Saudi Arabia’s City-Ranking Index (SACRI) methodology executed: Preliminary findings

Abstract

Aim/purpose – Saudi Arabia is rapidly urbanizing, where the number of urban residents, currently exceeds 80% of the population. Many cities in the country face challenges of sustainability, livability, resilience, and thus global reputation. Therefore, measuring city performance is crucial in assessing urban complexity in order to improve development potential. As stated in Vision 2030 of the Kingdom of Saudi Arabia, attempts at improving the global competitiveness and reputation of cities are of prime importance. This attempt aims at developing a culturally sensitive city ranking methodology, testing the method with relevant statistics, and presenting the preliminary results for further discussions, deliberations, and extensions.

Design/methodology/approach – In this context, an index named Saudi Arabia’s City-Ranking Index (SACRI) was developed, which proposes a three-dimensional assessment, incorporating livability, competitiveness, and environmental sustainability with 58 indicators (widely used or culturally specific). This exercise is carried out in 17 future cities, considering the feasibility criterion.

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Findings – Riyadh emerged as the most preferred city with the first rank, followed by Jeddah, Dammam, Madina, and Al Baha in order. Najran ranks 17, the last, preceded by Jazan, Al Qatif, Arar, and Al Taif.

Research implications/limitations – This ranking of Saudi Arabia’s cities seeks importance in planning, improving, and promoting livability, competitiveness, and environmental sustainability to grab prominent places on a global scale.

Originality/value/contribution – This exercise is unique for Saudi Arabia, with specific cultural dimensions that could be replicated in the neighboring Arab countries.

Keywords: city ranking, urbanization, livability, competitiveness, environmental sustainability.

JEL Classification: J10.

1. Introduction

Varieties of indices to rank cities at the global, regional, and national levels are executed involving intensification of cross-border mobility including goods, services and finance in addition to labor, human resources, and technology (Giap et al., 2014; Leff & Petersen, 2015; Uszkai, 2016). As a result, the livability of cities and competition for global reputations grew in demand creating challenges in investment, skilled labor, tourism, and international business leading to assessments of strengths and weaknesses pressurizing cities to formulate development goals to increase visibility (Begg, 1999; Giffinger et al., 2007; Uszkai, 2016).

City ranking as an industry has methodologies and structures not only in Europe and America but also in Japan, China, India, Singapore, and Chile crafted by large economic monitoring agencies, financial institutions, professional service firms, and media outlets with full-fledged industry experts and academic leaders (Giap et al., 2014; Leff & Petersen, 2015; Moonen & Clark, 2013). On the positive side, such exercises serve as perspectives on monitoring mechanisms and effective evaluation tools helpful in promoting livability, opportunities, sustainability, business orientation, economic vibrancy, competitiveness, and decision-making (The Mori Memorial Foundation, 2016; UN-Habitat, 2015).

Urbanization occurs in tandem with globalization and economic development, as experienced in countries, including Saudi Arabia, where the proportion of the urban population increased from 58.4% (1974) to 83.0% (2010), along with the economy and associated labor markets. Such economic progress is characterized by rapid migration of the native population, in turn bringing expatriates to meet labor demands, particularly in major cities of Riyadh, Jeddah, Makkah, Madinah, and Dammam (Abdelatti et al., 2017; Al-Khraif et al., 2022;
Choguill, 2008; Khraif, 2007, 2000; Khraif et al., 2016; Salam, 2022; Shukri et al., 1996; Susilawati & Al-Surf, 2011). Eventually, such an urban concentration leads to unprecedented growth harming the quality of living – resilience, and environmental hygiene (Choguill, 2008; United Nations, 2009).

Urbanization poses issues of native unemployment, shortage of housing, service infrastructure, and healthcare deficiencies (Al-Surf et al., 2013; Khraif, 2009). As pointed out, an important concern in this regard is home ownership (only 47% of native families own homes); not only in metropolitan areas such as Riyadh and Makkah but also in all other places in the country due, mainly, to high prices, limited availability of affordable housing, and temporary settlements (Karam, 2010; Salam et al., 2014; Saudi Vision 2030, 2013). Such issues hinder urban expansion, urban planning, potable water, and traffic, especially in societies with a demographic dividend (Aljazira Capital, 2013; Al-Khraif et al., 2022; Choguill, 2008; Clemence & Fowler, 2017; Khraif et al., 2015; Looney, 2004). A concern in this context of urban growth is the environmental impacting on built-up areas, solid waste disposal, and water supplies causing erosion of green spaces and agricultural land impacting livelihoods as well as environmental sustainability (Abdelatti et al., 2017).

This research is being carried out, in this context, to develop a culturally sensitive city ranking methodology. Thereafter, collected relevant data and tested the method to obtain results – considered to be preliminary. Results are presented here for discussions, deliberations, and extensions to facilitate urban development and city profiling.

This manuscript introduces the concept of city ranking, the Saudi Arabian city scenario, and the position of cities in the international ranking system. A conceptual development section is prepared, after stating the aims and objectives. This section is followed by a description of dimensions, indicator groups, and indicators (variables) used in the ranking procedures with benchmarking, definitions, and calculations with weights assigned. Subsequent to this, there are the results obtained, considered to be preliminary. Thereafter, the concluding remarks and limitations are explained.

2. Conceptual development

In order to accomplish this, the process of developing SACRI with reliable and comprehensive documents such as Vision 2030, Saudi Arabia’s National Spatial Strategy, and other relevant development strategies and previous research are reviewed. Thereafter, a conceptual framework was developed taking
into account dimensions of livability, competitiveness, and environmental sustainability as key themes measuring achievement (ARCADIS, 2016; Leff & Peterson, 2015) (Figure 1).

**Figure 1.** Conceptual framework of Saudi Arabia’s City-Ranking Index (SACRI) in alignment with Vision 2030

Livability refers to the creation of an ecosystem containing a high standard of living with infrastructure (housing, amenities, mass transit, education, healthcare, safety; and telecommunication technologies including broadband internet service) and a process of identifying areas of progress allocating resources and services to improve living conditions – social, economic, and environmental (Ballas, 2013; Giap et al., 2014; Goldberg et al., 2012; Kapoor & Garg, 2012; Sassen, 1991; Węziak-Białowolska, 2016).

Competitiveness is referred to as a city’s reach in terms of economic potential, performance and progress, and, thus, economic resilience and prosperity (adopted from World Economic Forum [WEF], 2017). Moreover, it might influence capacities to host events, accommodate stable tourism, and maintain activities and attractions that meet the needs of residents and visitors (Glaeser, 2011; Jiang & Shen, 2010).

Environmental sustainability is a necessity for development that covers environmental changes influencing physical, social, and economic development playing a dualistic relationship between people and their ecosystem (Jiang & Shen, 2010; Kaklauskas et al., 2017; Morelli, 2011; World Commission on Environment and Development, 1987).
3. Research methodology

Dimensions relevant to the strategic issues of Saudi cities on the world map are livability, competitiveness, and environmental sustainability aligned with the key aspirations of Vision 2030: a vibrant society, a thriving economy, and an ambitious nation. SACRI, in this context, intended to empower governmental development policies and strategies, enlightening municipal authorities and stakeholders considering city-ranking indexes in a global context (Giap et al., 2016; Huang, 2017; Jiang & Shen, 2010).

This exercise identified 58 indicators of three dimensions – livability (9 subsets of 36 indicators), competitiveness, 4 subsets of 12 indicators, and environmental sustainability (2 subsets of 10 indicators) through brainstorming and literature review (Table 1).

Table 1. Benchmarking dimensions, groups, and indicators of SACRI

| No. | Dimensions/Indicator groups/ Set of indicators/ | MGPCI | PCO | UNHCP | WGC I | SUKCI | ASCI |
|-----|---------------------------------------------|-------|-----|-------|-------|-------|------|
| 1   |                                             | 2     | 3   | 4     | 5     | 6     | 7    | 8    |
| a. Education Vitality Sub Index |
| 1   | Literacy rate | ● | ● |
| 2   | Percentage with a university degree or higher | ● | ● | ● | ● |
| 3   | Percentage of kindergarten students | |
| 4   | Number of international school students in 2020 | ● |
| 5   | Number of universities | ● | ● |
| 6   | QS University Rankings in 2021 | ● | ● |
| b. Demographics |
| 7   | Population in 2015 | ● |
| 8   | Population growth rate* | |
| 9   | Percentage of expatriates | |
| 10  | Population density | ● | ● | ● |
| c. Housing |
| 11  | Proportion of apartments | |
| 12  | Percentage of concrete buildings | |
| 13  | Proportion of own houses | ● | ● |
| d. Housing Infrastructure |
| 14  | Percentage of housing units with electricity connection | ● | ● | ● | ● |
| 15  | Percentage of housing units connected to the water network | ● | ● | ● | ● | ● |
| 16  | Percentage of housing units connected with sewage network | ● | ● | ● | ● |
Table 1 cont.

|   | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| e. Communication |   |   |   |   |   |   |   |
| 17 | Average broadband speed | ● | ● | ● | ● |   |   |
| 18 | Percentage of persons with internet access |   |   |   |   | ● |   |
| f. Transportation |   |   |   |   |   |   |   |
| 19 | Number of passengers traveling through airports | ● | ● | ● | ● |   |   |
| 20 | Number of international flights | ● | ● |   |   |   |   |
| 21 | Number of domestic flights | ● |   |   |   |   |   |
| 22 | Average daily travel time |   |   |   |   | ● |   |
| 23 | Use of public transport | ● | ● | ● |   |   |   |
| 24 | Railway availability | ● | ● | ● |   |   |   |
| g. Health Services |   |   |   |   |   |   |   |
| 25 | Life expectancy rate | ● | ● | ● | ● | ● |   |
| 26 | Medical doctors/1000 persons | ● | ● | ● |   |   |   |
| h. Culture and entertainment |   |   |   |   |   |   |   |
| 27 | Public libraries/100,000 persons | ● | ● |   |   |   |   |
| 28 | Attraction sites | ● |   |   |   |   |   |
| 29 | Fine dining restaurants | ● |   |   |   |   |   |
| 30 | Number of museums | ● |   |   |   |   |   |
| 31 | Number of festivals | ● |   |   |   |   |   |
| 32 | Number of stadiums | ● |   |   |   |   |   |
| 33 | Number of sports clubs |   |   |   |   |   |   |
| h. Security |   |   |   |   |   |   |   |
| 34 | Murder rate | ● | ● | ● | ● | ● |   |
| 35 | Theft |   |   |   |   |   |   |
| 36 | Road deaths |   |   |   |   |   |   |

Competitiveness Dimension

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| a. Economic Vitality |   |   |   |   |   |   |   |
| 37 | City product per capita | ● | ● | ● | ● | ● |   |
| b. Human Capital |   |   |   |   |   |   |   |
| 38 | Old age dependency | ● |   |   |   |   |   |
| 39 | Proportion of women in the labor force | ● | ● |   |   |   |   |
| 40 | Unemployment rate | ● | ● | ● |   |   |   |
| c. Tourism |   |   |   |   |   |   |   |
| 41 | Tourism nights | ● | ● |   |   |   |   |
| 42 | 4+ star hotel rooms, 2020 | ● |   |   |   |   |   |
| 43 | Holy places |   |   |   |   |   |   |
| d. Urban Environment |   |   |   |   |   |   |   |
| 44 | The percentage of treated wastewater | ● |   |   |   |   |   |
| 45 | Solid waste collection | ● |   |   |   |   |   |
| 46 | Percentage of solid waste recycling | ● | ● | ● |   |   |   |
| 47 | The per capita share of green spaces m² | ● | ● | ● |   |   |   |
| 48 | Sea shores |   |   |   |   |   |   |
Table 1 cont.

|   | 1   | 2   | 3 | 4 | 5 | 6 | 7 | 8 |
|---|-----|-----|---|---|---|---|---|---|
|   |     |     |   |   |   |   |   |   |
| a. Weather |     |     |   |   |   |   |   |   |
| 49 | Average rainfall (mm) (1985-2010) |   |   |   |   |   |   |   |
| 50 | Blows of dust (days) (1985-2010) |   |   |   |   |   |   |   |
| 51 | Days of occurrence of sand/dust storms (1985-2010) |   |   |   |   |   |   |   |
| 52 | Climate comfort index (winter) |   |   |   |   |   |   |   |
| 53 | Climate comfort index (spring) |   |   |   |   |   |   |   |
| 54 | Climate comfort index (Summer) |   |   |   |   |   |   |   |
| 55 | Climate comfort index (autumn) |   |   |   |   |   |   |   |
| b. Air Pollution |     |     |   |   |   |   |   |   |
| 56 | Air pollution 2019 (CO - ug / m³) | ● | ● | ● |   |   |   |   |
| 57 | The concentration of particulate matter in air (+10 μg / m³) pm10 |   |   |   |   |   |   |   |
| 58 | Concentration of sulfur dioxide |   |   |   |   |   |   |   |

* The newly proposed indicators for the SACRI which are not available in the benchmarks.

Note: MGPCI – MORI Global Power City Index; PCO – PwC: Cities of Opportunities; UNHCP1 – UN-Habitat City Prosperity Index; WGC1 – WEF: Global Competitiveness Index; SUKCI – Sustainable UK Cities Index; ASCI – ARCADAS: Sustainable Cities Index.

A three-stage process of city ranking adopted includes weighting the dimensions and indicator groups, determining and standardizing score, and dimension-specific rankings, and overall composite score. The first one employs a multi-criteria decision analysis, which weighs the dimensions using a pairwise comparison matrix (PCM) through Analytic Hierarchy Process to strengthen the ranking method (Saaty, 1980; Saaty & Kearns, 1985). Such a technique, relatively easy and effective, relates decision-making with urban development strategies (Malczewski, 1999). Accordingly, the pairwise comparison matrix deals with positive reciprocal matrices employed by the equation,

\[
\frac{n(n-1)}{2}
\]  

where \( n \) is the total number of dimensions/indicator groups being compared. For example, the size of pairwise comparison table is calculated as \( n = 3 \) (dimensions), so \( 3 \times (3 - 1) ÷ 2 = 3 \) (Table 2).
### Table 2. Indicators defined and described

| No. | Dimensions/Indicator groups/ Set of indicators/ | Definition | Weight |
|-----|-------------------------------------------------|------------|--------|
| 1   | Livability dimension                            |            | 67.0   |
|     | a. Educational Vitality Sub Index               |            |        |
| 1   | Illiteracy rate                                 | Number of people who cannot read and write to the total population | 1.6    |
| 2   | Percentage with a university degree or higher   | Persons with at least a university-level education to a population aged 15+ | 2.0    |
| 3   | Percentage of kindergarten students             | Children of age below 6 attending kindergarten to children below that age, 2020 | 1.8    |
| 4   | Number of international school students        | Number of international schools at primary and secondary levels, 2020 | 1.5    |
| 5   | Number of universities                          | Total number of universities (public and private) in the country, 2017 | 1.5    |
| 6   | QS University Rankings                          | The number of universities with an in QS rank, 2021 | 2.0    |
|     | b. Demographics                                 |            |        |
| 7   | Population                                      | Number of persons, including migrants, 2015 | 1.0    |
| 8   | Annual population growth rate                   | Increase in the population size within a census period by average, 2010 | 1.0    |
| 9   | Percentage of immigrants                        | Number of immigrants to the native population, 2010 | 2.0    |
| 10  | Population density                              | Population size by total land area, 2010 | 1.3    |
|     | c. Housing                                      |            |        |
| 11  | Proportion of apartments                        | Number of apartments to housing units, 2010 | 1.8    |
| 12  | Percentage of buildings with a gunman           | Number of buildings with a gunman to 100 buildings, 2010 | 2.8    |
| 13  | Proportion of own houses                        | Number of houses owned by one of the residents to total housing units, 2010 | 1.5    |
|     | d. Housing Infrastructure                       |            |        |
| 14  | Percentage of housing units with electricity connection | Number of houses with public electricity connection to 100 houses, 2010 | 2.0    |
| 15  | Percentage of housing units with municipality water supply | Number of houses with municipal water supply to 100 houses, 2010 | 1.8    |
| 16  | Percentage of housing units with government sewage facility | Number of houses with government sewage facility to 100 total houses, 2010 | 1.8    |
|     | e. Communication                                |            |        |
| 17  | Average broadband speed                         | Speed of internet connection, 2014 | 2.0    |
| 18  | Percentage of persons with internet access      | Number of persons having internet facility to 100 persons, 2014 | 2.2    |
|     | f. Transportation                               |            |        |
| 19  | Number of passengers traveling through airports | Total number of airport passengers in an year, exit and entry, 2020 | 1.0    |
| 20  | Number of international flights                 | International flights take-off and landing, 2020 | 1.0    |
| 21  | Number of domestic flights                      | Domestic flights take-off and landing, 2020 | 1.0    |
| 22  | Average daily travel time                       | Minutes spent in traveling in a day by a person | 1.4    |
| 23  | Use of public transport                         | Number of persons using public transport out of 100 persons | 2.0    |
| 24  | Railway availability                            | Availability of railway lines in the city | 2.0    |
Table 2 cont.

|   | 1  | 2                                                                 | 3                                                                 | 4                                                                 |
|---|----|-------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|
| g. Health Services |    |                                                                   |                                                                   |                                                                   |
| 25. | Life expectancy at birth | Number of years a person is expected to live under the prevailing demographic and health conditions | 4.5                                                               |
| 26. | Medical doctors/1000 persons | The number of registered medical doctors available to a population of 1000. | 5.5                                                               |
| h. Culture and Entertainment |    |                                                                   |                                                                   |                                                                   |
| 27. | Public libraries/100,000 persons | Number of libraries to every 100,000 persons | 1.5                                                              |
| 28. | Attraction sites | Number of sites attracting public attention | 2.0                                                              |
| 29. | Fine dining restaurants | Number of restaurants with a good ambiance | 2.0                                                              |
| 30. | Number of museums | Number of museums in the city | 1.5                                                              |
| 31. | Number of festivals | Number of festivals of any type held in a year | 2.0                                                              |
| 32. | Number of stadiums | Number of stadiums meant for sports of any type | 1.5                                                              |
| 33. | Number of sports clubs | Number of clubs for sports activities | 1.5                                                              |
| i. Security |    |                                                                   |                                                                   |                                                                   |
| 34. | Murder rate | Homicide per 100,000 persons | 2.5                                                              |
| 35. | Theft | Theft crime rate per 100,000 persons | 1.5                                                              |
| 36. | Road deaths | Traffic fatality per 100,000 persons | 1.0                                                              |
| Competitiveness dimension | 18.0 |                                                                   |                                                                   |                                                                   |
| a. Economic Vitality (weighted to 40% of the total) |    |                                                                   |                                                                   |                                                                   |
| 37. | City product per capita | GDP per person, 2014 | 8.0                                                              |
| b. Human Capital |    |                                                                   |                                                                   |                                                                   |
| 38. | Old age dependency | Persons of age 60 years and above per 1000 persons of working age (15-60 years), 2010 | 2.0                                                              |
| 39. | Proportion of women in the labor force | Number of women in the labor force to the total labor force | 2.0                                                              |
| 40. | Unemployment rate | Number of unemployed people to 100 persons in the labor force, 2010 | 1.0                                                              |
| c. Tourism |    |                                                                   |                                                                   |                                                                   |
| 41. | Tourism nights | Number of tourists multiplied by the number of nights stayed, 2019 | 1.5                                                              |
| 42. | 4+ star hotel rooms, 2020 | Number of available hotel rooms of four-star and above, 2020 | 1.5                                                              |
| 43. | Holy places | Number of holy places attracting Muslims from other countries, 2020 | 2.0                                                              |
| Environmental sustainability dimension | 15.0 |                                                                   |                                                                   |                                                                   |
| a. Urban Environment |    |                                                                   |                                                                   |                                                                   |
| 44. | The percentage of wastewater treated | Sewage water treatment percentage, 2020 | 1.0                                                              |
| 45. | Solid waste collection | Percentage of solid waste collected | 1.0                                                              |
| 46. | Percentage of solid waste recycling | Solid waste recycled out of collected | 1.0                                                              |
| 47. | The per capita share of green spaces m² | Green Area per person, 2014 | 1.5                                                              |
| 48. | Seashore | Seashore in meters | 1.75                                                             |
Table 2 cont.

|   | 2 | 3                                                                 | 4 |
|---|---|------------------------------------------------------------------|---|
| b. Weather | | | |
| 49 | Average rainfall (mm) (1985-2010) | Amount of rainfall in the city averaged for the reference period | 2.0 |
| 50 | Blows of dust (days) (1985-2010) | Number of days of dust averaged for the reference period | 0.25 |
| 52 | Days of occurrence of sand/dust storms (1985-2010) | Number of days of sand/dust storms averaged for the reference period | 0.25 |
| 52 | Climate comfort index (winter) | An index of temperature and humidity in the winter season (average for 1985-2010) | 0.25 |
| 53 | Climate comfort index (spring) | An index of temperature and humidity in the spring season (average for 1985-2010) | 0.25 |
| 54 | Climate comfort index (summer) | An index of temperature and humidity in the summer season (average for 1985-2010) | 0.25 |
| 55 | Climate comfort index (autumn) | An index of temperature and humidity in the autumn season (average for 1985-2010) | 0.25 |
| c. Air Pollution | | | |
| 56 | Air pollution (CO – ug/m³) | Contents of particles in air 2019 | 1.5 |
| 57 | The concentration of particulate matter in the air (+10 μg/m³) pm10 | | 1.5 |
| 58 | Concentration of sulfur dioxide | | 1.5 |

The second step, scoring is a crucial aspect because a city’s ranking depends on strengths, performances, and reputation. Like in other indexes, higher scores reflect better performance. Indicators were then standardized by means of uniformity in judgment and comparisons, following methods such as creating additive scores, ratio-scale scores (the score range procedure), and interval-scale scores (maximum scores), as stated by Voogd (1983). The SACRI used a score range procedure by employing Equation 2,

\[ z_j = \frac{x_j - x_j^{\text{min}}}{x_j^{\text{max}} - x_j^{\text{min}}} \]  

where \( z_j \) is the standardized score of the \( j \)th indicator, \( x_j \) is the raw score of the \( j \)th indicator, and \( x_j^{\text{min}} \) and \( x_j^{\text{max}} \) are the minimum and maximum scores of the \( j \)th indicator. The numerator computes the difference between the \( j \)th value and the minimum, and the denominator computes the difference between the \( j \)th value and the maximum. Thus, \( z_j \) is a standardized value. The standardized scores range from zero to one, and higher standardized scores indicate higher raw scores.
The third one relates to calculations by summing weighted average scores of dimensions; in order to obtain an overall score, the index demonstrates the city’s strengths and weaknesses on the dimensions – of livability, competitiveness, and environmental sustainability.

4. Research findings and discussions

This exercise resulted in a ranking of future Saudi Arabian cities where Riyadh is the top city followed by Jeddah, Dammam, Madina, and Al Baha in the order (Table 3). Individual ranks vary in such a way that on the basis of livability Riyadh scores highest followed by Jeddah, Dammam, Madina, and Al Ahsa; on competitiveness, Makkah scores the highest followed by Riyadh, Dammam, Al Ahsa, and Al Qatif; and on environmental sustainability, Abha scores highest followed by Al Baha, Arar, Al Hail, and Sakaka in the order. Here, not only the bigger cities but also the smaller upcoming cities receive aspiring ranks. At the bottom of this ranking is Najran, followed by Jazan, Al Qatif, Arar, and Al Taif. The order changes on livability (Najran, Al Qatif, Arar, Al Hail, and Al Qatif); on competitiveness (Al Hail, Jazan, Abha, Al Baha, and Najran); and on environmental sustainability (Jazan, Al Qatif, Jeddha, Dammam, and Al Ahsa).

Table 3. Preliminary results of the ranking exercise

| City                          | Overall | Livability | Competitiveness | Environmental sustainability |
|-------------------------------|---------|------------|-----------------|------------------------------|
|                               | Score   | Rank       | Score           | Rank            | Score | Rank       | Score | Rank |
| Riyadh                        | 36.7    | 1          | 25.5            | 1               | 3.6   | 2          | 7.6   | 11   |
| Jeddah                        | 32.1    | 2          | 23.8            | 2               | 2.5   | 6          | 5.8   | 15   |
| Dammam                        | 28.5    | 3          | 19.3            | 3               | 2.8   | 3          | 6.5   | 14   |
| Al-Madina Al-Monawarah        | 27.8    | 4          | 17.1            | 4               | 2.3   | 7          | 8.4   | 9    |
| Al Baha                       | 27.0    | 5          | 13.6            | 7               | 1.6   | 14         | 11.9  | 2    |
| Buraydah                      | 26.7    | 6          | 14.9            | 6               | 2.0   | 10         | 9.7   | 6    |
| Abha                          | 26.1    | 7          | 11.8            | 10              | 1.5   | 15         | 12.7  | 1    |
| Makkah Al-Mokaramah           | 24.8    | 8          | 13.5            | 8               | 4.0   | 1          | 7.3   | 12   |
| Al Ahsa                       | 24.5    | 9          | 15.1            | 5               | 2.7   | 4          | 6.7   | 13   |
| Sakaka                        | 23.9    | 10         | 11.8            | 1               | 2.3   | 8          | 9.9   | 5    |
| Tabouk                        | 23.8    | 11         | 12.1            | 9               | 2.2   | 9          | 9.5   | 7    |
| Al Hail                       | 22.8    | 12         | 11.5            | 14              | 1.2   | 17         | 10.1  | 4    |
| Al Taif                       | 22.6    | 13         | 10.5            | 6               | 2.0   | 11         | 10.1  | 3    |
| Arar                          | 21.9    | 14         | 0.7             | 5               | 1.9   | 12         | 9.3   | 8    |
| Al Qatif                      | 19.8    | 15         | 11.6            | 3               | 2.7   | 5          | 5.5   | 16   |
| Jazan                         | 18.3    | 16         | 11.8            | 12              | 1.4   | 16         | 5.1   | 17   |
| Najran                        | 18.1    | 17         | 8.6             | 17              | 1.8   | 13         | 7.8   | 10   |

Note: Data for this analysis were collected from official records of various governmental agencies, ministries, and municipalities.
The results of the rankings could be interpreted at the city level separately on dimensions such as livability, competitiveness, and environmental sustainability constructively and positively. These scores, on the other hand, pave way for inferring the strengths and weaknesses. At the same time, they suggest the need to progress in order to achieve the goals of Vision 2030.

Moreover, on global reputation and competitiveness, Saudi cities are up-coming, not only among Arab cities but also among others (Table 4). For example, Riyadh (the capital city) is among the top 10 cities on unprecedented business performance overlooking Milan and São Paulo on corporate relocation (Moonen & Clark, 2013). With the current pace of development, no doubt, Riyadh might raise to compete with London, New York, Paris, and Tokyo on multifaceted ranking, sooner or later.

**Table 4.** Position of Riyadh and Jeddah from the top cities of the MENA countries in the selected world ranking indexes*

| Cities – Country     | ATK-GCI | ATK-GCO | EIU - GLI | MQLS | Z/Y-GFCI | MCG-DCF | ASCI |
|----------------------|---------|---------|-----------|------|----------|---------|------|
| Dubai – UAE          | 27      | 32      | 75        | 74   | 19       | 1       | 52   |
| Abu Dhabi – UAE      | 69      | 20      | 79        | 78   | 38       | 4       | 58   |
| Doha – Qatar         | 61      | 66      | 85        | 110  | 55       | –       | 72   |
| Riyadh – Saudi Arabia| 67      | 85      | 107       | 164  | 105      | 2       | 76   |
| Kuwait City – Kuwait | 76      | 67      | 83        | 126  | 83       | –       | 70   |
| Cairo – Egypt        | 66      | 114     | 121       | 177  | –        | 5       | 99   |
| Manama – Bahrain     | 112     | 95      | –         | 136  | 68       | –       | –    |
| Tehran – Iran        | 96      | 118     | 130       | 199  | 96       | 6       | –    |
| Jeddah – Saudi Arabia| 75      | 84      | 111       | 168  | –        | –       | 81   |
| Muscat – Oman        | 99      | 58      | –         | 105  | –        | –       | –    |
| Baghdad – Iraq       | 122     | 120     | –         | 231  | –        | –       | –    |
| No. of cities in benchmarks | 130 | 130 | 140 | 231 | 114 | 10 | 100 |

* Not available data due to having no position in the corresponding indexes.

Note: ATK GCI – ATK Global Cities index 2019; ATK GCO – ATK Global Cities Outlook 2019; EIU GLI – EIU Global Livability Index 2015; MQLS – Mercer’s Quality of Living Survey 2019; Z/Y-GFCI – Z/Yen Global Financial Centres Index 2021; MCGDCI – Mastercard’s Global Destination Cities Index 2016 (MENA Countries); ASCI – ARCADAS: Sustainable Cities Index 2016.

Riyadh, the capital city of Saudi Arabia, gained a promising position on the basis of seven influential global city-ranking indexes among eight other largest cities of the region. Riyadh performed noticeably well in the Global Cities Index (27 of 130 cities), but relatively low on Mercer’s Quality of Living Survey (164
of 231 cities), the latter considering only the immigrant population. Moreover, results vary with the target population and selected indicators (Giffinger et al., 2007; Leff & Peterson, 2015; Węziak-Białowolska, 2016). However, Riyadh ranks impressively high on global financial competitiveness and moderately on sustainability and livability.

5. Conclusions

This ranking confirms with the established international city ranking exercises where Riyadh, Jeddah, and Makkah are recognized. Additional variables of cultural and traditional importance make this ranking different; bringing up a few upcoming cities such as Al Baha, Buraydah, and Abha as important cities of higher quality of life: livable, competitive, and environmentally sustainable.

With this methodology, Saudi Arabian cities are ranked where the capital city and major metropolises of prestigious living environments have received attention and ranks, the appeal of developments and offering on lives and perception of people. Gaining lessons from this exercise, it is essential to focus on service utilities and other demands to fulfill the ambitions of residents, travelers, and visitors based on the three dimensions of livability, competitiveness, and environmental sustainability. As a next step, more cities of Saudi Arabia, other Arabian Gulf countries, and other Arab countries could be included. As this research is a new attempt, it has the limitations of data update. So, these results may undergo further evaluations, appraisals, and updates with an aim to improve cities and add up to the achievement of Vision 2030. This inspires hope that the country invests more and more to build quality not only in the major cities but also in the upcoming cities and townships.

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