International Journal of
High-Rise Buildings
www.ctbuh-korea.org/ijhrb/index.php

International Journal of High-Rise Buildings
March 2024, Vol 13, No 1, 11-32
https://doi.org/10.21022/IJHRB.2024.13.1.11

# Refashioning Cities in the Middle East: The Case of Dubai

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**Abstract** In recent years, urban landscapes across the globe have undergone a remarkable transformation marked by a substantial surge in skyscraper development. This paper offers a comprehensive overview of the contemporary evolution of tall buildings, with a particular emphasis on the Middle East. It surveys tall building development in the ten "tallest cities" across the Middle East, including Dubai, Doha, Abu Dhabi, Sharjah, Riyadh, Manama, Tel Aviv, Kuwait, Mecca, and Jeddah, while listing the tallest ten buildings in each city. The focus sharpens on Dubai, UAE, serving as a compelling case study that vividly illustrates the city's swift metamorphosis from a low-rise to a high-rise urban center. Through meticulous examination, the study aims to unveil the key drivers propelling the construction of the world's tallest buildings, asserting that globalization factors play a pivotal role in fostering this transformative shift. The impetus behind this surge is rooted in the aspiration to project a modern and progressive image on the global stage. With Dubai at the forefront, cities in the Middle East strategically endeavor to reshape their international image and reclaim historical grandeur through ambitious skyscraper projects.

**Keywords** Urban Growth; Economic Development; Political Support; Globalization, Imageability; Iconicity; Placemaking, Tallest Middleastern Cities, Sustainability

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## 1. Introduction

The race to build the world's highest skyscraper seems to go on forever, reaching ever-impressive heights. Consider the Woolworth Building in New York, which was 241 m (791 ft) tall and 13% taller than the previous record-holder, the Metropolitan Life Insurance Company Tower. Over a century ago, it was constructed in 1913 and became the world's tallest building. The 319 m (1,047 ft) Chrysler Building became the world's tallest building in 1930, followed by the 381 m (1,250 ft) Empire State Building in 1931 in NYC. In 1971, NYC built the 417 m (1,368 ft) World Trade Center, but after two years, Chicago built the taller 442 m (1,450 ft) Sears Tower -- renamed Willis Tower. In 1998, the 452 m (1,483 ft) Petronas Towers in Kuala Lumpur snatched the title from the Sears Tower. In 2004, the 508 m (1,667 ft) Taipei 101 in Taiwan's capital broke the psychological 500 m (1,640 ft) barrier. In 2010, the 823 m (2,717 ft) Burj Khalifa in Dubai became the world's tallest building (Goldsworthy, 2018).

A recent CTBUH review study indicates that in 2023, a remarkable number of tall buildings were completed, reaching a total of 175 structures that were at least 200 meters in height. This represents a 13.6 percent increase compared to the 154 completions recorded in 2022. As of 2023, there are a total of 2,265 structures in the globe that are at least 200 meters tall, including 232 buildings that are 300 meters or taller, which are classified as supertall. To provide context, the initial 100 of these exceptionally tall structures were finished by 2015, while the remaining 132 were constructed within the subsequent years. Furthermore, by 2015, the number of buildings with a height of 200 meters or more reached 1,000, and this number has since increased by more than double. Overall, the world has been adding significant tall buildings observed in the three major categories (200 m+, 300 m+, and 600 m+), see Figure 1.

Interestingly, the globe has witnessed a significant geographic shift in the tallest buildings constructed in the 21st century (Figure 2). For around 115 years, the United States had the tallest buildings, but recently, skyscrapers have begun to move from Western to non-Western countries. Eighty percent of the world's 100 tallest buildings were built in North America before the beginning of the twenty-first century; following that, the highest skyscrapers were constructed elsewhere, primarily in Asia and the Middle East (Ford, 2021).

In a recent book, 2023, Antony Wood details the rapid

[1]The primary data source for this article is the Council on Tall Buildings and Urban Habitat (CTBUH). Most tables presented herein are meticulously compiled by the author, drawing from the comprehensive CTBUH database. For further clarity on the definitions of tall buildings, refer to Appendix A.

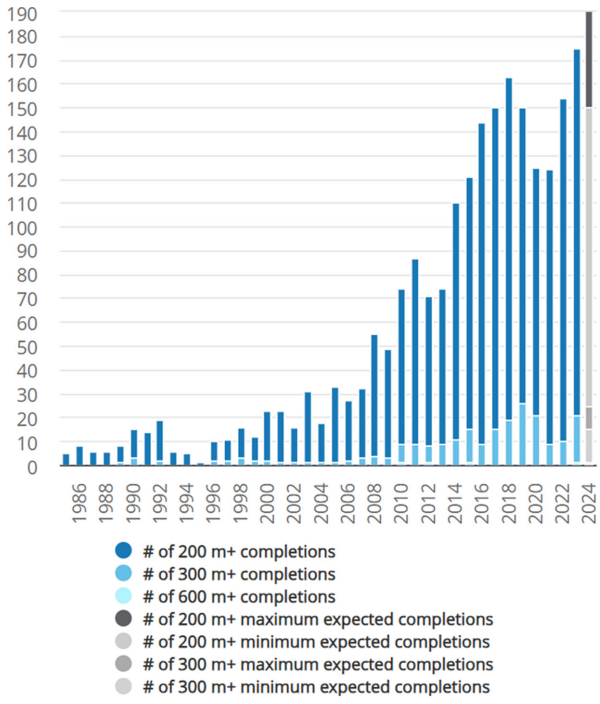



**Figure 1.** Notable skyscrapers have been constructed worldwide, falling into three main height categories: 200 meters or taller, 300 meters or taller, and 600 meters or taller. In 2023, the globe achieved a milestone by constructing over 100 structures at least 200 meters tall for the tenth consecutive year. Also, the graph shows a dip in the construction of tall buildings during COVID-19. (Source: CTBUH)

advancement in skyscraper development, noting that approximately 80 of the world's highest structures have been erected in the last ten years alone. The book mapped the 118 world's tallest buildings and illustrated that Asia and the Middle East have the lion's share, 73 and 24 tallest buildings, respectively (Figure 3).

Upon providing the larger global context, this study briefly traces the race of constructing the tallest buildings in the Middle East. It aims to uncover the factors that have fuelled the construction of the tallest buildings in that region. To that end, it examines Dubai, which embarked on erecting the tallest buildings in the past two decades. The research examines cultural, political, and socio-economic factors that induced vertical development. Within the conceptual framework of globalization, it dives deeper into the factors that have fuelled the construction of Dubai's world's tallest buildings. Scholars view globalization as a complex network of social, political, technological, and economic dynamics that permeate various aspects of our lives (Abbinnett, 2003). Jürgen Habermas echoes the same view, stressing the impact of globalization on the built environment (Habermas, 2006, p. 175). Ulrich Beck (2018) argues that North Atlantic Western culture dominates the new world order, and the most obvious result has been the proliferation of products and enterprises, including skyscrapers. Hopefully, by providing a more nuanced understanding of the skyscraper phenomenon in the examined city, other cities will benefit from the discourse and extracted lessons.

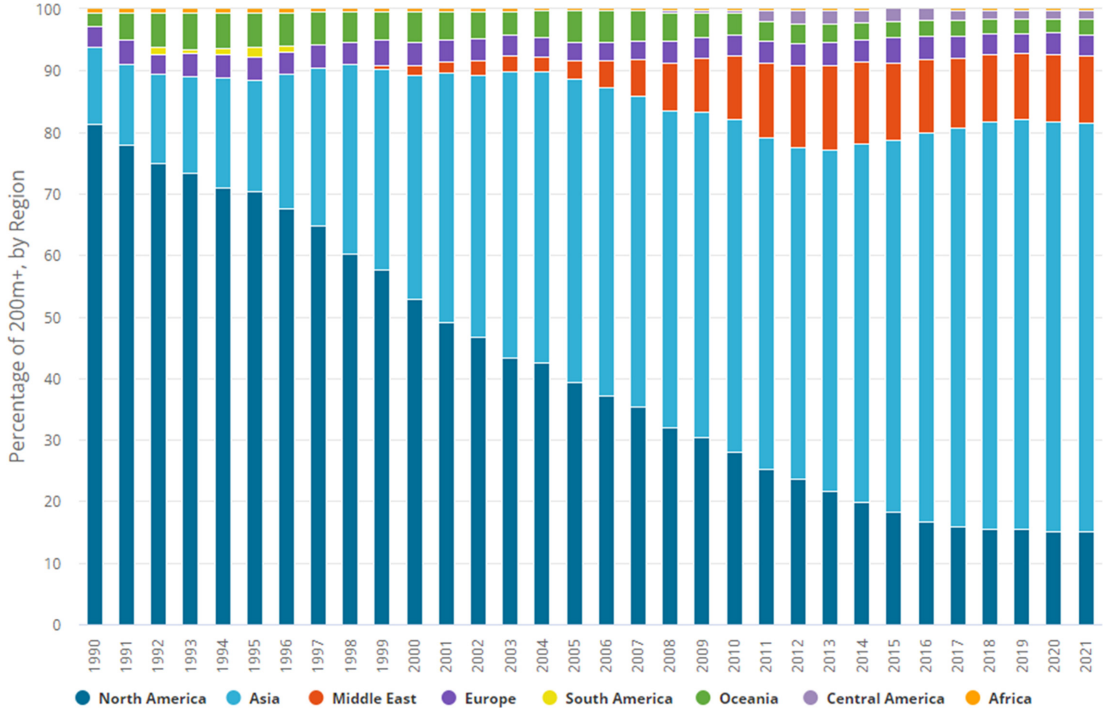



**Figure 2.** In 2001, 49% of all 200m+ buildings were in North America. This figure in 2021 is at 15%, with significant growth in Asia and the Middle East. (Source: CTBUH).

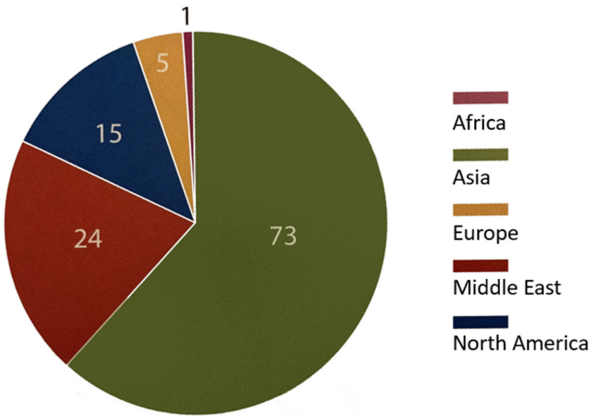



**Figure 3.** The distribution of the 118 projects, the world's tallest buildings by region. Note that Asia and the Middle East have the lion's share. (Source: CTBUH).

## 2. Tall Buildings in the Middle East

During the past 30 years, many Middle Eastern cities have witnessed significant urban transformation. With their skylines quickly transformed and boasting some of the world's tallest buildings and most expensive construction projects, Middle Eastern cities have heralded an ambitious aspiration to build unique global icons by developing massive business centers, high-income residences, luxury hotels, and high-priced services. The first skyscraper in the Middle East was built in 1994, the 164-m Baynunah Hilton Tower Hotel in Abu Dhabi. In 2000, the number of skyscrapers grew to just 11. However, in 2010, the number rose to 361 and 893 in 2022 (Figure 4). Such a rapid increase in building skyscrapers is remarkable by all measures.

After only five years of building the first skyscraper, the Middle East built the first supertall -- the 321-m Burj Al Arab – in 1999. In other words, the height of the tallest building in the Middle East almost doubled in five years. Since then, the supertall race has accelerated. By 2010, the Middle East had built 13 supertalls. It noticeably built Burj Khalifa in 2010, increasing the height of the tallest building from 321 m (Burj Al Arab) to 828 m (Burj Khalifa), 507 meters in about one decade. This astonishing increase has fueled a race to build more supertalls. By 2022, the number of supertalls had increased from 13 (in 2010) to 41 (Figure 5).

The Middle East built two of the world's megatalls, the 828-m Burj Khalifa in 2010 and the 601-m Makkah Royal Clock Tower in Mecca, Saudi Arabia, in 2012. The other two megatalls are the 632-m Shanghai Tower in Shanghai, China, in 2015 and 679-m Merdeka 118 in Kuala Lumpur, Malaysia, in 2023. Table 1 shows a snapshot of the growth of supertalls and megatalls in the Middle East since 1970.

As mentioned, Mecca and Dubai have built two of the world's four megatalls: Makkah Royal Clock Tower and Burj Khalifa. Jeddah started building another megatall, Jeddah Tower, to soar 1,000 m (3,280 ft) – construction on hold. Doha, Qatar, had no skyscrapers before the turn of the new century. Today, it has 47 skyscrapers, 20 greater than 200 meters tall, and one supertall. Likewise, Abu Dhabi, UAE, had merely one skyscraper before the turn of the new century. Now it has 44 skyscrapers – 23 with a height greater than 200 meters and four supertalls. Similarly, Manama, Bahrain, had no skyscrapers before the turn of

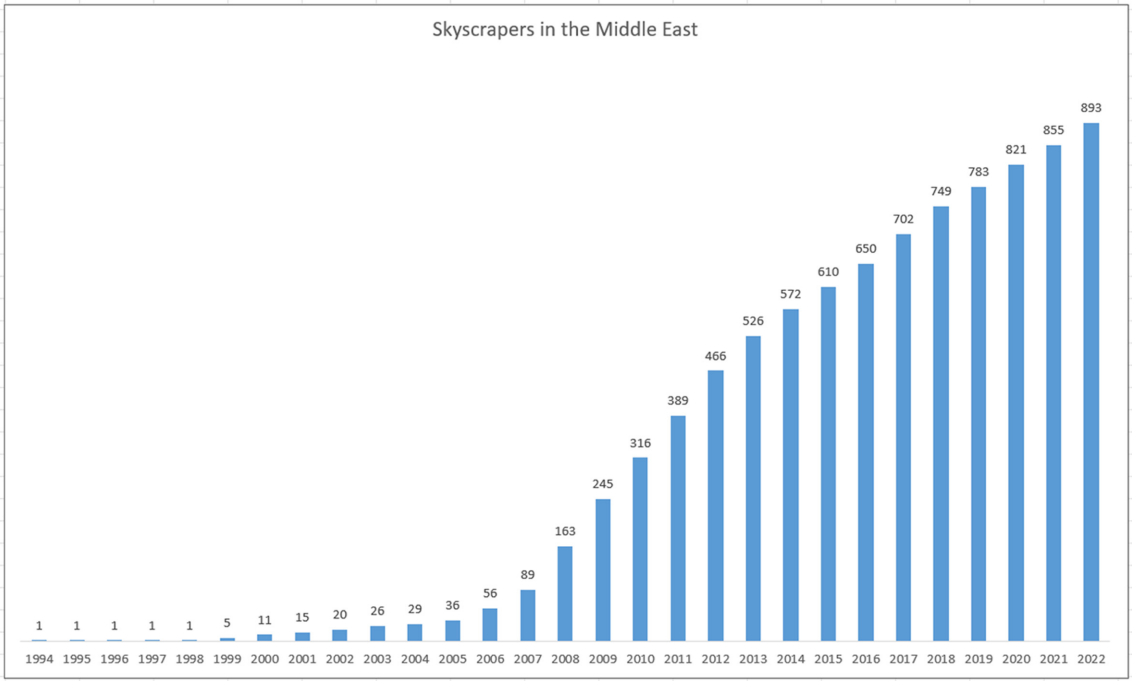



**Figure 4.** The growth of skyscrapers in the Middle East. (Source: CTBUH).

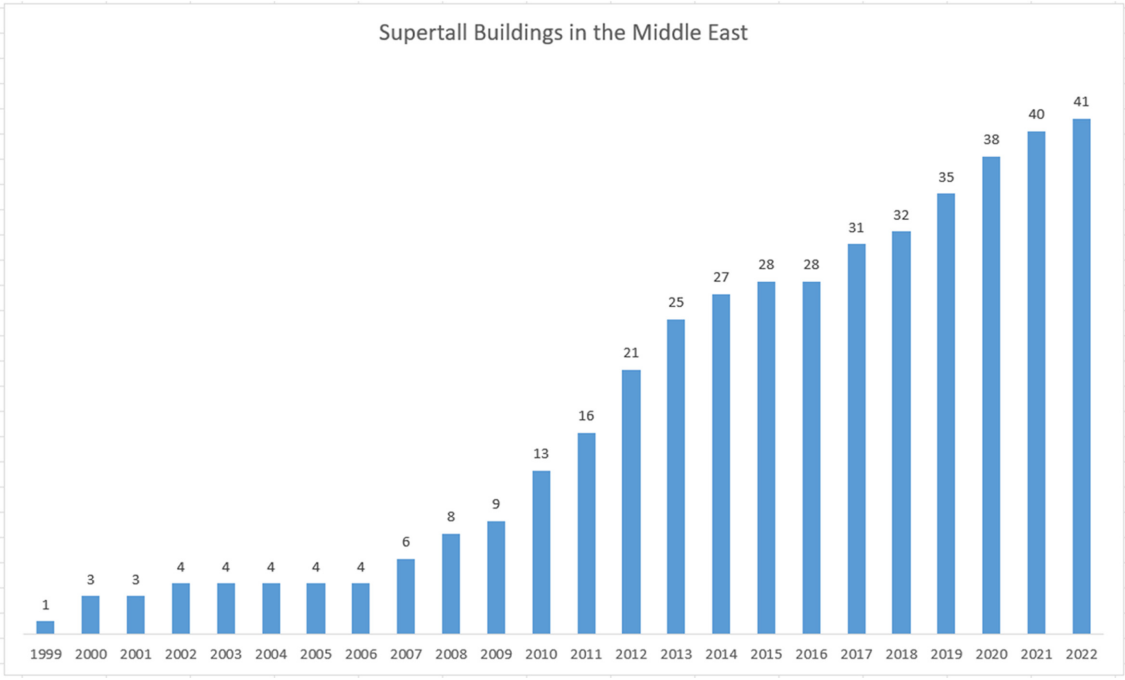



**Figure 5.** The growth of supertall buildings in the Middle East. (Source: CTBUH)

**Table 1.** Supertall and Megatall Buildings in the Middle East since 1970

| | 1970 | 1980 | 1990 | 2000 | 2010 | 2020 | 2024 |
|---|---|---|---|---|---|---|---|
| $300^{+}$ | 0 | 0 | 0 | 3 | 13 | 38 | 41 |
| $600^{+}$ | 0 | 0 | 0 | 0 | 1 | 2 | 2 |

the new century. Today, it has 19 skyscrapers, 8 greater than 200 meters.

The following Tables (2-8) detail the Middle East's journey in constructing tall buildings (of all categories) from inception in 1970 to the present. They provide a visual chronicle of the metamorphosis of prominent Middle Eastern cities over the last five decades and up to 2030, capturing their evolution from predominantly low-rise landscapes to dynamic high-rise hubs. Each table meticulously catalogs the ten tallest buildings per decade, offering a historical snapshot of the architectural transformations that have reshaped these urban centers. As the reader peruses these tables, a discernible pattern emerges—

**Table 2.** Middle East's Tallest Buildings in 1970

| # | Building Name | City | Height (m/ft) | | Floors | Completion |
|---|---|---|---|---|---|---|
| 1 | Shalom Meir Tower | Tel Aviv (IL) | 142 | 466 | 36 | 1965 |
| 2 | Tel Aviv Hilton | Tel Aviv (IL) | 61 | 200 | 17 | 1965 |

**Table 3.** Middle East's Ten Tallest Buildings in 1980

| # | Building Name | City | Height (m/ft) | | Floors | Completion |
|---|---|---|---|---|---|---|
| 1 | World Trade Center | Dubai (AE) | 149 | 489 | 39 | 1979 |
| 2 | Shalom Meir Tower | Tel Aviv (IL) | 142 | 466 | 36 | 1965 |
| 3 | Kapsad Development Housing | Tehran (IR) | 135 | 443 | 38 | 1978 |
| 4 | Deira Tower | Dubai (AE) | 135 | 443 | 29 | 1980 |
| 5 | Burj Rizk | Beirut (LB) | 106 | 348 | 26 | 1977 |
| 6 | Eshkol Tower | Haifa (IL) | 102 | 335 | 30 | 1978 |
| 7 | Europe-Israel Tower | Tel Aviv (IL) | 95 | 312 | 24 | 1979 |
| 8 | Apadana Tower II | Tehran (IR) | 92 | 302 | 26 | 1975 |
| 9 | Apadana Tower III | Tehran (IR) | 92 | 302 | 26 | 1975 |
| 10 | Azadi Grand Hotel | Tehran (IR) | 90 | 295 | 26 | 1978 |

a progressive escalation in building height that echoes the shifting skyline dynamics. The prevalence of low-rise structures in many Middle Eastern cities gradually yields a remarkable proliferation of towering skyscrapers. This transition is propelled by a confluence of factors, including rapid urban population growth, accumulating wealth, and the pervasive influence of globalization. The ensuing decades witnessed the ascent of increasingly significant high-rises, reflecting the changing physical contours of these cities and the socio-economic forces shaping their contemporary urban landscapes. Note that in 1970, the Middle East had only two buildings above 50 meters, the threshold to consider a building tall by the CTBUH database (Table 2).

Burj Binghatti Jacob & Co Residences in Dubai and Burj Almasa in Jeddah are under construction and expected to be completed according to the scheduled timeline.

## 3. Ten "Tallest Cities" in the Middle East

In scrutinizing the urban landscapes of the Middle East, the metric of "tallest cities," defined by the aggregate

**Table 4.** Middle East's Ten Tallest Buildings in 1990

| # | Building Name | City | Height (m/ft) | | Floors | Completion |
|---|---|---|---|---|---|---|
| 1 | World Trade Center | Dubai (AE) | 149 | 489 | 39 | 1979 |
| 2 | Shalom Meir Tower | Tel Aviv (IL) | 142 | 466 | 36 | 1965 |
| 3 | Marganit Tower | Tel Aviv (IL) | 138 | 453 | 17 | 1987 |
| 4 | Kapsad Development Housing | Tehran (IR) | 135 | 443 | 38 | 1978 |
| 5 | Deira Tower | Dubai (AE) | 135 | 443 | 29 | 1980 |
| 6 | National Commercial Bank | Jeddah (SA) | 126 | 413 | 27 | 1983 |
| 7 | Dizengoff Tower | Tel Aviv (IL) | 106 | 348 | 29 | 1985 |
| 8 | Burj Rizk | Beirut (LB) | 106 | 348 | 26 | 1977 |
| 9 | ARBIFT Tower | Dubai (AE) | 105 | 345 | 23 | 1982 |
| 10 | Eshkol Tower | Haifa (IL) | 102 | 335 | 30 | 1978 |

**Table 5.** Middle East's Ten Tallest Buildings in 2000

| # | Building Name | City | Height (m/ft) | | Floors | Completion |
|---|---|---|---|---|---|---|
| 1 | Emirates Tower One | Dubai (AE) | 355 | 1,165 | 54 | 2000 |
| 2 | Burj Al Arab | Dubai (AE) | 321 | 1,053 | 56 | 1999 |
| 3 | Emirates Tower Two | Dubai (AE) | 309 | 1,014 | 56 | 2000 |
| 4 | Al Faisaliah Center | Riyadh (SA) | 267 | 876 | 30 | 2000 |
| 5 | Azrieli Center Circular Tower | Tel Aviv (IL) | 187 | 614 | 49 | 1999 |
| 6 | Leonardo City Tower | Ramat Gan (IL) | 171 | 561 | 37 | 2000 |
| 7 | Azrieli Center Triangular Tower | Tel Aviv (IL) | 169 | 554 | 46 | 1999 |
| 8 | Baynunah Hilton Tower Hotel | Abu Dhabi (AE) | 165 | 541 | 42 | 1994 |
| 9 | Al Buhaira Insurance Tower | Sharjah (AE) | 162 | 532 | 37 | 2000 |
| 10 | Etisalat Headquarters | Abu Dhabi (AE) | 160 | 525 | 27 | 2000 |

**Table 6.** Middle East's Ten Tallest Buildings in 2010

| # | Building Name | City | Height (m/ft) | | Floors | Completion |
|---|---|---|---|---|---|---|
| 1 | Burj Khalifa | Dubai (AE) | 828 | 2,717 | 163 | 2010 |
| 2 | Almas Tower | Dubai (AE) | 360 | 1,181 | 68 | 2008 |
| 3 | Emirates Tower One | Dubai (AE) | 355 | 1,165 | 54 | 2000 |
| 4 | Rose Rayhaan by Rotana | Dubai (AE) | 333 | 1,093 | 71 | 2007 |
| 5 | The Index | Dubai (AE) | 326 | 1,070 | 80 | 2010 |
| 6 | Burj Al Arab | Dubai (AE) | 321 | 1,053 | 56 | 1999 |
| 7 | Blue Tower | Dubai (AE) | 318 | 1,043 | 72 | 2010 |
| 8 | Ocean Heights | Dubai (AE) | 310 | 1,017 | 83 | 2010 |
| 9 | Emirates Tower Two | Dubai (AE) | 309 | 1,013 | 56 | 2000 |
| 10 | Kingdom Centre | Riyadh (SA) | 302 | 991 | 41 | 2002 |

**Table 7.** Middle East's Ten Tallest Buildings in 2020

| # | Building Name | City | Height (m/ft) | | Floors | Completion |
|---|---|---|---|---|---|---|
| 1 | Burj Khalifa | Dubai (AE) | 828 | 2,717 | 163 | 2010 |
| 2 | Makkah Royal Clock Tower | Mecca (SA) | 601 | 1,972 | 120 | 2012 |
| 3 | Marina 101 | Dubai (AE) | 445 | 1,460 | 104 | 2019 |
| 4 | Princess Tower | Dubai (AE) | 413 | 1,356 | 101 | 2012 |
| 5 | Al Hamra Tower | Kuwait City (KW) | 413 | 1,354 | 80 | 2011 |
| 6 | 23 Marina | Dubai (AE) | 392 | 1,287 | 88 | 2012 |
| 7 | Burj Mohammed Bin Rashid | Abu Dhabi (AE) | 381 | 1,250 | 88 | 2014 |
| 8 | Elite Residence | Dubai (AE) | 380 | 1,247 | 87 | 2012 |
| 9 | The Address Boulevard | Dubai (AE) | 370 | 1,214 | 73 | 2017 |
| 10 | Almas Tower | Dubai (AE) | 360 | 1,181 | 68 | 2008 |

**Table 8.** Middle East's Ten Tallest Buildings in 2030

| # | Building Name | City | Height (m/ft) | | Floors | Completion |
|---|---|---|---|---|---|---|
| 1 | Burj Khalifa | Dubai (AE) | 828 | 2,717 | 163 | 2010 |
| 2 | Makkah Royal Clock Tower | Mecca (SA) | 601 | 1,972 | 120 | 2012 |
| 3 | Burj Binghatti Jacob & Co Residences | Dubai (AE) | 595 | 1952 | 105 | 2026 |
| 4 | Burj Almasa | Jeddah (SA) | 432 | 1417 | 93 | 2027 |
| 5 | Marina 101 | Dubai (AE) | 445 | 1,460 | 104 | 2019 |
| 6 | Princess Tower | Dubai (AE) | 413 | 1,356 | 101 | 2012 |
| 7 | Al Hamra Tower | Kuwait City (KW) | 413 | 1,354 | 80 | 2011 |
| 8 | 23 Marina | Dubai (AE) | 392 | 1,287 | 88 | 2012 |
| 9 | PIF Tower | Riyadh (SA) | 385 | 1263 | 72 | 2021 |
| 10 | Burj Mohammed Bin Rashid | Abu Dhabi (AE) | 381 | 1,250 | 88 | 2014 |

**Table 9.** Ten Tallest Cities in the Middle East

| City | Country | Ranking in the Middle East | Ranking in the Country | Ranking in the World | Number of Buildings | | |
|---|---|---|---|---|---|---|---|
| | | | | | 150 $m^+$ | 200 $m^+$ | 300 $m^+$ |
| Dubai | UAE | #1 | #1 | #4 | 263 | 127 | 31 |
| Doha | Qatar | #2 | #1 | #35 | 52 | 30 | 3 |
| Abu Dhabi | UAE | #3 | #2 | #38 | 44 | 23 | 4 |
| Sharjah | UAE | #4 | #3 | #59 | 25 | 5 | 0 |
| Riyadh | Saudi Arabia | #5 | #1 | #61 | 27 | 15 | 4 |
| Manama | Bahrain | #6 | #1 | #70 | 19 | 8 | 0 |
| Tel Aviv | Israel | #7 | #1 | #75 | 21 | 1 | 0 |
| Kuwait | Kuwait | #8 | #1 | #79 | 18 | 10 | 4 |
| Mecca | Saudi Arabia | #9 | #2 | #130 | 7 | 7 | 1 |
| Jeddah | Saudi Arabia | #10 | #2 | #130 | 7 | 3 | 0 |

building height surpassing 150 meters, becomes a focal point. This section provides a comprehensive overview of the ten tallest cities in the Middle East, presented in descending ranking order based on their cumulative building height. Each city's skyline, marked by structures reaching the impressive threshold of 150 meters or more, contributes to the visual narrative of the region's architectural prowess. From the soaring heights of iconic skyscrapers to the collective urban silhouette, these cities stand as testaments to the Middle East's commitment to vertical development and its position as a global hub for innovative and ambitious architecture. The subsequent exploration unveils each city's distinctive features and towering achievements, offering insights into the dynamic interplay of economic, cultural, and technological factors that shape the region's urban identity. Table 9 provides a brief account of the ten tallest cities in the Middle East presented in descending ranking order. Also, see Appendix B to learn about their areas, population, and densities.

### 3.1. Dubai, UAE

Dubai stands as a global epitome of swift and ambitious tall building development, orchestrating a remarkable transformation of its skyline in recent decades. The city has firmly established itself as a pioneering hub of architectural innovation, propelled by iconic structures that have become synonymous with its identity. The Burj Khalifa, the crown jewel of Dubai, reigns as the world's tallest building, a towering testament to the city's audacious vision and engineering prowess. Additionally, the Burj Al Arab, an architectural marvel and symbol of luxury, further accentuates Dubai's commitment to pushing boundaries in design and hospitality. This dedication to architectural excellence is intrinsically linked to Dubai's global stature as a thriving business and tourism hub (Bolleter, 2015). The city's unwavering pursuit of tall buildings extends beyond individual landmarks, with a plethora of mixed-use developments, residential towers, and commercial spaces weaving a narrative of dynamism into Dubai's urban fabric, reinforcing its reputation as a beacon of modernity and innovation (Table 10).

### 3.2. Doha, Qatar

Doha, the vibrant capital of Qatar, has emerged as a focal point for substantial tall building construction, with recent years witnessing a remarkable surge in architectural development. The cityscape is now adorned with modern marvels, notably the Aspire Tower and the Tornado Tower, each contributing to the evolving skyline. Doha's growth in tall buildings is intricately tied to the nation's broader economic diversification initiatives. As a strategic move to diversify its economy, the city has positioned itself on the global stage, hosting prestigious events like the FIFA World Cup 2022. This international spotlight has catalyzed extensive infrastructure development, leading to tall buildings that accommodate the expanding population and elevate Doha's global standing (Azzali, 2017). The city's skyline, characterized by these architectural achievements, mirrors Doha's commitment to blending modernity with tradition and showcases its ambitions as a dynamic metropolis on the world map (Table 11).

### 3.3. Abu Dhabi, UAE

As the distinguished capital of the United Arab Emirates, Abu Dhabi is a testament to substantial urban development, notably characterized by the proliferation of tall buildings across its skyline. The city's commitment to modern architecture and sustainable design is vividly reflected in iconic structures such as the Etihad Towers and the Capital Gate, which have become symbolic representations of Abu Dhabi's architectural ambition. This commitment is intricately intertwined with the broader goals of economic

**Table 10.** Ten Tallest Buildings in Dubai, UAE

| # | Name | Status | Height |
|---|---|---|---|
| 1 | Burj Khalifa | Completed | 828 m / 2,717 ft |
| 2 | Burj Binghatti Jacob & Co Residences | Under Construction | 595 m / 1,952 ft |
| 3 | Marina 101 | Completed | 425 m / 1,394 ft |
| 4 | Princess Tower | Completed | 413.4 m / 1,356 ft |
| 5 | 23 Marina | Completed | 392.4 m / 1,287 ft |
| 6 | Elite Residence | Completed | 380.5 m / 1,248 ft |
| 7 | The Address Boulevard | Completed | 370 m / 1,214 ft |
| 8 | Ciel Tower | Architecturally Topped Out | 365.5 m / 1,199 ft |
| 9 | Almas Tower | Completed | 360 m / 1,181 ft |
| 10 | City Tower 1 | Under Construction | 358 m / 1,175 ft |

**Table 11.** Ten Tallest Buildings in Doha, Qatar

| # | Name | Status | Height |
|---|---|---|---|
| 1 | Lusail Plaza Tower 3 | Completed | 300.7 m / 986 ft |
| 2 | Lusail Plaza Tower 4 | Completed | 300.7 m / 986 ft |
| 3 | Aspire Tower | Completed | 300 m / 984 ft |
| 4 | Kempinski Residences and Suites | Completed | 253.3 m / 831 ft |
| 5 | Burj Al Mana | Completed | 247.4 m / 812 ft |
| 6 | Palm Tower 1 | Completed | 244.5 m / 802 ft |
| 7 | Palm Tower 2 | Completed | 244.5 m / 802 ft |
| 8 | World Trade Center Doha | Completed | 241.1 m / 791 ft |
| 9 | Doha Tower | Completed | 238.1 m / 781 ft |
| 10 | Aleph Doha Residences | Completed | 230 m / 755 ft |

diversification, cultural enrichment, and tourism expansion pursued by the Emirate (Hashim, 2018). Abu Dhabi's strategic focus on diversifying its economy, fostering cultural development, and enhancing its allure as a global tourism destination has catalyzed these impressive tall structures. Adorned with these architectural marvels, the city's skyline is a visual testament to Abu Dhabi's multifaceted growth and role as a dynamic global hub (Table 12).

### 3.4. Sharjah, UAE

Despite not garnering the same international spotlight as its neighboring cities, Sharjah has made significant strides in tall building development, particularly within its central areas. The city's skyline now boasts diverse structures, including residential towers, commercial spaces, and cultural landmarks, showcasing its commitment to multifaceted urbanization. Sharjah's emphasis on cultural initiatives and economic development has played a pivotal role in catalyzing the construction of tall buildings. As the emirate actively fosters cultural growth and expands its economic footprint, these vertical endeavors have transformed the landscape of Sharjah (Mushtaha et al., 2018). The increasing number of tall buildings is a tangible testament to Sharjah's dedication to economic progress and the cultural enrichment of its residents, contributing to the emirate's evolving identity within the broader context of the United Arab Emirates (Table 13).

### 3.5. Riyadh, Saudi Arabia

Riyadh, the bustling capital of Saudi Arabia, stands at the forefront of a transformative urban landscape, marked by a notable surge in tall building construction aligned with the visionary goals of the country's Vision 2030 initiative. The King Abdullah Financial District, a symbolic hub of economic activity, proudly showcases a collection of imposing skyscrapers that symbolize the city's commitment to modernity and progress. Ongoing projects promise to add further splendor to Riyadh's skyline, aspiring to reach unprecedented heights. The city's urban development unfolds as a strategic response to the broader objectives of economic diversification, ushering in social reforms and positioning Riyadh as a key player in finance and culture within the region (Mubarak, 2004). These towering structures epitomize Riyadh's ascent as a modern metropolis, each skyscraper adding a new dimension to the city's narrative of growth and ambition (Table 14).

### 3.6. Manama, Bahrain

Bahrain's capital, Manama, emerges as a dynamic

**Table 12.** Ten Tallest Buildings in Abu Dhabi, UAE

| # | Name | Status | Height |
|---|---|---|---|
| 1 | Burj Mohammed Bin Rashid | Completed | 381.2 m / 1,251 ft |
| 2 | ADNOC Headquarters | Completed | 342 m / 1,122 ft |
| 3 | The Landmark | Completed | 324 m / 1,063 ft |
| 4 | Etihad Towers T2 | Completed | 305.3 m / 1,002 ft |
| 5 | Sky Tower | Completed | 292.2 m / 959 ft |
| 6 | City of Lights C1 Tower | Completed | 282.1 m / 926 ft |
| 7 | Etihad Towers T1 | Completed | 277.6 m / 911 ft |
| 8 | World Trade Center Abu Dhabi - The Offices | Completed | 276.6 m / 907 ft |
| 9 | Nation Towers Residential Lofts | Completed | 268 m / 879 ft |
| 10 | Etihad Towers T3 | Completed | 260.3 m / 854 ft |

**Table 13.** Ten Tallest Buildings in Sharjah, UAE

| # | Name | Status | Height |
|---|---|---|---|
| 1 | Nestle Plaza | Completed | 225 m / 738 ft |
| 2 | Sharjah Gate Tower | Completed | 223.6 m / 734 ft |
| 3 | Palm Tower 1 | Completed | 223 m / 732 ft |
| 4 | Sarh Al Emarat Tower | Completed | 215 m / 705 ft |
| 5 | Majestic Tower | Completed | 207 m / 679 ft |
| 6 | Malak Tower | Completed | 196 m / 643 ft |
| 7 | Bukkhamseen Tower | Completed | 192 m / 630 ft |
| 8 | The Gate Tower | Completed | 191 m / 627 ft |
| 9 | Majestic Tower | Completed | 190.8 m / 626 ft |
| 10 | Abbco Tower | Completed | 190 m / 623 ft |

cityscape, marked by significant strides in tall building development, with the Bahrain Financial Harbour area standing as a testament to the city's modern transformation. The skyline is adorned with architectural landmarks such as the World Trade Center Bahrain and the ambitious Bahrain Bay development, showcasing the city's dedication to contemporary urban aesthetics and economic progress. Manama's strategic emphasis on economic diversification and tourism initiatives has played a pivotal role in fostering the construction of high-rise structures. These iconic buildings symbolize the city's commitment to modernization and underscore Bahrain's evolving role on the global stage (Elwazani & Lerma, 2006). As Manama continues redefining its urban identity, each skyscraper embodies the city's economic aspirations and drive to position itself as a vibrant hub in the Gulf region (Table 15).

### 3.7. Tel Aviv, Israel

Tel Aviv, renowned as the "White City" for its iconic Bauhaus architecture, has witnessed a notable surge in tall building construction in response to its evolving urban landscape. The city's skyline now showcases an array of residential towers, commercial spaces, and luxury developments, reflecting Tel Aviv's commitment to modernity. Tel Aviv's accelerated growth is intricately linked to its role as a flourishing technology hub, attracting substantial local and international investment. The demand for state-of-the-art and high-rise structures mirrors the city's dynamic socioeconomic landscape, where innovation and technological advancements drive the need for contemporary urban living and workspaces (Amit-Cohen, 2005). Each tall building in Tel Aviv symbolizes the city's resilience and adaptability, representing its position as a global tech hub and a vibrant center for modern urban living (Table 16).

### 3.8. Kuwait City, Kuwait

Kuwait City has emerged as a hub for tall building development, emphasizing mixed-use projects and commercial spaces. The city's skyline proudly features prominent towers, with the Al Hamra Tower being a notable example of architectural excellence. Kuwait's strategic focus on economic diversification and urban development has been a driving force behind the construction of these high-rise structures. The commitment to creating a multifaceted urban environment is reflected in incorporating mixed-use elements and addressing residential and business requirements. Kuwait City's skyline, with its sleek and modern high-rises, mirrors the city's aspirations for a diversified and dynamic economy, underlining its role as a critical player in the region's urbanization and economic growth (Alastal & Shaqfa, 2022). Each tall building contributes to Kuwait City's evolving urban identity narrative, blending

**Table 14.** Ten Tallest Buildings in Riyadh, Saudi Arabia

| # | Name | Status | Height |
|---|---|---|---|
| 1 | PIF Tower | Completed | 385 m / 1,263 ft |
| 2 | Burj Rafal | Completed | 307.9 m / 1,010 ft |
| 3 | KAFD World Trade Center | Completed | 304 m / 997 ft |
| 4 | Kingdom Centre | Completed | 302.3 m / 992 ft |
| 5 | Al Faisaliah Center | Completed | 266.9 m / 876 ft |
| 6 | Riyad Bank Tower | Completed | 264 m / 866 ft |
| 7 | Tamkeen Tower | Completed | 258.2 m / 847 ft |
| 8 | Al Majdoul Tower | Completed | 244 m / 801 ft |
| 9 | Samba Bank HQ Tower | Completed | 231.2 m / 758 ft |
| 10 | Al Rajhi Bank Tower | Completed | 205 m / 673 ft |

**Table 15.** Ten Tallest Buildings in Manama, Bahrain

| # | Name | Status | Height |
|---|---|---|---|
| 1 | Four Seasons Hotel | Completed | 269.7 m / 885 ft |
| 2 | Dual Towers 1 | Completed | 260 m / 853 ft |
| 3 | Dual Towers 2 | Completed | 260 m / 853 ft |
| 4 | Golden Gate Tower B | Under Construction | 245 m / 804 ft |
| 5 | Bahrain World Trade Center 1 | Completed | 240 m / 787 ft |
| 6 | Bahrain World Trade Center 2 | Completed | 240 m / 787 ft |
| 7 | Al Tijaria Tower | Completed | 230 m / 755 ft |
| 8 | Harbour Heights Tower A | Completed | 220 m / 722 ft |
| 9 | Harbour Heights Tower C | Completed | 210 m / 689 ft |
| 10 | United Tower | Completed | 189.2 m / 621 ft |

**Table 16.** Ten Tallest Buildings in Tel Aviv, Israel

| # | Name | Status | Height |
|---|---|---|---|
| 1 | Azrieli Spiral Tower | Under Construction | 323 m / 1,060 ft |
| 2 | ToHa Tower 2 | Under Construction | 298.2 m / 978 ft |
| 3 | Azrieli Sarona Tower | Completed | 238.4 m / 782 ft |
| 4 | Landmark TLV Tower 1 | Architecturally Topped Out | 205 m / 673 ft |
| 5 | Landmark TLV Tower 2 | Architecturally Topped Out | 205 m / 673 ft |
| 6 | Midtown Office Tower | Completed | 196 m / 643 ft |
| 7 | Azrieli Center Circular Tower | Completed | 187 m / 614 ft |
| 8 | MIDTOWN Tel-Aviv- Residential Tower | Completed | 183 m / 600 ft |
| 9 | Nimrodi Tower | Under Construction | 180 m / 591 ft |
| 10 | Rom Tower | Completed | 173.1 m / 568 ft |

**Table 17.** Ten Tallest Buildings in Kuwait City, Kuwait

| # | Name | Status | Height |
|---|---|---|---|
| 1 | Al Hamra Tower | Completed | 412.6 m / 1,354 ft |
| 2 | The Assima Tower | Completed | 301.6 m / 990 ft |
| 3 | NBK Tower | Completed | 300 m / 984 ft |
| 4 | Arraya Tower | Completed | 300 m / 984 ft |
| 5 | Kipco Tower | Completed | 240 m / 787 ft |
| 6 | Crystal Tower | Completed | 240 m / 787 ft |
| 7 | The Central Bank of Kuwait New Headquarters Building | Completed | 238.5 m / 782 ft |
| 8 | Kuwait Investment Authority Headquarters | Completed | 231 m / 758 ft |
| 9 | Al Tijaria Tower | Completed | 218.2 m / 716 ft |
| 10 | Burj Alshaya West Tower | Completed | 205 m / 673 ft |

functionality with a distinctive architectural landscape (Table 17).

### 3.9. Mecca, Saudi Arabia

Mecca, a city revered for its profound religious significance, has undergone significant development in tall buildings, driven primarily by the need to accommodate the millions of pilgrims annually for religious rituals. The iconic Abraj Al Bait Towers dominate Mecca's skyline, with the prominent Clock Tower symbolizing the region's religious tourism and hospitality development. These towering structures are pivotal in providing accommodations, services, and facilities to the influx of pilgrims during the annual Hajj pilgrimage and Umrah. The Abraj Al Bait Towers, in addition to their functional role, contribute to the visual identity of Mecca's skyline, blending modernity with the city's historical and spiritual significance (Al-Hazmi, 2009). Mecca's commitment to enhancing its infrastructure and hospitality services aligns with its role as a focal point for Islamic pilgrimage, showcasing a harmonious integration of tradition, modern architecture, and religious devotion (Table 18).

**Table 18.** Ten Tallest Buildings in Mecca, Saudi Arabia

| # | Name | Status | Height |
|---|---|---|---|
| 1 | Makkah Royal Clock Tower | Completed | 601 m / 1,972 ft |
| 2 | Abraj Al Bait ZamZam Tower | Completed | 279 m / 915 ft |
| 3 | Abraj Al Bait Hajar Tower | Completed | 276 m / 906 ft |
| 4 | Abraj Al Bait Maqam Tower | Completed | 232.4 m / 762 ft |
| 5 | Abraj Al Bait Qibla Tower | Completed | 232.4 m / 762 ft |
| 6 | Abraj Al Bait Marwah Tower | Completed | 232 m / 761 ft |
| 7 | Abraj Al Bait Safa Tower | Completed | 232 m / 761 ft |
| 8 | Jabal Omar Hotel Tower 1 | Completed | 152 m / 499 ft |
| 9 | Jabal Omar Hotel Tower 2 | Architecturally Topped Out | 152 m / 499 ft |
| 10 | Makkah Royal Clock Tower | Architecturally Topped Out | 601 m / 1,972 ft |

### 3.10. Jeddah

Jeddah, a city at the forefront of Saudi Arabia's commitment to modernization, has experienced substantial urban development marked by a dedicated focus on tall buildings. Upon completion, the highly anticipated Jeddah Tower is poised to claim the world's tallest building title, embodying the city's ambitious approach to architectural excellence and vertical growth. Jeddah's waterfront and central business district serve as vibrant canvases for a mix of residential and commercial towers, shaping the city's skyline and contributing to its identity as a dynamic economic and cultural hub (Mandeli, 2008). The development of tall buildings in Jeddah is not merely a reflection of urban progress but also a testament to the city's aspirations to position itself prominently on the global stage, showcasing a harmonious blend of modernity, economic vitality, and cultural richness (Table 19).

## 4. Dubai: Case Study

### 4.1. Background

Dubai is one of the seven emirates that comprise the United Arab Emirates (UAE), bordered by Saudi Arabia, Oman, and Qatar in Western Asia or the Middle East. Beginning in the 1990s, Dubai was a reasonably small town with approximately 9 $km^2$ of land (3.5 $mi^2$). Since then, Dubai has expanded to encompass more than ten times its previous area and is now home to some of the world's most magnificent structures (İşcen, 2021). Dubai placed a premium on constructing an urban landscape with world-famous landmarks like skyscrapers, malls, hotels, and other tourist attractions (Ali, 2010). Dubai's expansion has been divided into four distinct phases: 1) Slow, from 1900 to 1955, in which the city grew gradually; 2) Compact, from 1956 to 1970, when a master plan that included road systems and significant harbors, such as Jebel Ali harbor, was implemented; 3) Suburban, from 1971 to 1980, when an ambitious plan allowed for radial street networks and ring roads around the city, connecting to suburbs, and the construction of the Shindagha Tunnel; and 4) Rapid, a new blueprint for Dubai's economic and urban growth, known as the Strategic Plan 1993-2012. This Plan paved the way for creating the 2015 Dubai Strategic Plan, spurred by the country's visionary leadership, high-quality infrastructure development, absence of personal and corporate income tax, and welcoming, cosmopolitan atmosphere for newcomers (Bolleter, 2009; 2015).

### 4.2. Why Examine Dubai?

Among all Middle Eastern cities, Dubai has been the most conspicuous "instant" skyscraper city. Dubai is the tallest city in the Middle East, the tallest city in the UAE,

**Table 19.** Ten Tallest Buildings in Jeddah, Saudi Arabia

| # | Name | Status | Height |
|---|---|---|---|
| 1 | Burj Almasa | Under Construction | 432 m / 1,417ft |
| 2 | Sumo Tower 1 | Under Construction | 322 m / 1,056ft |
| 3 | Sumo Tower 2 | Under Construction | 293 m / 961 ft |
| 4 | Burj Assila / Shangri-La Hotel & Residences Jeddah | Completed | 264.7 m / 868 ft |
| 5 | Aqua Tower | Architecturally Topped Out | 251 m / 823 ft |
| 6 | The Headquarters Business Park | Completed | 235.9 m / 774 ft |
| 7 | Golden Tower | Completed | 205 m / 673 ft |
| 8 | Al Jawhara Tower | Completed | 187 m / 614 ft |
| 9 | Beach Tower | Completed | 177 m / 581 ft |
| 10 | King's Road Tower | Completed | 170 m / 558 ft |

**Table 20.** Dubai ranks among the top cities with the greatest numbers of 200 $m^+$ and 300 $m^+$ buildings

| # | City | 200 $m^+$ Buildings | City | 300 $m^+$ Buildings |
|---|---|---|---|---|
| 1 | Dubai, UAE | 65 | Dubai | 18 |
| 2 | Hong Kong, China | 63 | Guangzhou | 8 |
| 3 | New York City, USA | 63 | New York City | 7 |
| 4 | Shanghai, China | 48 | Chicago | 6 |
| 5 | Shenzhen, China | 48 | Hong Kong | 6 |
| 6 | Chongqing, China | 33 | Moscow | 5 |
| 7 | Singapore, Singapore | 30 | Shenzhen | 5 |
| 8 | Jakarta, Indonesia | 28 | Abu Dhabi | 4 |
| 9 | Chicago, USA | 27 | Shanghai | 4 |
| 10 | Guangzhou, China | 27 | Kuala Lumpur | 3 |

**Table 21.** Tallest Buildings in Dubai

| Rank | Name | Completion | Height (m) |
|---|---|---|---|
| 1 | Burj Khalifa | 2010 | 828 |
| 2 | Marina 101 | 2017 | 425 |
| 3 | Princess Tower | 2012 | 413 |
| 4 | 23 Marina | 2012 | 392 |
| 5 | Elite Residence | 2012 | 381 |
| 6 | The Address Boulevard | 2017 | 370 |
| 7 | Almas Tower | 2008 | 360 |
| 8 | Gevora Hotel | 2017 | 356 |
| 9 | JW Marriott Marquis Hotel Dubai Tower 2 | 2013 | 355 |
| 10 | JW Marriott Marquis Hotel Dubai Tower 1 | 2012 | 355 |

**Table 22.** Supertalls and GaWC/GNC Rankings. (Source: Adapted from Barr, 2022)

| City | Building | Year Completed | Height (m) | Status | GaWC Rank in 2010 | GaWC Rank in 2020 |
|---|---|---|---|---|---|---|
| Dubai | Burj Khalifa | 2010 | 828 | Current World's Tallest | 7 | 7 |
| Shanghai | Shanghai Tower | 2015 | 632 | World's Tallest in East Asia from 2014-2022 | 7 | 5 |
| Taipei | Taipei 101 | 2004 | 508 | World's Tallest from 2004-2010 | 43 | 37 |
| St. Petersburg | Lakhta Center | 2019 | 462 | Tallest in Europe | 142 | 127 |
| Kuala Lumpur | Petronas Towers | 1998 | 452 | World's Tallest from 1998-2004 | 23 | 19 |

and the fourth tallest city in the world (CTBUH). Seven of the ten tallest buildings in the Middle East are in Dubai, and 28 of the 41 supertalls in the Middle East are in Dubai. In addition, Dubai has the most significant number of 200 $m^+$ buildings in the Middle East. Therefore, Dubai not only champions building skyscrapers in the Middle East, but it is also a leading skyscraper city worldwide. It ranks among the top cities in building skyscrapers of all categories, including 200 $m^+$ and 300 $m^+$ (Table 20). It also built among the world's tallest buildings (Table 21). It has constructed the "world's tallest block" (Figure 6) that contains some of the tallest residential towers, including Princess Tower (413 m/1,356 ft); 23 Marina (393 m/1,289 ft); and Elite Residence (381 m/1,250 ft).

Dubai was known as a modest pearl trade village yet has evolved quickly from a little town into a flourishing, internationally renowned metropolis. It is multicultural cosmopolitan and ranks alpha+ cities by GaWC (Globalization and World Cities Research Network). The GaWC ranks for Dubai were 7 in 2010 and 7 in 2020 (Table 22).

Today, Dubai is a modern city with glittering skyscrapers, unique transportation systems, and rich tourism and commerce that generate decent incomes (Figure 7). Dubai is renowned as a shopping destination with a predominance of designer and luxury stores. The Mall of the Emirates in Dubai is a sparkling megamall with hundreds of high-end retailers, restaurants, hotels, theaters, and even a ski resort. Like other major Gulf cities, Dubai is home to substantial expat communities, which has influenced the city's diversity, from the cuisine to the architecture, and made it among the most Westernized cities in the Middle East (Smith, 2007; Wood, 2023).

### 4.3. Examples of Dubai's Distinctive Skyscrapers

#### *4.3.1. Burj Al Arab*

In 1993, the Sheikh Ruler of Dubai gave the British architectural company Atkins the mandate to construct a skyscraper to symbolize Dubai and the United Arab Emirates. Under the direction of the architect Tom Wright, Atkins built a cutting-edge structure to seem like the billowing sail of a traditional Arab dhow, a type of yacht. The tower takes on a shape that recalls the sail of a vernacular dhow. The tower's design features two V-shaped wings that form a massive mast. They are separated by an enormous atrium, among the highest in the world at 180 meters (590 feet). The building uses Teflon-coated fiberglass and Dyneon coated with DuPont Teflon to withstand the desert's sand, heat, and wind. This lavish hotel on Dubai's Jumeirah Beach is one of the city's first and most iconic structures (Figure 8). The tower rises to 321 meters (1,053 feet) and comprises 60 stories. It is located on an artificial island in the water of the Persian Gulf and is connected to the mainland by a private bridge. Once completed in 1999, it brought international attention to Dubai (Elmasry, 2018; Elsheshtaw, 2009; Yurievich, 2017).



**Figure 6.** World's tallest residential block in Dubai. (Photo by author)

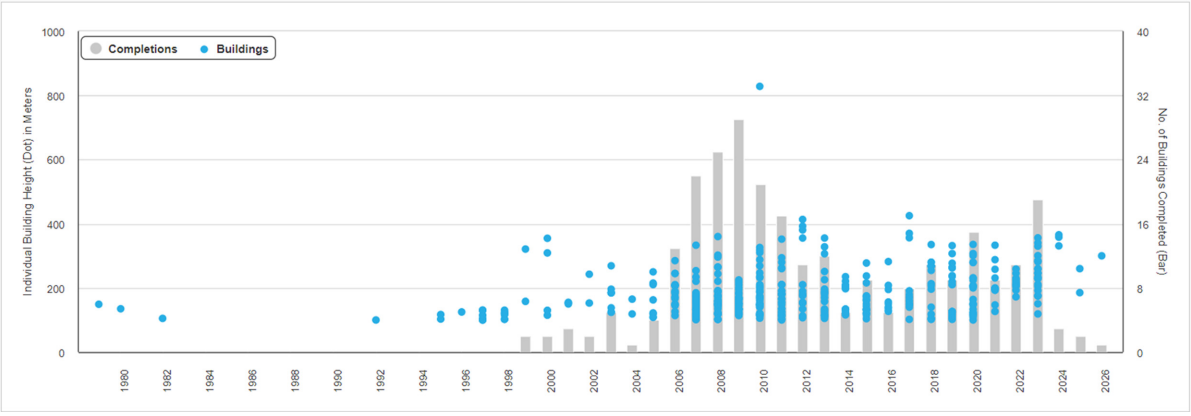



**Figure 7.** Building Completions Timeline in Dubai. (Source: CTBUH)

Lepik (2008) explains that the building's all-too-obvious symbology placed it very much in the 'theme architecture' of Las Vegas. In contrast to the high-tech façade, the building's interior is a stunning mash-up of Eastern and Western architectural luxury, decorated with 22-carat gold leaf and 30 varieties of pricey marble. Throughout the interior of the building are pointed arch shapes reminiscent of Islamic architecture, and a fountain in the lobby resembles a three-dimensional Islamic star pattern (Haggag, 2007).

*4.3.2. Burj Khalifa*

Led by architect Adrian Smith and structural engineer Bill Baker, SOM designed Burj Khalifa, the world's tallest structure (Figure 9). It has 163 stories and a height of 828 meters (2,717 feet). The project began in 2004 under the original name "Burj Dubai," and it was completed in 2010 with a new name "Burj Khalifa." Because of the world financial crisis, Dubai borrowed money from Abu Dhabi to finish the project. As a result, the tower's name was changed to recognize the UAE's monarch for contributing to the building's construction. The government's goal of attracting international attention and foreign investment inspired the tower's development. The tower is intended to be the focal point of a massive mixed-use development



**Figure 8.** Burj Al Arab in Dubai. It uses an innovative high-tech structural system to resemble the billowing sail of an Arabian dhow, honoring local history, culture, and heritage. (Photo by author).



**Figure 9.** Burj Khalifa in Dubai. Rising 828 meters, it is the world's tallest building. (Photo by author)

that would also feature 30,000 houses, nine hotels, 19 residential towers, Dubai Mall, 3 hectares (7.5 acres) of parkland, and a 12-ha (30-acre) artificial Burj Khalifa Lake. As one of the world's largest malls, Dubai Mall contains more than 1,200 retail establishments, including major department stores, over 200 international eating options, and various entertainment and leisure activities for families to enjoy (Reisz, 2020; Rizvi, 2017).

The tower design, comprising three pieces grouped around a central core, was based on an abstraction of the indigenous Hymenocallis flower. If viewed from above, it is congruent with the onion-dome style typically found in various Islamic buildings. The external cladding system, devised to withstand Dubai's extreme summer, consists of aluminum, reflective glazing, and textured stainless steel spandrel panels with vertical fins (Smith, 2007). A thriving center of food and entertainment can be found around the base of the impressive tower. It includes Dubai Mall, the musically choreographed Dubai Fountain, and several other tourist attractions (Figures 10, 11 & 12). This spectacular building has attracted international and local visitors since its opening in 2010.

## 5. Factors Contributing to Spikes in Skyscraper Construction

The rise of skyscrapers is affected by many different aspects of globalization, both material and immaterial. Globalization has made people more open to "outside" influences, notably Western culture. Wealth creation, the public display of skyscrapers as symbols of success,



**Figure 10.** Dubai Mall, Dubai, UAE. It is one of the world's largest malls. The Western culture presence is found in many stores, such as Galeries Lafayette (one of Paris's most well-known, stylish, and prestigious shopping districts) and Bloomingdale's (an American chain of upscale department stores). (Photo by author)

international tourism, and political perspectives that view skyscrapers as a means of promoting locations are among the prominent factors that promote vertical developments. Dubai wants to erect the tallest buildings to appear progressive and dynamic and lure international investors, talents, and the workforce. Burj Khalifa, the world's highest tower (in Arabic, "Burj" means "tower"), is a symbol of Dubai's ambition and aspiration to become a global city (Baker et al., 2007).

### 5.1. Prospects on a Global Scale, with an Eye on the Economy

Dubai lured multinational enterprises, which have increased demand for high-quality real estate. A few



**Figure 11.** The Aquarium and Discovery Center. Situated on the ground floor of Dubai Mall, it is one of the world's largest aquariums, offering visitors an exhilarating experience. (Photo by author)



**Figure 11.** Continued.



**Figure 12:** The Dubai Fountain is the tallest performing fountain in the world and is located near Burj Khalifa. As moving water dances, music of various cultures is played at designated intervals, attracting masses. (Photo by author)

decades ago, Sheikh Maktoum bin Rashid Al-Maktoum, Dubai's former ruler, discovered that Dubai had a limited supply of oil and gas deposits. This realization fueled Dubai's aspirations to become a global trade hub. Efforts in this direction date back a few decades. Today, oil is not the only thing driving Dubai's economy, and the city's non-oil GDP currently accounts for more than 92 percent of the overall GDP and continues to expand. Indeed, the city's GDP from sources other than oil is growing (Al-Kodmany and Ali, 2013).

Abnormally high demand for real estate has been brought about in Dubai due to commercial activity, the liberalization of the market, and the acknowledgment of the legality of foreign ownership of property (Bradley et al., 2002). Property prices rose due to greater competition for available space and the concentration of socio-economic activities. The land cost has always been one of the primary motivating factors behind the construction of skyscrapers. Cass Gilbert endorsed this viewpoint, explaining that a skyscraper is a piece of machinery that ensures the profitability of land (Willis, 1995, p.63). Therefore, vertical development in Dubai was made possible due to the increased demand for real estate caused by international investors. Multinational firms have been responsible for the construction of hundreds of manufacturing sites around the world. As a result of these activities, there is now a demand for real estate in strategic areas, which has led to an increase in property values and vertical expansion.

### 5.2. Place Identity and Urban Symbols

Attracting attention has always been the primary tactic in advertising to promote a brand and sell a product. Urban symbolism can be easily created through the utilization of iconic skyscrapers. Landmark structures serve as urban emblems in Dubai to highlight the city's characteristics. For instance, Burj Al Arab Hotel in Dubai's façade provides a dramatic profile of the dhow, a classic Arab sailing vessel, which accurately represents Dubai's long-standing fishing culture and draws attention to the city's lovely beach. These landmarks, created by renowned architects, show how place-market strategy can give a city a brand while displaying the incredible development of urban transformation and promoting memorable imagery as desirable locations for both business and pleasure.

Skyscrapers boost cities' imageability on the international stage. They are urban icons that catch the public's imagination through novelty and sheer scale (Al-Kodmany and Ali, 2013, p. 188), and they play an essential part in making a city known to others. According to Brandon Moor's explanation (2006), the pride, passion, and feel for the skyscrapers of people in the United States have traveled across time and space and are now shared by people in other parts of the world. Towers have been built in Dubai to increase its international profile. At one time, Dubai was an unrecognized city; nevertheless, due to its relentless pursuit of building tall, higher, and the tallest structures possible, Dubai swiftly climbed to prominence and began to be regarded as a renowned global city. This applies to other cities in the Middle East. The building of skyscrapers in Dubai is seen to improve the Middle East's reputation and recapture its glorious heritage. The Middle East was a major economic powerhouse. The revitalization is reflected in the city's rapidly changing skyline, which is increasingly populated by tall buildings.

Dubai aimed to rediscover and celebrate its rich heritage. When asked why Dubai is constructing the "tallest" building, the Chairman of EMAAR Properties, Mohamed Ali Alabbar, responded that the Middle East has recently been plagued by "bad news" and that Dubai's exciting initiatives, including the world's tallest building, are intended to combat that image. The developers of Burj Khalifa have been very clear about their intentions with the project (EMAAR, 2006): the goal is not merely to be the tallest structure in the world. The goal is to personify humanity's loftiest ideals. Burj Khalifa, indeed, takes on a variety of appearances from various vantage points. For the locals, it's a bright success story and a symbol of Dubai's leading role in the developing world. It is a beacon for onlookers in other world capitals, an icon of the modern, wealthy, and prosperous Middle East.

### 5.3. Tourism

In Dubai, several "largest" and "amusing" structures in the modern world are constructed. Dubai's approach to attracting tourists and international attention is to develop unique projects, including skyscrapers. It built the Mall of Arabia, which at more than 5 billion square feet (465 million square meters), is the largest shopping mall in the world (Yeoman, 2008). Hundreds of kilometers of shoreline were also artificially created in this city, making it the leader in creating human-made islands. Dubai has the first 7-star hotel, Burj Al Arab, and is planning the first 10-star underwater hotel, Hydropolis. It also constructed the largest indoor ski resort in the world.

The world's tallest buildings often have notable architectural details to increase their appeal. Many claim to have the world's most soaring atrium or lobby; for instance, the Burj Al Arab claims to have the world's tallest hotel lobby. The highest restaurant in the world is in Burj Khalifa. It also has among the world's highest indoor and outdoor observation decks. Skyscrapers gain further popularity as they offer breathtaking day and nighttime panoramas of the city.

### 5.4. City Planners and Politicians

As a reaction to international pressures for governments to adopt a "place promotion" policy, we see the rise of a pro-skyscraper mindset. City planners and mayors can use city skyscrapers to show that their cities have graduated from "Third World" to "First World" status. Dubai's government has come to appreciate the promotional value of the city's towers. Dubai's government understood that the Central Business District (CBD) had to serve as "an important symbol and picture of the results of reform" and the "successes" of the Open Door Policy. In politicians' opinion, the rise of shiny skyscrapers that dominated the downtown horizon was the best way to symbolize the new era and reform achievements.

Dubai's municipal governments have shown a firm commitment to 'place promotion' and have invested heavily in the urban infrastructure to construct pedestrian shopping streets, ring roads, subway systems, convention centers, and, most importantly, new CBDs with skyscrapers. Skyscrapers are the architectural form that will secure a city's success in city planners' competition for worldwide attention. Even before they are built, skyscrapers advertise their host city. Dubai used online resources to promote the city as a thriving worldwide metropolis. The advertisements are printed in several languages to appeal to foreign investors and aid in the commercialization of space. Websites feature photos of dozens of recognizable towers. Extensive marketing and the promise of a futuristic new Dubai have successfully lured investors from abroad.

Dubai government offered incentives to international investors who would back skyscrapers. Foreign investments were subsidized through tax breaks, streamlined services, expedited approval processes, and reduced fees. Dubai's Municipal Government's website demonstrates the city's promptness in addressing investor inquiries. Application procedures for visas, private/chartered aircraft entrance, and other services are all spelled out in detail on the

website.

Importantly, Sheikh Maktoum bin Rashid Al-Maktoum and his son, Sheikh Mohammed bin Rashid Al-Maktoum, are widely credited with providing the political backing and vision necessary for many of Dubai's most significant construction projects and the city's rapid urbanization. To put Dubai on the global stage, Sheikh Mohammad advocated constructing Burj Khalifa (Acuto, 2010). As a result of the ruler's considerable sway and support, this goal was realized despite the country's declining oil reserves and the lack of demand for increasing density.

### 5.5. Acceptance of Western Ideas and Lifestyle

Like other Gulf states that welcomed Westerners with open arms, so did Dubai. Dubai is one of the Middle East's most Westernized cities. TV shows, products, restaurants, international schools, shopping centers, nightclubs, museums, parks, and even golf and skiing are some Western cultural hallmarks on display and catered to in Dubai. English is widely used in commerce, the media, and popular culture. Logos for global brands like Coke, Pepsi, 7Up, Visa, McDonald's, Subway, KFC, and others show evidence of Western influence. Developers and investors worldwide, attracted by the city's Western-style architecture and services, have built various structures, including tall buildings. Major development projects showed their openness to Western culture by soliciting advice from renowned Western architects and designers (Al-Kodmany and Ali, 2013).

### 5.6. The Accumulation of Wealth

Construction of skyscrapers entails significant costs, and substantial financial backing has facilitated their proliferation in Dubai. Over the last two to three decades, Dubai has experienced substantial economic prosperity. The city leveraged its wealth from oil revenues, robust trade, and a thriving tourism industry to underwrite ambitious construction ventures, prominently featuring skyscrapers. The buoyancy of Dubai's economy has served as a catalyst, providing the necessary financial resources to embark on elaborate construction projects, exemplified by the construction of opulent skyscrapers. With its transformation into a prominent exporter and financial hub, Dubai has harnessed increased income streams, enabling the continual development of lavish skyscrapers that contribute to the city's iconic skyline (Pereira et al., 2019).

## 6. Discussion

The swift proliferation of tall buildings, including supertall skyscrapers and opulent high-rises, in Dubai over the last two to three decades has triggered a pivotal inquiry into the sustainability of such extensive development. The unparalleled surge in these architectural marvels gives rise to concerns regarding their potential long-term effects on the environment, economy, and social fabric of Dubai, UAE. Addressing these concerns is challenging. However, the sustainability of tall buildings in Dubai could be framed by tackling the following questions, as Acuto (2010) outlines.

### 6.1. Is Vertical Urbanism the Proper Urban Planning Model for Dubai, UAE?

The appropriateness of adopting vertical urbanism in Dubai hinges on a multifaceted evaluation encompassing critical factors such as population density, existing infrastructure, and overarching sustainability objectives. Vertical urbanism has the potential to efficiently utilize land in densely populated zones, presenting a viable solution to the challenges posed by limited horizontal space. Furthermore, it contributes significantly to cultivating a futuristic skyline, reflecting Dubai's commitment to architectural innovation and establishing itself as a global metropolis.

However, successfully integrating vertical urbanism in Dubai requires carefully balancing and aligning with the city's cultural identity and environmental priorities. Dubai, known for its rich cultural heritage, must ensure that vertical development respects and complements the traditional values and aesthetics that define its identity. Striking this balance is pivotal for maintaining a harmonious coexistence between modernity and heritage.

Additionally, environmental considerations play a crucial role in the sustainability of vertical urbanism. The city must address energy consumption, waste management, and ecological impact issues. Embracing sustainable building practices, green technologies, and eco-friendly design principles can mitigate the environmental footprint of vertical structures. This aligns with Dubai's broader sustainability goals and commitment to becoming a resilient and environmentally conscious urban center.

In essence, the viability of vertical urbanism in Dubai necessitates a comprehensive evaluation of its compatibility with demographic patterns, existing infrastructure, and overarching sustainability objectives. The city's commitment to preserving cultural heritage and mitigating environmental impact will play a pivotal role in shaping the successful integration of vertical elements into its urban landscape (Wood, 2021).

### 6.2. Will Building Skyscrapers Continue in Dubai?

The trajectory of skyscraper construction in Dubai is anticipated to persist, driven by its pivotal role in shaping the city's economic prowess and distinctive architectural identity. The city's skyline, adorned with iconic skyscrapers, has become synonymous with its ambition, prosperity, and global standing. While the continuity of skyscraper development is foreseen, there is a discernible shift in the approach towards future projects (Wood, 2023).

The forthcoming wave of skyscraper initiatives will likely prioritize sustainability, smart design, and integrated urban planning as central tenets. This shift aligns with

global trends and the growing recognition of the environmental impact of large-scale urban development. Embracing sustainable practices in construction, energy efficiency, and resource utilization is expected to be integral to the design philosophy of upcoming skyscrapers.

Intelligent design, incorporating advanced technologies and innovative solutions, is poised to redefine the functionality and efficiency of these towering structures. Integrating intelligent systems for energy management, waste reduction, and enhanced connectivity can contribute to environmental sustainability and improve residents' and occupants' overall quality of life (Auerbach & Wan, 2020).

Furthermore, integrated urban planning should ensure that new skyscraper projects seamlessly blend into the existing urban fabric. This involves transportation infrastructure, public spaces, and community amenities to enhance the city's overall livability. Striking a balance between vertical development and creating a sustainable, people-centric urban environment should be a key focus of future skyscraper initiatives in Dubai.

In summary, the continued construction of skyscrapers in Dubai is expected to be driven by economic and architectural imperatives. However, a paradigm shift towards sustainability, smart design, and integrated urban planning is poised to redefine the nature and impact of these towering structures, ensuring they contribute positively to the city's skyline and the well-being of its inhabitants (Barr, 2022).

### 6.3. Does Constructing the Tallest Buildings in Dubai, UAE, Make Sense from an Urban Planning Perspective?

The pursuit of constructing the tallest structures in Dubai is intricately intertwined with the city's overarching vision to position itself as a global hub and an emblem of architectural innovation. This ambitious endeavor goes beyond a mere architectural feat; it symbolizes Dubai's unwavering commitment to excellence and modernity and its aim to be a focal point on the global stage. From an urban planning perspective, constructing towering structures of unprecedented height is expected to yield multifaceted benefits.

Foremost among these advantages is the potential to catalyze economic growth. The construction, operation, and maintenance of such monumental structures generate employment opportunities and stimulate various sectors of the economy, including real estate, hospitality, and tourism. The presence of iconic skyscrapers contributes to Dubai's image as a dynamic, forward-thinking city, attracting international businesses, investors, and visitors.

Furthermore, building the tallest structures is a powerful tool to capture international attention and position Dubai as a global architectural and technological leader. Striking feats of engineering and design become landmarks that draw admiration and curiosity from around the world. This global recognition enhances Dubai's visibility on the world stage, fostering a positive perception that extends beyond its borders.

However, this pursuit of architectural excellence and urban grandeur requires meticulous urban planning to ensure a sustainable and harmonious development. Critical considerations include robust infrastructure to support these colossal structures, the creation of well-designed public spaces that enhance the quality of life for residents and visitors, and a keen awareness of the environmental impact of such extensive development. Integrating these aspects into the planning process is imperative for fostering sustainable urban growth and mitigating potential challenges associated with rapid vertical development.

In summary, constructing the tallest structures in Dubai is a strategic choice that aligns with the city's global aspirations and architectural ambitions. While contributing to economic growth and garnering international acclaim, it necessitates a thoughtful and comprehensive approach to urban planning to ensure sustainable development that harmonizes with the city's identity and meets the needs of its residents and the global community (Auerbach & Wan, 2020).

### 6.4. What Would the Future of Urbanism in the UAE be?

Envisioning the future of urbanism in the UAE unfolds against a rapidly evolving landscape marked by technological innovations, sustainability imperatives, and the integration of innovative city concepts. A holistic approach to urban development is anticipated, with a multifaceted emphasis on vertical expansion complemented by a commitment to fostering vibrant, inclusive communities.

While the trajectory of vertical development may persist, the emphasis is expected to shift toward cultivating well-designed urban environments that prioritize the needs and well-being of residents. This evolution goes beyond physical structures; it encompasses creating vibrant neighborhoods that encourage social interaction, cultural diversity, and a sense of community. Green spaces will likely play a pivotal role, providing residents access to nature, promoting environmental sustainability, and contributing to a higher quality of life (Stiglitz, 2002).

The concept of resilient infrastructure is poised to become a cornerstone of future urban planning in the UAE. As cities grapple with the challenges posed by climate change and other external disruptions, an increased focus is on building infrastructure that can withstand shocks and stresses. This resilience-oriented approach ensures that urban areas are equipped to adapt and thrive in the face of evolving challenges.

Environmental sustainability is anticipated to be a core tenet of future urban development strategies. The UAE may strongly emphasize green initiatives, renewable energy, and eco-friendly urban planning practices. This approach aligns with global sustainability goals and positions the UAE as a leader in environmentally conscious

urbanism.

Moreover, the quality of life for residents is likely to take center stage in future urban planning endeavors. Cities in the UAE may prioritize creating environments that foster well-being, health, and cultural richness. Innovative approaches to transportation, public services, and digital connectivity are expected to enhance the overall living experience, making cities in the UAE more attractive and livable.

In summary, the future of urbanism in the UAE is poised to be a dynamic blend of vertical development, community-centric design, environmental sustainability, and technological innovation. By embracing these principles, the UAE can chart a course toward resilient, inclusive, and forward-thinking urban environments that meet the evolving needs of its residents and contribute to the global discourse on sustainable urban development (Li and Wang, 2022).

## 7. Conclusions

In conclusion, this paper has provided a comprehensive exploration of the evolution of tall building construction in the Middle East, specifically focusing on the case of Dubai. The narrative unveiled the transformative journey of the region's urban landscapes, emphasizing the dynamic competition among cities to construct increasingly taller structures. Through meticulous examinations of key cities, the paper showcased the strategic efforts and distinctive approaches employed to assert prominence on the global stage, capturing the essence of the architectural race. Notably, the surge in skyscraper construction in Dubai was examined as emblematic of the city's global aspirations, influenced by globalization, economic diversification, and tourism promotion. The paper delved into the sustainability, future trajectory, and urban planning perspectives of Dubai's tall building development, highlighting the need for a balanced approach that considers cultural identity and environmental priorities.

As evidenced in Dubai's case, the construction of skyscrapers has not only served as symbols of economic prowess but has also redefined the city's image on the global stage. The city strategically utilizes these iconic structures to attract global attention, investors, and a skilled workforce, fostering economic growth and establishing itself as a recognized international metropolis. However, the paper recognizes the importance of sustainability in vertical urbanism, advocating for a shift towards intelligent design, integrated planning, and a balance between modernity and heritage.

Looking ahead, the anticipated trajectory of skyscraper construction in Dubai suggests a continued emphasis on sustainability and a redefined approach that prioritizes economic, environmental, and social considerations. This evolution aligns with global trends and aims to enhance the city's overall livability. From an urban planning perspective, constructing the tallest buildings in Dubai is justified, catalyzing economic growth and positioning the city as a global leader. However, meticulous planning is essential to address infrastructure needs, public spaces, and environmental impact.

Envisioning the future of urbanism in the UAE, this paper anticipates a holistic approach emphasizing resilient infrastructure, environmental sustainability, and a focus on residents' quality of life. Integrating green initiatives and technological innovation is expected to shape dynamic, inclusive, and forward-thinking urban environments in the UAE. In essence, the case of Dubai serves as a microcosm, reflecting the broader trends and considerations influencing the refashioning of cities in the Middle East.

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# Appendix A

### Basic Definitions of Tall Buildings

#### Tall buildings

There is no universally accepted definition of a "tall building." Governments around the world differ in how they define "tall buildings." For example, German regulations define a "tall building" as a building higher than 22 m (72 ft) with room for people's permanent accommodation. City officials derived this limit from the length of ladders used by the firefighters. Leicester City Council in the UK defines a tall building as any structure over 20 m/66 ft in height, and/or a building of any height that is substantially higher than the predominant height of the buildings in the surrounding area, and/or a building that would make a significant impact on the city's skyline. In Ireland, Cork City defines tall buildings as 10 stories and higher buildings. The ASHRAE (American Society of Heating, Refrigerating, and Air-conditioning Engineers) Technical Committee for Tall Buildings defines them as buildings higher than 91 m/300 ft.

Importantly, the CTBUH (Council on Tall Buildings and Urban Habitat) seeks to resolve the confusion by providing a framework for the definition. It sets three attributes required to qualify a building to become "tall:"

1. Height relative to context,
2. Proportion, and
3. Building technologies.

Per the first criterion, the building should significantly exceed the general building heights of its surroundings. This criterion is crucial because it contextualizes the perception of tallness. Whereas we may not consider a 10-story building tall in the urban cores of U.S. cities or high-rise cities such as Hong Kong, a predominantly low-rise suburb, a 10-story building is distinctly taller than the norm. The second criterion for tallness implies verticality and states that the building should be slender enough to give it the appearance of a tall building. Numerous large-footprint buildings are tall, but their spatial composition of size/footprint/height prevents them from being classified as tall buildings. This means that tall buildings are higher

than neighboring buildings, but they tend to have a much larger footprint and bulkier appearance. The third and relatively weakest criterion—height-related building technologies—suggests that a building may be considered tall if it contains technologies attributed to tallness (e.g., structural systems and building materials). Importantly, the CTBUH makes a distinction between two tall building categories:

- A "supertall" is a 300+ m (984+ ft) building; and
- A "megatall" is a 600+ m (1,967+ ft) building.

**High-rise buildings**

As with tall buildings, there is no universal agreement on when we can call a building a high-rise. The public often considers a building consisting of many floors a high-rise. In the U.S., with some exceptions, cities define high-rise buildings as structures with occupied floors measuring 23 m (75 ft) or above the lowest level of fire department vehicle access. The Emporis (a global database for building informatio) defines a "high-rise" building as a multi-story structure between 35-100 meters tall.

**Skyscrapers**

Similarly, there is no universally accepted definition of a "skyscraper." The Oxford Dictionary defines it as a tall building with many stories. The CTBUH does not set a height threshold for a tall building to be called a skyscraper, while Emporis defines a skyscraper as a 100 $m^+$ (328 $ft^+$) building.

**Working definitions**

This research embraces the following definitions:

- A tall building, a high-rise, or a tower is a 50 $m^+$ (164 $ft^+$) building.
- A skyscraper is a 150 $m^+$ (328$^+$ ft) building.
- A supertall or ultra-tall is a 300+ m (984+ ft) building.
- A megatall is a 600+ m (1,967+ ft) building.

## Appendix B

Ten Tallest Cities in the Middle East: Population, Area, and Density

| Rank | City | Country | Population | Area | Density |
|---|---|---|---|---|---|
| #1 | Dubai | UAE | 2,878,344 | 4,114 km²<br>1,588 mi² | 700 people per km²<br>1,812 people per mi² |
| #2 | Doha | Qatar | 641,380 | 189 km²<br>73 mi² | 3,394 people per km²<br>8,789 people per mi² |
| #3 | Abu Dhabi | UAE | 2,120,700 | 67,340 km²<br>26,000 mi² | N.A. |
| #4 | Sharjah | UAE | 1,800,000 | 235.5 km²<br>90.9 mi² | 7,643 people per km²<br>19,801 people per mi² |
| #5 | Riyadh | Saudi Arabia | 7,009,100 | 1,973 km²<br>762 mi² | 3,600 people per km²<br>9,200 people per mi² |
| #6 | Manama | Bahrain | 726,505 | 30 km² 10 mi² | 5,200 people per km²<br>13,000 people per mi² |
| #7 | Tel Aviv | Israel | 467,875 | 52 km² 20 mi² | 8,468 people per km²<br>21,934 people per sq mi² |
| #8 | Kuwait | Kuwait | 4,333,029 | 860 km² 330 m² | 5,038 people per km²<br>13,130 People per mi² |
| #9 | Mecca | Saudi Arabia | 2,042,000 | 1,200 km²<br>500 mi² | 1,701 people per km²<br>4,084 people per mi² |
| #10 | Jeddah | Saudi Arabia | 3,456,259 | 4,686 km²<br>1,809 mi² | 738 people per km²<br>1,910 people per mi² |