Customer Segmentation

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Submitted by: GROUP 3

ANANDA CHATTERJEE
HRISAV BHOWMICK
RAJARSHI CHAKRABORTY
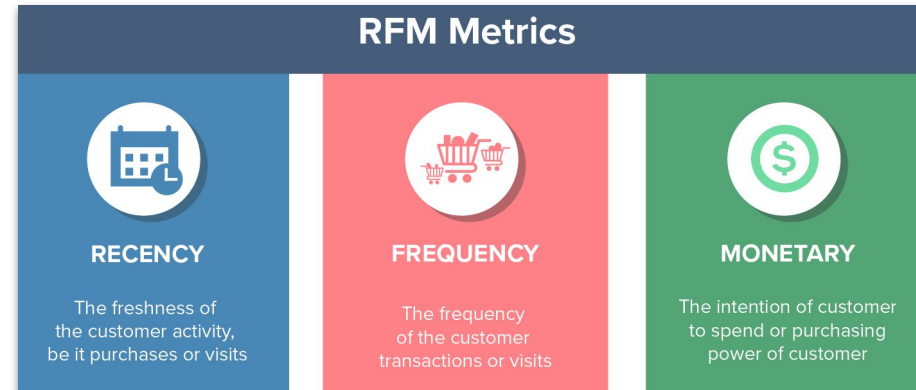SANKALPA SAHA
SIDDHARTHA DWIVEDI

Agenda

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- Business Objective
- Data Description
- Understanding the Problem
- Customer Segmentation (K-means Clustering)
- Customer Segmentation (Managerial Perspective)

Business Objective

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- A Retail Store wants to keep customers active in purchasing. The business would like to understand customer purchasing behavior to **prioritize marketing by customer groups and send relevant promotions** to existing customers.

- Segmenting customers will allow the business to create personalized marketing for each group:

  - ❏ Marketing activities can be prioritized for each group of customers based on the recency of their last purchase.

  - ❏ Customer promotions can be personalized based on how often customers purchase and the average amount spend.

RFM Metrics

RECENCY
The freshness of the customer activity, be it purchases or visits

FREQUENCY
The frequency of the customer transactions or visits

MONETARY
The intention of customer to spend or purchasing power of customer

Data Description

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- Dataset is about a **Retail Store** that sells gift items, books and stationery items.

- It has **51,243 transactions** – for 11 yrs – from 2nd Jan 2005 till 31st Dec 2015.

- It has 3 variables – Customer Id, Value of Transaction and Date of Transaction.

- The Transaction dataset is then converted to **Customer dataset**.

```
  customer_id recency frequency      amount
1          10    3829         1   30.00000
2          80     343         7   71.42857
3          90     758        10  115.80000
4         120    1401         1   20.00000
5         130    2970         2   50.00000
6         160    2963         2   30.00000
```

```
    recency          frequency          amount
 Min.   :   1    Min.   : 1.000    Min.   :    5.00
 1st Qu.: 244    1st Qu.: 1.000    1st Qu.:   21.67
 Median :1070    Median : 2.000    Median :   30.00
 Mean   :1253    Mean   : 2.782    Mean   :   57.79
 3rd Qu.:2130    3rd Qu.: 3.000    3rd Qu.:   50.00
 Max.   :4014    Max.   :45.000    Max.   : 4500.00
```
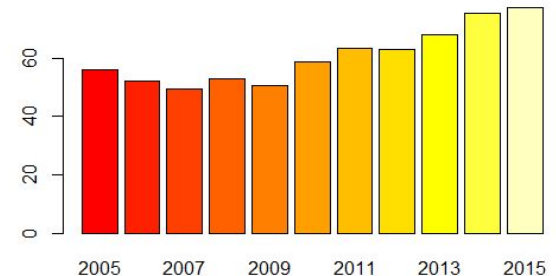
Understanding the Problem

- Transactions have been stagnant over the last few years (2011-2015).

- **Average bill value has grown** in the same period with an approximately constant trend. This could be a result of an increase in customers' average basket size or the store stocking more high value items.

- Therefore, the **revenue has grown** for the business.

- The current business problem that the store needs to focus on is to increase the number of customer transactions.
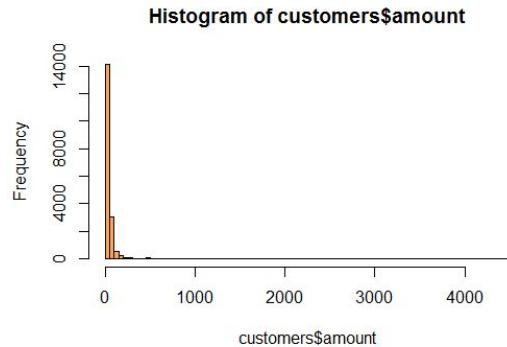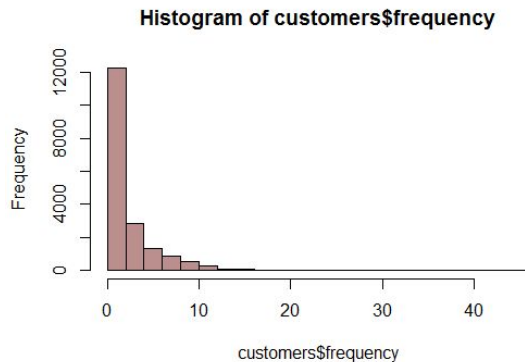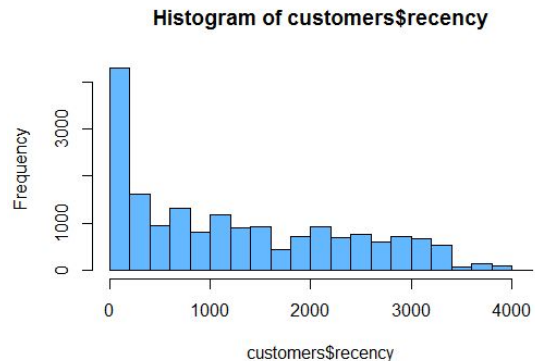
Number of purchases year wise
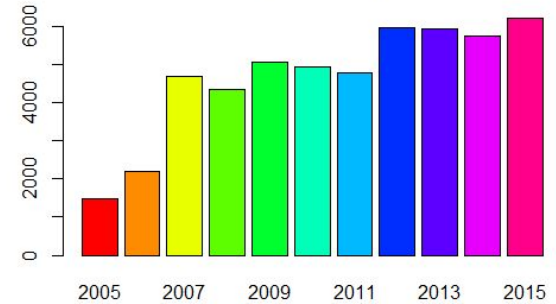
Average purchase amount per year

Understanding the Problem

- **Customer vs Recency** - Maximum number of customers have visited the store less than a year ago. 50% of the customers have visited less than 3 years ago.

- **Customer vs Frequency** - Right skewed, i.e, few customers came to store more frequently while most of them aren't frequent customers.

- **Customer vs Amount** - Average bill value of customers is highly right skewed i.e., ABV of maximum number of customers is less than $50.
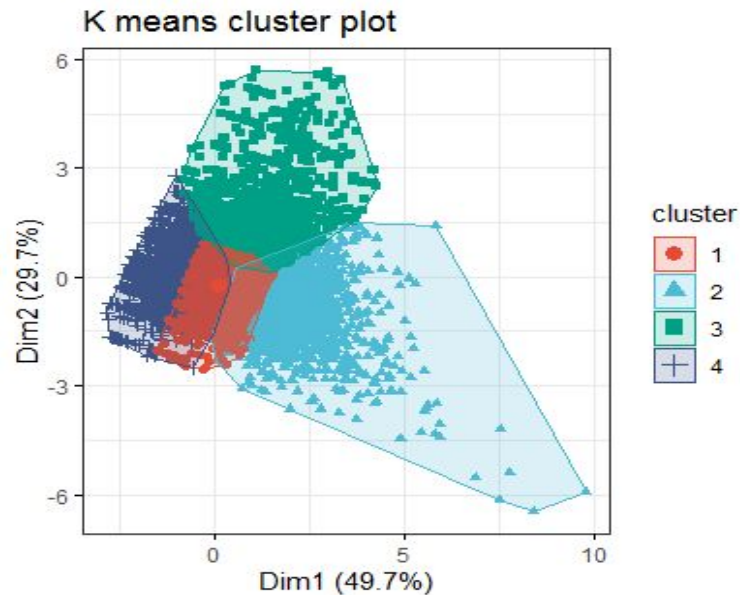
PART - I
K-Means Clustering

Customer Segmentation

Segment	Recency	Frequency	Amount	Avg Revenue	Segment size
1	**656 days**	**2**	**$ 33.1**	$ 66.2	8080
2	314 days	9	**$ 51.1**	$ 459.9	2205
3	**816 days**	3	$ 228.2	$ 684.6	2200
4	**2378 days**	**2**	**$ 30.7**	$ 61.4	5932

K means cluster plot

Customer Segmentation

cluster vs recency
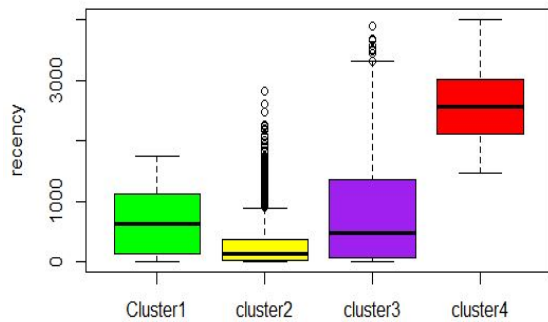
cluster vs frequency

cluster vs avg_amount

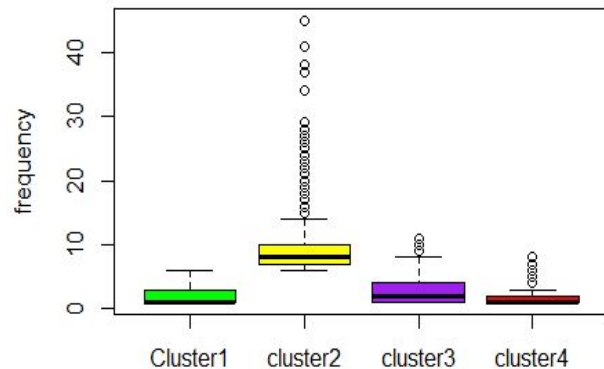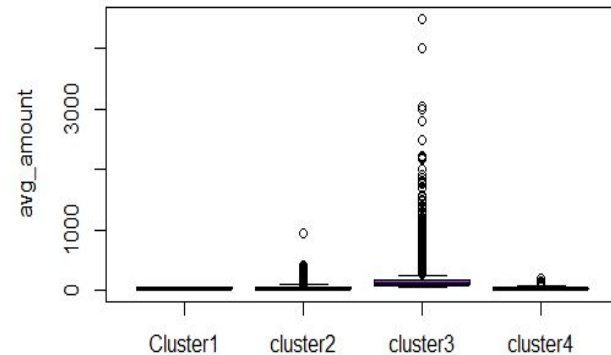- **Segment 1** - Customers of this segment have high recency values (approx. 2 years) and low frequency and amount. Also, the segment has 8000 customers and it would be difficult for the store to direct marketing actions towards all of them. If customers of this segment need to be revived, the segment should be further divided into sub-groups.

- **Segment 2** - Customers of this segment have low recency values, they are frequent customers and relatively high revenue generating customers. The store may wish to retain these customers by means of different marketing actions but since the current problem the store needs to focus on is reviving old customers, this segment need not be looked at.

Customer Segmentation

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- **Segment 3 -** Customers of this segment have high recency values and low frequency but very high ABV. These customers can be revived using some marketing actions. Since, the number of customers in this segment are lesser compared to Cluster 1, it would be easier for the store to revive them using some direct marketing actions.

- **Segment 4 -** Customers of this segment have very high recency values and would be very difficult to revive.

Therefore, the store should focus on reviving customers of Segment 3.

Marketing Actions -

The customers of segment 3 are premium customers with high-value baskets (median = $100). Assuming customers of this segment would buy high priced goods like limited-edition books, musical instruments, gaming consoles, etc. the store can implement following marketing actions -

- Offer exclusive discounts on items relevant to the segment.
- Start a loyalty program with reward points.
- Organise and invite them to exclusive events like book launches, gaming conventions, etc.
- Offer early access to new product launches / arrivals.

PART - II
Managerial Perspective

Customer Segmentation

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```
customer_id recency frequency      amount       segment
      93660      44         8    25.62500      Promising
     142190    2023         1    10.00000       Inactive
     202370     637         2    30.00000    Irrevocable
     147130    1875         1   100.00000       Inactive
      97900     177         8    90.00000        Winners
     137470    2121         1    30.00000       Inactive
     178780     181         4    25.00000      Promising
     118820      98         4    27.50000      Promising
     164280      34         6    78.33333        Winners
     215930     692         1  3000.00000     Extravagant
      32740    2241         4    27.50000       Inactive
     152170      16         6   110.00000        winners
      12980      44         5    17.00000      Promising
     174190    1301         1    30.00000       Inactive
     210930     777         1    10.00000    Irrevocable
     218120     644         1    45.00000    Irrevocable
      86930    2968         1    50.00000       Inactive
     223900     548         1    30.00000    Irrevocable
     211610      30         3    30.00000          Loyal
     224860     527         1    30.00000    Irrevocable
```
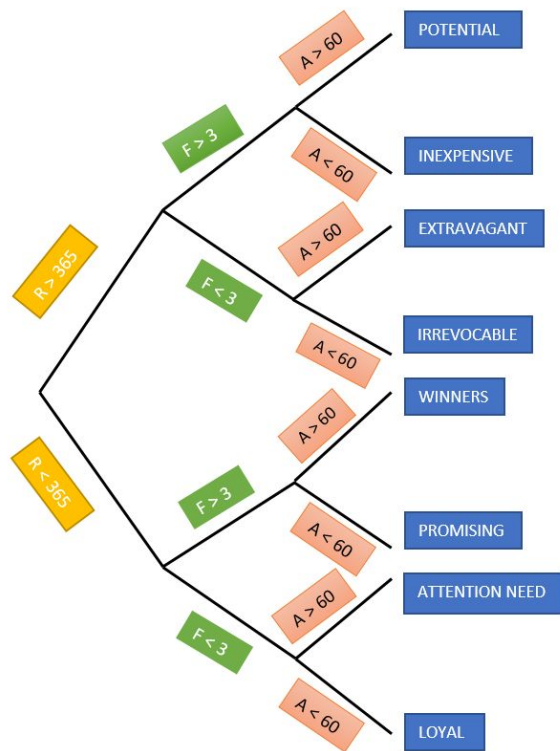
Tree Diagram shows how we have tried to do the segmentation.

R : Recency, **F** : Frequency, **A** : Amount

Customer Segmentation

Clusters	Recency	Frequency	Amount	Avg Revenue	Cluster Size	Description
1	624 days	6.51 (~ 7 times)	$ 32.64	$ 212.48	645	Came more than 1 and half years ago, was frequent, low bill value.
2	88 days	1.68 (~ 2 times)	$ 188.75	$ 317.1	775	More recent, but less frequent, high bill value.
3	666 days	1.27 (~ 1 time)	$ 167.99	$ 213.34	545	Visited nearly 2 years ago, was less frequent, high bill value.
4	106 days	1.71 (~ 2 times)	$ 31.61	$ 54.05	2056	More recent, but less frequent, low bill value.
5	2118 days	1.86 (~ 2 times)	$ 48.97	$ 91.08	9535	Visited long back, also was less frequent, low bill value.
6	697 days	1.23 (~ 1 time)	$ 29.98	$ 36.87	2089	Visited nearly 2 years ago, was less frequent, low bill value.
7	619 days	6.82 (~ 7 times)	$ 161.43	$ 1100.95	205	Came more than 1 and half years ago, was frequent, high bill value.
8	102 days	7.74 (~ 8 times)	$ 33.99	$ 263.08	1794	More recent, more frequent, low bill value.
9	88 days	7.61 (~ 8 times)	$ 151.10	$ 1149.87	773	More recent, more frequent, high bill value.

Customer Segmentation (Marketing Actions)

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Segment 2 -

More Recent, Low Frequency, High Amount
Cluster Size - 775

ATTRIBUTES

- They are the most recent customers but not frequent visitors.

- They are high spenders as evident from the high bill values.

- Objective - Make these customers visit more frequently (Retain recency and revive frequency)

STRATEGIES

- Offer membership cards for free with cashback on using them (e.g. 10% cashback on purchase above $100)

- Offer discounts on items relevant to the segment.

- Offer gift coupons redeemable after a certain period (e.g. $40 gift coupon on purchase above $200 redeemable after 30 days)

Customer Segmentation (Marketing Actions)

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Segment 7 -

Not Recent, High Frequency, High Amount
Cluster Size - 205

ATTRIBUTES

- They are frequent customers but they visited the store around one and a half year back.

- They are high spenders, who either buy premium items or have a larger basket size,.

- Objective - Bring them back to the store (Revive recency)

STRATEGIES

- Offer early access to new product launches / arrivals (pre-order).

- Offer loyalty cards with reward points.

- Invite them to exclusive events like book launches, gaming conventions, etc.

Thank You