

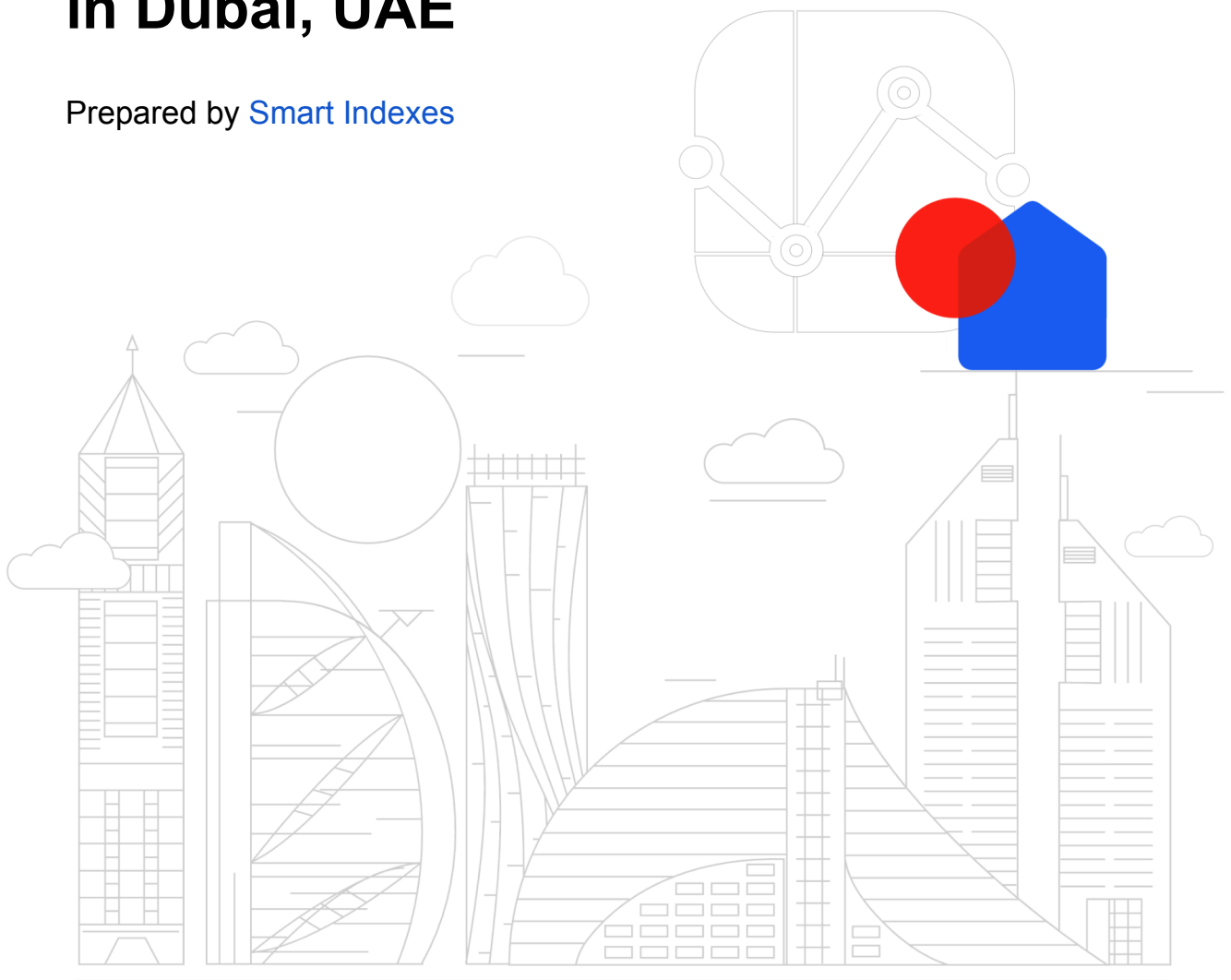


SMART INDEXES

Geoanalytics of Dubai, UAE

ABC Classification of Office Buildings in Dubai, UAE

Prepared by [Smart Indexes](#)





Problem Statement

The goal of this case is to develop a scalable and justifiable method for the classification of office buildings in Dubai according to the international ABC grading system, using open datasets from the Dubai Land Department (DLD) and related public sources. This classification supports filter-based analytics, price benchmarking, and quality scoring in the Smart Indexes GeoAnalytics product.

Background

On May 8, 2016, the Dubai Land Department (DLD) announced updates to its building classification framework. Historically, the approach was bottom-up — inspectors conducted on-site assessments of building infrastructure using a 60-point checklist.

However, with over 120,000 property units and 20,000 plots in Dubai, this process is time-consuming and incomplete. A digital and scalable classification strategy was required for market participants to evaluate office infrastructure, set accurate pricing, and integrate data into investment tools.

Data Sources

We used the following public datasets from Dubai Pulse Open Data:

1. Building Summary

Characteristics of all registered buildings in the Emirate of Dubai, UAE.

Source:

https://www.dubaipulse.gov.ae/data/dm-registration/dm_building_summary_information-open

2. Buildings Open

Project-level attributes

Source: https://www.dubaipulse.gov.ae/data/dld-registration/dld_buildings-open

3. Units Open

Full detail for every registered freehold unit

Source: https://www.dubaipulse.gov.ae/data/dld-registration/dld_units-open

4. External project descriptors

Third-party datasets and hashmaps



Solution Design

Step 1. Initial Attempt — Direct DB Classification (Bottom-Up)

- Attempted classification of buildings using fields from Open Data.
- Found issues:
 - Data sparsity: many fields were null.
 - Logic complexity: mapping conditions to ABC levels proved impractical at scale.
 - Backend computation was required significant computational resources and time-intensive.

Step 2: Assisted Evaluation Using Open AI + External Descriptions

- Used descriptions from a third-party commercial database of developed projects that include office units with defined names (project_name_en).
- Employed OpenAI (ChatGPT) to classify buildings by infrastructure quality.
- Result: 2,416 office buildings were classified (~29% of 8,335 office buildings).
- Advantage: scalable by prompt engineering.
- Limitation: requires building descriptions.

Step 3: Strategic Shift: Master Development–Level Classification (Top-Down)

- Shifted classification to the master project level (146 identified in total).
- Linked buildings to master projects using `project\_name\_en`.
- Inherited ABC grade from master project to buildings.
- Adjusted class using building age: any building older than 10 years was downgraded by one grade (e.g., A → B+).



Simplified ABC Grading Matrix

Class	Year Built	Location	Fire Safety	Security	Business Center	Restaurant/cafe for dining	Parking
A	<10 yrs	City center	OK	OK	Full	Yes	Covered
B	<10 yrs	Mixed	OK	OK	Partial	Nearby	Partial
C	>10 yrs	Outer districts	Unknown	Unknown	Basic	No	Street

Note: the full matrix includes approx. 30 factors, compiled from international ABC standards.

Challenges Identified

1. Null values limit analytical accuracy of DLD datasets.
 2. Non-normalized labels (e.g., inconsistent project names) cause matching issues.
 3. Bottom-up logic is not feasible without full building descriptions.
 4. Aging infrastructure requires class depreciation logic to reflect reality.
4. Additional cases for processing incomplete data

Case #1: «Double» + New

If building_class contains several classes (e.g. A+, B+) and building_status_english == New, then:

- is_green_building == YES and public area ratio $\geq 30\%$ $\rightarrow$ A+
- green building and ratio $< 30\%$ $\rightarrow$ A-
- other cases $\rightarrow$ A

Case #2: Scoring for empty records

For buildings without the original building_class, but with at least one feature:

- +2 for greenness (is_green_building == YES)
- +2 for ≥ 3 elevators
- +2 for public area ratio $\geq 30\%$
- +1 for ≥ 10 floors
- +1 for height ≥ 50 m



Resulting classes:

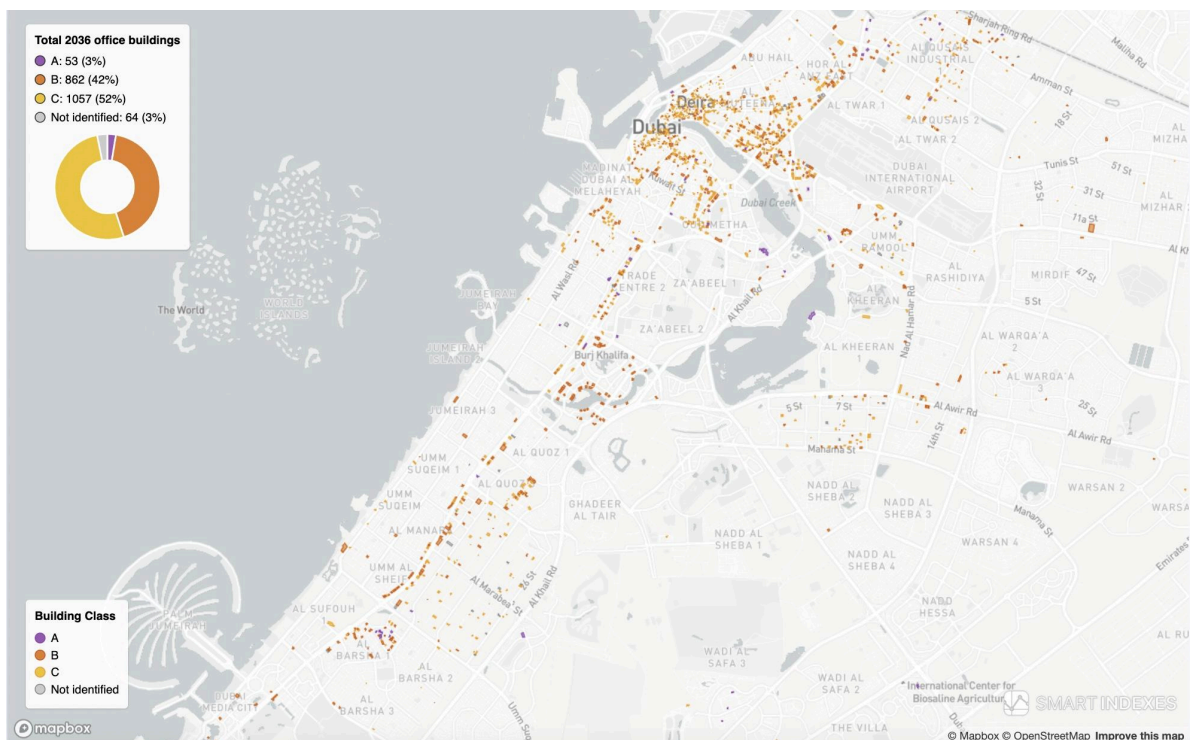
- score $\geq 5 \rightarrow A$
- $2 \leq \text{score} < 5 \rightarrow B$
- score $< 2 \rightarrow C$

Case #3: Age-filter

After all appointments:

- over 20 years $\rightarrow B-$
- over 10 years $\rightarrow B+$

Geo analytical research

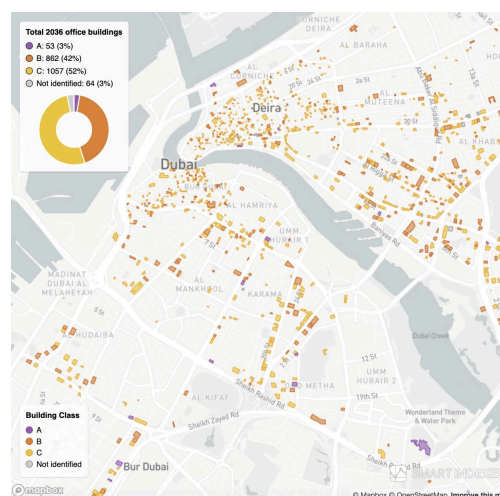


A study by data analysts at Smart Indexes has demonstrated that linking parcel IDs with building entry points (Makani number/ID) provides precise geolocation and identification of buildings within the Dubai Land Department, Makani.ae, and other geo-analytical databases.



This approach enabled a detailed analysis and segmentation of office buildings based on:

- the infrastructure quality of the master development project in which each building is situated,
- the building's age,
- compliance with Green Building standards,
- the percentage of communal areas allocated to business-comfort infrastructure,
- the number of elevators,
- building status,
- and other relevant parameters.



The ABC classification system delivers a rigorous, location-based assessment of office building quality, clearly segmenting properties into A, B, and C classes across Dubai's districts. Unlike a promotional five-star scheme, the ABC model is more stringent and equitable: it relies on concrete technical and operational metrics (age, infrastructure level, density of public spaces) and consequently yields a relatively small share of A-class buildings.

Key Findings

- **Class A** buildings are primarily located in Al Barsha First, Al Wasl, and Al Nahda First.
- **Class B** buildings are most common in Dubai Investment Park First, Dubai Industrial City, and Al Jaddaf (with some uncategorized cases beyond these core areas).
- **Class C** buildings are concentrated in older central districts such as Al Souq Al Kabeer, Al Karama, and a number of locations without a clear community designation.



Final Statistics on buildings

Office Building Class	Quantity, bld	Share, %
A	53	3%
B	862	42%
C	1057	52%
Not identified	64	3%

Total sum: 2 036 buildings* includes office areas.

* Counted quantity based on Building Summary data from Dubai Land Department.

Conclusions

- Primary DLD data is not complete enough for direct classification.
- Hybrid scheme (Top-Down + scoring + age-filter) allows to cover 97% of office buildings.
- Only 3% "Not identified" remains — buildings with no features for scoring.

References

1. DLD Building Classification

Source: <https://dubailand.gov.ae/.../building-classification-system/>

2. Bayut Office Buildings

Source: <https://www.bayut.com/buildings/>