Excel

Data transformation in power query

10 Steps

Created by	Creation Date	Last Updated
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Raw Data [Denormalized Form]

Raw data of telecommunication company in excel. In this file contains 32 columns.

Normalized Form

1. Here we take a small portion of data and convert it into normalized form.
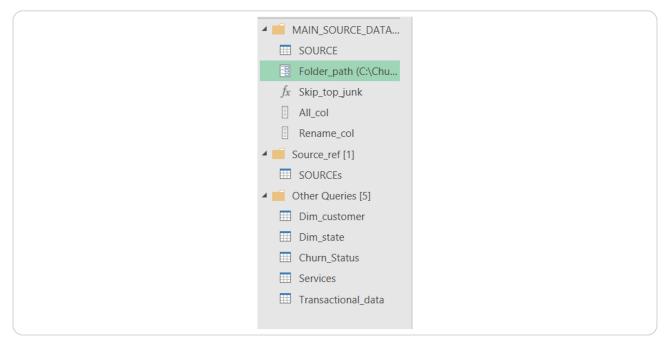Normalization helps to avoid --
Data redundancy
Data duplication

It also helps to avoid following anomalies --
Update
Insertion
Deletion

Power Query – {M language}

Here we use the power query in order to extract and transform the raw data.

Elaborate the queries

**1 – Firstly, I create a folder pathway. this pathway is a directly reference where all files are kept
in the file manager.**

pathway is – "C:\Churn_analysis_telecom\Data" meta [IsParameterQuery=true,
Type="Any", IsParameterQueryRequired=true]

**2 – Secondly i create a custom function which help to clean the top junk rows of the table
and help to set the headers.**

Function – (input_data as table)=>
let
Skip_top_junk_rows =
Table.PromoteHeaders(
Table.Skip(input_data,
each
List.MatchesAny(
Record.ToList(_),each = *null or* = "")
))
in

Skip_top_junk_rows

3 – Finally, we rename the columns so that all related columns are append in a correct manner whenever new data set added.

```
Function -
let
Source = Table.TransformColumns(Folder.Files(Folder_path), {"Content",each Csv.Docu-
ment(_)}),
#"Added Custom" = Table.AddColumn
(Source, "skip_top_junks",
each
Table.RenameColumns(
Skip_top_junk([Content]),Rename_col, MissingField.Ignore)
),
req_col_list = List.Transform(
Rename_col, each _{1}
),
Req_cols = Table.Combine(#"Added Custom"[skip_top_junks],req_col_list),
Dynamic_datatype_list = Table.ToColumns(
Table.DemoteHeaders(
Table.TransformColumns(
Table.FirstN(Req_cols,1),{}, each Value.Type(_)))),
Changed_type_dynamically = Table.TransformColumnTypes(Req_cols,Dynam-
ic_datatype_list),
Distinct_table = Table.Distinct(Changed_type_dynamically)
in
Distinct_table
```

STEP 5

After deep understanding of the dataset, we categorized it into two categories called – 1 – Dimensional Table 2 – Factual Table

Dim_customer

Customer_id	Gender	Age	Married	Cust_id_index	State_id_index
19877-DEL	Male	35	No	1	1
58353-MAH	Female	45	Yes	2	2
84741-MAH	Female	66	Yes	7	2
71897-MAH	Female	36	Yes	14	2
11925-MAH	Female	78	Yes	21	2
86818-MAH	Female	29	Yes	23	2
25063-WES	Male	51	No	3	3
59787-KAR	Male	79	No	4	4
28544-TAM	Female	80	No	5	5
32750-TEL	Male	24	No	6	6
65618-GUJ	Male	51	Yes	8	7
64233-GUJ	Female	63	No	9	7
49302-GUJ	Female	47	No	17	7
93520-GUJ	Female	67	No	18	7
23612-UTT	Female	41	No	10	8
53023-UTT	Male	26	Yes	12	8
13717-UTT	Male	56	Yes	13	8
15776-UTT	Female	38	Yes	15	8
45397-RAJ	Male	48	Yes	11	9
56731-BIH	Female	53	Yes	16	10

STEP 7

Dim_state

State	State_id_index
Delhi	1
Maharashtra	2
West Bengal	3
Karnataka	4
Tamil Nadu	5
Telangana	6
Gujarat	7
Uttar Pradesh	8
Rajasthan	9
Bihar	10
Andhra Pradesh	11
Madhya Pradesh	12
Chhattisgarh	13
Punjab	14
Jharkhand	15
Haryana	16
Jammu & Kashmir	17
Assam	18
Uttarakhand	19
Odisha	20
Kerala	21
Puducherry	22

STEP 8

Churn Status

Cust_id_index	Customer_Status	Churn_Category	Churn_Reason
1	Stayed	Not_Available	Not_Available
2	Stayed	Not_Available	Not_Available
3	Churned	Competitor	Competitor had better devices
7	Stayed	Not_Available	Not_Available
4	Churned	Dissatisfaction	Product dissatisfaction
14	Stayed	Not_Available	Not_Available
5	Churned	Dissatisfaction	Network reliability
21	Stayed	Not_Available	Not_Available
6	Stayed	Not_Available	Not_Available
23	Stayed	Not_Available	Not_Available
8	Stayed	Not_Available	Not_Available
9	Stayed	Not_Available	Not_Available
10	Stayed	Not_Available	Not_Available
11	Stayed	Not_Available	Not_Available
12	Stayed	Not_Available	Not_Available
13	Stayed	Not_Available	Not_Available
17	Stayed	Not_Available	Not_Available

STEP 9

Service offered

Cust_id_index	Unlimited_Data	Streaming_Music	Streaming_Movies	Streaming_TV	Premium_Support	Device_Protection_Plan	Online_Backup	Online_Security	Internet_Type	Internet_Service	Multiple_Lines	Phone_Service
1	Yes	No	No	Yes	Yes	No	Yes	No	Cable	Yes	No	Yes
2	No	Yes	Yes	No	No	No	No	No	Cable	Yes	Yes	Yes
3	Yes	No	No	No	No	Yes	No	No	Fiber Optic	Yes	No	Yes
4	Yes	No	Yes	Yes	No	Yes	Yes	No	Fiber Optic	Yes	No	Yes
5	Yes	No	No	Yes	Yes	No	No	No	Fiber Optic	Yes	No	Yes
6	Yes	Yes	Yes	Yes	Yes	No	No	No	Cable	Yes	No	Yes
7	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Fiber Optic	Yes	No	Yes
8	No	No	No	No	Yes	No	No	Yes	Fiber Optic	Yes	Yes	Yes
9	Yes	No	No	No	No	No	No	Yes	DSL	Yes	No	Yes
10	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Cable	Yes	Yes	Yes
11	Yes	No	No	Yes	Yes	No	No	Yes	Cable	Yes	N/A	No
12	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Fiber Optic	Yes	Yes	Yes
13	Yes	No	No	No	No	No	No	No	Fiber Optic	Yes	No	Yes
14	Yes	No	No	Yes	No	Yes	Yes	Yes	Fiber Optic	Yes	Yes	Yes
15	Yes	No	No	No	Yes	Yes	Yes	Yes	DSL	Yes	N/A	No
16	Yes	Yes	Yes	No	No	Yes	Yes	No	Fiber Optic	Yes	Yes	Yes
17	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	DSL	Yes	N/A	No
18	Yes	No	No	No	No	No	No	No	Fiber Optic	Yes	Yes	Yes
19	Yes	No	Yes	No	No	Yes	No	Yes	DSL	Yes	No	Yes
20	Yes	No	No	No	No	No	No	No	Cable	Yes	N/A	No
21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No	Yes	Yes
22	Yes	No	No	Yes	No	Yes	Yes	No	Fiber Optic	Yes	Yes	Yes
23	Yes	No	No	Yes	No	No	No	No	Fiber Optic	Yes	Yes	Yes
24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Yes
25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Yes
26	Yes	No	No	No	No	No	No	Yes	DSL	Yes	N/A	No
27	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Fiber Optic	Yes	No	Yes
28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Yes
29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Yes
30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Yes
31	Yes	Yes	Yes	Yes	No	No	No	No	Fiber Optic	Yes	No	Yes
32	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Yes
33	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Fiber Optic	Yes	Yes	Yes
34	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Yes
35	Yes	No	No	No	Yes	Yes	No	Yes	Cable	Yes	N/A	No
36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No	Yes	Yes
37	Yes	No	No	Yes	No	No	No	Yes	Fiber Optic	Yes	Yes	Yes

STEP 10

Transactiomnal

Cust_id_index	Contract	Payment_Method	Paperless_Billing	Value_Deal	Number_of_Referrals	Tenure_in_Months	Monthly_Charge	Total_Charges	Total_Refunds	Total_Extra_Data_Charges	Total_Long_Distance_Charges	Total_Revenue
1	One Year	Credit Card	Yes	Not_Available	7	27	65.6	593.3	0	0	381.51	974.81
2	Month-to-Month	Credit Card	No	Not_Available	14	13	-4	542.4	38.33	10	96.21	610.28
3	Month-to-Month	Bank Withdrawal	Yes	Deal 5	4	35	73.9	280.85	0	0	134.6	415.45
4	Month-to-Month	Bank Withdrawal	Yes	Deal 4	3	21	98	1237.85	0	0	361.66	1599.51
5	Month-to-Month	Credit Card	Yes	Not_Available	3	8	83.9	267.4	0	0	22.14	289.54
6	Month-to-Month	Credit Card	Yes	Deal 5	9	2	69.4	571.45	0	0	150.93	722.38
7	Two Year	Bank Withdrawal	Yes	Deal 1	9	23	109.7	7904.25	0	0	707.16	8611.41
8	Two Year	Credit Card	Yes	Deal 2	12	24	84.65	5377.8	0	20	816.48	6214.28
9	Two Year	Bank Withdrawal	Yes	Deal 5	4	10	48.2	340.35	0	0	73.71	414.06
10	Two Year	Credit Card	Yes	Not_Available	3	1	90.45	5957.9	0	0	1849.9	7807.8
11	Two Year	Credit Card	No	Not_Available	0	1	45.2	2460.55	0	0	0	2460.55
12	Two Year	Credit Card	Yes	Not_Available	6	22	116.8	8456.75	0	0	1152.72	9609.47
13	Month-to-Month	Bank Withdrawal	Yes	Not_Available	15	26	68.95	351.5	0	0	93.25	444.75
14	Two Year	Bank Withdrawal	Yes	Deal 1	8	6	101.3	7261.25	0	0	162	7423.25
15	Two Year	Bank Withdrawal	No	Not_Available	1	19	45.05	2560.1	0	0	0	2560.1
16	Two Year	Credit Card	Yes	Deal 1	5	8	95.75	6849.4	0	0	1935.46	8784.86
17	One Year	Credit Card	No	Not_Available	14	4	61.25	1993.2	0	0	0	1993.2
18	One Year	Bank Withdrawal	Yes	Deal 5	13	19	72.1	72.1	0	0	7.77	79.87
19	One Year	Credit Card	No	Not_Available	0	30	62.7	2791.5	0	0	480.15	3271.65
20	Month-to-Month	Bank Withdrawal	Yes	Not_Available	15	33	25.1	25.1	0	0	0	25.1
21	One Year	Bank Withdrawal	No	Not_Available	12	12	25.2	1306.3	0	0	1571.5	2877.8
22	Month-to-Month	Bank Withdrawal	No	Not_Available	12	20	94.1	1215.6	0	0	566.28	1781.88
23	Month-to-Month	Bank Withdrawal	Yes	Deal 4	8	22	83.75	1849.95	0	0	802.93	2652.88
24	Month-to-Month	Credit Card	No	Not_Available	9	7	19.85	57.2	0	0	9.36	66.56
25	Month-to-Month	Credit Card	No	Deal 5	12	24	20.35	76.35	0	0	49.72	126.07
26	Month-to-Month	Bank Withdrawal	No	Not_Available	12	26	30.5	30.5	0	0	0	30.5
27	One Year	Bank Withdrawal	Yes	Not_Available	14	18	103.7	5656.75	0	20	1927.2	7603.95
28	Two Year	Credit Card	No	Not_Available	0	23	20.4	1090.6	0	0	1063.8	2154.4
29	One Year	Bank Withdrawal	Yes	Deal 3	6	3	19.6	471.85	21.25	0	980.2	1430.8
30	Two Year	Bank Withdrawal	No	Not_Available	8	2	19.7	1396.9	0	0	2648.91	4045.81
31	One Year	Credit Card	No	Deal 3	4	8	91.2	3247.55	0	0	1591.37	4838.92
32	One Year	Bank Withdrawal	No	Deal 2	2	18	20.45	900.9	0	0	2429.42	3330.32
33	One Year	Bank Withdrawal	No	Not_Available	7	8	-2	7942.15	0	0	2888.82	10830.97
34	One Year	Bank Withdrawal	No	Not_Available	12	20	20.55	1343.4	30.53	0	1549.04	2861.91
35	Two Year	Credit Card	Yes	Not_Available	14	2	39.4	825.4	0	0	0	825.4
36	Two Year	Bank Withdrawal	Yes	Not_Available	10	8	25.1	1070.15	0	0	1317.52	2387.67

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