Akaademy

Business Intelligence Analyst Bootcamp

Final Assignment on
"*Comprehensive Data Analysis &*
Visualization of IAB-Registered Companies"

Prepared By

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Executive Summary

This report presents a comprehensive analysis of companies registered with the Institute of Architects Bangladesh (IAB). The objective of this project was to transform raw, unstructured data into meaningful insights by performing data cleaning, analysis, and visualization, followed by the creation of a static descriptive report and an interactive dashboard.

A total of **142** companies were analyzed across various dimensions such as establishment year, manpower, web presence, email type, location, and professionalism. Companies were categorized based on their geographic location, email domain, and website activity to evaluate their digital footprint and operational maturity. Additional insights were generated by calculating company age, estimating project completion numbers, and evaluating professionalism scores on a 100-point scale.

Key findings include that a significant percentage of firms use personal email addresses, while a smaller fraction have active websites. The majority of companies are concentrated within Dhaka, particularly in commercial zones like Gulshan and Banani, which correlate with higher estimated pricing tiers. Predictive logic based on experience, ratings, and digital presence was used to identify companies likely to demonstrate professionalism and high-quality service.

This report supports strategic decision-making for stakeholders by highlighting trends, identifying high-potential firms, and offering a clear view of the architectural landscape in Bangladesh.

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Objective 1: Total Number of IAB-Registered Companies

Methodology : The original data was sourced from a PDF document provided by the Institute of Architects Bangladesh (IAB). This data was manually converted into a structured format using Google Sheets. After conversion, the dataset underwent a thorough cleaning process to remove duplicates, irrelevant entries, and formatting inconsistencies.

During data preparation, **two entries** were found to have **identical company details** but **different IAB Accreditation IDs**. Upon review, they were treated as separate entities under the assumption that they may represent distinct branches or legal registrations of the same brand.

The final count reflects the number of unique firm records listed in the dataset, as all entries in the original document are assumed to be IAB-registered by default. No separate column for "IAB Registration Status" was present, and therefore, the total number of rows in the cleaned dataset directly corresponds to the number of IAB-registered companies.

Result : A total of **142** entries were analyzed, including two records with shared company names but distinct accreditation IDs.
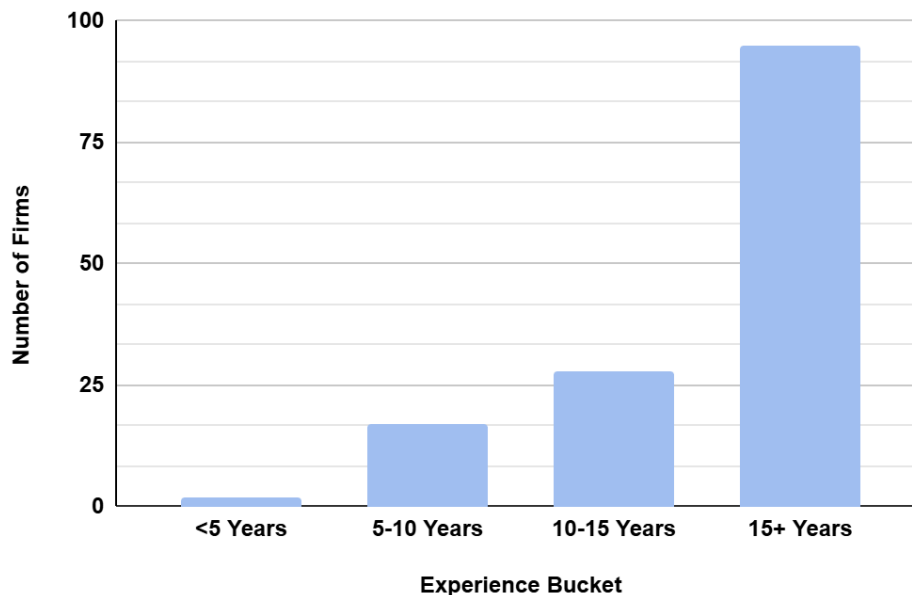
Insights :

- This number forms the foundation for all subsequent analyses and is used as the base population in segmentation, classification, and trend assessments.

- The presence of 142 officially listed firms suggests a structured and moderately sized community of architectural firms under IAB oversight.

Objective 2: Group Companies by Establishment Year and Categorize Them

Methodology : The establishment year of each company was used to calculate its age. Based on company age, firms were grouped into four categories: <5 years, 5–10 years, 10–15 years, and 15+ years. A pivot table was used to count the number of companies in each group.

Experience Bucket	Number of Firms
<5 Years	2
5-10 Years	17
10-15 Years	28
15+ Years	95
Grand Total	**142**

Chart : Group Companies by Establishment Year

Insights : .

- A healthy presence of long-standing firms (15+ years) indicates experience depth in the industry.
- A significant portion of the companies are relatively new, with many established in the past 10–15 years
- This distribution offers insight into market maturity and helps inform assumptions in professionalism and project estimation.

Objective 3: Calculate Total Manpower of each Company

Methodology : The dataset includes a "Total Manpower" column for each company. Since the dataset was derived from the official IAB registration list, all entries are considered IAB-registered. The total manpower was calculated using a simple summation of the column.

A pivot table was also used to explore how manpower is distributed across companies.

Table: Summary of Manpower

Company Name	Total Manpower
PROFILE LTD	67
PROKALPA UPODESHTA LTD	60
PRONAYON	30
VOLUMEZERO LIMITED	27
TANYA KARIM N.R. KHAN & ASSOCIATES	26
SYNTHESIS ARCHITECTS	26
NAYREET ARCHITECTS	23
BESTEC INFOTECH	20
VISTAARA ARCHITECTS (PVT.) LTD	19
DESH UPODESH LTD	19
SHELTER ARCHITECTS AND ENGINEERS LIMITED	18
DOMUS	18
J.A.ARCHITECTS LTD.	16
BINYASH	16
ENVIRON STRUCTURE LTD.	15
SHATOTTO ARCHITECTURE FOR GREEN LIVING	14
FOURTH DIMENSION	14
SYSTEM ARCHITECTS	13
EHSAN KHAN ARCHITECTS LTD.	13
UNITED CONSULTANT	12
STYLE LIVING ARCHITECTS LTD	12
DESIGN VISION ASSOCIATES LTD	12
STUDIO DHAKA LIMITED.	11
ROOFLINERS_STUDIO OF ARCHITECTURE	11
REINCARNATION	11
URBANA	10

SYMBIOTIC ARCHITECTS & ASSOCIATES	10
STUDIO ECOTECTURE LIMITED	10
SRISHTI SHAILEE	10
SAIUJ CONSULTANTS	10
RIDDHI ARCHITECTS	10
MW3 DESIGN + PARTNERS	10
INGRID ARCHITECTS	10
CUBEINSIDE DESIGN LTD.	10
VENNA ARCHITECTS	9
KHETRO	9
DESIGN ENGINEERS & ARCHITECTS	9
DEHSAR WORKS	9
ARCHEGROUND LTD.	9
MATRIX	8
IN QUEST DESIGN STUDIO	8
ARQUITECTURA PVT. LTD.	8
ARESCON CONSULTANT	8
ARCHSEL	8
ARC ARCHITECTURAL CONSULTANTS	8
AKRITY	8
TRIOTECT & ASSOCIATES LTD.	7
TRIANGLE CONSULTANTS	7
STHAPOTIK	7
SILVERBRICKS	7
OLI MAHMUD ARCHITECTS	7
KHETTRA ARCHITECTS	7
INSIGHT ARCHITECTS	7
CAD LTD	7
BASATIKALPA	7
ARCHITEKTON PVT. LTD	7
STUDIO HDA	6
KHETTRA ARCHITECTS & ENGINEERS LIMITED	6
K2AH+ ARCHITECTS	6
GRAVITY ARCHITECTURE STUDIO	6
FALGUNI MALLICK & ASSOCIATES	6

DCON DESIGN STUDIO	6
ARTISAN ARCHITECTS ENGINEERS & DEVELOPMENTS LTD.	6
ARQUITECTURA DESIGN STUDIO	6
ARCHIWORKS CONSULTANTS	6
ARCHITECT HASAN & ASSOCIATES LTD.	6
AHMED HOSSAIN ARCHITECTS AND ASSOCIATES	6
VISTA ARCHITECTURAL CONSULTANT	5
VASTUVITA ARCHITECTS	5
THE DESIGNERS	5
TARIQUE HASAN & ASSOCIATES LTD.	5
STUDIO XI ARCHITECTS	5
SRISTI UPADESHTA	5
SPACE ARCHITECTS, ENGINEERS, PLANNERS	5
SCENIC	5
RACHONA CONSULTANTS	5
PRACHEE STHAPATI	5
NOUVEAU ARCHITECTS.	5
IMAGE ARCHITECTS	5
GKA & ASSOCIATES	5
GENESIS ARCHITECTS	5
FIALKA	5
ECLIPTIC	5
DWG	5
BKS & ASSOCIATES	5
AYOTEEK	5
ARTYSPACE DESIGN STUDIO	5
ARCHFIELD	5
ARCHDOERS	5
ADS ARCHITECTS DESIGN STUDIO	5
ABASHAN UPODESHTA LIMITED	5
VUU‑MAATRA CONSULTANTS	4
MAATRIK ARCHITECTS	4
IDEA	4
ENVISION ARCHITECTS	4

DOT ARCHITECTS	4
DESIGN CELL	4
BABUIBASHA: A SUSTAINABLE ARCHITECTURE.	4
AURITRO ARCHITECTS	4
ARCHITECTURE TOMORROW	4
ARCHITECTES CONTEMPORAIN (ARCON)	4
ARC ANGON CONSORTIUM	4
ANWAR & ASSOCIATES	4
ALIGN ARCHITECTS	4
37 BRIDGE	4
STUDIO DHAKA ARCHITECTS	3
SPACE SCAPE	3
SILT	3
SHANGBIT	3
S & ASSOCIATES	3
RIVNAT ARCHITECTS	3
J.M. CONSULTANT	3
INTEGRATED DESIGNERS, ENGINEERS AND ARCHITECTS LIMITED	3
INARCH STUDIO AND CONSTRUCTION LIMITED	3
DIAGONAL ARCHITECTS	3
DA-SEIN ARCHITECTS	3
BASHA BARI LTD.	3
ARCHSTUDIO	3
ARCHITECTS' HORIZON	3
ARCHINET ARCHITECTS & ENGINEERS	3
ANGON ARCHITECTS	3
REGIONAL ARCHITECTS	2
KALPAK ARCHITECTS	2
ICON DESIGN STUDIO	2
ASSOCONSULT LTD.	2
ROSEBUD CONSULTANTS LTD	1
H I ARCHITECTS	1
COCREATE STUDIO	1
ARCHYTAS LIMITED	1

ARCHIAAN ARCHITECTS	1
ARCH.PMC	1
ARC.IN.D	1
VITTI STHAPATI BRINDO LTD	0
STUDIO MORPHOGENESIS LTD.	0
River & Rain Ltd.	0
NAKSHABID ARCHITECTS	0
DWm4 INTRENDS LTD.	0
DWm4 ARCHITECTS	0
ARCHITECTS & ASSOCIATES LTD	0
4 WALLS INSIDE OUTSIDE	0

Insights :

- The top 3 companies (PROFILE LTD, PROKALPA UPODESHTA LTD, PRONAYON) in the dataset employ the highest number of personnel, indicating their large operational scale and possibly broader project capacity.

- Interestingly, 8 companies reported zero manpower. This could imply that these firms:

  ➔ Are newly established and yet to recruit staff.

  ➔ Operate on a freelance or outsourced model.

  ➔ Did not disclose their manpower information during registration.

- This variation in manpower highlights the diversity in company structures—from large architectural firms to small or emerging practices.

## Objective 4: Identify How Many Companies Have Active Websites

Methodology : Each company's website link was checked for validity. A new column was created to mark the website status as:

- "Available" if a functional website was found, or
- "Unavailable" if no valid site was available.

A pivot table was used to count how many companies fall under each status.

Website Status	Company Name
Available	76
Unavailable	66
Grand Total	**142**

Chart: Website Presence Across Companies

Unavailable 46.5%

Available 53.5%
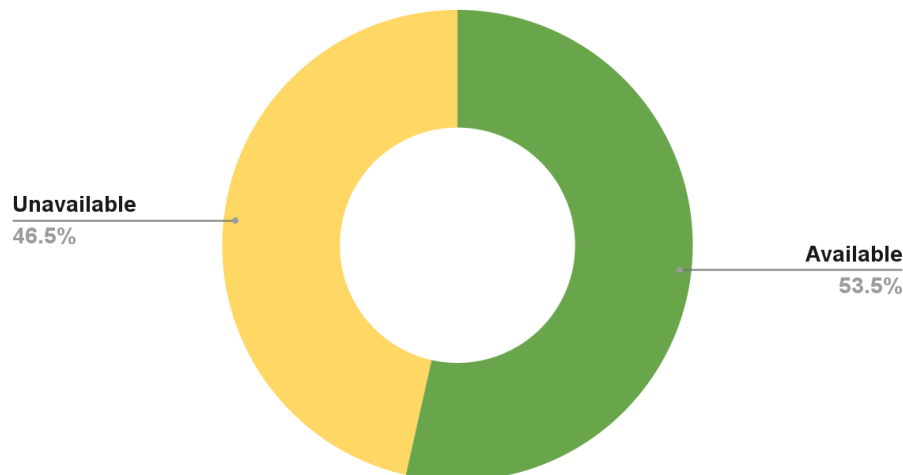
Insights :

- A total of **76 companies maintain an active website**, reflecting efforts to establish a digital presence.
- **66 companies do not have websites**, suggesting limited visibility or a reliance on other channels (social media, referrals).
- Having a website often correlates with professionalism and client trust—companies without one may be at a disadvantage in competitive markets.

Objective 5: Determine the Number of Companies Using Professional Email Addresses

Methodology : A new calculated column named "Email Type" was created using a formula that classifies emails into two categories:

- Professional: Emails with custom domains not linked to public providers (e.g., @companyname.com)
- Personal: Emails from free services like Gmail, Yahoo, Hotmail, etc.

Google Sheets IF and REGEX MATCH formulas were used to identify and tag these types. A pivot table was then created to summarize the distribution.

Chart: Professional Email Across Companies

Professional
21.8%

31

111
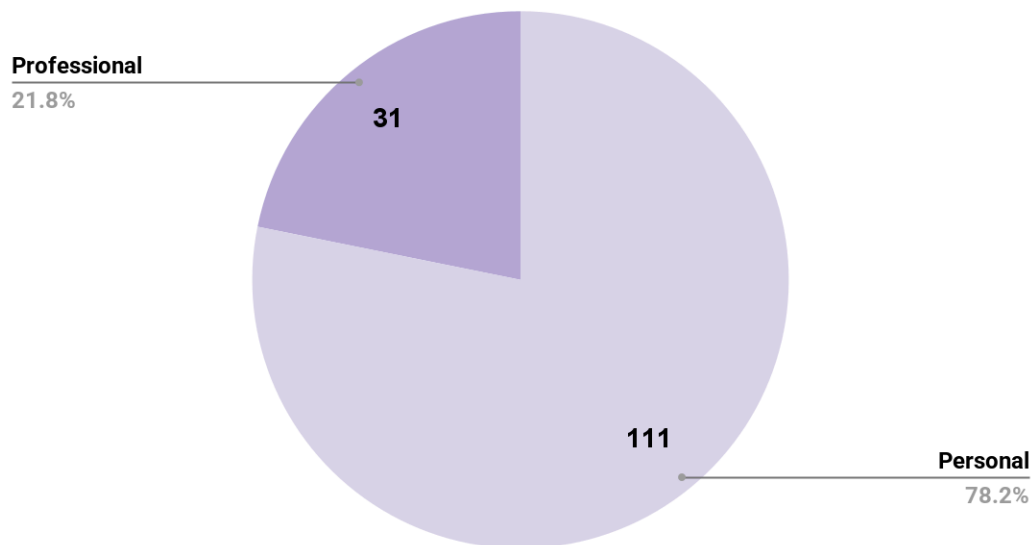
Personal
78.2%

Insights :

- **31 companies** use **professional email addresses**, which reflects a stronger brand identity and operational formality.
- **111 companies** rely on **personal emails**, which may suggest smaller operations, startups, or informal communication practices.
- Encouraging the use of professional emails could enhance trust, especially in client-facing roles.

Objective 6: Categorize Companies Based on Location (Inside vs. Outside Dhaka)

Methodology : The "Division" column was used to classify each company based on location. A new column titled "Location Type" was created using IF statements:

● If the company's location (Division) was matched as Dhaka, it was labeled "Inside Dhaka".

● All other areas were marked "Outside Dhaka".

Chart : Companies based on Location
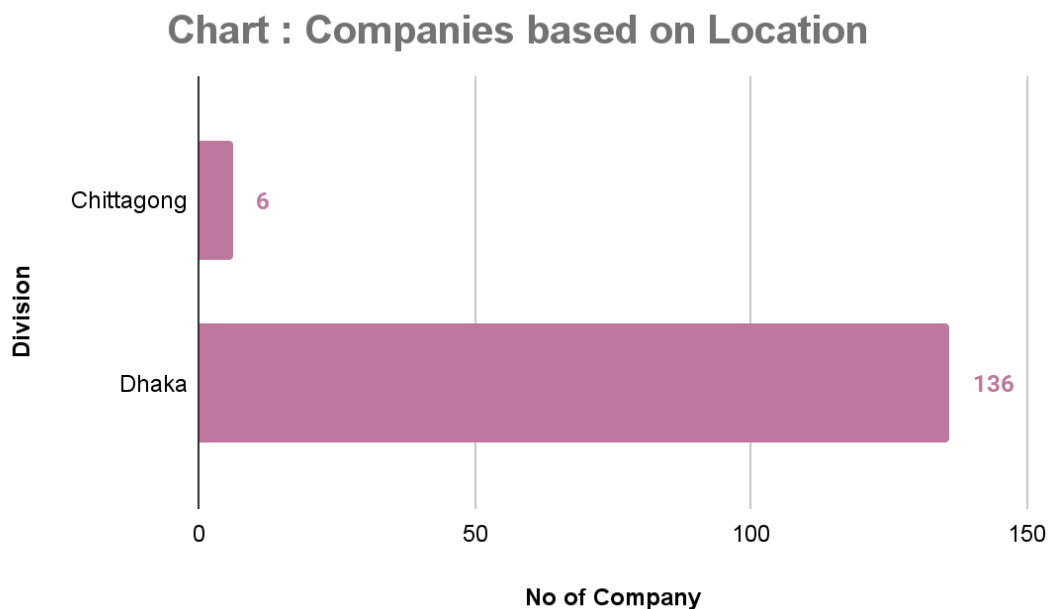
Insights :

● **136 companies** are located **inside Dhaka**, indicating a significant concentration of architectural firms in the capital.

● **6 companies** operate **outside Dhaka**, all in **Chittagong** suggesting a smaller but growing reach in regional areas.

● The dominance of Dhaka-based firms may reflect client concentration, better infrastructure, or ease of regulatory access in the city.

## Objective 7: Distribute Company Locations According to Police Station-Level Geographic Segmentation

Methodology : The "Police Station" column was used to categorize each company's location.

A pivot table was generated with:

- Rows: Thana (Police Station)
- Values: Count of Company Names

The result was sorted in descending order to highlight the areas with the highest number of firms.

## Chart : Number of Companies by Police Station
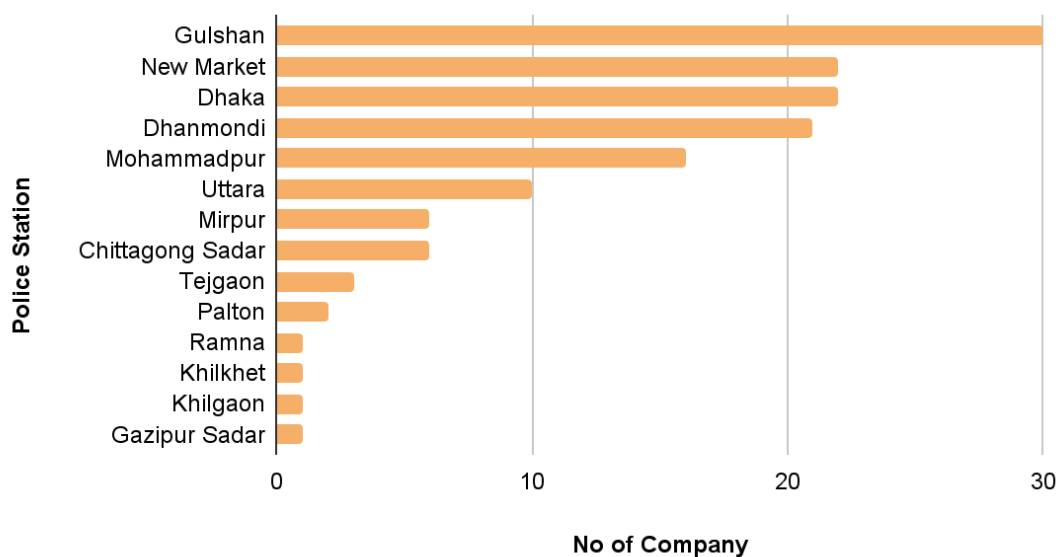
Insights :

- **Gulshan** tops the list with **30 companies**, indicating a clear preference among firms for this upscale, commercial zone.**New Market**, **Dhaka Cantonment**, and **Dhanmondi** also host a high concentration of firms, possibly due to infrastructure, client access, and prestige.
- Outlier regions like **Gazipur Sadar**, **Khilgaon**, and **Ramna** each host only **1 firm**, suggesting underrepresentation or lower commercial demand.
- The data reflects a significant urban concentration of architectural activity, particularly in central and affluent zones of Dhaka.

Objective 8: Collect and Analyze Google Ratings and Geo-location Data for Each Company

Methodology : Using the final cleaned dataset (142 companies), we searched each company on Google Maps and recorded their Google ratings and map coordinates. Companies without a visible rating were marked accordingly.

Issues Faced :

- Many company names were either too generic or similar to others, making exact matches on Google Maps difficult.
- Some companies had map locations but no associated rating, likely due to low activity or recent registration. So, Marked companies as "0" rating if not found or if no Google rating was shown despite being listed.
- Duplicate entries and inconsistent naming formats slowed down manual verification.
- Not all companies maintain an active or verified Google business profile.

Chart : Company No vs. Google Rating
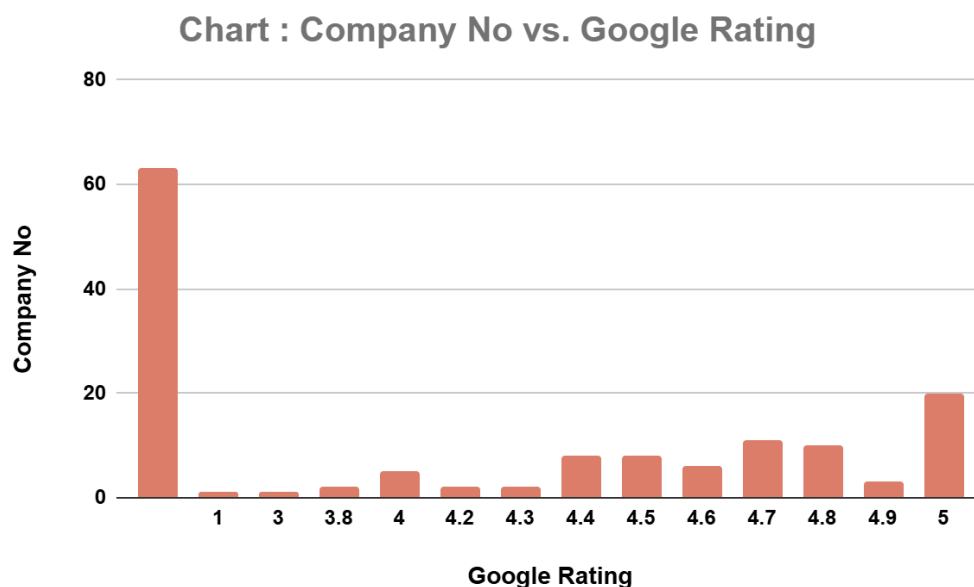
Insights :

- Total companies with Google rating found: 79
- Total companies without any Google rating: 63
- 20 companies had a rating of 5.

Objective 9: Predict and List Companies That Exhibit Professionalism and Quality

Methodology : We defined "Professionalism and Quality" using a Professionalism Score (0–100 scale) derived from four weighted criteria:

Component	Weight	Logic
Google Rating	40%	Rating × 10 × 0.4
Website Presence	20%	Yes = 20, No = 0
Email Type	20%	Professional = 20, Personal = 0
Company Age	20%	Capped at 20 years

Data Filtering and Inference :

- Records with **incomplete input data** were **excluded** from scoring.
- This ensures a fair comparison based only on valid and complete data points.

Here is a pivot table that represents Top 10 companies based on our calculation of Professionalism Score :

Company Name	Email Type	Website Status	Google Rating	Company Age	Professionalism Score
J.A.ARCHITECTS LTD.	Professional	Available	4.6	20	78.4
TANYA KARIM N.R. KHAN & ASSOCIATES	Professional	Available	4.5	32	78
KHETRO	Professional	Available	5	18	78
SYSTEM ARCHITECTS	Professional	Available	4.4	24	77.6
STYLE LIVING ARCHITECTS LTD	Professional	Available	4.3	21	77.2
DESIGN VISION ASSOCIATES LTD	Professional	Available	4.2	27	76.8
DWG	Professional	Available	4.9	17	76.6
VOLUMEZERO LIMITED	Professional	Available	4.6	17	75.4
PROKALPA UPODESHTA LTD	Professional	Available	3.8	41	75.2
SYMBIOTIC ARCHITECTS & ASSOCIATES	Professional	Available	4.6	14	72.4

Objective 10: Estimate total project completion numbers based on Google ratings and years of experience

Methodology : The dataset does not include any actual figures for the number of projects completed by each registered company. However, this metric is important to gauge organizational productivity, project experience, and capacity. A predictive approach was therefore required to estimate total project completions using two key variables:

- **Company Age (in years)**
- **Google Rating (0–5 scale)**

The underlying logic assumes a baseline project completion rate of **3 projects per year**, which is then **scaled by a performance multiplier** derived from the company's Google Rating (rating ÷ 5). Here is a pivot table representing Top 10 firms with highest number of estimated projects :

Company Name	Company Age	Google Rating	Projects (estimated)
DOMUS	48	4.4	127
DESH UPODESH LTD	47	4	113
CAD LTD	39	4.8	112
PRONAYON	35	4.5	95
PROKALPA UPODESHTA LTD	41	3.8	93
VITTI STHAPATI BRINDO LTD	34	4.4	90
ROSEBUD CONSULTANTS LTD	30	5	90
TANYA KARIM N.R. KHAN & ASSOCIATES	32	4.5	86
VISTA ARCHITECTURAL CONSULTANT	30	4.7	85
PROFILE LTD	29	4.8	84

Insights:

- These estimates reflect the interaction between years of experience and public perception (via Google reviews). For example, **DOMUS**, with 48 years of operation and a strong 4.4 rating, emerged as the top company with an estimated **127 projects completed**.
- Out of the 142 registered companies, a total of 85 companies received a non-zero estimate for project completions.
- Companies with a zero Google Rating (or missing age/rating data) were excluded from estimation.

Objective 11: Identify Top Three Companies per Police Station Based on Years of Experience

Methodology : With over 140 registered companies across various locations (police stations), stakeholders need to know which firms have the most industry experience in each area. This allows for localized comparisons, regional benchmarking, and helps clients or regulators identify trusted firms near them.

A Pivot Table was created to:

- Group companies by Police Station (Thana)
- Sort them by Company Age (Years of Operation)
- Select the Top 3 companies per station based on descending order of age

Table : Top 3 companies by Years of Operation in every Police Station

No	Police Station	Company 1 (Age)	Company 2 (Age)	Company 3 (Age)
1	Chittagong Sadar	PRONAYON (35)	FIALKA (26)	STYLE LIVING ARCHITECTS LTD (21)
2	Dhaka Cantonment	DWm4 ARCHITECTS (30)	INGRID ARCHITECTS (29)	4 WALLS INSIDE OUTSIDE (26)
3	Dhanmondi	ARC ARCHITECTURAL CONSULTANTS (43)	TANYA KARIM N.R. KHAN & ASSOCIATES (32)	VISTA ARCHITECTURAL CONSULTANT (30)
4	Gulshan	DOMUS (48)	CAD LTD (39)	TRIANGLE CONSULTANTS (32)
5	Mirpur	ASSOCONSULT LTD. (40)	37 BRIDGE (16)	ARCHITECTURE TOMORROW (12)
6	Mohammadpur	DESH UPODESH LTD (47)	PROKALPA UPODESHTA LTD (41)	ARCHSEL (28)
7	New Market	ENVIRON STRUCTURE LTD. (36)	ARCHITECTES CONTEMPORAIN (ARCON) (29)	MAATRIK ARCHITECTS (25)
8	Tejgaon	VITTI STHAPATI BRINDO LTD (34)	DESIGN CELL (17)	ECLIPTIC (16)

|				
9	Uttara	DESIGN ENGINEERS & ARCHITECTS (33)	SPACE SCAPE (29)	VASTUVITA ARCHITECTS (20)
10	Palton	BASATIKALPA (37)	ROSEBUD CONSULTANTS LTD (30)	
11	Ramna	SHELTER ARCHITECTS AND ENGINEERS LIMITED (29)		
12	Khilkhet	ARCHITECTS' HORIZON (8)		
13	Gazipur Sadar	GENESIS ARCHITECTS (8)		
14	Khilgaon	ARCHITECTS & ASSOCIATES LTD		

Insights :

- A total of **9 Police Stations** had at least three companies registered. The companies identified under each Thana represent the most experienced firms in their area, making them stand out for reliability and legacy.

Objective 12: Estimate Pricing Category Based on Location

Methodology : The dataset lacks direct information on company pricing or service fees. The task was to estimate which companies are more likely to charge high, medium, or low fees using available data. Location (Police Station) can act as a proxy for pricing level, based on economic prestige and general market knowledge. So, a new column "Estimated Fee Tier" was created with three tiers:

- High Fee Areas: Gulshan, Banani, Baridhara, Dhanmondi
- Medium Fee Areas: Uttara, Mirpur, Mohammadpur, Motijheel, Badda, Tejgaon
- Low Fee Areas: All other areas, including remote or semi-urban thanas like Gazipur, Savar, Narayanganj.

A chart was created to illustrate the number of companies per location and how they fall into estimated pricing categories.

Chart : Estimated Pricing based on Location
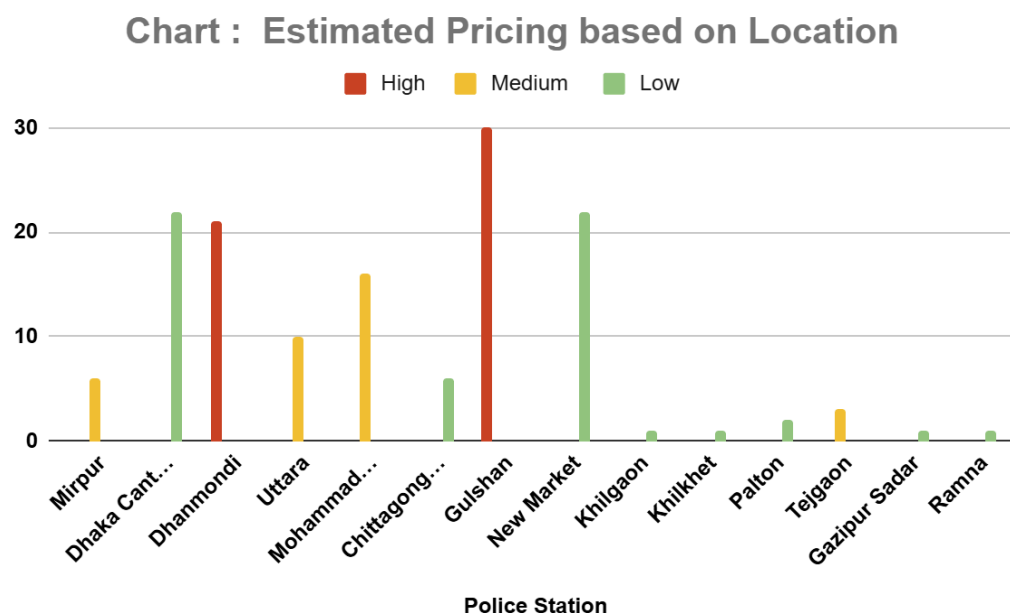
Insight:

- Gulshan and Dhanmondi dominate the High-Fee category, aligning with their status as affluent commercial areas.
- Mirpur, Uttara, and Mohammadpur mostly fall into the Medium-Fee category, offering balanced value.

Objective 13: Distinguishing Project Specialization Types

Methodology : The dataset did not include explicit information about the type of projects handled by each architectural firm. To overcome the lack of direct project classification, a heuristic method was developed using two previously calculated parameters : Google Ratings and Fee Tier.

Based on the combination of these two inputs, a logic formula was applied in Google Sheets to classify each firm into one of three project categories:

- **High-End Commercial Projects:** Assigned to companies with a **Google Rating ≥ 4.6** and operating in **High Fee** areas.

- **Aesthetic Apartment Buildings:** Assigned to companies with a **Google Rating ≥ 4.4** and located in **Medium Fee** areas.

- **Regular Construction Projects:** All other firms not meeting the above conditions.

Chart : Project Category

- Aesthetic Apartments   - High-End Commercial   - Regular Construction
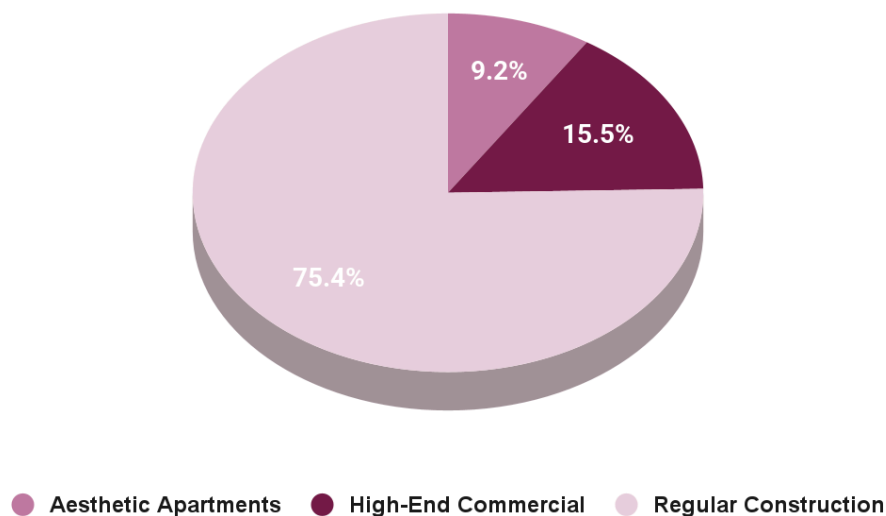
Insights :

- **High-End Commercial Projects** : **22 firms** (~15%) were classified under this category. These firms typically operate in high-fee areas like Gulshan, Banani, or Dhanmondi and have high Google Ratings (≥ 4.6), indicating strong client satisfaction and a likely focus on premium commercial or landmark developments.

- **Aesthetic Apartment Buildings** : **13 firms** (~9%) fell into this mid-tier specialization. These companies are generally based in moderately priced business zones such as Uttara, Mirpur, or Tejgaon and hold Google Ratings of at least 4.4. This suggests a focus on well-designed residential or apartment-based projects catering to upper-middle-income clients.

- **Regular Construction Projects** : The majority, **107 firms** (~75%), were categorized under general construction. These companies operate across a wider range of locations, including low-fee and remote areas, and may have average or missing Google Ratings. This group likely handles typical residential, institutional, or infrastructural projects with standard design and budget considerations.

Summary & Recommendations

The analysis of 142 registered architecture firms under the Institute of Architects Bangladesh (IAB) has provided detailed insights across several operational, reputational, and regional dimensions.

Key findings include:

- **Professionalism Scores** revealed a gap between firms with complete digital presence and those lacking core information such as websites or professional emails.
- **Estimated Project Completions** provided a comparative understanding of each firm's likely experience level, using a reasonable proxy model based on age and Google ratings.
- **Fee Tier Classification** highlighted market stratification based on location, allowing stakeholders to understand regional pricing dynamics.
- **Firm Categorization** into high-end commercial, aesthetic apartments, and regular construction helped segment companies by market focus, based on combined reputation and location data.

Recommendations:

1. **Encourage Complete Digital Presence**: Firms lacking Google reviews, websites, or professional contact details should be supported to establish these.
2. **Further Validation of Predictive Models**: Where real project or pricing data becomes available, models should be refined for higher accuracy.
3. **Use of Dashboard for Ongoing Insights**: Stakeholders can use the accompanying interactive dashboard to filter and compare firms for various analytical and operational purposes.
4. **Regional Development Opportunities**: Targeted support or outreach can be designed for firms in lower-tier areas to bridge professional and exposure gaps.

Dashboard & Documentation Links

- **Interactive Dashboard (Looker Studio):**

  [IAB Registered Companies - Analysis Dashboard](#)

- **Data Analysis (Google Sheets Workbook):**

  IAB Data Cleaning_Sohana Tasneem

- **Project Documentation (Google Docs):**

  Documentation