**Business Requirements Specification (BRS)**

**1. Background Of The Project**

It is time to make a complete picture of the Organized Retail stores and products as they are the market leader in the field of Retailing.

These stores have been successful in its strategies in upgrading the consumer in the electronic business. The stores have made sure that it makes it consumer friendly where they move up the product chain by introducing the same products to the new customers.

Here the Retail Sales Analysis is a list of over 7,249 electronic products with pricing information having over 15 unique fields provided by Datafiniti's Product Database. The dataset also includes the brand, category, merchant, name, source, and more.

**2. Approach**

* **The Capabilities Needed for Sales Trend Analysis**

To gain meaningful insight from your data, you need the following key capabilities:

* Centralized location to view data (PYSPARK)
* Real-time sales data updates
* Data visualization tools (GRAFANA)
* Anytime, anywhere access to data
* Time-based data analysis

Without these capabilities, you won’t be able to take action from your data.

* **Products**
* Yamaha - This product is sold by many merchants. It contributes more revenue among all products.
* Boytone - Boytone offers a 2500W amplifier. It consists of a package of 2 amplifiers.
* Sanus - Provides electrical TV Wall Mount.

From our data, the average selling price is around 300$-400$. For the growth of the sales, the company must intake the most selling stocks.

**3. Goals of project**

* To provide all types of Electronics at a reasonable price with exclusive offers.
* The products sold if met with any defects must be provided with good customer service as soon as possible.

Key motive is:

* To get a good customer-seller relationship
* To maintain proper service system as well

**4. Problem Statement**

Analyze the business perspectives and provide the hidden inference from the data.Also deploy the machine learning model for predicting the accuracy of the prices of brands which are in sale.

**5. Solution / Proposed System**

When looking for trends or patterns in the sales data, we can determine both opportunities and potential problems. We can track if a particular product is increasing or decreasing in sales.

If it’s declining, you can make timely decisions such as to cut prices, market more, or discontinue the product.

If an item is selling off the shelves, you can be sure to stock inventory accurately across channels.

Sales trend analysis also helps you determine if we’re meeting the sales goals by providing an easy, measurable way to track the progress. We’ll actually know if we increased sales from last year and by what percentage based on the dates added of the product.,

**6. Users of project**

Looking at your sales reports will tell you exactly which products or suppliers are driving revenue so you can plan your stock orders accordingly.

Company - Setting up an established firm with merchants for the delivery of products.

Merchants - The buying/selling work between the company and the customer is smoothly carried out by them.

Customer - People buy the products and also contact the company for service.

**7. Requirements: Functional Requirements**

**Exploratory Data Analysis:**

* Analysis the dataset
* The number of missing/null values
* The number of unique values in each variable

**Business queries:**

**1)**  Predicting the mean value for the products from its sales price(Max & Min)

Solution for the query:

Mean value of Maximum price of the sales strategy has been calculated.From this inference we can find the average amount of which the price has been sold for Maximum in the market by the merchants



The minimum and maximum price has no major difference. Only an amount of 31 USD is the difference.

**2)** Competitive pricing strategy for the same product from different merchants.

Solution for the query:

Competitive pricing is the process of strategically selecting price points for the brands/products and merchants based on competitor pricing in the market or niche and showing their differences, rather than basing prices solely on business costs or target profit margins.

Filtering only the brand “Yamaha” in order to find how the product's price differs from different merchants.

Filtering and grouping one particular brand and merchant.

* x=ra.filter(f.col('brand')== 'Yamaha')
* x.show()

**Here out of many brands, we have chosen one brand which has the maximum products.**



* Now we have selected the merchant for the particular brand and took counts.

**Here out of many merchants, we have chosen one merchant which has the maximum products.**

* x=x.filter(f.col('prices\_merchant')== 'Bestbuy.com')
* x.show()



Now the average of price points for the YAMAHA brand and BESTBUY.COM merchants based on competitor pricing in the market has been displayed in the below snippet.

* x.agg({'prices\_amountMax':'mean'}).show()
* x.agg({'prices\_amountMin':'mean'}).show()



* b=a.filter(f.col('prices\_merchant')== 'bhphotovideo.com')
* b.show()

**we have chosen another merchant which has the second maximum products.**



Now the average price points for the YAMAHA brand and BHPHOTOVIDEO.COM merchants based on competitor pricing in the market has been displayed in the below snippet.



**The difference between both the merchant's maximum amount and minimum amount prices for the Yamaha brand**



It is found that the merchant(bestbuy.com) selling products has a higher mean value than the other(bhphotovideo.com).

**3)** Count of Which brand products are in sales in the market.

Solution for the query:

**Brand** equity is built by a **company** over time through the delivery of high-quality **products**, strong **marketing**, reliability, and positive press.

To attract potential customer's attention, **offer something valuable and/or unique enough to try out for the first time**. This is the essence and purpose of content marketing.It Must offer something that the brand can deliver and which satisfies the customer's needs

It identifies which brand’s products are in highest sale preference and which products are sold & not sold based on the market's pricing condition.

* The output to check if a product is sold or not is as follows.

**Convert synthetic data to numerical data of prices\_isSale column.**

from pyspark.sql.functions import translate



sel = trans.select('brand','prices\_isSale').show()



* After selecting the columns we have grouped the brands to identify the total counts of the brand which are sold and not sold.
* trans1 = trans.groupBy("brand").count()
* rans1.show()



The sold and unsold products count is given, so it clearly tells that the sold products are only 1740 which is less than the unsold products(5506).

The unsold products are more than the sold products.



**4)** The day in which the sales are updated more/less.

Solution for the query:

Online sales broadly follow people’s daily patterns, with sales dipping overnight before beginning to build up from around 6am, and growing throughout the rest of the day.

In 2020, SaleCycle data found Wednesday and Thursday saw the busiest retail days online for online sales with Saturday being the worst day of the week for online sales.

Here, we are predicting the number of products sold on a particular day through the products added dates.

* To find the number of products sold on particular days



* quer4 = query4.groupBy("prices\_isSale").count()
* quer4.show()



On some days the sales were high and on some days it was even 0 or 1

**5)** Finding Whether New or Used product sales are High/Low.

Solution for the query:

* To know if the used or new product is selling more.

**Total Count**



**Unsold**



**Sold**



From our analysis, we found that New products were highly sold as well as unsold.

**Non-Functional Requirements**

**Performance Requirements**

**1.Number of Customers (Customer Traffic):**

A number of customers are the most straightforward metric for the retail business. Even a child gets that the place that’s crowded with customers must be doing good. Customers are the sole source of money for your retail business.

**2. Effectivity (Retail Conversion Rate):**

Alright, we already had to distinguish retail visitors and retail customers. Some visitors don't buy anything. It’s rather unlikely in a big shopping mall, but very common in specialty stores or luxury boutiques.

In e-commerce, we’re talking about customer conversion ratio. This shows how many visitors a retailer turns into a buyer. It’s easy to calculate if you already know your retail customer traffic.

**3. Average Sale (Average purchase value):**

Now we have two essential retail metrics to watch. Going more in depth, you’ll be interested in your average sale value. How much money dollars, pounds, yen or euros does your average customer spend at checkout? How has it changed over time?

So we have been working on getting more people into your store, and tried to make them buy each time they visit your store? Calculate the average sale, also called average order value. It’s the moment of truth in many cases.

**Conclusions:**

There are plenty more indicators a retail business owner and manager can monitor. **Erply**(web-based retail software that works wherever you have an Internet connection) is working in close cooperation with many large retail companies, including multinationals, and what we see is that successful management keeps day-to-day watch on a limited set of retail metrics.