LOOKUPs in Excel & Business Problem

🎯 Session Objective:

- Break down complex business problems.
- Use logical and data-driven thinking to analyze them.
- Understand how each data analysis stage ties to a real business problem.
- How and when to use VLOOKUP, HLOOKUP, XLOOKUP, and INDEX-MATCH

🏢 Business Scenario: ABC Food Company

ABC Food Co. produces sweet and fruit-based food products sold via outlets and online. Recently, the company has observed:

- 📉 A need to make their new fruit-sweet product profitable.
- 💔 A rise in customer churn (customers stopping purchases).

✅ Business Goals:

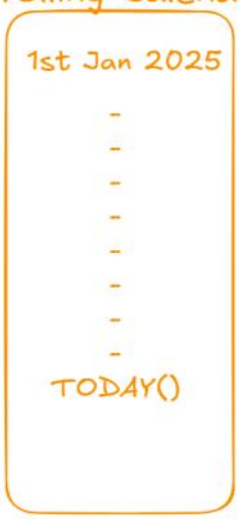
- Identify who will buy the new product.
- Reduce churn and retain customers.

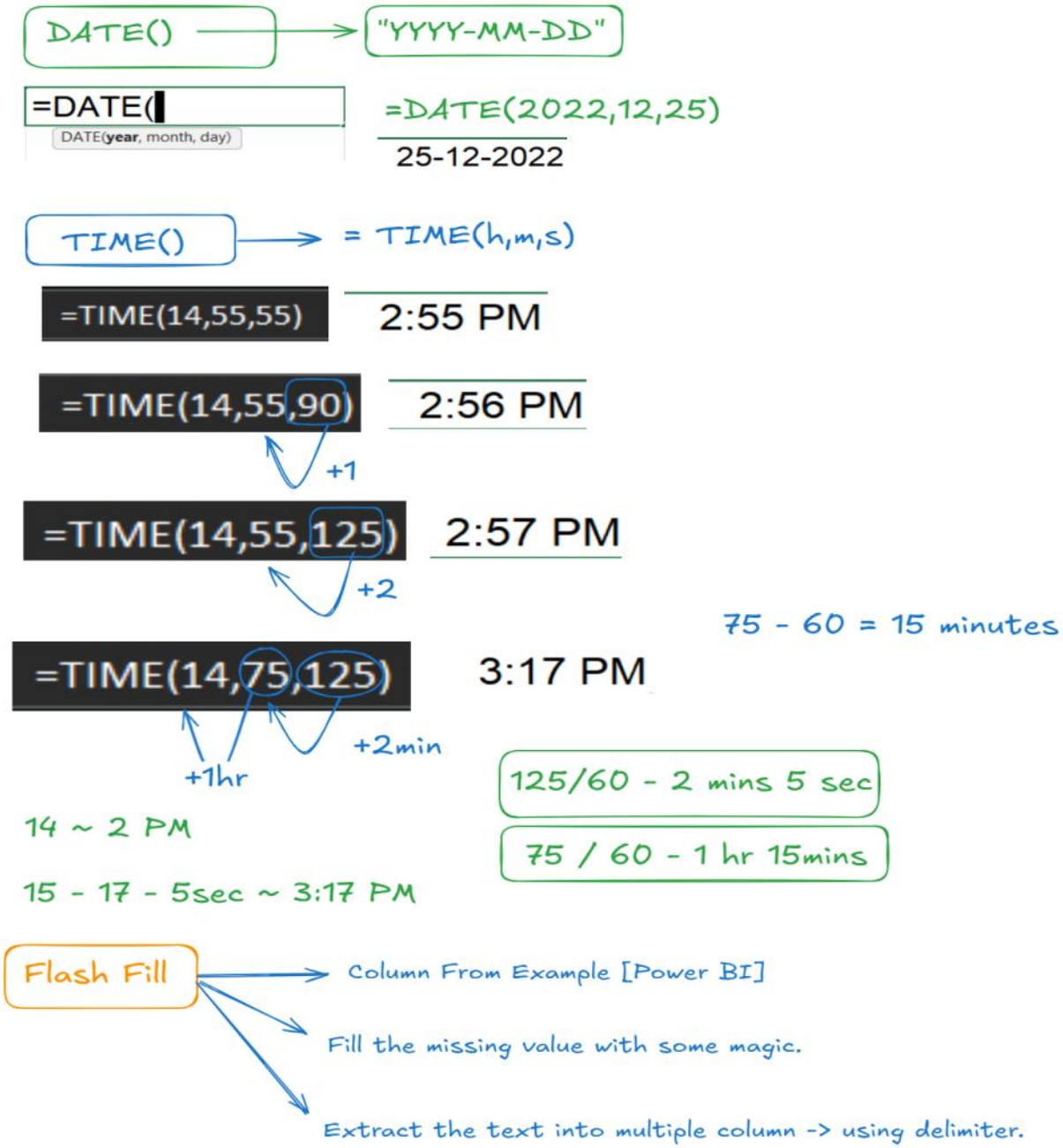
Date & Time Functions

Today() / NOW()

07-06-2025	07-06-2025 11:19
=TODAY()	=NOW()

rolling Calender





Location	City	State	Country
Delhi, Delhi , India	Delhi	Delhi	India
Mumbai, Maharastra, India	Mumbai	Maharastra	India
Kolkata, WestBengal, India	Kolkata	WestBengal	India
Bangalore, Karnataka, India	Bangalore	Karnataka	India
Kochi, Kerala, India	Kochi	Kerala	India
Hyderabad,Telangana,India	Hyderabad	Telangana	India
Raipur,Chhattisgarh, India	Raipur	Chhattisgarh	India
Indore, Madhya Pradesh, India	Indore	Madhya Pradesh	India
Patna, Bihar, India	Patna	Bihar	India
Chennai, TamilNadu, India	Chennai	TamilNadu	India

Churn Rate? → "Vodafone"

When people leave from one brand to the another.

Survey

- Customer Support - Aggressive.
- Low internet connection
- Competitor giving better discount.
- Competitor providing strong networks.

Df_1

B	C	D	E	F	G	H	I	J
ID	Year_Birth	Education	Marital_Status	Income	Kidhome	Teenhome	Dt_Customer	Recency
5524	1957	Graduation	Single	58138	0	0	04-09-2012	58
2174	1954	Graduation	Single	46344	1	1	08-03-2014	38
4141	1965	Graduation	Together	71613	0	0	21-08-2013	26
6182	1984	Graduation	Together	26646	1	0	10-02-2014	26
5324	1981	PhD	Married	58293	1	0	19-01-2014	94
7446	1967	Master	Together	62513	0	1	09-09-2013	16
965	1971	Graduation	Divorced	55635	0	1	13-11-2012	34
6177	1985	PhD	Married	33454	1	0	08-05-2013	32
4855	1974	PhD	Together	30351	1	0	06-06-2013	19
5899	1950	PhD	Together	5648	1	1	13-03-2014	68
1994	1983	Graduation	Married		1	0	15-11-2013	11
387	1976	Basic	Married	7500	0	0	13-11-2012	59
2125	1959	Graduation	Divorced	63033	0	0	15-11-2013	82
8180	1952	Master	Divorced	59354	1	1	15-11-2013	53
2569	1987	Graduation	Married	17323	0	0	10-10-2012	38

B	C	D	E	F
ID	MntFruits	MntSweetProducts	NumWebPurchases	NumStorePurchases
4619	2	262	27	0
5255	1	263	27	0
10311	4	4	25	0
6237	4	2	23	1
7381	153	97	11	6
7966	137	22	11	11
4910	134	134	11	13
1951	122	129	11	8
7706	104	151	11	5
8931	99	149	11	10
1911	97	133	11	12
9743	89	35	11	8

Challenge 1 - Calculate the age of a customer

= YEAR() 07-11-2025 → 2025

Date → Function [Year] → extract the year from it.

=YEAR(TODAY())

2025

C	D
Year_Birth	Age
1957	68
1954	71
1965	60
1984	41
1981	44

```
=YEAR(TODAY())-C2
```

Total Children

H	I	J
Kidhome	Teenhome	Total Children
0	0	0
1	1	2
0	0	0
1	0	1
1	0	1
0	1	1
0	1	1
1	0	1
1	0	1
1	1	2

J2 = H2+I2

=IF(J2>0,"Has Children","No Children")

H	I	J	K
Kidhome	Teenhome	Total Children	Is Children?
0	0	0	No Children
1	1	2	Has Children
0	0	0	No Children
1	0	1	Has Children

```
=IF(J2>0,"Has Children","No Children")
```

Amount Spent

=C2+D2

B	C	D	E	F	G
ID	MntFruits	MntSweetProducts	NumWebPurchases	NumStorePurchases	Amount Spent
4619	2	262	27	0	=C2+D2

Finding the Recency to calculate the Inactive Customers.

- Lower the recency, means a recent purchase.

<30 - Very Active
<90 - Moderate
>=90 - Inactive

```
=IFS(M2<30,"Very Active",M2<90,"Moderate",M2>=90,"Inactive")
```

"Select Recency Column according to your table and refer it correctly."

M	N
Recency	Whether Active?
58	Moderate
38	Moderate
26	Very Active
26	Very Active
94	Inactive
16	Very Active
34	Moderate
32	Moderate
19	Very Active
68	Moderate
11	Very Active
59	Moderate
82	Moderate
53	Moderate
38	Moderate
23	Very Active

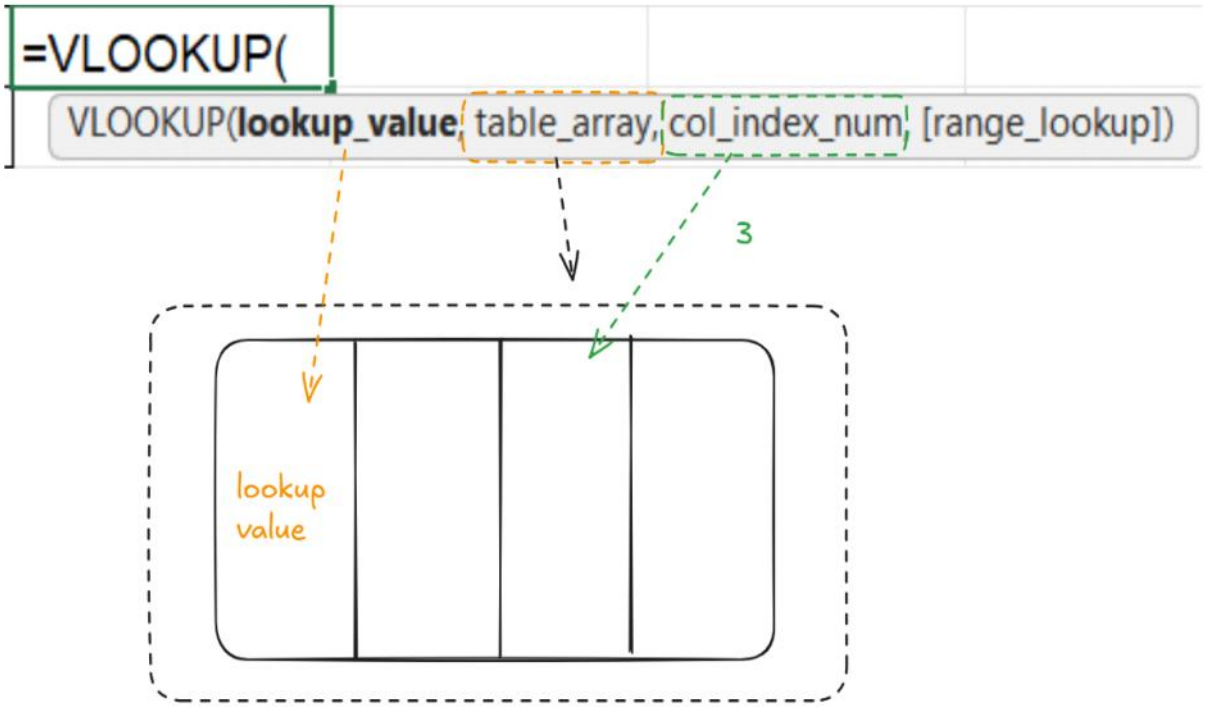
1330 Moderate 692 Very Active 218 Inactive

Moderate	1330
Inactive	218
Active	692
Total Customer	2240
Churn Rate	9.73%

Moderate	=COUNTIF(N:N,"Moderate")
Inactive	=COUNTIF(N:N,"Inactive")
Active	=COUNTIF(N:N,"Very Active")
Total Customer	=COUNTA(N2:N2241)
Churn Rate	=Q3/Q5

churn Rate = Inactive / Total Customers

Vlookup



Reference Table

ID	Year_Birth	Age	Education	Marital_Status	Income
5524	1957	68	Graduation	Single	58138
2174	1954	71	Graduation	Single	46344
4141	1965	60	Graduation	Together	71613
6182	1984	41	Graduation	Together	26646
5324	1981	44	PhD	Married	58293
7446	1967	58	Master	Together	62513
965	1971	54	Graduation	Divorced	55635
6177	1985	40	PhD	Married	33454
4855	1974	51	PhD	Together	30351
5899	1950	75	PhD	Together	5648
1994	1983	42	Graduation	Married	
387	1976	49	Basic	Married	7500
2125	1959	66	Graduation	Divorced	63033
8180	1952	73	Master	Divorced	59354
2569	1987	38	Graduation	Married	17323
2114	1946	79	PhD	Single	82800
9736	1980	45	Graduation	Married	41850
4939	1946	79	Graduation	Together	37760
6565	1949	76	Master	Married	76995
2278	1985	40	2n Cycle	Single	33812
9360	1982	43	Graduation	Married	37040

ID	MntFruits	MntSweetProducts	NumWebPurchases	NumStorePurchases	Amount Spent	Income
4619	2	262	27	0	264	
5255	1	263	27	0	264	
10311	4	4	25	0	8	
6237	4	2	23	1	6	
7381	153	97	11	6	250	
7966	137	22	11	11	159	
4910	134	134	11	13	268	
1951	122	129	11	8	251	

ID	MntFruits	MntSweetProducts	NumWebPurchases	NumStorePurchases	Amount Spent	Income
4619	2	262	27	0	264	113734
5255	1	263	27	0	264	0
10311	4	4	25	0	8	4428
6237	4	2	23	1	6	7144
7381	153	97	11	6	250	75693
7966	137	22	11	11	159	80982
4910	134	134	11	13	268	68743
1951	122	129	11	8	251	34445
7706	104	151	11	5	255	46772
8931	99	149	11	10	248	83033
1911	97	133	11	12	230	67430
9743	89	35	11	8	124	76998
10159	81	122	11	9	203	58710

```
=VLOOKUP(B2,Marketing_df1!$B$1:$G$2241,6,FALSE)
```

"Exact Match"

TRUE → "Approximate Value"

```
0-20 : Poor Performance
21-40 : Below Average
41-60 : Average
61-80 : Good
81-90 : Excellent
91-100 : Outstanding
```

Student Marks

```
57
63
91
27
99
85
```

IND -
AUS -
SA -
WI -
END -
NZ -
Ire -

IND - INDIA
AUS - Australia
SA - South Africa
WI - West Indies
END - England
NZ - New Zealand
Ire - Ireland

1000 records

HARMEAN | =VLOOKUP(A15,F15:G27,2,FALSE)

VLOOKUP(lookup_value, **table_array**, col_index_num, [range_lookup])

	A	B	C	D	G
1	TABLE 1				TABLE 2
2	EMPLOYEE ID	LAST_NAME	FIRST_NAME	PAY	EMPLOYEE ID / PAY
3	110608	Doe	John	131505	990678 £84,289
4	253072	Cline	Andy	149946	830385 £1,37,670
5	352711	Smith	John	89627	795574 £1,90,024
6	391006	Pan	Peter	168114	580622 £1,22,604
7	392128	Fawre	Bret	85931	549427 £1,11,700
8	549427	Elway	John	#N/A	392128 £85,931
9	580622	Manning	Eli	#N/A	391006 £1,68,114
10	602693	Vick	Micheal	71478	352711 £89,627
11	611810	Woods	Tiger	64757	253072 £1,49,946
12	612235	Jordan	Micheal	145893	612235 £1,45,893
13	795574	Stark	Tony	#N/A	611810 £64,757
14	830385	Williams	Price	#N/A	602693 £71,478
15	990678	Pitt	Brad	A15,F15:G27,	110608 £1,31,505

A	B	C	D	E	F	G
TABLE 1					TABLE 2	
EMPLOYEE ID	LAST_NAME	FIRST_NAME	PAY		EMPLOYEE ID	PAY
110608	Doe	John	£ 1,31,505		990678	£84,289
253072	Cline	Andy	£ 1,49,946		830385	£1,37,670
352711	Smith	John	£ 89,627		795574	£1,90,024
391006	Pan	Peter	£ 1,68,114		580622	£1,22,604
392128	Fawre	Bret	£ 85,931		549427	£1,11,700
549427	Elway	John	£ 1,11,700		392128	£85,931
580622	Manning	Eli	£ 1,22,604		391006	£1,68,114
602693	Vick	Micheal	£ 71,478		352711	£89,627
611810	Woods	Tiger	£ 64,757		253072	£1,49,946
612235	Jordan	Micheal	£ 1,45,893		612235	£1,45,893
795574	Stark	Tony	£ 1,90,024		611810	£64,757
830385	Williams	Price	£ 1,37,670		602693	£71,478
990678	Pitt	Brad	£ 84,289		110608	£1,31,505

Pay Column index is 2 on a select table range

=VLOOKUP(A3,$F$3:$G$15,2,FALSE)

Freezing Table to get the exact value

PAY
=VLOOKUP(A3,$F$3:$G$15,2,FALSE)
=VLOOKUP(A4,$F$3:$G$15,2,FALSE)
=VLOOKUP(A5,$F$3:$G$15,2,FALSE)
=VLOOKUP(A6,$F$3:$G$15,2,FALSE)
=VLOOKUP(A7,$F$3:$G$15,2,FALSE)
=VLOOKUP(A8,$F$3:$G$15,2,FALSE)
=VLOOKUP(A9,$F$3:$G$15,2,FALSE)
=VLOOKUP(A10,$F$3:$G$15,2,FALSE)
=VLOOKUP(A11,$F$3:$G$15,2,FALSE)
=VLOOKUP(A12,$F$3:$G$15,2,FALSE)
=VLOOKUP(A13,$F$3:$G$15,2,FALSE)
=VLOOKUP(A14,$F$3:$G$15,2,FALSE)
=VLOOKUP(A15,$F$3:$G$15,2,FALSE)

TABLE 1		
EMPLOYEE ID	LAST_NAME	FIRST_NAME
110608	Doe	John
253072	Cline	Andy
352711	Smith	John
391006	Pan	Peter
392128	Fawre	Bret
549427	Elway	John
580622	Manning	Eli
602693	Vick	Micheal
611810	Woods	Tiger
612235	Jordan	Micheal
795574	Stark	Tony
830385	Williams	Price
990678	Pitt	Brad

TABLE 2		
EMPLOYEE ID	CITY	STATE
110608	Columbus	Ohio
253072	Chicago	Illinois
352711	Tampa Bay	Florida
391006	Chicago	Illinois
392128	Chicago	Illinois
549427	Tampa Bay	Florida
580622	Columbus	Ohio
602693	Tampa Bay	Florida
611810	Austin	Texas
612235	Tampa Bay	Florida
795574	Austin	Texas
830385	Chicago	Illinois
990678	Austin	Texas

D15 =VLOOKUP(A15,'VLOOKUP(Different sheet)-2'!$A$2:$C$15,{2,3},FALSE)

	A	B	C	D	E	F	G
1	TABLE 1						
2	EMPLOYEE ID	LAST_NAME	FIRST_NAME	CITY	STATE		
3	110608	Doe	John	Columbus	Ohio		
4	253072	Cline	Andy	Chicago	Illinois		
5	352711	Smith	John	Tampa Bay	Florida		
6	391006	Pan	Peter	Chicago	Illinois		
7	392128	Fawre	Bret	Chicago	Illinois		
8	549427	Elway	John	Tampa Bay	Florida		
9	580622	Manning	Eli	Columbus	Ohio		
10	602693	Vick	Micheal	Tampa Bay	Florida		
11	611810	Woods	Tiger	Austin	Texas		
12	612235	Jordan	Micheal	Tampa Bay	Florida		
13	795574	Stark	Tony	Austin	Texas		
14	830385	Williams	Price	Chicago	Illinois		
15	990678	Pitt	Brad	Austin	Texas		

```
=VLOOKUP(A3,'VLOOKUP(Different sheet)-2'!$A$2:$C$15,{2,3},FALSE)
```

Extracting 2 columns at once.

HLOOKUP()

```
=HLOOKUP(
```

HLOOKUP(**lookup_value**, table_array, row_index_num, [range_lookup])

col ref

Index of Management

A	B	C	D	E	F
STUDENT NAME	**A**	**B**	**C**	**D**	**E**
ACCOUNTS	75	65	70	60	59
ECONOMICS	65	72	78	89	67
MANAGEMENT	70	68	90	72	58
MATHEMATICS	80	90	75	65	87
	D	**E**	**A**	**C**	**B**
MANAGEMENT	72	58	70	90	68

STUDENT NAME	A	B	C	D	E
ACCOUNTS	75	65	70	60	59
ECONOMICS	65	72	78	89	67
MANAGEMENT	70	68	90	72	58
MATHEMATICS	80	90	75	65	87
	D	E	A	C	B
MANAGEMENT	=HLOOKUP(B8,$A$1:$F$5,4,	=HLOOKUP(C8,$A$1:$F$5,4,	=HLOOKUP(D8,$A$1:$F$5,4,	=HLOOKUP(E8,$A$1:$F$5,4,	=HLOOKUP(F8,$A$1:$F$5,4,I

```
=HLOOKUP(B8,$A$1:$F$5,4,FALSE)
```

Management [Row_index]