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RESEARCH LABS

INNOVATION. AUTOMATION. ANALYTICS

ANALYSIS OF WEAPONS

ABOUT ME

- I have recently completed my bachelor degree of computer application from hvm , Amravati .
- I have prior experience in Python and data manipulation, so I developed a strong interest in the field of Data Science
- Here are links to my GitHub and Linkedin profile
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- https://github.com/vaibhavitayade

Problem statement

Weapon data available online is often unstructured and inconsistent, with variations in units (kg/lb, cm/inch) and missing specifications.
Lack of a centralized, standardized database makes it difficult to analyze weapon categories, pricing patterns, and key specifications.

Objectives

To collect, clean, and standardize weapon data into a structured format for accurate analysis.
To build a database that enables meaningful insights such as price distribution, category trends, and correlations between specifications.

Web scraping - Process

- Website : https://airsoftstation.com/

Step followed while Scrapping :

01 **Find Website & Collect Data –**

Choose a weapon site and get page content using Python (requests).

02 **Read the Page**

Use BeautifulSoup to take details like name, price, type, weight, and size.

03 **Clean the Data**

Remove symbols (₹, $, cm, kg), fix units, and handle missing or repeat values.

04 **Save & Check**

Store data in CSV/SQL, then check if everything is correct and complete.

DATA FRAME AFTER SCRAPPING THE WEBSITE

[79]:

	Weapon Name	Cost	Weight (kg)	Length(cm)	Size (cm)	Caliber(mm)	Range (m)	Availability
0	Rifle M347	1125276816	4.7	117.0	68.0	7.62	712.0	Out of Stock
1	Rifle M708	839955103	4.4	113.0	62.0	5.56	303.0	In Stock
2	Pistol M787	266452742	5.7	82.0	58.0	9.00	607.0	In Stock
3	Pistol M422	180684692	2.1	62.0	58.0	12.00	129.0	In Stock
4	Sniper M119	280175630	2.6	83.0	108.0	9.00	257.0	In Stock

DATA FRAME AFTER SCRAPING & CLEANING THE DATA

Weapon Name	Type	Length (cm)	Range	Availability	Brand
Rifle M574	Sniper	53	266	In Stock	Tokyo Marui
Pistol M260	Shotgun	68	88	Out of Stock	G&G
Shotgun M458	Shotgun	79	429	Out of Stock	CYMA
Shotgun M469	Rifle	50	569	Out of Stock	CYMA
Shotgun M179	Rifle	48	203	In Stock	CYMA
SMG M703	Rifle	59	87	Out of Stock	G&G
Shotgun M899	Sniper	86	163	In Stock	Lancer Tactical
SMG M444	SMG	49	798	In Stock	Tokyo Marui

FPS	Magazine Capacity	Power Source	Customer Rating	Cost	Caliber_Diameter	Caliber_Type
302	25	CO2	3.4	112050	11.43	mm
254	128	Gas	3.8	104746	5.56	mm
387	121	Electric	3.7	172142	5.56	mm
377	109	Spring	2.5	64657	11.43	mm
317	137	Spring	4.8	184343	18.53	gauge
281	157	CO2	2.5	112299	9.0	mm
310	142	Gas	1.5	160356	9.0	mm
254	160	Gas	2.1	88312	18.53	gauge
339	157	Electric	2.9	73123	11.43	mm

TYPES OF GUNS

Machine Guns

Rifles

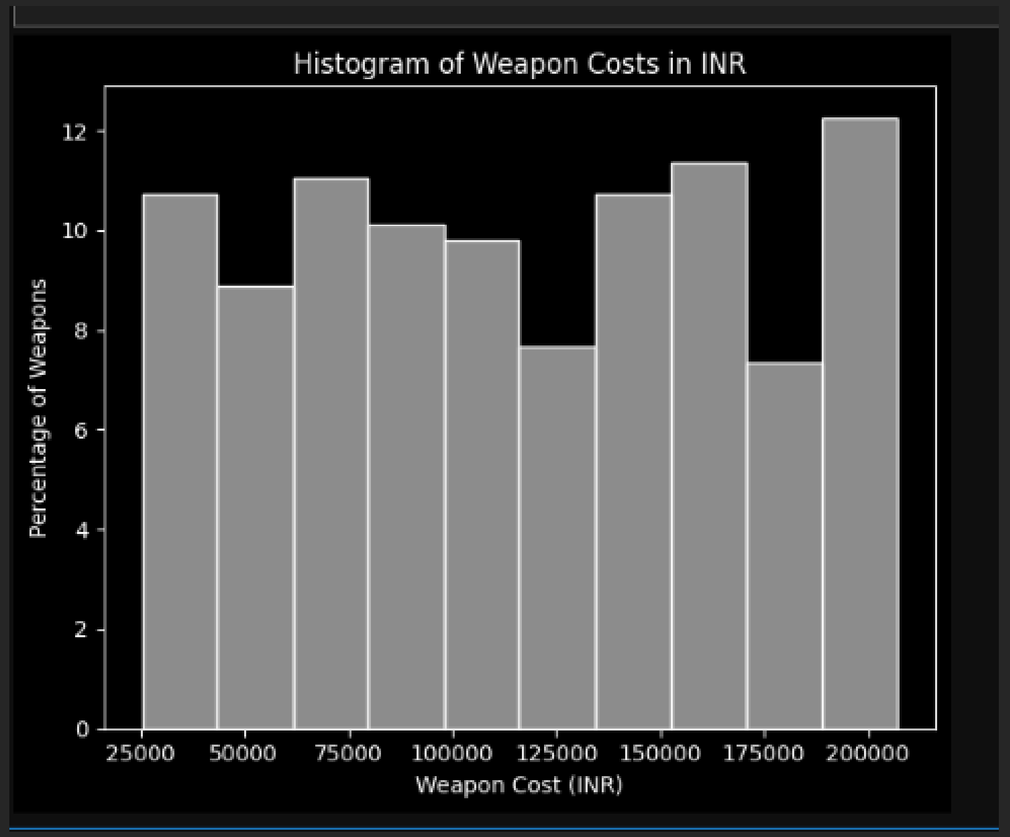
1. Handguns
    a. Small, easy to carry.
    b. Includes Pistols and Revolvers.
2. Rifles
    a. Long-barrel firearms, accurate for long-range shooting.
    b. Examples: Assault Rifles, Sniper Rifles, Bolt-Action Rifles.
3. Shotguns
    a. Designed to fire multiple pellets (shot).
    b. Used for close-range and spread fire.
4. Submachine Guns (SMGs)
    a. Compact automatic firearms, used in close combat.
5. Sniper Guns
    a. High precision, long-range targeting.

Handguns

Shotguns

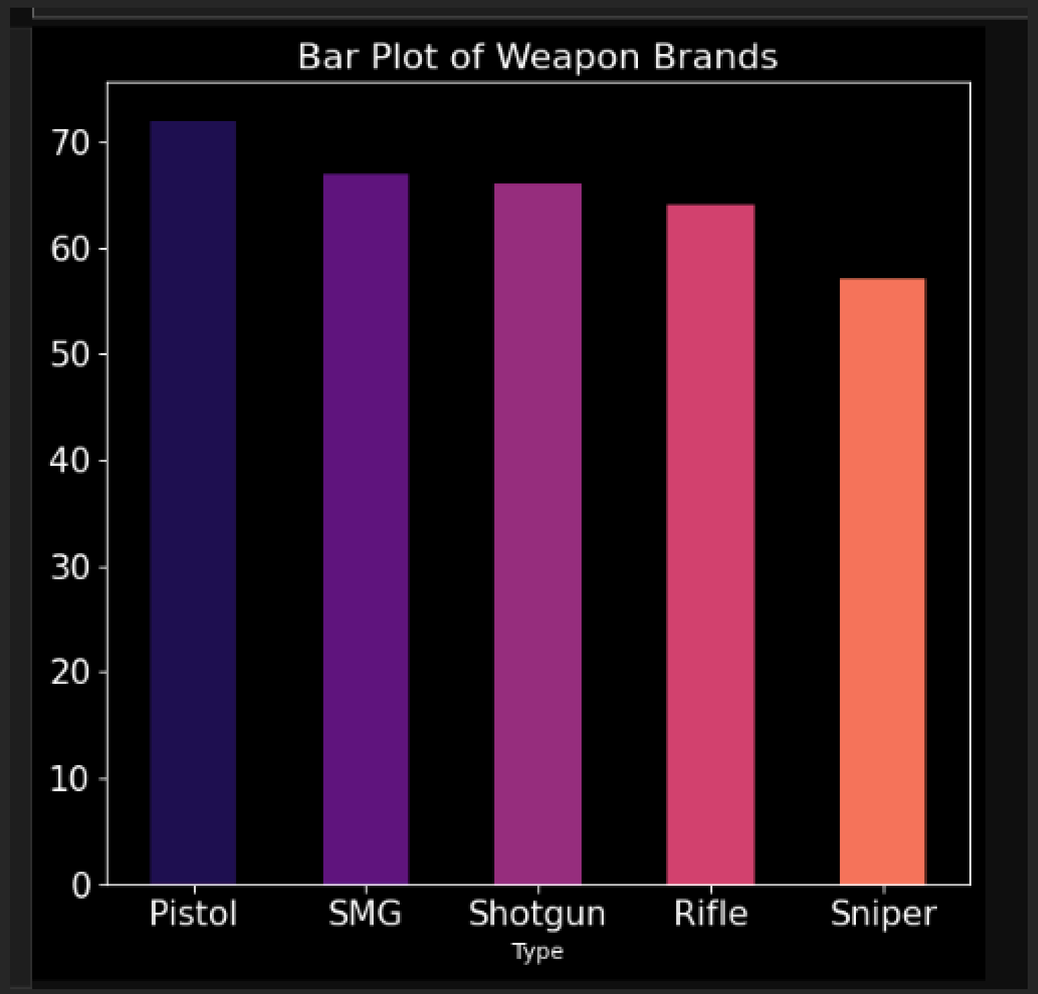
Submachine Guns (SMGs)

UNIVARIATE ANALYSIS



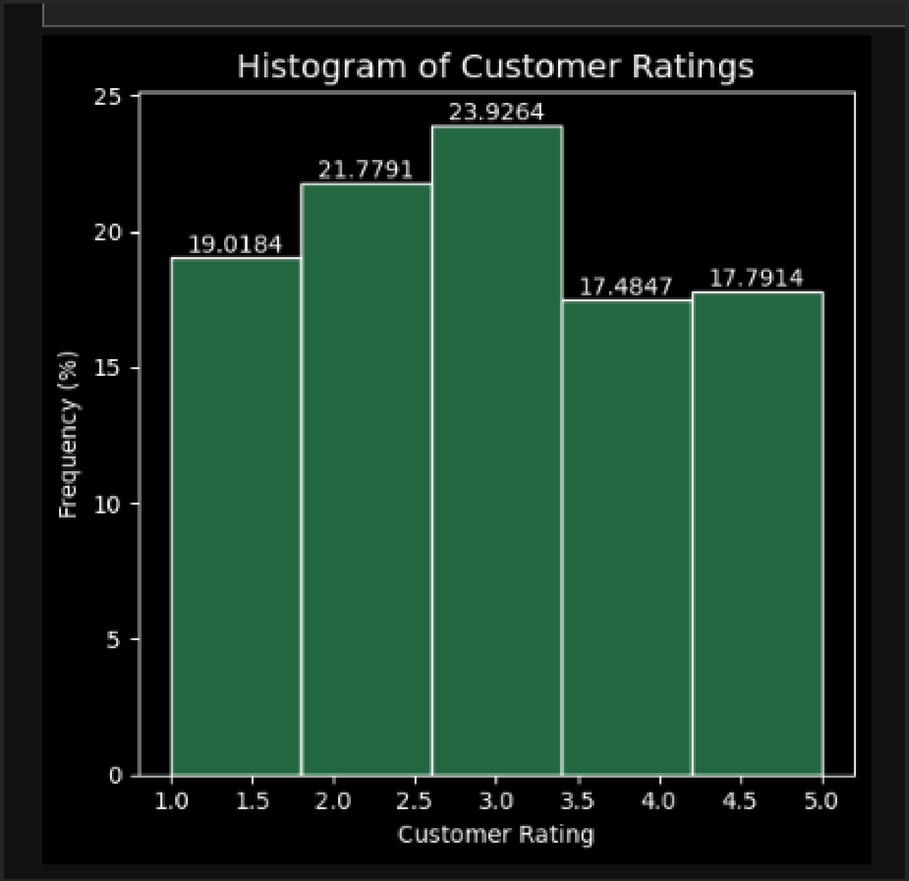
- The X-axis shows the weapon cost ranges (25,000 – 2,00,000 INR).
- The Y-axis shows the percentage of weapons that fall into each cost range.
- The bars represent how many weapons belong to each cost group.
- We can see that the distribution is fairly spread out across all price ranges, with a slightly higher percentage of weapons in the cost range 1,50,000 – 2,00,000 INR.

UNIVARIATE ANALYSIS



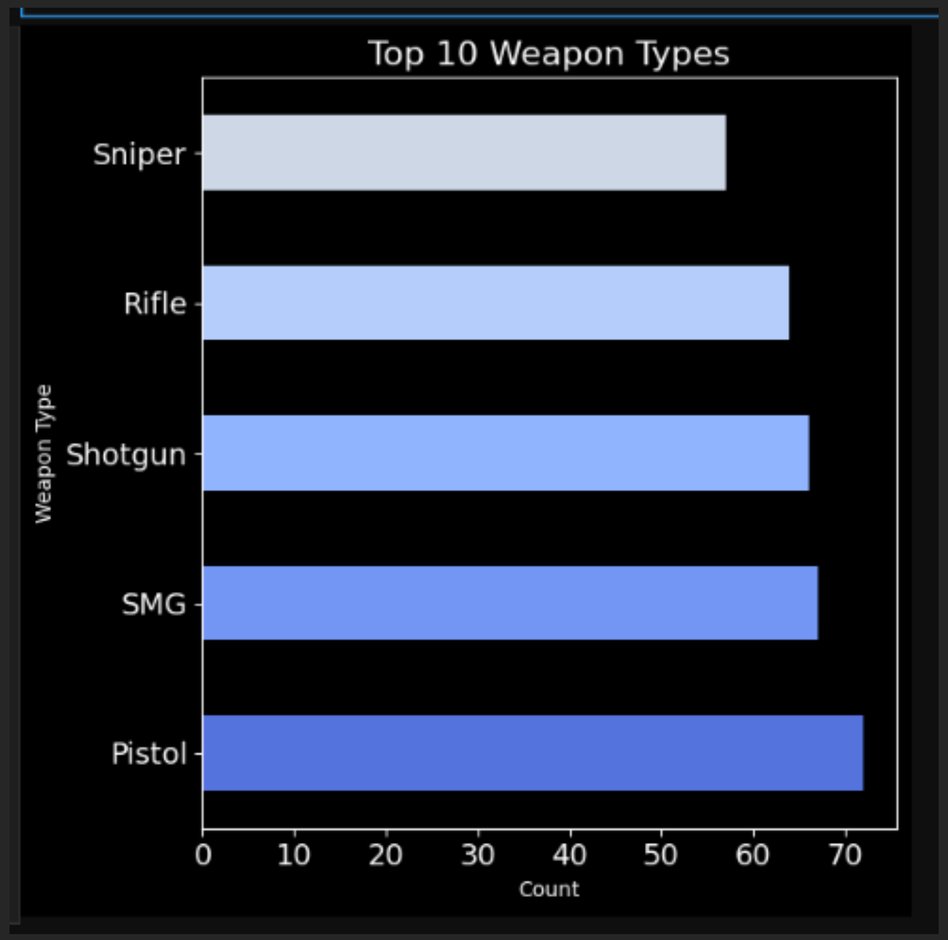
- The X-axis shows different weapon types (Pistol, SMG, Shotgun, Rifle, Sniper).
- The Y-axis shows the number of weapons in each type.
- Among all, Pistols have the highest count, followed by SMGs and Shotguns.
- Snipers are the least common type in the dataset.

Histogram of Customer Ratings



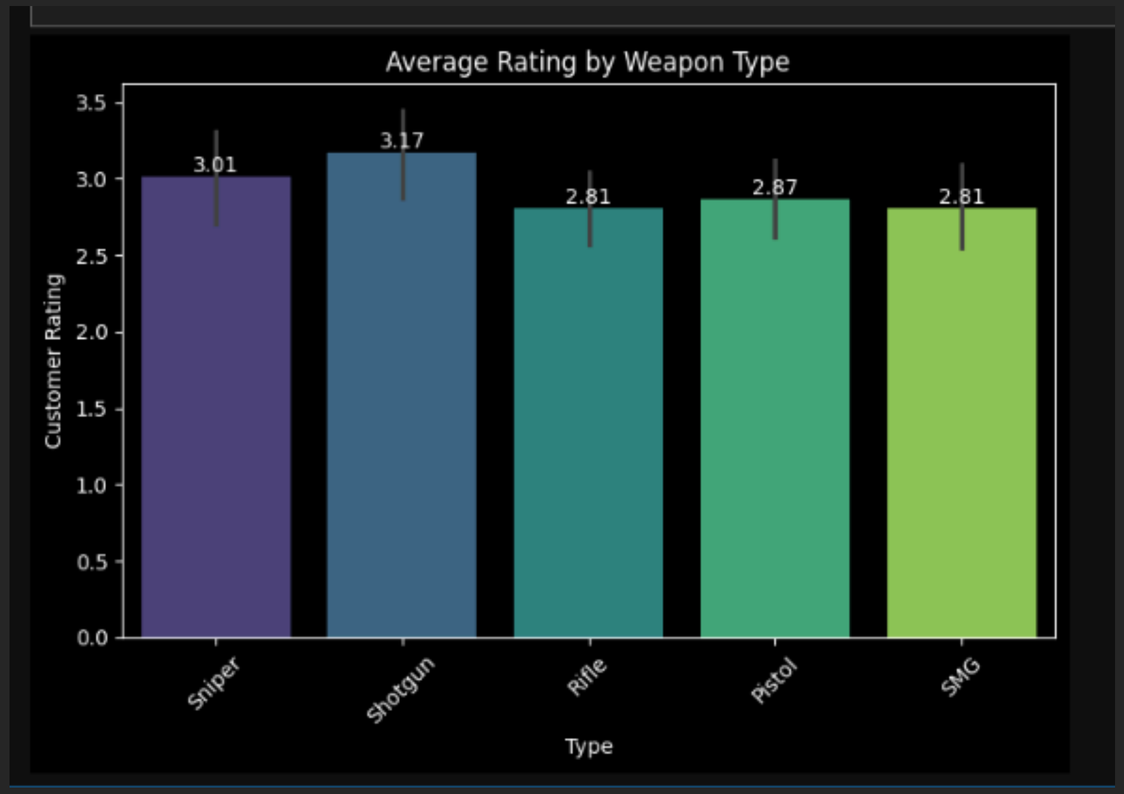
- X-axis: Customer rating scale (e.g., 1–5).
- Y-axis: Percentage of weapons with that rating.
- Most weapons are rated in the higher range (if the bars are taller on the right), showing better customer satisfaction.
- Lower ratings (if any) indicate less preferred weapons.

TOP 10 WEAPON



- This chart shows the 10 most common weapon types in the dataset.
- The X-axis represents the count of weapons, while the Y-axis lists the weapon types.
- The longest bar indicates the most frequently occurring weapon type, while the shorter bars show the less common ones.
- This helps us quickly identify which weapon types are dominant in the dataset and which are relatively rare.

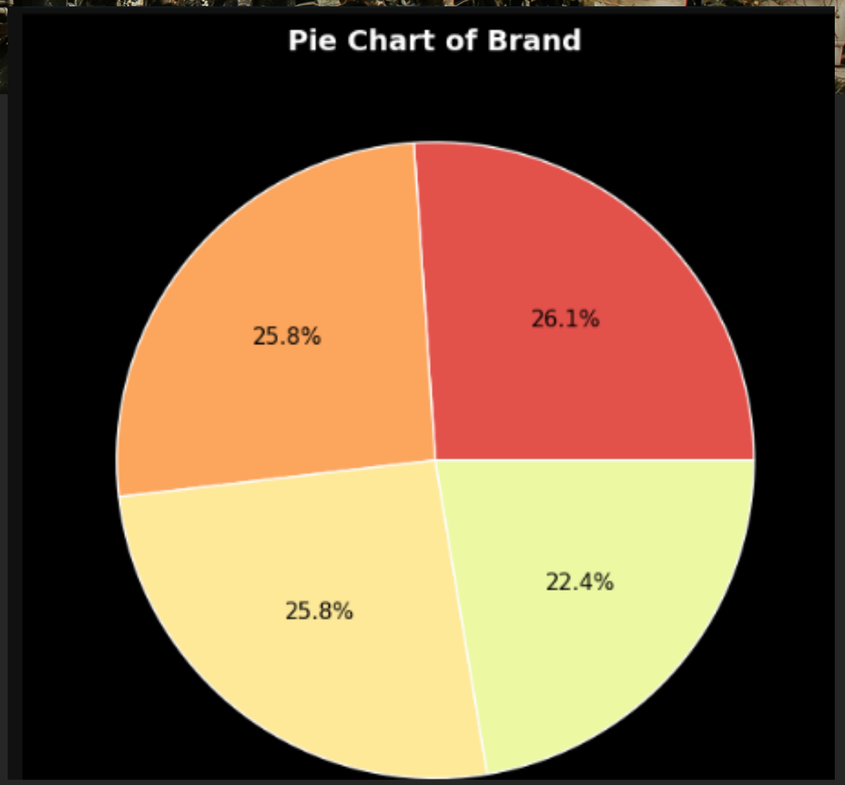
Average Rating by Weapon Type



- The X-axis shows different weapon types (Sniper, Shotgun, Rifle, Pistol, SMG).
- The Y-axis shows the average customer rating for each weapon type.
- Shotguns have the highest rating (3.17), meaning customers rate them more positively.
- Snipers come next (3.01), also showing relatively good ratings.
- Rifles, Pistols, and SMGs all have ratings around 2.8, which are comparatively lower.
- The black lines on top of each bar represent confidence intervals, showing variation in ratings.

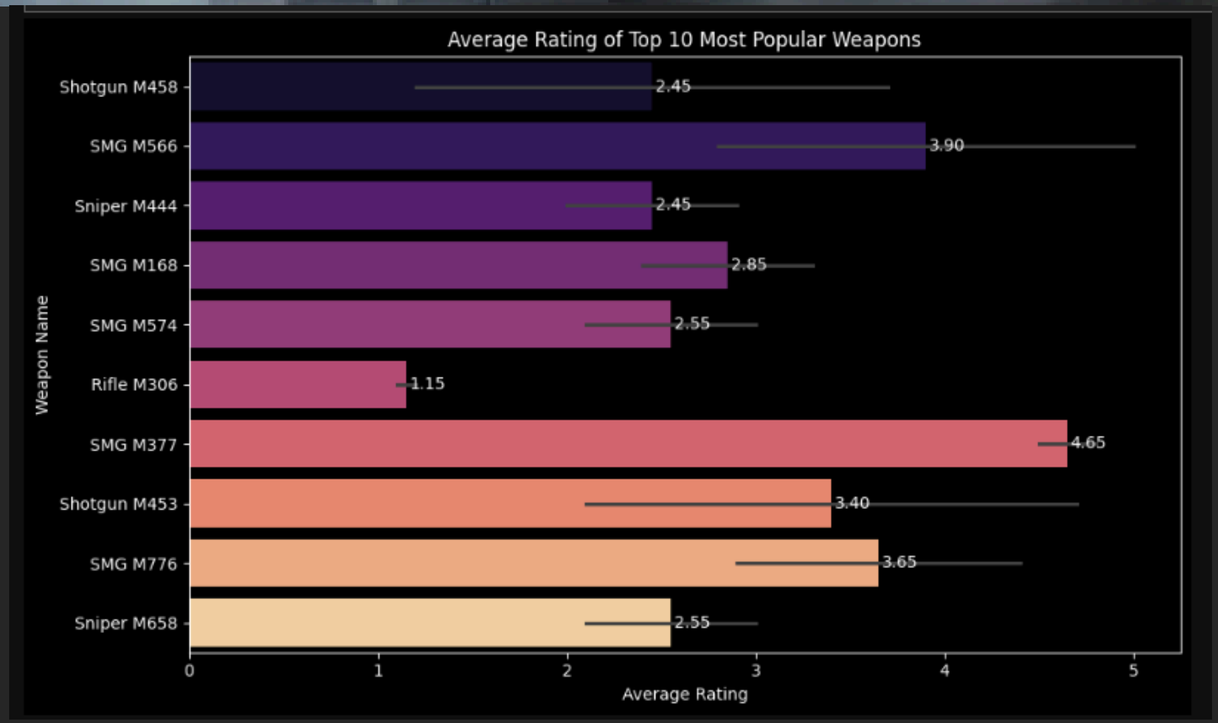
Pie Chart of Brand

1. The pie chart shows the market share of top weapon brands in the dataset.
2. Dominant Brand: Tokyo Marui leads with 26.1%, slightly ahead of others.
3. Close Competitors: CYMA (25.8%) and Lancer Tactical (25.8%) have almost equal shares, showing strong competition.
4. Smaller Share: G&G holds the lowest share (22.4%), but still a significant portion.



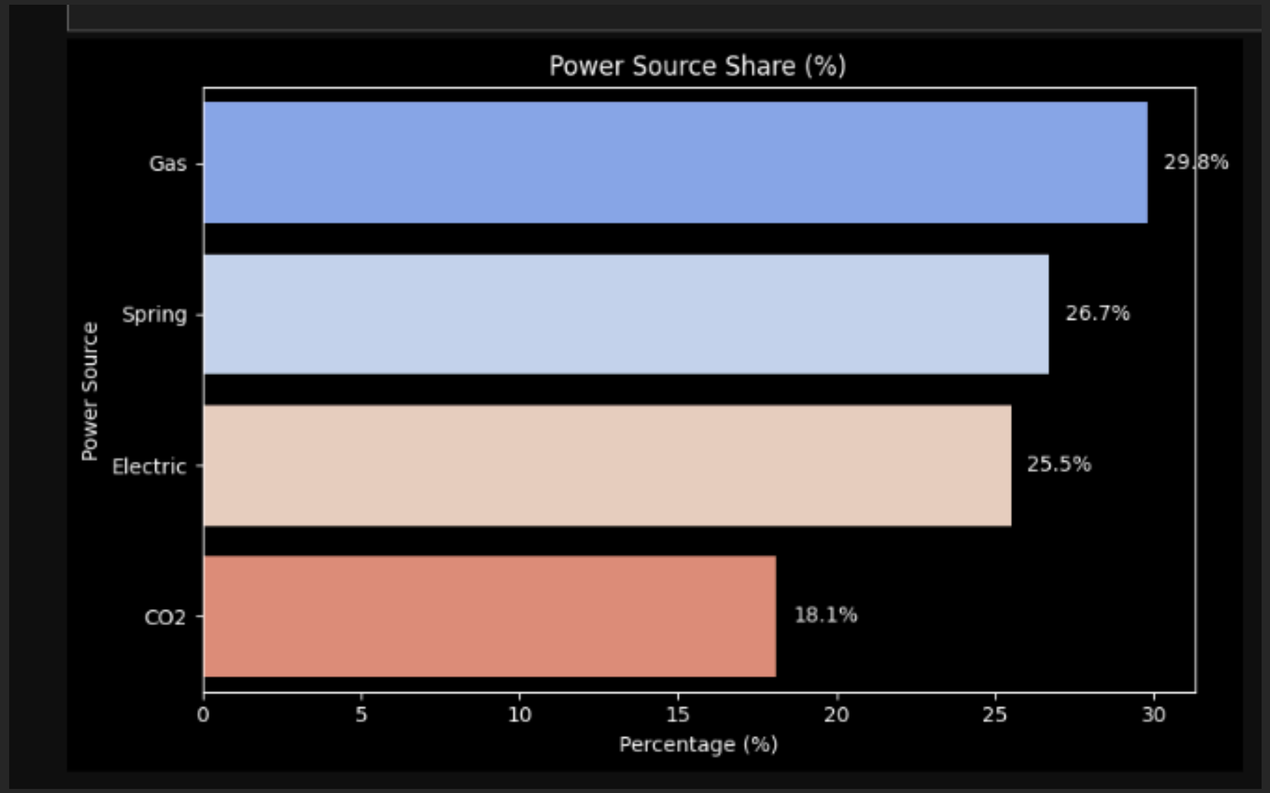
Average Rating of top 10 most popular Weapons

- This bar plot shows the average customer rating of the top 10 most popular weapons (based on frequency of appearance).
- The x-axis represents the average rating given by customers.
- The y-axis lists the weapon names.
- The value labels on each bar (e.g., 4.20, 3.85) make it easy to compare ratings.
- The color palette (magma) highlights the differences visually.



POWER SOURCE SHARE (%)

- This chart shows the percentage distribution of weapons based on their power source.
- Gas-powered weapons are the most common, making up 29.8% of the total.
- Spring weapons (26.7%) and Electric weapons (25.5%) are also widely used.
- CO2-powered weapons are the least common, at only 18.1%.
- The percentages are written on each bar, making the chart easy to interpret at a glance.



Customer Rating by Brand

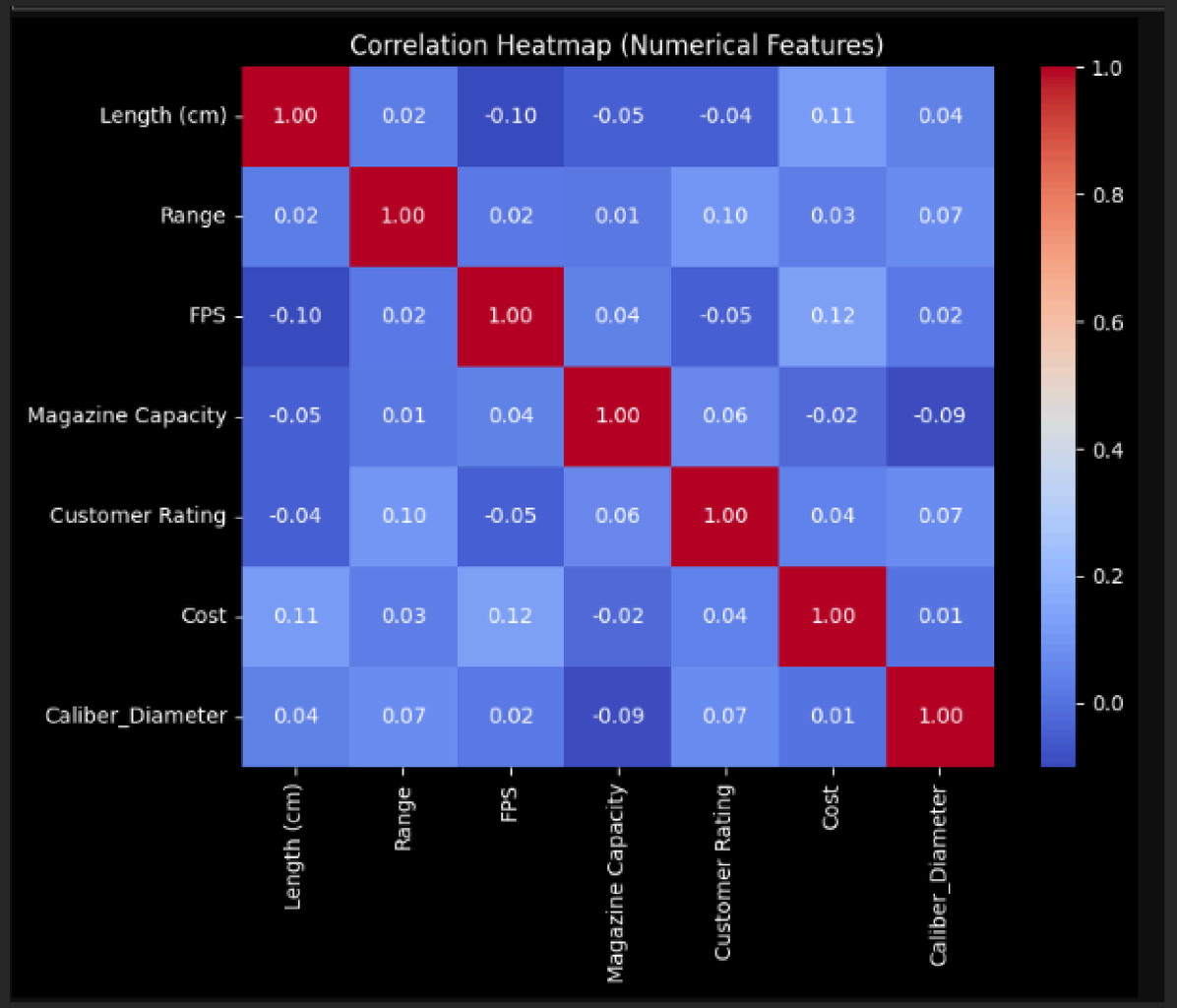
1. This is a Boxplot used for Bivariate Analysis (Brand vs Customer Rating).
2. It shows the distribution of customer ratings for each brand.
3. The line inside the box is the median rating (most common rating level).
4. The box height shows how much variation (spread) there is in ratings.
5. Dots outside the box (if any) represent outliers — unusual customer ratings.

COST VS CUSTOMER RATING

1. The blue bars show the cost of the top 10 weapons.
2. The red line represents the customer ratings of the same weapons.
3. Some weapons have high cost but low rating, showing poor value.
4. Others with moderate cost have better ratings, indicating higher customer satisfaction.
5. This dual-axis chart helps compare price vs performance effectively.

Correlation Heatmap

1. This is a Correlation Heatmap showing how numerical features of weapons are related.
2. Each box shows a value between -1 and +1:
   - +1 (red) = strong positive relationship
   - -1 (blue) = strong negative relationship
   - 0 (neutral) = no relationship
3. Example: Cost has a weak positive correlation with FPS (0.12) and Length (0.11) → slightly higher cost weapons tend to be longer and faster.
4. Magazine Capacity and Caliber Diameter show a weak negative relationship (-0.09).
5. Overall, most features show weak correlations, meaning weapon attributes like range, cost, and rating are largely independent of each other.



CONCLUSION

In this weapon dataset, we identified patterns and trends in Weapon Types, Power Sources, Weight, Range, and Price, which provide valuable insights for analysis.

These findings support smarter decision-making for research, manufacturing, and defense strategy planning.

- Future Enhancement for Growth Opportunities:

Collect data from multiple sources (e.g., online weapon stores, defense reports, research articles, government databases).

Analyze reviews, expert blogs, and market reports to track sentiment and perception of different weapon categories.

Build an interactive dashboard using Power BI or Tableau to explore weapon features and performance.

Use automation tools (e.g., Selenium, APIs) for better and faster data extraction.


THANK YOU
Vaibhavi Tayade