Analysis of Customer Complaint Data for Internet Division of Comcast Cable Communications LLC

Quarter-2

Key Perform Indicators for Q2

KPI 1	Complaints Received: Months and Days
KPI 2	Percentage change in complaints raised each month
KPI 3	Ticket Resolution Percentage
KPI 4	Customer Satisfaction
KPI 5	Complaints in Backlog
KPI 6	Regional Analysis: Total no. complaints by City and State
KPI 7	Regional Analysis: Top 10 States with Maximum no of complaints.
KPI 8	Regional Analysis: Top 10 States with Minimum no of complaints
KPI 9	Count of Complaints in each Sub-Category by month
KPI 10	No. of complaints in each stage by sub-category

KPI 1: Complaints Received

Total number of complaints received within a given time period.

A) By Months:

SQL Query :

```
SELECT
CASE WHEN Months= 4 THEN 'April'
WHEN Months=5 THEN 'May'
ELSE 'June' END AS MONTH, COUNT([Ticket #]) AS 'Total No of Complaints'
FROM ['Master Table$']
GROUP BY Months
```

Output:

	MONTH	Total No of Complaints
1	June	1119
2	April	445
3	May	351

Analysis:

There was decrease in complaints from April to May followed by a drastic increase in June.

B) By Days:

SQL Query :

```
SELECT Top 10 CONVERT(date,Date) AS Date, COUNT([Ticket #]) AS 'Total No of Complaints'
FROM ['Master Table$']
GROUP BY Date
ORDER BY COUNT([Ticket #]) DESC
```

Output:

	Date	Total No of Complaints
1	2015-06-24	180
2	2015-06-23	171
3	2015-06-25	91
4	2015-06-26	55
5	2015-06-29	45
6	2015-06-18	42
7	2015-06-30	42
8	2015-06-22	36
9	2015-06-27	35
10	2015-06-28	31

Analysis:

Maximum number of complaints are generated in second half of June with 23rd and 24th receiving 171 and 180 complaints resp.

KPI 2: Percentage change in complaints raised each month

(Total no of tickets in pending state in current month) - (Total no of tickets in pending state in previous month)/(Total no of tickets in pending state in previous month) *100

SQL Query :

```
SELECT Months, CAST(round(((curr-prev*1.0)/prev)*100,2) AS FLOAT) AS 'Percent Change in No. of Complaints'
FROM
(SELECT Months, COUNT([Ticket #]) AS curr, LAG(COUNT([Ticket #]),1) OVER(ORDER BY Months) as prev
FROM ['Master Table$']
GROUP BY Months) as sb
```

Output:

	Months	Percent Change in No. of Complaints
1	4	NULL
2	5	-21.12
3	6	218.8

Analysis:

There was decrease of 21.12% in the complaints received from April to June which was followed by a massive increase of 218.8% in June.

KPI 3: Ticket Resolution Percentage

Total no. of tickets closed / Total no. of complaints raised

SQL Query :

```
SELECT t1.Months, CAST(ROUND(t1.ResolvedTicket*0.1/t2.TotalTickets,3) AS FLOAT)*100 AS 'Ticket Resolution Rate'
FROM
(SELECT Months, COUNT(Status) AS 'ResolvedTicket'
FROM ['Master Table$']
WHERE Status IN ('Closed','Solved')
GROUP BY MONTHS) t1
FULL OUTER JOIN
(SELECT Months, COUNT([Ticket #]) AS 'TotalTickets'
FROM ['Master Table$']
GROUP BY Months) t2
ON t1.Months=t2.Months
ORDER BY t1.Months
```

Output:

	Months	Ticket Resolution Rate
1	4	9.8
2	5	7.5
3	6	6.7

Analysis:

Maximum percentage of tickets were resolved in April. There has been a decrease in the percentage of tickets resolved in May and June.

KPI 4: Customer Satisfaction

Total no of complaints in solved state / Total no of complaints raised

SQL Query :

```
SELECT t1.Months, CAST(ROUND(t1.SolvedTicket*0.1/t2.TotalTickets,3) AS FLOAT)*100 AS 'Customer Satisfaction Percentage'
FROM
(SELECT Months, COUNT(Status) AS 'SolvedTicket'
FROM ['Master Table$']
WHERE Status ='Solved'
GROUP BY MONTHS) t1
FULL OUTER JOIN
(SELECT Months, COUNT([Ticket #]) AS 'TotalTickets'
FROM ['Master Table$']
GROUP BY Months) t2
ON t1.Months=t2.Months
ORDER BY t1.Months
```

Output:

	Months	Customer Satisfaction Percentage
1	4	0.1
2	5	5.6
3	6	5.9

Analysis:

- Even though Maximum percentage of tickets were resolved in April, however it had least customer satisfaction.
- It signifies that a possible reason slow ticket resolution rate in May and June can be linked to the idea resolving tickets with a solid solution that satisfies the customer.

KPI 5: Complaints in Backlog

Total no. of complaints in Open State

SQL Query :

```
SELECT Months, COUNT(Status) AS 'Open Tickets'
FROM ['Master Table$']
WHERE Status='Open'
GROUP BY ROLLUP(Months)
```

Output:

	Months	Open Tickets
1	4	9
2	5	74
3	6	243
4	NULL	326

Analysis:

There are total of 326 tickets remaining to be worked upon, out of which 9 are from April, 74 are from May and 243 are from June.

KPI 6: Regional Analysis

Total no. complaints by City and State

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SQL Query :

```
SELECT top 10 CITY,State, COUNT(Status) as 'Total No. Of Complaints'
FROM ['Master Table$']
GROUP BY City, State
ORDER BY COUNT(Status) DESC
```

Output:

	CITY	State	Total No. Of Complaints
1	Atlanta	Georgia	102
2	Chicago	Illinois	35
3	Baltimore	Maryland	30
4	Knoxville	Tennessee	30
5	Houston	Texas	30
6	Tucson	Arizona	24
7	Denver	Colorado	24
8	Philadelphia	Pennsylvania	24
9	San Francisco	California	22
10	Jacksonville	Florida	21

Analysis:

- Maximum no of complaints are raised from Atlanta city in Georgia state.
- The difference between the city having highest complaints is almost three times the city having second highest complaints.

KPI 7: Regional Analysis

Top 10 States with Maximum no. of complaints

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SQL Query :

```
SELECT TOP(10) State, COUNT(Status) as 'Total No. Of Complaints'
FROM ['Master Table$']
GROUP BY  State
ORDER BY COUNT(STATUS) DESC
```

Output:

	State	Total No. Of Complaints
1	Georgia	309
2	Florida	196
3	California	167
4	Illinois	125
5	Pennsylvania	114
6	Tennessee	113
7	Michigan	102
8	Washington	88
9	Maryland	68
10	Texas	64

Analysis:

- Maximum number of complaints are raised the state of Georgia, followed by Florida.
- There is not much significant difference in the no. of complaints raised in states ranked from 2 to 10, however, there if difference almost 107 complaints between top two states.

KPI 8: Regional Analysis

Top 10 States with Minimum no of complaints.

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SQL Query :

```
SELECT TOP(10) State, COUNT(Status) as 'Total No. Of Complaints'
FROM ['Master Table$']
GROUP BY  State
ORDER BY COUNT(STATUS)
```

Output:

	State	Total No. Of Complaints
1	Ohio	2
2	Iowa	2
3	Vermont	2
4	Kansas	2
5	North Carolina	3
6	New York	5
7	Missouri	5
8	Arkansas	5
9	Maine	6
10	Delaware	7

Analysis:

Customers from Ohio, Iowa, vermont, Kansas have raised the least number of complaints, that is, 2.

KPI 9: Count of Complaints in each Sub-Category by Month

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SQL Query :

```
SELECT [Complaint Sub Head], Count(Status) AS 'Total No. Of Complaints'
FROM ['Master Table$']
GROUP BY [Complaint Sub Head]
ORDER BY Count(Status) DESC
```

Output:

	Complaint Sub Head	Total No. Of Complaints
1	Billing Issue	534
2	Speed Issue	379
3	Service Issue	370
4	Data Issue	262
5	Connectivity Issue	117
6	Pricing Issue	103
7	Account Closing Issue	59
8	Throttling Issue	48
9	Internet Not Coming	30
10	Customer Care Issue	12
11	Account Setup Issue	1

Analysis:

- Maximum number of complaints received .are related to billing issues, followed by speed, service and data issues.
- There was just 1 complaints raised related to Account setup in past three months.

KPI 10: No. of complaints in each stage by sub-category

SQL Query :

```
SELECT t2.[Complaint Sub Head], t1.PendingTicket, t2.OpenTicket, t3.ClosedTicket, t4.SolvedTicket
FROM(SELECT DISTINCT([Complaint Sub Head]), COUNT(Status) OVER (Partition By [Complaint Sub Head]) AS 'PendingTicket'
    FROM ['Master Table$']
    WHERE Status ='Pending') t1
 FULL OUTER JOIN
    (SELECT DISTINCT([Complaint Sub Head]), COUNT(Status) OVER (Partition By [Complaint Sub Head]) AS 'OpenTicket'
    FROM ['Master Table$']
    WHERE Status ='Open') t2
ON t2.[Complaint Sub Head]=t1.[Complaint Sub Head]
FULL OUTER JOIN
    (SELECT DISTINCT([Complaint Sub Head]), COUNT(Status) OVER (Partition By [Complaint Sub Head]) AS 'ClosedTicket'
    FROM ['Master Table$']
    WHERE Status ='Closed') t3
    ON t2.[Complaint Sub Head]=t3.[Complaint Sub Head]
FULL OUTER JOIN
    (SELECT DISTINCT([Complaint Sub Head]), COUNT(Status) OVER (Partition By [Complaint Sub Head]) AS 'SolvedTicket'
    FROM ['Master Table$']
    WHERE Status ='Solved') t4
    ON t4.[Complaint Sub Head]=t3.[Complaint Sub Head]
```

Output:

	Complaint Sub Head	PendingTicket	OpenTicket	ClosedTicket	SolvedTicket
1	Account Closing Issue	1	4	21	33
2	Account Setup Issue	NULL	1	NULL	NULL
3	Billing Issue	18	81	182	253
4	Connectivity Issue	4	17	40	56
5	Customer Care Issue	NULL	5	3	4
6	Data Issue	70	44	52	96
7	Internet Not Coming	NULL	6	12	12
8	Pricing Issue	3	22	20	58
9	Service Issue	10	55	132	173
10	Speed Issue	19	81	120	159
11	Throttling Issue	16	10	9	13

Analysis:

- Maximum Tickets
  - in Pending state are related to Speed issue,
  - in Open State are related to Billing and Speed issue,
  - in Closed state are related to Billing issue,
  - and, in Solved state are related to Billing issue
- Minimum Tickets
  - in Pending state are related to Account Closing issue,
  - in Open State are related to Account setup issue,
  - in Closed state are related to Customer Care issue,
  - and, in Solved state are related to Customer care issue

Thank You

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