE has made concerted efforts to enhance gender balance, particularly in workforce participation and leadership roles.

The UAE Constitution enshrines the rights of women, providing that equality, social justice, safety, security, and equal opportunities for all citizens shall be the pillars of society (UAE Gender Balance Council, 2017). In the workplace, women's participation has seen significant growth. Women represent 46.6% of the labor force in the UAE, making it the second highest in the Gulf Cooperation Council (GCC) countries (OECD, 2017).

The advancements in gender balance and the evolving demographic context in the UAE lay the groundwork for further exploration into specific sectors. The next section discusses the challenges and opportunities in bridging the gender gap within the STEAM fields in general and engineering and construction industries in particular.

Figure 1 United Arab Emirates population 1950 - 2024 (Worldometer, 2024)



1.4 Bridging the gender gap in engineering and construction: A UAE perspective

The UAE has made remarkable strides toward gender equity, notably through various initiatives and impressive progress in women's economic participation. The UAE was ranked 1st globally in three of the report's sub-indicators: enrolment in tertiary education, sex ratio at birth, and women in parliament (World Economic Forum, 2023). The UAE has also achieved a women's workforce participation rate of 53%, surpassing the global average (Bain & Company, 2023). Additionally, there are currently 20,000 women entrepreneurs in the UAE, making up 10% of all Emirati entrepreneurs—a 58% growth since 2012 (Strohal Legal Group, 2023).

The UAE's commitment to advancing gender equality and empowering women is further emphasized by its collaboration with the UN Women Agency to establish a new Liaison Office in Abu Dhabi. This partnership, in collaboration with the General Women's Union (GWU) under the leadership of Her Highness Sheikha Fatima Bint Mubarak, aims to address issues such as workplace culture, gender bias, and limited access to professional networks and mentorship opportunities (UN Women, 2021).

Additionally, the UAE has implemented policies that promote women's participation in the workforce, such as Gender Equality Certification and maternity leave benefits, which have significantly contributed to women's empowerment and leadership in various sectors (Strohal Legal Group, 2023).

Emirati women have a strong representation in STEM education, constituting 56% of STEM graduates and making up 70% of university graduates (Dubai Women Establishment, 2020).

The UAE has achieved noteworthy progress in gender equality, with women holding 27.3% of ministerial roles and 30% of diplomatic positions (World Economic Forum, 2023). Within the public sector, women constitute 66% of the workforce and hold 30% of senior decision-making positions (National Human Rights Committee, 2021). The UAE Federal Cabinet includes nine female ministers, representing nearly one-third of the cabinet, one of the highest proportions in the Middle East (National Human Rights Committee, 2021). Additionally, the UNDP Human Development Report ranks the UAE 35th globally and 1st in "Women Treated with Respect" (UNDP, 2020).

Achieving gender equality in the UAE has seen significant advancements, yet challenges persist that need addressing. Cultural and societal norms that hinder women's full participation in the workforce remain one of the major barriers (Winston & Strawn LLP, 2018). There is a need for more flexible work arrangements, improved childcare support, and targeted mentorship programs to enhance women's workforce participation and leverage their potential for economic and social benefits (Al Hajeri and Vammalle, 2020). The UAE has implemented effective diversity and inclusion strategies, but ongoing efforts are required to address implicit biases and discriminatory practices in recruitment, promotion, and evaluation processes (Ottmann, 2023).

In the engineering and construction sectors, women face additional challenges. Cultural and societal norms often associate construction work with masculinity, fostering skepticism and resistance towards women in these fields (Winston & Strawn LLP, 2018). Within site construction works, the physically demanding and often hazardous work environments can discourage women from pursuing careers in these sectors (McKinsey & Company, 2020).



A comprehensive review of the UAE's efforts to promote gender equality highlights that despite progress, Emirati women still face considerable barriers in leadership and entrepreneurship due to cultural norms and limited institutional support (Al Khayyal et al., 2021).

The UAE's commitment to gender equality and women's empowerment provides a solid foundation for further advancements. By addressing these challenges head-on and implementing targeted strategies, the nation can unlock the full potential of Emirati women in all sectors, including engineering and construction. To gain deeper insights into these dynamics, this study was designed to explore the experiences of Emirati female professionals at various stages of their careers in the engineering and construction sectors.

By listening to their stories, the study aims to identify effective strategies and potential areas for improvement to further support and empower Emirati women in these fields.

1.5 Emirati women at the intersection of engineering, construction, and sustainable development

The remarkable economic evolution and social transformation in the UAE has seen a concerted effort to integrate gender equity into its growth sectors. From its beginnings in the pearl industry to becoming a global economic powerhouse, the UAE has consistently prioritized the empowerment of women. The discovery of oil in 1971 catalyzed various initiatives, such as the Abu Dhabi Women's Development Association led by Sheikha Fatima, which enhanced women's education and opportunities.

Gender Equity and Inclusion is strongly tied to the UAE's aspirations for sustainable development and pioneering climate action.

The UAE's leadership in sustainability is complemented by important contributions from women, particularly in STEAM fields crucial for environmental sciences and sustainable development. Initiatives like the National Strategy for Empowerment of Emirati Women and the Women in Sustainability, Environment, and Renewable Energy (WiSER) platform promote female participation and leadership in addressing global sustainability challenges (Masdar, 2021). These efforts are crucial as they not only contribute to the UAE's sustainability goals but also empower women to be at the forefront of the industry, driving innovation and fostering a more inclusive and sustainable future (Dubai Women Establishment, 2020).

Women are increasingly recognized as key players in sustainability and climate action initiatives. Notably, Emirati women are driving the country toward a more sustainable future by shaping the sustainability dialogue, developing clean energy solutions, and playing key roles in the construction of smart cities (Emirates Nature-WWF, 2024). The Women in Sustainability Report further highlights the positive contributions of Emirati women to the UAE's sustainability goals, highlighting the importance of providing educational and professional opportunities for women in STEAM fields (Women in Sustainability Report, 2024).

Regenerative development goes beyond merely sustaining the existing conditions. It aims to achieve a net enhancement, actively improving and revitalizing the ecological, social, and economic systems.

Unlike sustainable development, which primarily focuses on maintaining the status quo and minimizing negative impacts, regenerative development seeks to restore and regenerate, leading to a thriving and resilient environment. Achieving regenerative development requires a profound awareness and the integration of skills and outputs from multiple sectors.

This interdisciplinary approach is essential for creating holistic and sustainable improvements. Empowering women in these fields is crucial, as their involvement not only advances the industry but also aligns with broader national objectives to build a society resilient to the impacts of climate change.

The initial step towards crafting effective solutions to address gender disparity involves a comprehensive understanding of the status quo, paired with the sharing of inspiring success stories that illuminate potential pathways forward. This dual focus is essential for any exploratory study aimed at mapping the landscape of gender equity in the UAE's engineering and construction industry while celebrating the achievements of women who have successfully navigated these fields (Elamin, 2020). By embracing a holistic approach that encompasses both professional opportunities and active roles in sustainability, this study seeks to uncover the key factors that either support or hinder gender equity. The goal is to guide the development of tailored interventions and policies that foster an inclusive and equitable work environment. The insights gleaned aim to catalyze meaningful change and enhance the socio-economic and cultural advancement within the sector in the UAE.



1.6 Objectives of the exploratory study

This exploratory study is designed to gather perspectives on the dynamics of gender equity within the UAE engineering and construction industry, based on insights from female Emiratis in the field. By exploring the individual experiences and challenges faced by the interviewees, this research aims to uncover some of the underlying factors that influence their career trajectories and identify effective strategies suggested by them for fostering a more inclusive and equitable industry.



The specific objectives of this study are to:

Investigate the motivations of Emirati women in the UAE's construction and engineering industry, exploring factors that influence their career choices and identifying influential figures or role models who inspire women to pursue careers in these fields.

Examine the challenges faced by Emirati women in STEAM education and their academic and professional journeys within the construction and engineering sectors, focusing on barriers to advancement and opportunities for empowerment.

Explore the key factors that influence the career growth of Emirati female professionals, understand their achievements and contributions in these industries, and highlight their successes.

Identify empowerment strategies aimed at young Emirati females to enhance inclusivity and promote their success within the engineering and construction industry.

2

Study approach

2.1 Research questions

The research questions were developed to explore the context and dynamics of gender equity within the UAE engineering and construction industry, based on insights from female Emiratis in the field. These questions aim to understand their perceptions about career challenges, achievements, and aspirations for a more gender-equitable environment in both private and public organizations. This study represents an initial exploration of the current context, focusing on the firsthand accounts of female Emiratis to shed light on the specific challenges and opportunities they encounter, informing future initiatives to enhance gender equity in the industry.

What motivates Emirati women to choose careers in the UAE's construction and engineering industry, and who are the key role models influencing these decisions?

What challenges do Emirati female engineers face in their academic and professional journeys, and how do these challenges impact their career advancement and empowerment opportunities?

How can organizations develop effective strategies to support the career growth and resilience of Emirati female graduates and professionals, promoting inclusivity and recognizing their achievements in the industry?

2.2 Methodology

The methodology selected for this study was designed to explore the intricate dynamics of gender equity within the UAE engineering and construction industry, specifically through the experiences of Emirati women. A qualitative research design, leveraging semi-structured interviews and thematic analysis, was employed to understand the motivations, challenges, and successes that shape these women's professional journeys.

2.2.1 Qualitative approach and semi-structured interviews

A qualitative framework is crucial for eliciting detailed, nuanced insights directly from participants. Semi-structured interviews facilitated rich, expansive discussions, allowing female engineers to share their experiences in depth. These interviews were crafted to address the study's objectives by exploring several core areas:

- **Motivations and Influences:** Interviews investigated what motivated Emirati women to enter the construction and engineering fields, the factors influencing their career choices, and the role models or influential figures who inspired them.
- **Challenges in STEAM Education and Career Advancement:** Discussions also focused on the educational and professional challenges these women faced, including barriers to career advancement and opportunities within the sector that could empower them.
- **Career Growth Factors:** The interviews aimed to uncover key factors that contributed to or hindered the career growth of these women, allowing them to articulate their achievements and the contributions they had made to their industries.
- **Empowerment Strategies:** The dialogue sought to identify strategies that could support and enhance the inclusivity and success of young Emirati females in these traditionally male-dominated sectors.

2.2.2 Data collection approach

Data were collected through semi-structured interviews with 18 female Emirati professionals who have either current or significant previous experience in the UAE engineering and construction industry. The methodology for communications (both written and verbal) and interview structure included careful consideration of cultural awareness and measures to ensure anonymity of interviewees. The interviews were conducted in English, each lasting between 45 to 60 minutes. A letter was sent to participants prior to the interviews, explaining the purpose of the study. Before the interview, the use of data and their rights to confidentiality were explained to the participants. Consent was received from them to take notes during the interview and to use their responses in an anonymous way. This process was designed to uphold the ethical standards necessary for conducting qualitative research responsibly.

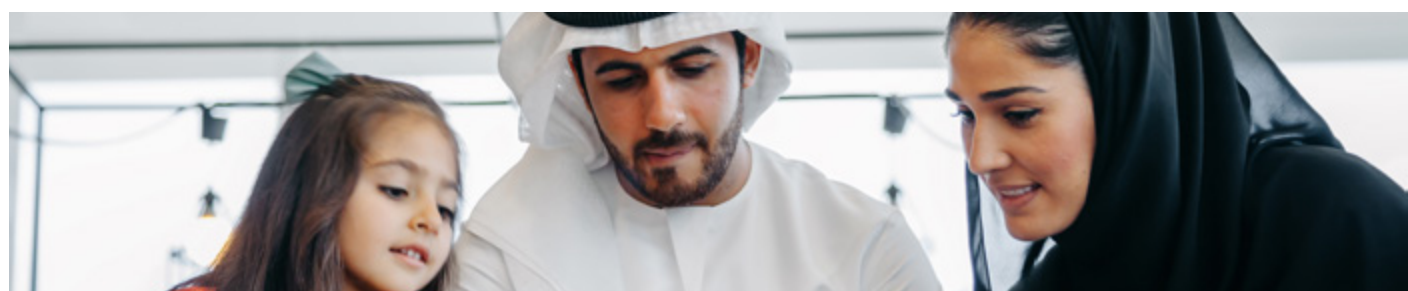
Table 1 provides a snapshot of interviewees across different career stages and specialties. This data categorizes participants from entry-level graduates to senior and leadership positions, detailing their specific fields such as architecture, mechanical engineering, and project management, among others. It also includes the type of organization they are affiliated with—ranging from consulting firms to local authorities—and their respective years of experience in the industry.

The diversity of participants in this study is crucial for understanding the multifaceted dynamics that influence gender equity for female Emiratis working in the field. By examining a range of experiences from various specializations and career stages, the study aims to capture a broad spectrum of insights into the barriers to and enablers of career progression for Emirati women. This approach helps to identify not only common challenges faced by women but also highlights the support systems and success stories within different segments of the industry.



Table 1 Interviewees profiles

#	Level	Specialty	Organization type	Years of experience
1	Graduate	Architecture	Consultant	2
2	Graduate	Architecture	Consultant	2
3	Graduate	Design Architecture	Consultant	1
4	Graduate	Electrical Engineering	Consultant	2
5	Graduate	Mechanical Engineering	Local Authority	2
6	Senior	Geographic Information Systems Engineering	Consultant	7
7	Intermediate	Mechanical Engineering	Consultant	5
8	Intermediate	Project Management	Consultant	5
9	Senior	Electrical Engineering	Local Authority	7
10	Intermediate	Electrical Engineering	Local Authority	5
11	Senior	Engineering Bids Analysis	Local Authority	10
12	Lead	Environmental Engineering	Local Authority	17
13	Lead	Engineering Solutions / Client Management	Consultant	17
14	Senior	Civil and Environmental Engineering/Project Management	Government	10
15	Graduate	Geotechnical Engineering	Consultant	1
16	Intermediate	Mechanical Engineering	Consultant	3
17	Intermediate	Geological Engineering	Consultant	3
18	Intermediate	Chemical Engineering	Government	5



2.2.3 Data analysis method

Thematic analysis was conducted following Braun and Clarke's methodical six-step process, which provides a structured approach to identifying, analyzing, and reporting themes within qualitative data (Braun and Clarke, 2006).

This process involves:

- **Familiarizing with the Data:** Initial immersion into the interview transcripts to understand depth and breadth.
- **Generating Initial Codes:** Coding the data to categorize information relevant to the research objectives.
- **Searching for Themes:** Collating codes into potential themes and reviewing how they relate to the coded data and the entire dataset.
- **Reviewing Themes:** Refining themes to ensure they accurately represent the dataset and are aligned with the research objectives.
- **Defining and Naming Themes:** Finalizing the specifics of each theme, ensuring clarity and relevance to the research questions.
- **Producing the Report:** Synthesizing the findings into a coherent narrative that aligns with the research objectives, supported by vivid examples from the data.

Additionally, a quantitative method of analysis was used to illustrate the distribution of themes in the form of pie charts. While the sample size is not large enough to employ statistical methods for generalization, this graphical representation enhances the visualization of the results, providing a clearer understanding of the thematic distribution across the interviews.

2.3 Study limitations

The qualitative nature of this study limits its generalizability. Findings are specific to the sampled individuals and their contexts within the UAE's engineering and construction industry. The study is limited to a specific geographic and professional context, which may not be generalizable to other regions or industries. Additionally, the qualitative approach, while in-depth, is limited in its ability to provide quantifiable data that might further validate the findings.

Furthermore, the study's small sample size constrains the breadth of insights, potentially omitting broader trends and experiences within the industry. However, it is important to acknowledge that, although the sample size is small, it was sufficient to enable some meaningful observations to be made. The depth of qualitative data collected allowed for a rich understanding of the experiences and perceptions of the participants. This study represents initial steps in what is hoped to be a more extended series of research, providing a foundation for future studies with larger and more diverse samples.

The scope of this research focuses on female Emiratis who have already worked in the engineering and construction industry, thereby excluding Emirati women who have not managed to continue their careers in the field. This specific focus provides valuable insights into the experiences of these professionals but does not cover the challenges and perspectives of those who left or did not enter the industry. This study aims to lay the groundwork for future research that can expand the scope to include these groups and offer a more comprehensive view of the overall gender dynamics in the UAE's engineering and construction sectors.

3

Findings and insights

To understand the dynamics influencing women in the engineering and construction industry, a thematic analysis of interviews with 18 participants was conducted. These participants, all from diverse backgrounds and at various stages in their careers, provided insights into their personal motivations, the influences that shaped their career paths, the potential challenges they may have encountered during their education and professional lives and their main achievements within the industry. Additionally, they offered recommendations on how to make the industry more inclusive for women. Following the analysis of the interviews' findings, the results have been categorized under themes to identify common patterns and provide an initial assessment of the current dynamics influencing the participants in their engineering and construction career.

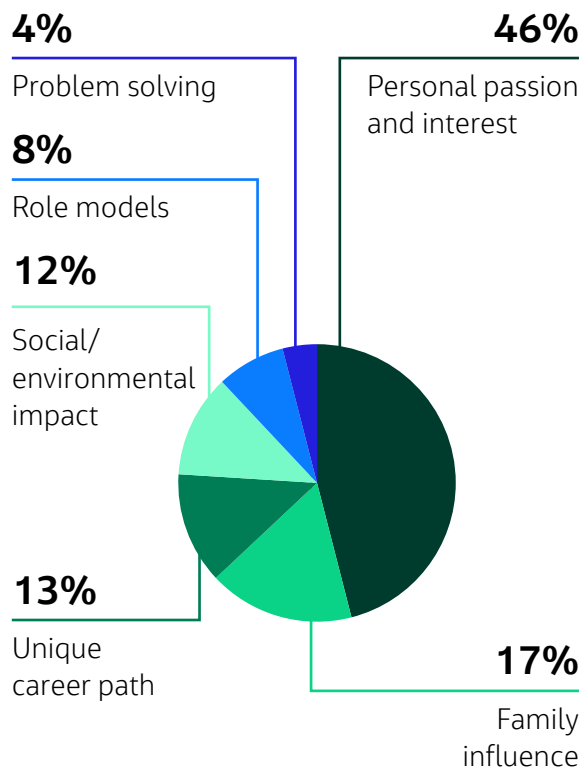
3.1 Motivations for pursuing engineering/construction careers

The purpose of examining the motivations for pursuing a career in engineering or construction is to understand the factors that drive individuals toward these fields. This understanding is crucial for educators, policymakers, and industry leaders who aim to attract and retain talent in the engineering and construction sectors.

The factors influencing career choices, as shared by the interviewed Emirati female professionals, are presented in Figure 2. The

largest segment, "Personal Passion and Interest", accounts for 46% of the responses, indicating that the primary motivation for them is their own interests and passions. This is followed by "Family Influence" at 17%, showing a significant role of familial support and background in their career choices. Other factors include "Unique Career Path" (13%), "Social/ Environmental Impact" (12%), "Role Models and Inspiration" (8%), and "Problem Solving" (4%). Below, each factor is explored in detail with associated insights and interpretations.

Figure 2 Motivations for pursuing an engineering/ construction career



Personal passion and interest

The drive from personal interest is a key factor in choosing a career in engineering or construction.

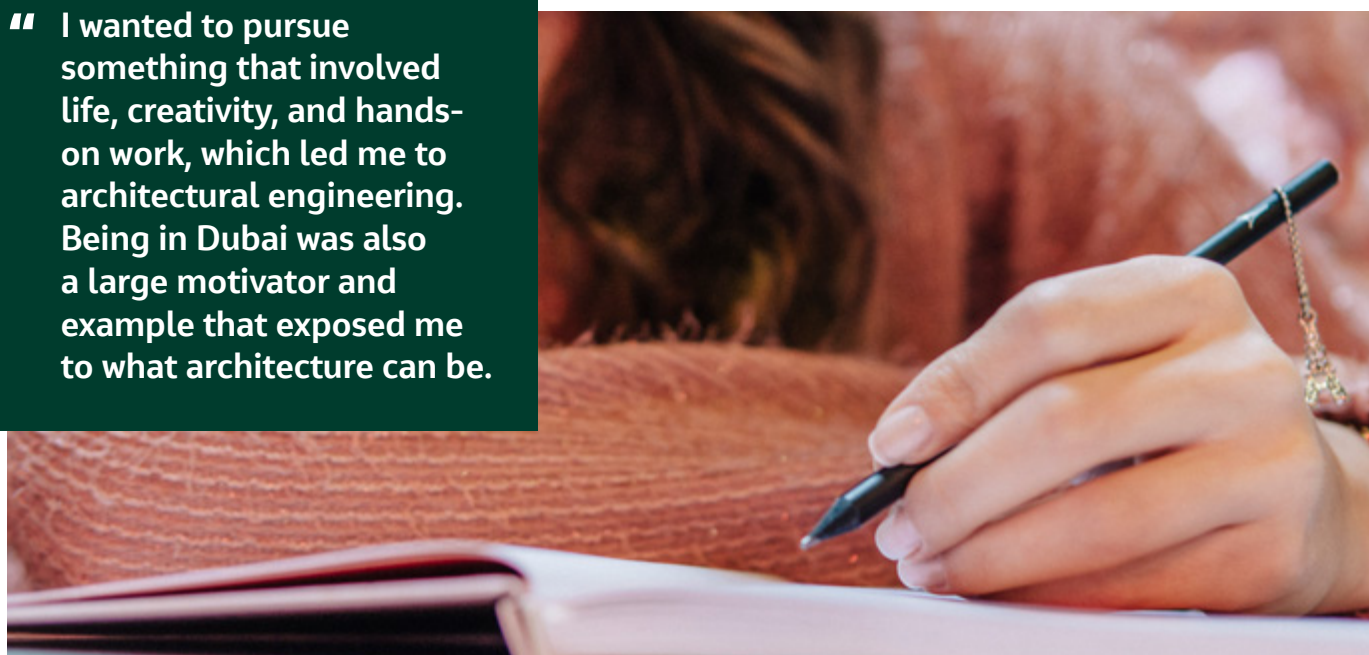
For instance, Interviewee 1's lifelong fascination with understanding how things work and enjoyment of hands-on activities led her to study mechanical engineering. Although she did not end up working as a mechanical engineer, she found a related role with a small technical contractor. Similarly, Interviewee 3's journey into architectural engineering was fueled by her creative nature and her desire to make tangible impacts through building design. Interviewees 2 and 5 also shared this sentiment, with a profound connection to the subject matter driving their career choices. Interviewee 2, for instance, was motivated by a deep connection with nature and a commitment to sustainability, leading her to renewable energy engineering while interviewee 5 emphasized the appeal of the hybrid and flexible nature of engineering work, allowing for movement between sites and offices, which resonated with her personal interests. Graduate interviewees often emphasized the excitement and passion driving their initial interest in engineering, while more senior professionals highlighted how their motivations evolved with their career progression, noting that initial passions often deepened and became more refined over time.

“ I wanted to pursue something that involved life, creativity, and hands-on work, which led me to architectural engineering. Being in Dubai was also a large motivator and example that exposed me to what architecture can be.

The significant role of personal passion and interest aligns with existing literature on career motivations in STEM fields, where intrinsic interests are often cited as primary drivers (Eccles, 2009). This finding underscores the importance of fostering environments that allow individuals to explore and develop their interests from an early age. Educational institutions and industry leaders should focus on creating opportunities for hands-on learning and exploration in various STEM fields to nurture these interests.

Family influence

Family influence is a profound theme in the career choices of the interviewees, demonstrating how familial professions and the environment one grows up in can shape personal aspirations and career pathways. Interviewee 4's transition from an initial interest in medicine to choosing architectural engineering under her father's influence exemplifies this. Her narrative suggests that family members' professions not only provide a familiar context but also a sense of possibility and accessibility within certain fields.



Similarly, Interviewee 9, influenced by her engineer uncles, chose to pursue civil engineering. When females grow up seeing family members, especially female relatives, thriving in diverse careers, it normalizes the idea of women being capable and successful in various professions. This helps counteract societal stereotypes and biases that may suggest certain careers are more suitable for men.

These stories illustrate the impactful role of family as both immediate and tangible motivators and enablers, providing early exposure to the fields of science and engineering that might otherwise seem inaccessible or daunting. This finding is consistent with studies that emphasize the impact of family on career development (Stevenson & Clegg, 2011). For policymakers and educators, this highlights the need to engage families in career guidance processes, providing them with the tools and information to support their children's aspirations in engineering and construction.

Social/environmental impact

The motivation to make a positive societal impact through one's career was another strong theme for the interviewees. Interviewee 2, driven by her deep connection with nature and a commitment to environmental stewardship, chose to pursue sustainable and renewable energy engineering. This reflects a growing trend among new generations to seek professions that contribute directly to addressing global challenges such as climate change and sustainability. Interviewees 5 and 10 also mentioned the importance of making a positive impact on society and the environment as a key motivation for their career choices.

The desire to engage in meaningful work that extends beyond personal gain to include broader societal benefits is particularly pronounced in fields like engineering, where the outcomes can significantly affect communities and environments.

“ I have always felt a profound connection with nature, and I believe we are responsible for our surroundings. This led me to pursue a career in sustainable and renewable energy engineering.

This theme highlights a shift towards values-based career decision-making, where interviewees seek roles that align with their personal values and offer opportunities to contribute positively to the world.

Unique career path

Some interviewees expressed a desire to pursue unique or less conventional career pathways within engineering. For instance, Interviewee 7 pursued Geographic Information Systems (GIS), a field that was unique at the time and offered new challenges and perspectives on how geography and data can impact urban planning and development. Similarly, interviewees 12 and 16 highlighted their pursuit of unique career paths, often driven by a desire to take on new challenges and innovate within their fields. The desire for unique career paths points to the evolving nature of career motivations among younger generations. These findings suggest a shift towards values-based career decision-making, where individuals seek roles that align with their personal values and offer opportunities for innovation (Lyons et al., 2012). Industry leaders should leverage this trend by promoting the diverse and impactful nature of engineering and construction careers, particularly those that address global challenges such as sustainability and climate change.

Role models and inspiration

Influence from role models or mentors was a critical motivator for some interviewees. The interaction with a female site engineer significantly shaped Interviewee 11's decision to explore and eventually enter the engineering field. Similarly, Interviewee 13 was encouraged by her family and an inspiring math's teacher to pursue a career in electrical engineering. Interviewee 15 was also influenced by a mentor to pursue transport planning. This highlights the impact that mentorship can have on a student's career trajectory, encouraging them to explore and commit to specialized fields within engineering. The influence of role models and mentors highlights the critical role of positive reinforcement and support in shaping career trajectories. To enhance gender diversity in engineering, organizations should implement mentorship programs that connect aspiring female engineers with experienced professionals who can provide guidance, support, and inspiration.

Problem solving

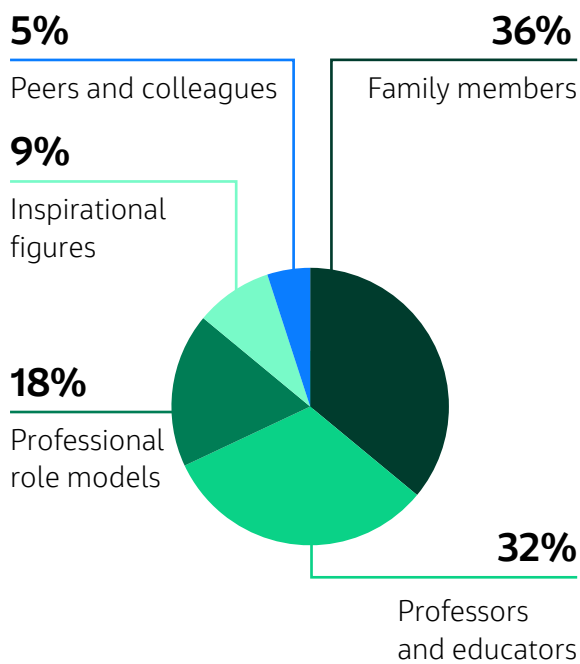
For Interviewee 10, the ability to solve complex, real-world problems through engineering was the primary motivator. This reflects a common appeal of the engineering profession—the intellectual satisfaction derived from tackling and overcoming challenging issues, making a tangible difference through one's work. The appeal of problem-solving reflects the intellectual satisfaction and professional fulfillment that many find in engineering roles. Despite problem solving being explicitly mentioned by one interviewee, it was inherently present in other responses, highlighting its importance across various motivations. This motivation is essential for retaining talent in the industry, as it highlights the importance of creating work environments that offer challenging and rewarding opportunities.



3.2 Role models and influences

Exploring the role models and influences in pursuing a career in engineering or construction helps us understand the key figures shaping these career decisions. Although these results are specific to the interviewees, they can offer broader insights into the impact of role models on career choices. By identifying these influences, strategies can be developed to enhance their visibility and connection to aspiring professionals in these fields.

Figure 3 Role Models and Influences



As illustrated in figure 3, family members emerge as the most considerable influence, accounting for 36% of responses, indicating that familial ties and background play a pivotal role in shaping their career paths. Professors and Educators also hold a substantial impact, representing 32% of the motivational factors, underscoring the importance of educational guidance in their career development.

Professional Role Models are noted by 18% of the respondents, highlighting the influence of industry leaders on career choices. Inspirational Figures and Peers and Colleagues account for smaller portions, 9% and 5% respectively. Below, each theme is explored in detail with specific examples and interpretations.

Family members

Family members play a crucial role in influencing career decisions, as seen in multiple narratives. For example, interviewee 1 was inspired by one of female relatives who was in the profession and was surrounded in a family environment steeped in medical and engineering. This instilled confidence and familiarity with the fields, making them more accessible and desirable for her to pursue. Similarly, interviewee 5 was guided by her father whose involvement in engineering subtly led her to a career in ground engineering despite her initial lack of interest in civil engineering.

“ My father’s career subtly guided me towards engineering, even though I initially had no interest in civil engineering.”

These stories demonstrate the powerful impact of family members as role models, providing early exposure, support, and encouragement. Family members who understand the challenges and rewards of certain professions can provide crucial encouragement and support to young women as they explore their interests and pursue their goals.

Their belief in the women’s abilities and potential can boost confidence and motivation, making it easier to overcome obstacles and setbacks along the way.

Professors and educators

Professors and educators significantly shape career paths by inspiring passion for and dedication to engineering and construction sector. For instance, interviewee 2 highlighted how a university professor's enthusiasm for sustainability and his belief in engineers as change-makers deeply influenced her career choice. Interviewee 4 described how a physics professor's encouragement to "build something great on Mars" played a critical role in her pursuit of engineering.

Early-career professionals often cited their educators as the most influential during their formative years, while more experienced professionals noted how ongoing mentorship from educators continued to shape their career trajectories and professional development. These educators not only impart knowledge but also foster a belief in the transformative potential of engineering roles. Eccles (2009) supports this finding, emphasizing that educators play a critical role in nurturing students' interests and guiding them towards successful careers in engineering.

“ My physics professor's encouragement to 'build something great on Mars' was a pivotal moment that steered me towards engineering.

Professional role models

Professional role models, such as renowned architects like Zaha Hadid, have also been cited as influential. Their successful careers provide tangible examples of what can be achieved in the field, inspiring interviewee 15 to follow a similar path. Interviewee 11 was motivated by a former line manager who not only supported her professionally but also encouraged further academic pursuits, showing the importance of mentorship within the workplace. Senior professionals often stressed the importance of professional role models in providing not just inspiration but also practical guidance and opportunities for career advancement. The impact of professional role models aligns with Dasgupta's (2011) findings on the importance of ingroup experts and mentors in shaping career trajectories and self-concept in STEM fields.

Inspirational figures

Interviewee 16 was inspired by influential figures such as UAE country leaders, whose visions and achievements in infrastructure development left a lasting impression, motivating her to contribute to societal betterment through her career.



The influence of national leaders and their accomplishments can inspire individuals to pursue careers that align with their personal values and aspirations for societal impact. This aligns with findings in literature that highlight the role of inspirational leaders in motivating individuals to pursue careers in STEM fields (Dasgupta, 2011; Bandura, 2000).

“ The visions and achievements of UAE leaders in infrastructure development left a lasting impression on me, motivating me to contribute to societal betterment through my career in engineering.

Peers and colleagues

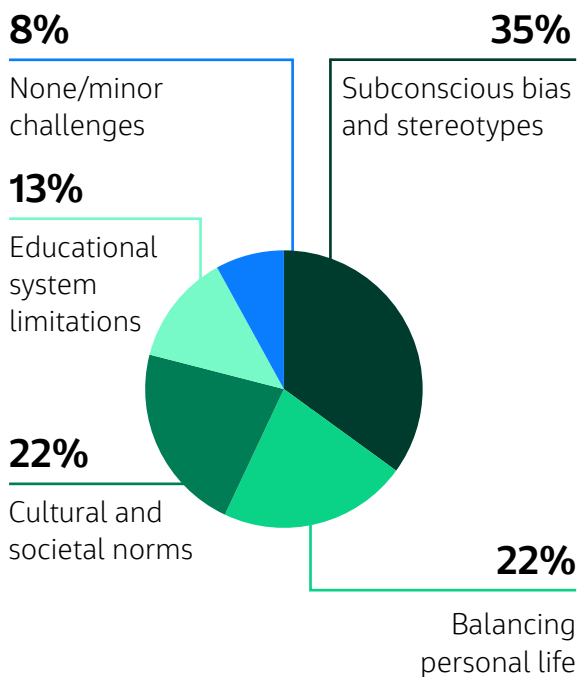
Peers and colleagues can also serve as role models, as evidenced by interviewee 6 who was inspired by her peers' commitment to engineering and their supportive environment, which reinforced her own career choices. The positive influence of peers and the collaborative nature of the learning environment can significantly impact career decisions, as highlighted by Eccles (2009) and Dasgupta (2011). This underscores the importance of fostering supportive peer networks and collaborative environments in educational and professional settings to encourage more women to pursue and persist in engineering careers.



3.3 Challenges in STEAM education

Identifying the potential challenges faced by female engineers in STEAM education reveals any potential obstacles impacting their educational experiences and career pathways. Despite the increasing number of women in STEAM education in the UAE, it remains crucial to explore possible challenges to ensure continued progress. Figure 4 provides a breakdown of the common challenges identified from the interviews.

Figure 4 Challenges in STEAM education



As shown in figure 4, the largest segment, "Subconscious Biases and Stereotypes," accounts for 35% of the responses. This is followed by "Balancing Personal Life" and "Cultural and Societal Norms," each making up 22% of the responses, showing that personal life commitments and cultural expectations also play a substantial role in shaping their education journey.

"Educational System Limitations" are noted by 8% of the respondents. Interestingly, 13% of the participants mentioned facing none or only minor challenges, suggesting that personal experiences vary and that the impact of challenges in STEAM education is not uniform for everyone. Below are further insights about each challenge.

Subconscious bias and stereotypes

Subconscious biases are automatic, implicit attitudes or stereotypes that affect our understanding, actions, and decisions unconsciously. Unlike overt discrimination, these biases operate below conscious awareness and can subtly influence behavior and judgments, often in ways that perpetuate existing social inequalities. In the context of STEAM education, subconscious biases might lead to assumptions about women's capabilities, often resulting in differential treatment in educational settings and professional environments. Recognizing and addressing these biases is essential for creating equitable opportunities and supportive environments for all students (Hill et al., 2010; Moss-Racusin et al., 2012).

Some biases and stereotypes have been reported by interviewees, however they also shared how they overcame these obstacles with resilience and support. For instance, Interviewee 1 noted how a different type of bias from professors towards more extroverted students affected her, but she proactively sought out more supportive instructors, ultimately finding a more positive learning environment. Interviewee 3 mentioned internal struggles of not feeling "good enough" or belonging in the field. Interviewee 4 noted discrepancies between male and female students in exams/scores, with higher expectations for female students in creative fields. She also faced stricter university rules compared to male students.



Interviewee 7 noted discrepancies between male and female students in exams and scores, with professors having higher expectations of female students in her creative field. Interviewee 17 faced societal and cultural barriers, initially discouraged from pursuing engineering due to the prioritization of marriage. These experiences reflect the broader challenges women face in overcoming subconscious biases and stereotypes in STEAM fields. Despite these challenges, many interviewees highlighted the support from their families, peers, and professors as crucial in helping them navigate and overcome these biases.

Early-career professionals often experienced subconscious biases more acutely during their educational journey. For instance, Interviewee 1 and Interviewee 2, who are relatively early in their careers, described the biases they faced during their university years and how they navigated these challenges with the support of professors and peers. In contrast, more experienced professionals, such as Interviewee 6, reflected on how overcoming initial biases contributed to their long-term success and adaptability in their chosen fields. This differentiation aligns with literature indicating that early-career individuals may be more vulnerable to subconscious biases due to their formative stages of professional identity development (Eccles, 2009). Conversely, seasoned professionals often develop resilience and strategies to mitigate these biases over time, highlighting the importance of continuous support and mentorship throughout one's career.

Balancing personal life

Balancing the demanding requirements of STEAM education with one's personal life was a challenge especially highlighted by interviewee 3. Issues ranged from managing time effectively to dealing with internal self-doubt and external criticism.

She successfully managed her time and dealt with internal self-doubt by reminding herself of the good intentions behind criticism and seeking balance in her personal and professional life. Interviewee 7 also faced balancing challenges, especially after taking a 2-3 year gap from her profession. Despite these challenges, interviewees shared positive aspects of their experiences. Interviewee 10 found that the supportive environment provided by peers and professors was crucial in helping her manage personal and academic demands. She emphasized the importance of having a network that encourages resilience and confidence. Interviewee 14 noted that although university regulations were stricter for female students, the support from her family and the university staff helped her navigate these obstacles effectively. The intense pressure of balancing these aspects can impact mental health and well-being, emphasizing the need for supportive educational environments that accommodate these unique challenges.

Cultural and societal norms

Cultural and societal expectations significantly impact educational choices and experiences in STEAM. Interviewee 15 faced pressure to prioritize marriage over education reflecting a common societal norm that values traditional roles over professional aspirations. Interviewee 7 highlighted language barriers as a significant challenge during her education. She initially struggled with understanding and communicating technical terms in English, which impeded her learning process and made it difficult to fully grasp complex concepts. However, she did not feel discriminated against at her university, indicating that positive support can mitigate some of these challenges.

“ My family initially resisted my decision to study engineering, emphasizing traditional roles. However, their support grew over time as they saw my dedication and success.

These cultural barriers, if not expressed and addressed, not only limit access to education but also affect the types of careers women feel empowered to pursue.

Educational system limitations

Challenges within the educational system, such as stringent university hostel rules or biases in classroom dynamics, also pose barriers for women in STEAM fields. These structural issues can deter women from pursuing or excelling in these fields due to an unwelcoming or restrictive learning environment.

For example, Interviewee 15 highlighted that stricter university hostel rules for female students compared to their male counterparts added to the challenges of balancing personal commitments and academic demands. These regulations can be particularly burdensome and create additional stress for female students. Additionally, Interviewee 10 emphasized the importance of practical knowledge in the curriculum, suggesting that incorporating subjects on real-world applications, such as project management and industry-specific challenges, could better prepare students for professional environments. This approach would enhance the efficiency and confidence of graduates as they transition into their careers.

None/minor challenges mentioned

Several interviewees reported having faced no significant challenges or only minor ones during their STEAM education. This indicates variability in experiences, which may be influenced by a variety of factors including personal resilience, the specific educational institution, and the presence of supportive networks. These positive experiences demonstrate that supportive environments, combined with the agility of the UAE educational system in integrating gender equity, have significantly enhanced the educational journey of women in STEAM.



3.4 Achievements in the industry

Exploring and highlighting the achievements of female engineers in the industry provides valuable insights into their contributions and successes, which can serve as inspiration and guidance for others in the field. Figure 5 presents an overview of the key accomplishments shared by the interviewees, categorized by the number of interviewees who highlighted them.

Figure 5 Achievements in the industry

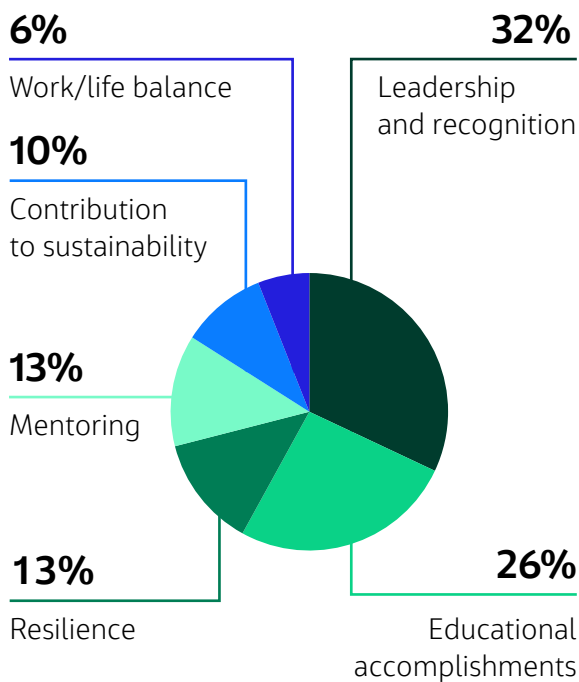


Figure 5 illustrates the various aspects that the interviewees find rewarding in their careers. “Leadership and Recognition” is the most significant factor, accounting for 32% of responses, indicating that many professionals highly value recognition of their leadership skills and contributions. This is followed closely by “Educational Accomplishments”, which represents 26% of the responses, showing the importance placed on formal education and continuous learning in their careers.

“Resilience and Adaptability” was highlighted by 13% of the participants, reflecting the value placed on the ability to adapt and thrive despite challenges. “Contributing and Supporting Sustainability and Innovation” was noted by 10% of the participants, underscoring their commitment to impacting the industry positively through sustainable practices and innovative solutions. “Work-Life Balance” and “Mentoring Others” each account for smaller portions, 6% and 8% respectively. Further examples and insights related to these themes are discussed below.

Leadership and recognition

Candidates have achieved significant leadership roles and recognition within their fields, exemplifying their capacity to break new ground and lead major projects. For example, one interviewee became the first and youngest female holding a significant position at a Ministry, highlighting how women are increasingly taking on roles traditionally held by men. Another interviewee became the first female appointed director of a major public sector organization and led significant projects, displaying her leadership and expertise in a male-dominated field. Yet another interviewee became a senior executive at a ministry, obtaining a PhD in a specialized field, and organizing workshops and mentoring programs for students. Their progression into these roles highlights their leadership abilities and the shifting dynamics within traditionally male-dominated industries.

Educational accomplishments

Interviewees 16 and 17 have excelled academically, with achievements such as completing PhDs, participating in advanced research, and receiving prestigious educational awards.

Interviewee 5's involvement in mega projects and her progression in knowledge and professional status underscores the direct impact of lifelong education on career advancement. These accomplishments are crucial not just for personal career growth but also for contributing to evolution and innovation within their fields, demonstrating the value of continuous learning and adaptation in a fast-evolving sector. These accomplishments highlight the importance of ongoing learning and specialization in their career advancement and contribution to their field.

Resilience and adaptability

Resilience and adaptability are key themes in the achievements of several interviewees. Interviewee 1 demonstrated resilience by starting her career during the COVID-19 pandemic and establishing solid ground in her company despite significant challenges. Interviewee 3, who juggles a demanding personal pursuit alongside her professional aspirations in construction, reflects this theme through her perseverance in multiple fields. These examples highlight the ability to maintain performance under pressure and adapt to new roles or start new ventures, showing strong resilience and adaptability.

“ Starting my career during COVID-19 and establishing solid ground within my company, while also managing my own business, has been incredibly rewarding.

Contribution to sustainability and innovation

Interviewees 3,9,16 and 17 have contributed significantly to sustainability and innovation, either through their professional work or through specific projects that have had a wider impact, such as environmental sustainability projects recognized on international platforms. Their work not only advances their careers but also contributes significantly to global sustainability efforts.

Mentoring and supporting others

Interviewee 16 organizes workshops and mentoring programs, while Interviewee 10 reported actively mentoring other female engineers. These initiatives play a crucial role in fostering growth and development in others, promoting a supportive and inclusive environment within the industry.

“ Mentoring other female engineers and seeing them grow in their careers has been one of my most fulfilling achievements.

Mentorship provides essential guidance, encouragement, and support, helping to cultivate the next generation of leaders and innovators in construction and engineering fields.



Work-life balance

Successfully managing work-life balance is considered a significant achievement by interviewee 10. Balancing personal responsibilities with professional demands, such as being an engineer and a mother, shows her ability to manage multiple roles effectively. This reflects the evolving nature of the workplace and societal expectations, highlighting the importance of support systems and flexible work environments.

3.5 Unique challenges as women in engineering/construction

Understanding the unique challenges faced by women in engineering and construction provides valuable insights into barriers and obstacles that can hinder their progress. This understanding is crucial for policymakers and industry leaders who aim to foster a more inclusive and supportive environment. This section outlines these challenges based on firsthand accounts from the interviewed Emirati women.

Figure 6 Unique Challenges as Women in Engineering/Construction

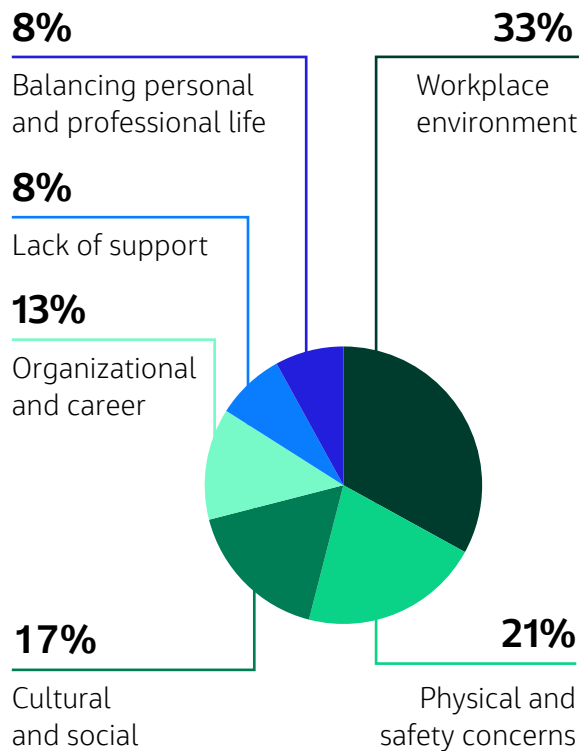


Figure 6 presents the unique career challenges reported by the interviewees, with "Workplace Environment" identified as the most prevalent issue, constituting 33% of responses, emphasizing concerns like work culture and conditions. "Physical and Safety Concerns" follow at 21%, underscoring the industry's inherent physical demands and safety risks as perceived by the interviewees. "Cultural and Societal Norms" and "Organizational and Career Advancement Challenges" represent 17% and 13% respectively, indicating perceived issues related to societal expectations and professional growth barriers. Less dominant but important, "Lack of Support and Mentorship" and "Balancing Personal and Professional Life" each account for 8%, highlighting some of the interviewees' need for better support systems and flexible policies to aid professionals in managing work-life balance. Further discussion and examples are provided below.

Workplace environment

Several interviewees highlighted significant support from the UAE government and companies in promoting gender inclusivity, suggesting a more positive trend in the region. They noted that the country's support for women, including the UAE leaders' efforts to empower Emirati women, has been instrumental in their success. Globally, the workplace environment presents a range of challenges for women in engineering and construction, including inadequate facilities, gender biases in team interactions, and a general lack of representation in leadership roles (Frehill, 2010; Sang, Dainty, and Ison, 2014). Some women also encounter direct discrimination or are underestimated because of traditional or conservative views on gender roles within the workplace (Powell and Sang, 2013).

Based on the insights from the interviews, interviewee 1 noted that while the industry is male-dominated, women have proven

they can thrive, largely influenced by the country's leadership. As mentioned by interviewee 8, gender bias in team interactions can significantly impact women's daily work experiences and their long-term career progression. Interviewee 3 highlighted the stigma and expectations faced by Emirati women, including being underestimated and having to work harder to prove their skills and abilities. This aligns with the findings of Frehill (2010), who noted the additional effort required by women in general to prove their competence in engineering fields. Interviewee 6 highlighted instances of ridicule for wearing traditional attire and encountering gender-based discrimination on construction sites while interviewee 10 recalled a colleague questioning her choice to be a civil engineer, highlighting a stereotype about women's capabilities in engineering. Interviewee 14 described being the only female in a male-dominated industry, often assigned administrative tasks, and having to prove herself constantly. These issues highlight the importance of additional organizational efforts to create a more inclusive culture in the industry.

Physical and safety concerns

Physical and safety issues are particularly pronounced on construction sites. Interviewees reported that safety equipment and protocols often do not consider female physical differences, which can lead to increased risk and discomfort (Galea et al., 2015). Additionally, Hinze (2019) emphasizes the importance of adapting safety measures to include women, which is reflected in the proactive steps some companies are taking as noted by the interviewees. Interviewees reported that companies in the UAE are increasingly recognizing the need for safety equipment and protocols that cater to female physical differences. This recognition has led to safer working conditions for all employees, and women feel more supported in their roles.

One interviewee mentioned overcoming the fear of visiting project sites thanks to the company's strong HSE policies and supportive team environment.

Cultural and societal norms

Cultural and societal pressures can heavily influence women's experiences in engineering and construction. However, many women have successfully navigated these pressures with support from their families and the government. Challenges include facing stigmas associated with breaking traditional gender roles, societal expectations about women's priorities (such as balancing family and career), and the need to constantly prove their worth in a male-dominated field (Fernando et al., 2018). Fernando et al. (2018) detail the societal pressures faced by women in engineering, echoing the challenges described by interviewees. Interviewee 3 explained that while societal ideologies persist, the government is incredibly supportive of women.

Organizational and career advancement challenges

Women often face obstacles in career advancement due to organizational biases. This includes being passed over for promotions, not being trusted with significant projects, or being typecast into certain roles that limit their career development (Smith, Caputi, and Crittenden, 2012). Interviewee 12 observed that despite facing initial challenges, she leveraged every opportunity to learn and eventually became an active member of higher committee meetings. Interviewees noted that despite initial challenges, they have leveraged opportunities to learn and grow within their organizations.

Lack of support and mentorship

A lack of mentorship and support from senior leaders and peers can hinder women's professional development. Women often feel isolated or unsupported, which can affect their confidence and willingness to pursue ambitious projects or roles (Sealy, 2010). Interviewee 3 noted the lack of mentorship in her initial career stages as a significant challenge. However, several interviewees highlighted the support and mentorship provided to them, especially at their early career stages. This support and encouragement helped them progress in their careers.

Balancing personal and professional life

Balancing personal responsibilities, such as family commitments, with professional demands poses significant challenges, especially in a field that requires long hours and significant on-site presence (Abele and Volmer, 2011). Interviewee 12 observed challenges when transitioning to working on-site, particularly in terms of the demanding nature of the work and the lack of flexibility, which could impact women balancing work and family commitments. Interviewee 14 highlighted the difficulties in balancing personal and professional life, especially with the long hours required on construction sites. This balance is particularly challenging for women who may face additional societal expectations regarding their roles at home. However, some interviewees noted that company policies in the UAE are increasingly accommodating, suggesting a positive shift towards better work-life balance support.

3.6 Recommendations for enhancing inclusivity

In the engineering and construction industry, fostering an inclusive environment is not just beneficial—it is essential for innovation and growth. The candid reflections provided by women working in these fields highlight both progress and persisting challenges, underscoring the need for continued efforts in promoting gender inclusivity. This section presents the recommendations shared by the interviewees for enhancing inclusivity in the industry.

Figure 7 Recommendations for enhancing inclusivity

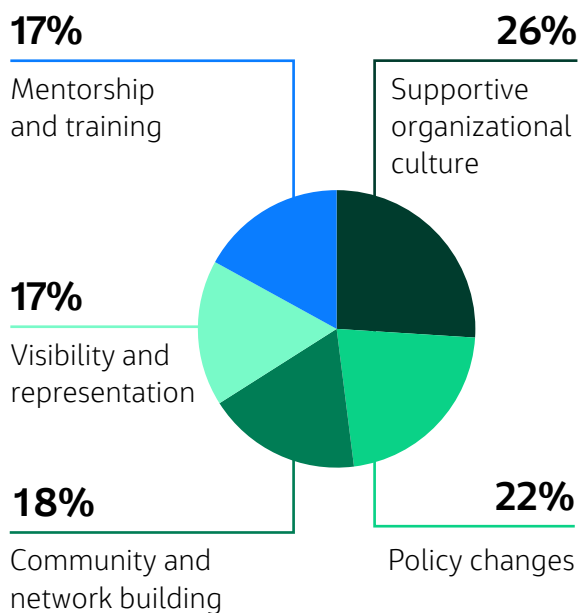


Figure 7 illustrates the key elements contributing to enhancing inclusivity as suggested by the interviewees. The largest segment, “Supportive Organization Culture,” accounts for 26% of the responses, followed by “Policy Changes” which represents 22%, underscoring the need for structural changes that foster equity and support diverse workforce needs according to some interviewees.

“Community and Network Building” and “Mentorship and Training” are also significant, with 18% and 17% respectively, indicating the value placed by respondents on professional networks and developmental opportunities that enhance their career growth. “Visibility and Representation” similarly holds 17%, emphasizing the importance for some of interviewees of seeing diverse role models and leaders within the field. Further details on the suggested recommendations are highlighted below.

Supportive organizational culture

Creating a workplace culture that supports flexibility, respects individual needs, and provides supportive interactions is necessary for inclusive organizations. Recognizing and accommodating the unique challenges women face, such as balancing work and family commitments, is essential (Eagly and Carli, 2007; Ely and Meyerson, 2000). Interviewee 12 described a supportive environment where male counterparts genuinely helped her develop her career and involved her in work immediately. Equal growth opportunities and transparent feedback foster an inclusive environment where women can thrive.

Policy changes

Policies addressing maternity leave, flexible working hours, and countermeasures against gender discrimination are crucial. Implementing these policies can significantly impact women's day-to-day experiences, making them feel valued and respected (Baird and O'Brien, 2015; Kossek and Distelberg, 2009). Interviewee 10 advocated for gender-neutral policies, diversity promotion, and equal pay as essential measures for inclusivity.

Interviewee 1 noted gaps in facilities for women but highlighted active efforts to address these issues, indicating a commitment to inclusivity and gender diversity.

In the UAE, significant strides have been made towards these interventions. For instance, the UAE government has introduced initiatives such as the UAE Gender Balance Council, which aims to enhance the role of women in leadership positions and across various sectors. Additionally, many companies have implemented comprehensive maternity leave policies and flexible working hours to support women in the workplace (Forster, 2020; Abdalla, 2015). Despite these efforts, the insights from the interviews underscore the need for further and more standard initiatives and policies to address the remaining gaps and challenges.

Community and network building

Building robust professional networks is vital for enhancing inclusivity. Mentorship programs for young female engineers can bridge the gap between emerging talent and established professionals (Ibarra, Carter, and Silva, 2010; Ragins and Kram, 2007). Encouraging family members and peers to facilitate introductions to broader networks can significantly boost young women's careers, offering support and opening doors to new opportunities. In the UAE, networking initiatives are increasingly supported by both private and public sectors to foster female participation in engineering. For example, the Women in Engineering Chapter of the Institute of Electrical and Electronics Engineers (IEEE) in the UAE provides a platform for women engineers to connect, share knowledge, and support each other's professional growth (Al Zaabi, 2016). These efforts are promising, yet the interview insights call for more targeted and sustained initiatives to build and strengthen these professional networks.

Visibility and representation

Increasing the visibility of women in engineering roles, particularly in leadership positions, is essential. This challenges stereotypes and inspires other women by displaying attainable success (Sandberg, 2013; Catalyst, 2019). Promoting women's achievements and ensuring their representation in company activities and leadership roles can motivate female employees and change organizational dynamics. In the UAE, initiatives to increase women's visibility in leadership roles have been significant. Programs like the Dubai Women Establishment's initiatives focus on empowering women in various sectors, including engineering, by providing leadership training and opportunities (Dubai Women Establishment, 2020). These efforts are commendable, but the interview insights highlight the ongoing need for more robust measures to ensure women's representation and visibility at all organizational levels.

Mentorship and training

Targeted mentorship and training programs help women navigate the industry's complexities and enhance their skills (Allen et al., 2004; Kram, 1985). Interviewee 7 emphasized the need for mentorship and supportive networks, which significantly impact women's careers. Including men in these programs fosters an inclusive culture that understands and supports women's challenges.

3.7 Advice for future generations

In the engineering and construction industry, providing actionable advice to aspiring female professionals is pivotal for shaping a more inclusive and equitable workforce. Insights drawn from the interviewed Emirati women in these fields can shed light on effective strategies and personal philosophies that can guide young women navigating their careers. We outline below the varied recommendations given by these professionals.

Figure 8 Advice for future generations

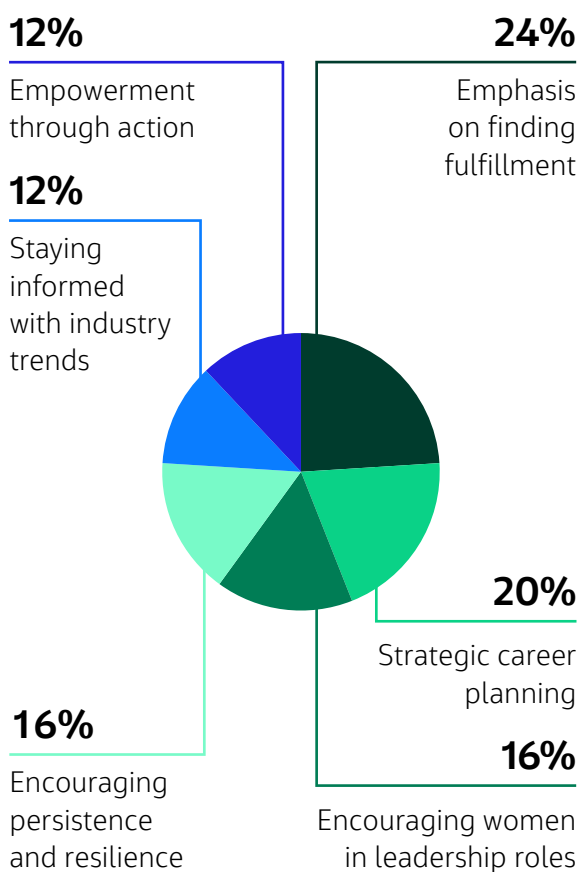


Figure 8 highlights the varied advice shared by the interviewed professionals for future generations.

The leading piece of advice, “Emphasis on Finding Fulfilment,” constitutes 24% of the responses. “Strategic Career Planning” follows with 20%. Both “Persistence and Resilience” and the encouragement for women to step into leadership roles each account for 16% of the suggestions. Staying abreast of industry trends and actively empowering oneself and others each garner 12% of the responses. These insights suggest that, according to the interviewees, for new entrants to thrive in these challenging fields, they should focus on choosing a career that aligns with personal passions and interests, planning strategically, demonstrating persistence and resilience, seeking leadership positions, staying updated with industry developments, and actively empowering themselves and others. Detailed examples of the advice provided by the interviewees are discussed below.

Emphasis on finding fulfillment

Pursuing personal fulfillment and maintaining a passion for one’s work were recurrent themes. Interviewee 3 stressed the importance of doing what makes one happy and remaining open to continuous learning. Interviewee 8 emphasized truly investing in one’s strengths and capabilities, and Interviewee 15 noted the importance of choosing what is worth struggling for and being open to every opportunity. This advice echoes findings that personal happiness, self-belief, and adaptability are key to career satisfaction and success in engineering (Deci & Ryan, 2000; Amabile & Kramer, 2011).

Strategic career planning

Interviewees recommended strategic career planning, including seeking internships, attending conferences, and continuously learning. Interviewee 2 highlighted the value of exploring fields with great opportunities and building a strong educational foundation.

Interviewee 6 advised women to be proactive in learning and taking small steps, while Interviewee 14 stressed the importance of continuously learning new things and refreshing knowledge. This aligns with research indicating that internships and diverse skill-building are essential for career advancement in engineering (Kuh, 2008; Buse, Bilimoria, & Perelli, 2013).

Encouraging women in leadership roles

Several interviewees, such as Interviewee 4, suggested that young women should pursue leadership roles, such as project management, due to their potential and suitability for these positions. Interviewee 17 emphasized the importance of continuous improvement, mentorship, and pushing boundaries, while Interviewee 12 advised finding something rare and needed, and working hard towards it.

Encouraging persistence and resilience

Interviewees emphasized the importance of persistence and resilience in overcoming obstacles in engineering careers. For instance, Interviewee 1 suggested pursuing passions and embracing changes as opportunities for new experiences and growth. Similarly, Interviewee 5 encouraged women to strive, make an effort, and trust in their ability to succeed despite facing difficulties and fears.

This advice aligns with literature highlighting the crucial role of resilience and supportive networks in helping women persist in engineering fields (Martin, Miller, & Simmons, 2014; Lin, 2001).

Staying informed with industry trends

Interviewees highlighted the importance of lifelong learning and staying informed about emerging fields like AI and urban regeneration. Interviewee 16 suggested that continuous improvement and pushing boundaries are crucial, while Interviewee 9 advocated for selecting environment and engineering subjects.

Empowerment through action

Interviewees advised young women to advocate for themselves, recognize their accomplishments, and remain open to opportunities. Interviewee 6 emphasized not being discouraged by the male-dominated nature of the industry and seeking the right support. Interviewee 3 highlighted the need to validate and encourage young women, while Interviewee 7 advised being proactive, discussing thoughts openly, and stepping out of comfort zones. This perspective is supported by literature that highlights the need for self-advocacy and the importance of challenging societal stereotypes (Gorman & Kmec, 2009; Corbett & Hill, 2015).





3.8 Key Insights

The thematic analysis of interviews from 18 Emirati women in the UAE's engineering and construction industry provides deep insights into their experiences, motivations, and challenges. These findings illuminate the dynamic factors influencing women's careers in these traditionally male-dominated fields and offer actionable recommendations for fostering a more inclusive industry environment.

■ Personal motivation and influences

Passion and interest: A substantial majority of interviewees emphasized that personal passion and interest are pivotal in choosing engineering or construction as a career path. This aligns with the understanding that career satisfaction and success are closely tied to personal fulfilment. Many cited lifelong interests in understanding how things work and the appeal of creative problem-solving as key motivators.

Family and social influence: Family influence stands out as a significant factor, with many women citing family members in related fields as their inspiration. This familial support plays a crucial role in shaping career choices, often providing the initial exposure and encouragement needed to pursue these careers.

■ Challenges and barriers

Subconscious biases and societal norms:

The interviews highlighted ongoing challenges related to subconscious biases and societal expectations. Women continue to face stereotypes and a lack of acceptance, which can hinder career progression and day-to-day job satisfaction.

Work-life balance: Balancing professional demands with personal life remains a significant challenge, reflecting the broader issue of workplace cultures that may not fully support women's dual roles in society.

■ Achievements and professional growth

Leadership and recognition: Many interviewees have achieved significant leadership positions, underscoring their ability to overcome barriers and excel in their fields. This not only demonstrates individual success but also serves to inspire and pave the way for future generations.

Educational and professional

development: Continuous learning and professional development are highly valued, with many women pursuing advanced degrees and certifications that enhance their expertise and marketability.

■ Recommendations for industry inclusivity

Policy and Organizational Culture: There is a strong call for policy changes and the cultivation of a supportive organizational culture. These changes are seen as essential for creating an environment where women can thrive equally. Implementing policies that further enhances maternity leave, flexible working hours, and countermeasures against gender discrimination are seen as essential for creating an environment where women can thrive equally.

Mentorship and community building: Establishing mentorship programs and professional networks is crucial for supporting women, particularly in navigating career challenges and achieving growth. Encouraging family and peer support, along with robust professional networks, can significantly enhance career development and inclusivity.

■ Advice for future generations

Encouraging persistence and resilience: Interviewees emphasized the importance of persistence and resilience in overcoming obstacles in engineering careers. They suggested pursuing passions, embracing changes as opportunities for growth, and trusting in one's ability to succeed despite difficulties.

Strategic career planning: Strategic career planning, including seeking internships, attending conferences, and continuously learning, was recommended. Building a strong educational foundation and being proactive in learning and taking small steps were highlighted as essential for career advancement.

Emphasis on finding fulfillment: Pursuing personal fulfillment and maintaining a passion for one's work were recurrent themes. Interviewees stressed the importance of choosing a career that aligns with personal passions and interests and remaining open to continuous learning and new opportunities.



4

Recommendations and takeaways

This study reveals the evolving dynamics within the UAE's engineering and construction industries, where significant, proactive strides toward gender equity are being realized. It explores the interplay of societal norms, structural barriers, and the impressive progress that is reshaping the career trajectories of women. The findings indicate that, although there are some persistent challenges, there have been notable advancements in professional opportunities for women, driven by increased educational achievements and a broad cultural shift towards greater inclusivity.

These advancements are complemented by the UAE's strategic initiatives aimed at empowering women such as the National Policy for Empowerment of Emirati Women - 2031, launched in 2023, which promise substantial benefits not only for the industry but for broader society as well. With an increasing number of women entering these fields, the industry is witnessing a gradual transformation to a more inclusive environment. This commitment to change is underscored by enhanced policy initiatives and the visible impact of female leaders who inspire future generations.

This study not only highlights the hurdles that women have overcome but also the promising practices and achievements that paved the way for a more equitable future in the engineering and construction sectors.



4.1 Key takeaways

Persistence of gender gaps: High rates of educational attainment among Emirati women contrast with their underrepresentation in the workforce, particularly in leadership roles within engineering and construction. However, the UAE has shown a commitment to closing this gap, with national strategies aimed at increasing female participation in all sectors.

Cultural and structural challenges: Although traditional views still sometimes link construction work with masculinity, there is a growing recognition of the need for cultural transformation alongside policy reforms to facilitate greater inclusion.

Opportunities for impact: Emirati women are crucial in driving sustainability and climate action, shaping dialogues, developing clean energy, and contributing to smart cities. Supporting women's education and careers in STEAM is vital for these efforts. Regenerative development, which enhances and revitalizes systems, relies on an interdisciplinary approach and women's empowerment to achieve sustainable improvements and national resilience against climate change.

Positive trends in gender parity: Efforts to achieve gender parity are bearing fruit, as societal attitudes shift, and more women enter the field. Initiatives like the national strategy for empowerment of Emirati women and the gender balance council underscore the UAE's proactive approach to gender equity, both expected to yield substantial benefits for the industry and society.

Feasibility of gender equity: With ongoing efforts and top-down advocacy, achieving and sustaining gender equity in the UAE's workforce is increasingly viewed as attainable.

4.2 Suggested actions for stakeholders

Enhanced policy initiatives: Advocate for robust policies that promote gender equity, including enhanced parental leave, flexible working conditions, and comprehensive anti-discrimination laws.

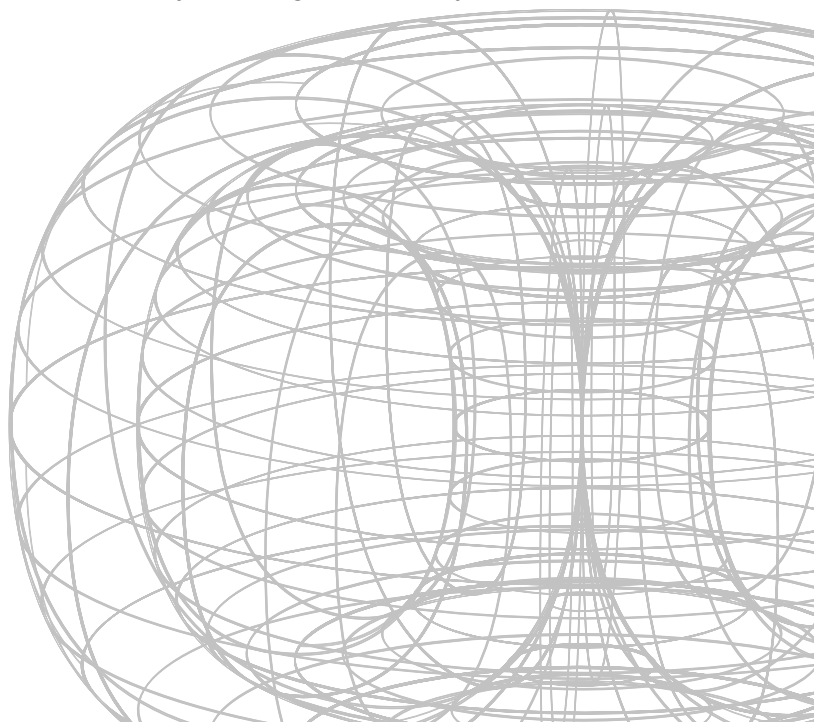
Visibility of role models: Amplify the visibility of successful women in engineering and construction through media and mentorship programs, which can inspire and motivate young women.

Professional development programs: Develop programs focused on leadership, negotiation skills, and career progression tailored for women in the industry.

Support from governments and policymakers in the UAE: Strengthen gender equity through legislative measures, enforce compliance in workplaces, and provide support such as childcare subsidies for working parents.

Commitment from industry leaders: Encourage transparent hiring practices and the promotion of women to leadership positions to ensure a balanced representation within the industry.

Role of educational institutions: Integrate gender studies into STEAM curricula to better prepare future professionals to address diversity and equity challenges effectively.



4.3 Areas for further research

This study, while providing valuable insights into the dynamics of gender equity in the UAE's engineering and construction industry, is bound by certain limitations due to its qualitative nature. The findings are specific to the sampled individuals and are not necessarily generalizable beyond the geographic and professional contexts of the UAE. Furthermore, the qualitative approach, although rich in detailed personal narratives, lacks the ability to produce quantifiable data that might further validate the findings or allow for broader generalizations. Given these constraints, there is a need for additional research to deepen our understanding of these issues.



Areas for further research include:

- Effectiveness of existing gender equity policies to identify critical gaps and propose necessary amendments.
- Investigation of the cultural perceptions of women in these fields could provide deeper insights into societal barriers and help develop strategies to alter these perceptions.
- Examination of the economic contributions of women, particularly in leadership roles, to quantify their impact on the industry and economy. Expanding the scope to include quantitative analyses and comparisons across different regions or industries could also enrich the findings and enhance their applicability to other contexts.
- Examination of the contributions of women to sustainable and regenerative development could provide valuable insights into how gender equity can drive broader environmental, societal, and economic benefits.
- Experiences of women who left the industry: Investigate the reasons why some Emirati women leave the engineering and construction fields, focusing on the challenges and barriers they faced that led to their decision to exit the industry. This could provide critical insights into retention issues and inform strategies to enhance support and career longevity for women in these sectors.

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For inquiries about this report please contact:

Nayyar Ehsan

Senior Marketing, Brand
& Communications Director

Asia Pacific & Middle East

Nayyar.Ehsan@jacobs.com

Jacobs

jacobs.com



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