**ISM-6419 DATA VISUALIZATION**

**FLIPKART MOBILE ANALYSIS**

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**ABSTRACT:**

Mobile phones are one of the most rapidly rising industries, as well as one of the most prominent industries in the technology sector. The rate of mobile phone sales has been increasing rapidly since last decade. It is important to focus on the factors that drive the industry commercially. This became an inspiration to come up with the project that aims at visualizing different price range segments, comparing premium brands, comparing most product offerings by Indian market.

These visualizations are created using two data sets namely Flipkart\_Mobiles, Flipkart\_Mobiles2 which are connected using the composite key of Brand, Model, Color, Memory, Storage, Selling price, original price.

The main goal of the project is to focus on the mobile sales depending on the various factors such as its specifications like model, color, brand, memory, storage.

The report addresses the main aim, reason behind choosing this project, overview of datasets, visualizations, and conclusions.

**INTRODUCTION:**

Flipkart is an Indian E-commerce company which is headquartered in Bangalore, India. Flipkart initially started by selling online book sales slowly it started receiving 100 orders a day and they began to expand its product categories from then. In February 2014, Flipkart partnered with Motorola Mobility to be the exclusive mobile retailer its Moto G smartphone. It subsequently held Indian launches for other smartphones and sooner it held 51% share of all Indian smartphone shipments in 2017 overtaking Amazon which is Flipkart’s competitor. It started a major sale on its website with the name “Big Billion Day” where it generated a huge traffic to the website and had a huge selling of $100 million in 10 hours. It later bolstered its supply chain and introduced more warehouses to meet customer demands.

In this project I am going to analyze all the Mobile brands that are available on Flipkart website. I would like to perform visualizations on different mobile brands that are available on their website.

Following are the research questions that I used to create the visualization with the dataset I have.

1. Different Price range segments for mobiles in India
2. Brand with most product offerings for the Indian Market
3. Brand catering to all different segments (low range, mid-range, premium)
4. Most common specs offered by various brands (e.g., if 4 GB memory and 64GB storage models are more commonly offered by all brands)
5. Compare premium offerings by top brands
6. Most offered colors by all Brands
7. Compare Two Brands based on specs
8. Are higher rated mobiles always premium or expensive?
9. Does a brand have better than 4 ratings for all its products?

**METHODOLOGY**

Dataset consists of different Mobile brand in India from the website called Flipkart. It consists of 7 attributes in Flipkart\_Mobiles file and the second file has 6 attributes.

Flipkart Mobiles Dataset (Flipkart\_Mobiles)

1. Brand- Name of the Mobile Manufacturer
2. Model- Model number of the Mobile Phone
3. Color- Color of the model.
4. Memory - RAM of the model
5. Storage- ROM of the model
6. Selling Price- Selling Price/Discounted Price of the model in INR
7. Original Price- Actual price of the model in INR

Flipkart Mobiles Dataset (Flipkart\_Mobiles2)

1. Brand- Name of the Mobile Manufacturer
2. Model- Model number of the Mobile Phone
3. Color- Color of the model.
4. Memory - RAM of the model
5. Storage- ROM of the model
6. Rating- Rating of the model based on the customer reviews

I found null values in the rating column, and I have imputed them with average rating of that brand. I have joined both the tables by using the composite key of Brand, Model, Color, Memory, Storage, Selling price, original price.

**Visualization 1: Visualization displays the Average Selling price of brands across products.**

Chart, bar chart

Description automatically generated

The above visualization displays the brands and the average price of the products released by the brands into market. From the visualization plot it is observed that Apple has the highest selling price followed by google pixel. These two brands have the highest average selling price of about 82k and 61k respectively. Next IQOD has greater selling price of about 37k followed by HTC with 28k, Samsung with 24k and vivo with 23k. There is not much difference in the selling prices of the brands like LG, OPPO, Realme, Motorola, Lenovo, and few other brands. GIONEE has the least Average selling price. I observed that the name of the brand has great impact on customers in the market irrespective of the functionalities offered and user interface provided by the brand.

**Visualization 2: The Visualization displays the brands with most product offerings**

Chart, bar chart, funnel chart

Description automatically generated

The above Visualization displays which brands offers more products to its customers. From the visualization it can be observed that Samsung offers more product to its customers by releasing various products into the market and it offers more than 200 products. Next comes Nokia which offers more than 80 products and there is a drastic change between the number of products offered when compared to Samsung. Later followed by OPPO, LG, Realme, vivo etc. and the least number of products are offered by Apple, google pixel and Iqod. It can be observed that though a brand offers more number of products to its customers, we cannot say that the brand which offers more products is the highest selling brand in the market.

**Visualization 3: The Visualization displays difference price range segments for all brands**

Timeline

Description automatically generated

The above Visualization displays the different price segments offered by all brands. Prices offered depends on the features available in the product. Visualizations showcases three different ranges Low range, Mid-Range and Premium. We can see that most selling products fall under the Low range in terms of ratings and count of model followed by mid-range and then premium. And the Most selling products fall under the premium range in terms of the original price and selling price followed by mid-range and low range.

**Visualization 4: The Visualization displays brands catering to all different segments**

Chart, bar chart

Description automatically generated

The above visualization displays the products offered in different segments by a brand and number of products offered in each segment. Here the dark color shows the highest number of products, and the light color indicates the lowest number of products by a particular brand. Almost all brands offer products in the Mid-range and Low range and only few brands offer products in the premium segment. We can see that Samsung offers different models in all the three segments. No products are offered in the Low range by Apple, it only offers segments in Midrange and premium segments. Google pixel is the only brand that offers only the premium products.

**Visualization 5: The Visualization displays the most common specifications offered by all brands**

Chart, bar chart

Description automatically generated

The above Visualization displays the specifications offered by all the brands. Few common specifications offered by all the brands the ram storage, memory, battery, accessibility etc. These features are offered by all the brands, but memory and storage are the most vital specifications that are considered in Indian market. Visualization showcases that the products released with 4GB memory and 64GB storage are the most offered when compared to 3GB memory and 32GB storage, 6GB memory and 128GB storage etc.

**Visualization 6: The Visualization displays the Products with and without 4 stars for all the brands**

Chart, Excel

Description automatically generated

The visualization above shows total product offerings split by brand and 4-star rated products flag for the top brands sold in India. As we can see, Apple & Realme had all the product offerings which are at least 4-star rated, HTC had more products with less than 4 stars than the products with above 4 stars and all the other brands have more products with at least 4-star rating than without 4-star rating.

**Visualization 7: The Visualization displays the most offered colors by all the brands**

Chart, bar chart

Description automatically generated

I have plotted a bar graph to see the total number of product offerings for each color across all the brands. Blue color is used from the above visualization, Black is the most selling color in all the brands. Next gold is the most selling product then comes white followed by blue, sliver and red.

**CONCLUSION:**

* Apple is the costliest brand in India followed by Google.
* Samsung has the highest product offerings in Indian market followed by Nokia & Oppo and IQOO and Google has the least number of product offerings.
* Total products offered is high for low range segment followed by medium range and premium and average rating is high for premium segment followed by medium and low segment.
* Samsung is the only brand that caters well to all the different price segments.
* 4 GB memory and 64 GB storage & 3 GB memory and 32 GB storage are the most common specification offered by all the brands.
* Samsung has highest 4 rated products and vivo has the least number of 4 rated products offered among the top brands.
* Black is the most common color offered in the Indian market followed by gold & white.

**FUTURE ENHANCEMENTS:**

Visualizing the trends based upon mobile and its offerings.

Visualizing the brand sales with respect to the usage of mobile by visually impaired.

Visualizing the sales of mobile phones with respect to sim slots & 5G network specification.

Visualizing the highest number of product offerings based on the battery life

Visualizing the average ratings for brands based on their country make

**REFERENCE:**

<https://www.kaggle.com/devsubhash/flipkart-mobiles-dataset>

<https://www.kaggle.com/devsubhash/flipkart-mobiles-dataset?select=Flipkart_mobile_brands_scraped_data.csv>

<https://en.wikipedia.org/wiki/Flipkart>