

Task-1

Worksheet Contents:

The workbook contains the following worksheets:

- 1) Customer Acquisition
- 2) Spend
- 3) Repayment

Tools: Microsoft Excel

Note: - I use Microsoft Excel for this task and I only shows the task result on the basis of Customer name A1 because of Space Efficiency in document. It takes more space for the all-customer data.

Data Cleaning, Data Transformation, Data Formation

Age		NewAge
0.9285		1
35.5346		36
11.5593		12
45.8203		46
69.6639		70
35.5786		36
52.1022		52
77.8396		78
18.1581		18

(By Using Round() Function)

Limit		Limit
INR 5,00,000		500000
INR 1,00,000		100000
INR 10,000		10000
INR 10,001		10001
INR 10,002		10002
INR 1,00,000		100000
INR 1,00,001		100001
INR 1,00,002		100002
INR 1,00,003		100003
		500000

(By Using Text to Column)

Month		Month
12-Jan-04		12-01-2004
3-Jan-04		03-01-2004
15-Jan-04		15-01-2004
25-Jan-04		25-01-2004
17-Jan-05		17-01-2005
23-Feb-05		23-02-2005
1-Feb-05		01-02-2005
5-Feb-04		05-02-2004
28-Feb-05		28-02-2005

(By Using Text to Column)

Month	Month
12-Jan-04	Jan-2004
3-Jan-04	Jan-2004
15-Jan-04	Jan-2004
25-Jan-04	Jan-2004
17-Jan-05	Jan-2005
23-Feb-05	Feb-2005
1-Feb-05	Feb-2005
5-Feb-04	Feb-2004
28-Feb-05	Feb-2005

(By Using Text to Column)

Amount	Amount
331844.0074	331844
441139.8073	441140
32480.00401	32480
90636.96653	90637
1581.969829	1582
357678.5077	357679
280990.7099	280991
117697.0531	117697
8047.30078	8047
407418.8054	

(By Using Text to Column)

Task-1:- Provide a meaningful treatment to all values where age is less than 18.

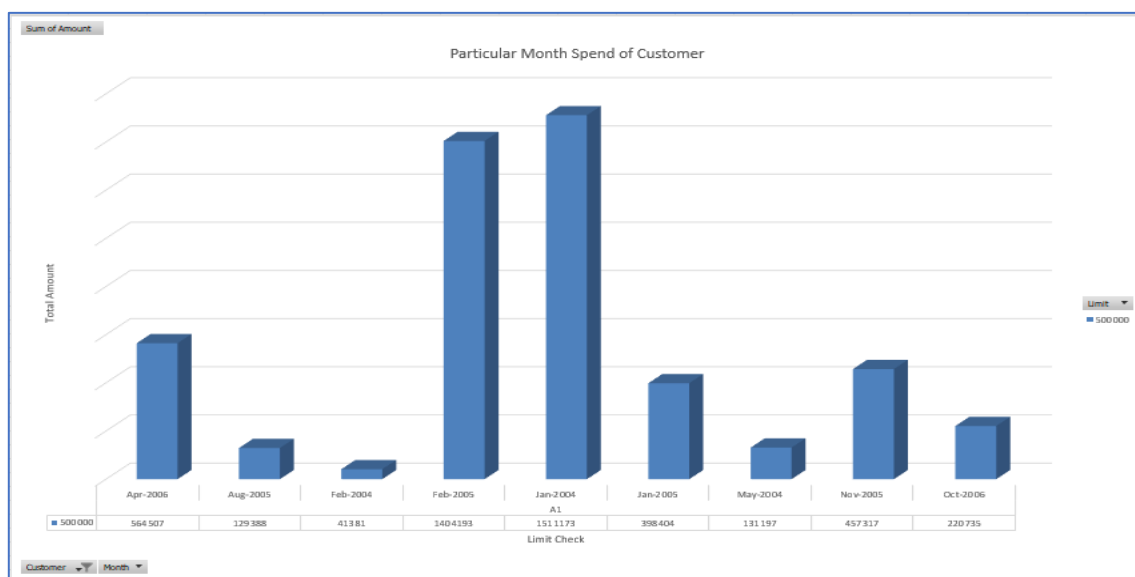
	A	B	C	D	E	F	G	H	I	J	K
1	Age	Valid_Age	Check_Age	Mean_Age							
2	0.9285	1	Underage	49.2924		Mean Value of the age = 49.2924					
3	35.5346	36	Valid	35.5346							
4	11.5593	12	Underage	49.2924							
5	45.8203	46	Valid	45.8203							
6	69.6639	70	Valid	69.6639							
7	35.5786	36	Valid	35.5786							
8	52.1022	52	Valid	52.1022							
9	77.8396	78	Valid	77.8396							
10	18.1581	18	Valid	18.1581							
11	4.1438	4	Underage	49.2924							
12	61.3411	61	Valid	61.3411							
13	11.1825	11	Underage	49.2924							
14	40.1411	40	Valid	40.1411							
15	6.7724	7	Underage	49.2924							

Explanation

- 1) **Age Column :-** The Column A (Age) has the invalid data because age in never be in decimal values like 0.9285, 35.534.
- 2) **Valid_Age:** - I convert decimal value into whole number using round function () because for further analysis like calculate the for the age group.
- 3) **Check_Age:-** This column contains the customer age is valid or underage because it shows that how many customer are underage and how many are has valid age. I used the formula to calculate the values [=IF(B2<18,"Underage","Valid")].
- 4) **Mean_Age:** - The given data has 22% Garbage Value. It is not good to delete that 22% garbage value from the data because it not gives the proper accurate analysis. So, for this Situation we calculate the mean value and replace with the garbage values.

Task-2:- Is there any customer who have spent more than his/her Credit Limit for any particular month.

	A	B	C	D	E	F	G	H	I	J
1	Customer	Limit	Month	Amount	Limit_Check		Customer who have spent more than his/her Credit Limit for any particular month.			
2	A1	500000	Jan-2004	473776	In Limit		Sum of Amount		Limit	
3	A1	500000	Jan-2004	335579	In Limit		Customer	Month	500000	
4	A1	500000	Jan-2004	371041	In Limit		A1	Apr-2006	564507	
5	A1	500000	Jan-2004	141178	In Limit			Aug-2005	129388	
6	A1	500000	Jan-2005	398404	In Limit			Feb-2004	41381	
7	A1	500000	Feb-2005	429085	In Limit			Feb-2005	1404193	
8	A1	500000	Feb-2005	219342	In Limit			Jan-2004	1511173	
9	A8	100002	Feb-2004	60302	In Limit			Jan-2005	398404	
10	A9	100003	Feb-2005	199771	Over Limit			May-2004	131197	
11	A10	500000	Feb-2005	71117	In Limit			Nov-2005	457317	
12	A11	500000	Feb-2005	285356	In Limit			Oct-2006	220735	
13	A12	500000	Feb-2005	94470	In Limit			A1 Total	4858294	
14	A13	500000	Feb-2006	116944	In Limit					
15	A14	500000	Mar-2006	252037	In Limit					



Explanation

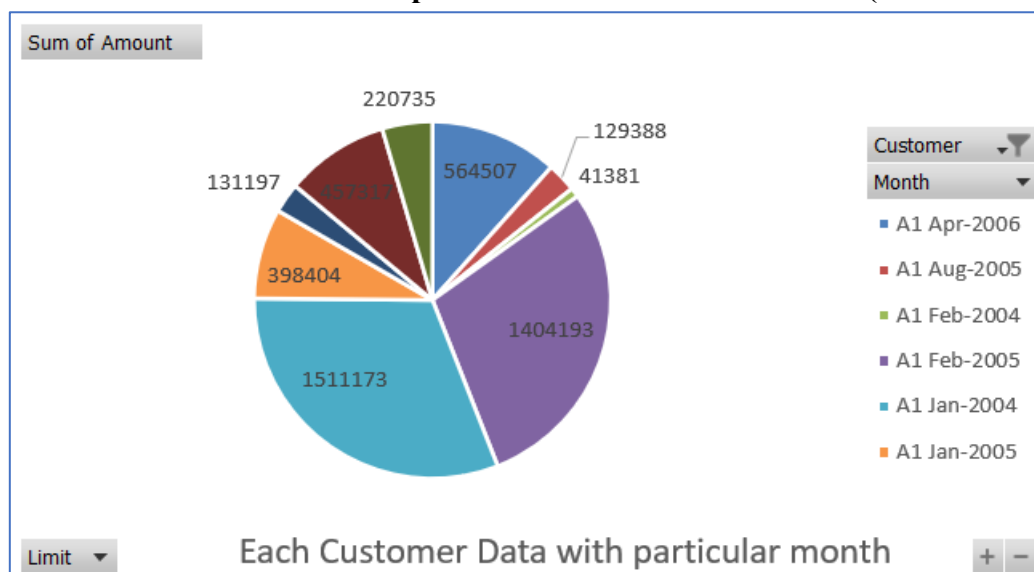
- 1) From the help of Spend Workbook i done this task, in this task i analysis the data and find out the Customer who spend more than his/her limit.
- 2) After the analysis i maked pivot table to showcase the task.
- 3) In this pivot table i only shows one customer A1 as a example using filter and Bar chart as well.
- 4) Pivot table shows that customer A1 spend monthly wise amount and also show that amounts are in inlimit or not.
- 5) 1st column contain the custom er name, 2nd column contain month, 3rd column contain the amount he/she spend and upper side of 3rd column you can see Limit 5,00,000.
- 6) This Limit shows the maximum limit of customer,from this we can easily find the customer spend his amount in limit or not as particular month.
- 7) From this analysis we easily find the customer A1 Spend more amoount in Jan-2004 and FEB-2005 as well as in limit or not.

Task-3:- Monthly spend of each customer.

	A	B	C	D	E	F	G	H	I	J	K	L
1	Sr.No	Customer	Limit	Month	Date	Category	Amount	Limit_Check				
2	1	A1	500000	Jan-2004	12-01-2004	JEWELLERY	473776	In Limit		Monthly spend of each customer.		
3	2	A1	500000	Jan-2004	03-01-2004	PETRO	335579	In Limit		Sum of Amount		Limit
4	3	A1	500000	Jan-2004	15-01-2004	CLOTHES	371041	In Limit		Customer	Month	500000
5	4	A1	500000	Jan-2004	25-01-2004	FOOD	141178	In Limit		A1	Apr-2006	564507
6	5	A1	500000	Jan-2005	17-01-2005	CAMERA	398404	In Limit			Aug-2005	129388
7	6	A1	500000	Feb-2005	23-02-2005	SANDALS	429085	In Limit			Feb-2004	41381
8	7	A1	500000	Feb-2005	01-02-2005	CAR	219342	In Limit			Feb-2005	1404193
9	8	A8	100002	Feb-2004	05-02-2004	BIKE	60302	In Limit			Jan-2004	1511173
10	9	A9	100003	Feb-2005	28-02-2005	AUTO	199771	Over Limit			Jan-2005	398404
11	10	A10	500000	Feb-2005	16-02-2005	SHOPPING	71117	In Limit			May-2004	131197
12	11	A11	500000	Feb-2005	23-02-2005	AIR TICKET	285356	In Limit			Nov-2005	457317
13	12	A12	500000	Feb-2005	03-02-2005	BUS TICKET	94470	In Limit			Oct-2006	220735
14	13	A13	500000	Feb-2006	04-02-2006	TRAIN TICKET	116944	In Limit		A1 Total		4858294
15	14	A14	500000	Mar-2006	25-03-2006	RENTAL	252037	In Limit				

Explanation

- 1) For this task i use same approach as i done in task 2.
- 2) In pivot table you can see customer A1 Spend amount with particular month like,
A1---> April-2006 ---> 564507 **(.: as well as 500000 limit)**

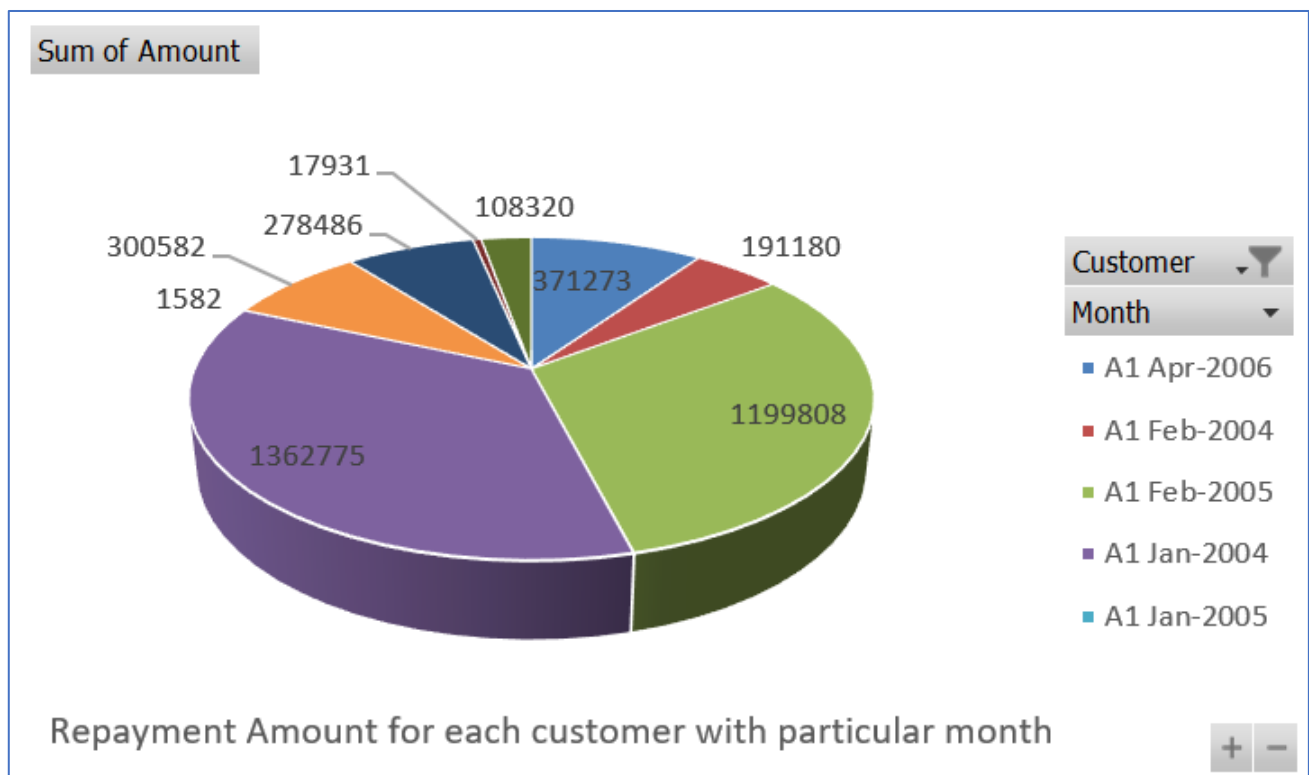


- 3) We can see that customer A1 spend more amount in Month April-2006 with INR 15,11,173/-

Task-4:- Monthly repayment of each customer

	A	B	C	D	E	F	G	H	I	J
1	Sr No:	Customer	Month	Date	Amount					
2	1	A1	Jan-2004	12-Jan-04	331844		Monthly Repayment of Each Customer			
3	2	A1	Jan-2004	3-Jan-04	441140					
4	3	A1	Jan-2004	15-Jan-04	32480					
5	4	A1	Jan-2004	25-Jan-04	90637					
6	5	A1	Jan-2005	17-Jan-05	1582					
7	6	A1	Feb-2005	23-Feb-05	357679					
8	7	A1	Feb-2005	1-Feb-05	280991					
9	8	A8	Feb-2004	5-Feb-04	117697					
10	9	A9	Feb-2005	28-Feb-05	8047					
11	10	A10	Feb-2005	16-Feb-05	407419					
12	11	A11	Feb-2005	23-Feb-05	243699					
13	12	A12	Feb-2005	3-Feb-05	227657					
14	13	A13	Feb-2006	4-Feb-06	106283					
15	14	A14	Mar-2006	25-Mar-06	96147					
16	15	A15	Mar-2006	21-Mar-06	18442					

- 1) For this task i use same approach as i done in task 3.
- 2) In pivot table you can see customer A1 Repayment amount with particular month like,
A1---> April-2006 ---> 371273



Task-5:- Highest paying 10 customers.

	A	B	C	D	E	F	G	H
1	Customer	Month	Date	Spend_Amount	Repayment_Amount			
2	A1	Jan-2004	12-01-2004	473776	331844			
3	A1	Jan-2004	03-01-2004	335579	441140		Top 10 Highest Paying Customer	
4	A1	Jan-2004	15-01-2004	371041	32480		Sum of Spend_Amount	
5	A1	Jan-2004	25-01-2004	141178	90637		Customer	Total
6	A1	Jan-2005	17-01-2005	398404	1582		A22	9637819
7	A1	Feb-2005	23-02-2005	429085	357679		A40	9595040
8	A1	Feb-2005	01-02-2005	219342	280991		A60	9317672
9	A8	Feb-2004	05-02-2004	60302	117697		A61	9148468
10	A9	Feb-2005	28-02-2005	199771	8047		A48	9056652
11	A10	Feb-2005	16-02-2005	71117	407419		A42	8665639
12	A11	Feb-2005	23-02-2005	285356	243699		A41	8583532
13	A12	Feb-2005	03-02-2005	94470	227657		A39	8526678
14	A13	Feb-2006	04-02-2006	116944	106283		A45	8498612
15	A14	Mar-2006	25-03-2006	252037	96147		A13	8042339
16	A15	Mar-2006	31-03-2006	339606	18443		Grand Total	89072450
17	A16	Mar-2006	23-03-2006	441190	32573			

Explanation

- 1) Using Pivot Table i take the sum of particular customer spend amount and repayment amount.
- 2) After I showcase in pivot table then using sort decending to ascening i find the top 10 customer who spend more amount.
- 3) We can easily see in the table that A20 is the Top 1st customer who spend more money.
- 4) We can easily see in the table that A79 is the Top 10th customer who spend more money.
- 5) At the last also take a sum of all the Top 10 Grand Total for better analysis.

Task-6:- People in which segment are spending more money.

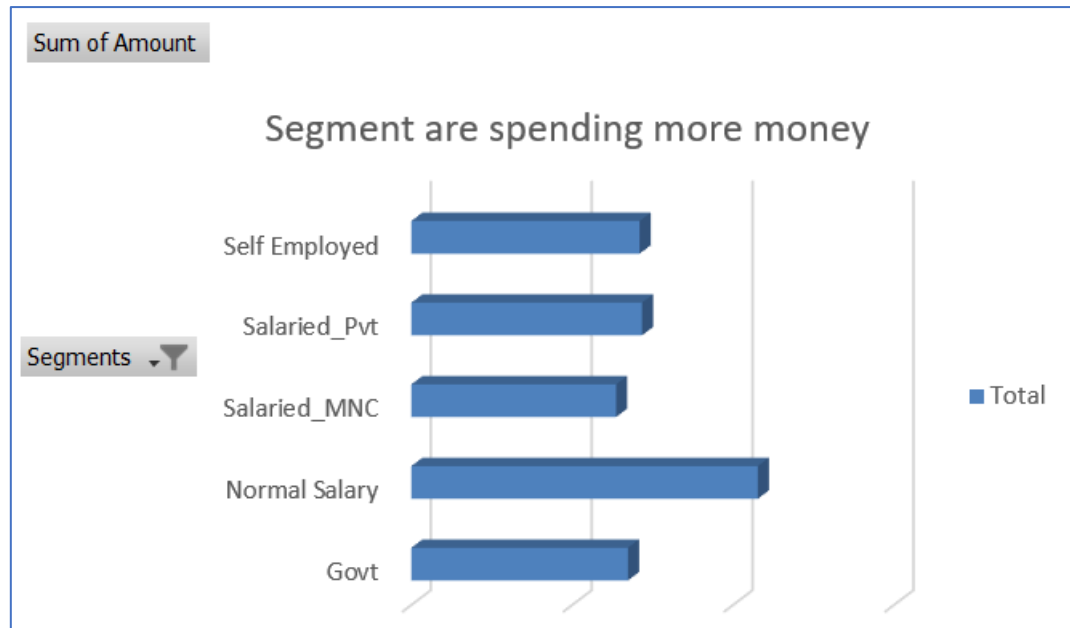
	A	B	C	D	E	F	G	H	I	J	K	L
1	Sr.No	Customer	Credit_limit	Segments	Month	Date	Type	Amount	Limit_Check			
2	1	A1	500000	Self Employed	Jan-2004	12-01-2004	JEWELLERY	473776	In Limit		Segment are spending more money.	
3	2	A1	500000	Self Employed	Jan-2004	03-01-2004	PETRO	335579	In Limit		Sum of Amount	
4	3	A1	500000	Self Employed	Jan-2004	15-01-2004	CLOTHES	371041	In Limit		Segments	Total
5	4	A1	500000	Self Employed	Jan-2004	25-01-2004	FOOD	141178	In Limit		Govt	67325631
6	5	A1	500000	Self Employed	Jan-2005	17-01-2005	CAMERA	398404	In Limit		Normal Salary	107707143
7	6	A1	500000	Self Employed	Feb-2005	23-02-2005	SANDALS	429085	In Limit		Salaried_MNC	63639489
8	7	A1	500000	Self Employed	Feb-2005	01-02-2005	CAR	219342	In Limit		Salaried_Pvt	71704311
9	8	A8	100002	Salaried_Pvt	Feb-2004	05-02-2004	BIKE	60302	In Limit		Self Employed	70975475
10	9	A9	100003	Govt	Feb-2005	28-02-2005	AUTO	199771	Over Limit		(blank)	
11	10	A10	500000	Normal Salary	Feb-2005	16-02-2005	SHOPPING	71117	In Limit		Grand Total	381352048
12	11	A11	500000	Normal Salary	Feb-2005	23-02-2005	AIR TICKET	285356	In Limit			
13	12	A12	500000	Self Employed	Feb-2005	03-02-2005	BUS TICKET	94470	In Limit			

Explanation

- 1) In this task i took a segment column from the “Customer Acquisition” using **vlookup function**,

D2	=VLOOKUP(B2, '[Customer Acquisition]Customer Acquisition'!\$B\$2:\$I\$101, 8, FALSE)											
	A	B	C	D	E	F	G	H	I			
1	Sr.No	Customer	Credit_limit	Segments	Month	Date	Type	Amount	Limit_Check			
2	1	A1	500000	Self Employed	Jan-2004	12-01-2004	JEWELLERY	473776	In Limit			
3	2	A1	500000	Self Employed	Jan-2004	03-01-2004	PETRO	335579	In Limit			
4	3	A1	500000	Self Employed	Jan-2004	15-01-2004	CLOTHES	371041	In Limit			

- 2) After the particular row value i just drag the value for all the rows.



- 3) From the Bar chart we can easily find that **Normal Salary Segment** are spending more money.

Task7:-Which age group is spending more money?

	A	B	C	D	E	F	G	H	I
1	Age	Valid_Age	Check_Age	Mean_Age	Age_Group				
2	0.9285	1	Underage	40.1465	Underage Group			Which age group spend more money	
3	35.5346	36	Valid	35.5346	Youngest Group				
4	11.5593	12	Underage	40.1465	Underage Group				
5	45.8203	46	Valid	45.8203	Youngest Group				
6	69.6639	70	Valid	69.6639	Youngest Group			Count of Valid_Age	
7	35.5786	36	Valid	35.5786	Youngest Group			Age_Group	Total
8	52.1022	52	Valid	52.1022	Youngest Group			Underage Group	22
9	77.8396	78	Valid	77.8396	Youngest Group			Youngest Group	78
								Grand Total	100

Explanation

- 1) I make a Age_Group Column for the calculation for the age group that which age group spend more money.
- 2) I use the IFELSE funtion for calculation for this task,

E2	=IF(B2<18,"Underage Group",IF(B2>=18,"Youngest Group",))				
	A	B	C	D	E
1	Age	Valid_Age	Check_Age	Mean_Age	Age_Group
2	0.9285	1	Underage	40.1465	Underage Group
3	35.5346	36	Valid	35.5346	Youngest Group

- 3) If the age of customer is <18 then it show "Underage Group".

- Count of Valid_Age
- ### Which Age Group spend more money
-
- A bar chart titled 'Which Age Group spend more money' comparing the 'Count of Valid_Age' for two categories: 'Underage Group' and 'Youngest Group'. The y-axis represents the count, with horizontal grid lines at intervals of 10, ranging from 0 to 90. The 'Underage Group' bar has a value of 22, and the 'Youngest Group' bar has a value of 78. A legend at the bottom left indicates that the blue bars represent the 'Total' count.
- | Age Group | Total |
|----------------|-------|
| Underage Group | 22 |
| Youngest Group | 78 |

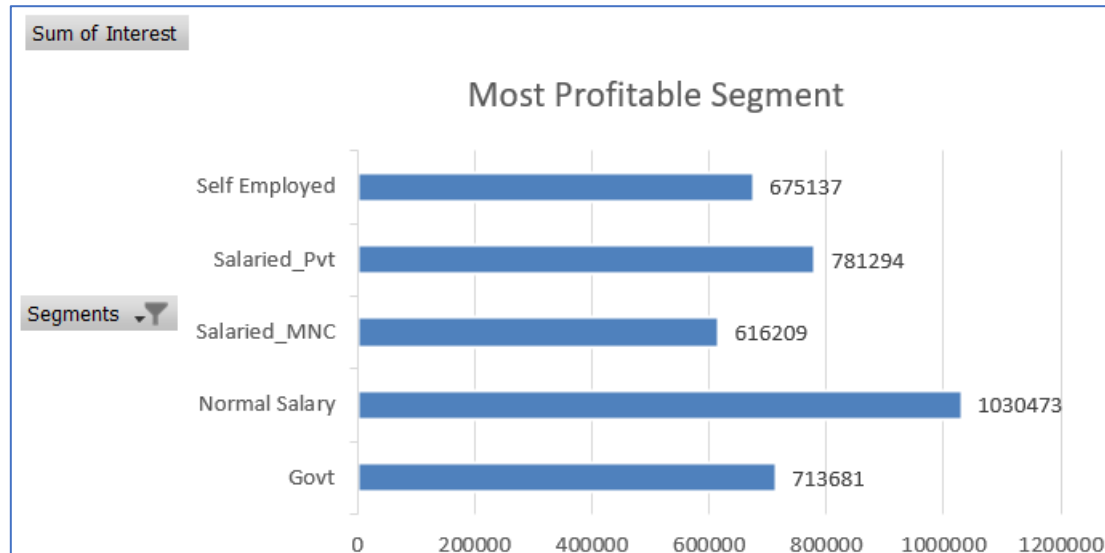
- | | A | B | C | D | E | F | G | H | I | J |
|----|----------|----------|---------------|------------------|---------------|--------|----------|---|-------------------------|---------|
| 1 | Customer | Month | Monthly_Spend | Repayment_Amount | Segments | Due | Interest | | | |
| 2 | A1 | Jan-2004 | 473776 | 331844 | Self Employed | 141932 | 4116 | | | |
| 3 | A1 | Jan-2004 | 335579 | 441140 | Self Employed | 0 | 0 | | Most Profitable Segment | |
| 4 | A1 | Jan-2004 | 371041 | 32480 | Self Employed | 338561 | 9818 | | | |
| 5 | A1 | Jan-2004 | 141178 | 90637 | Self Employed | 50541 | 1466 | | | |
| 6 | A1 | Jan-2005 | 398404 | 1582 | Self Employed | 396822 | 11508 | | Sum of Interest | |
| 7 | A1 | Feb-2005 | 429085 | 357679 | Self Employed | 71406 | 2071 | | Segments | Total |
| 8 | A1 | Feb-2005 | 219342 | 280991 | Self Employed | 0 | 0 | | Govt | 713681 |
| 9 | A8 | Feb-2004 | 60302 | 117697 | Salaried_Pvt | 0 | 0 | | Normal Salary | 1030473 |
| 10 | A9 | Feb-2005 | 199771 | 8047 | Govt | 191724 | 5560 | | Salaried_MNC | 616209 |
| 11 | A10 | Feb-2005 | 71117 | 407419 | Normal Salary | 0 | 0 | | Salaried_Pvt | 781294 |
| 12 | A11 | Feb-2005 | 285356 | 243699 | Normal Salary | 41657 | 1208 | | Self Employed | 675137 |
| 13 | A12 | Feb-2005 | 94470 | 227657 | Self Employed | 0 | 0 | | Grand Total | 3816794 |

F2							
=MAX(C2-D2,0)							
	A	B	C	D	E	F	G
1	Customer	Month	Monthly_Spend	Repayment_Amount	Segments	Due	Interest
2	A1	Jan-2004	473776	331844	Self Employed	141932	4116
3	A1	Jan-2004	335579	441140	Self Employed	0	0
4	A1	Jan-2004	371041	32480	Self Employed	338561	9818

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G2 $=F2*0.029$						
	A	B	C	D	E	F
1	Customer	Month	Monthly_Spend	Repayment_Amount	Segments	Due
2	A1	Jan-2004	473776	331844	Self Employed	141932
3	A1	Jan-2004	335579	441140	Self Employed	0
4	A1	Jan-2004	371041	32480	Self Employed	338561

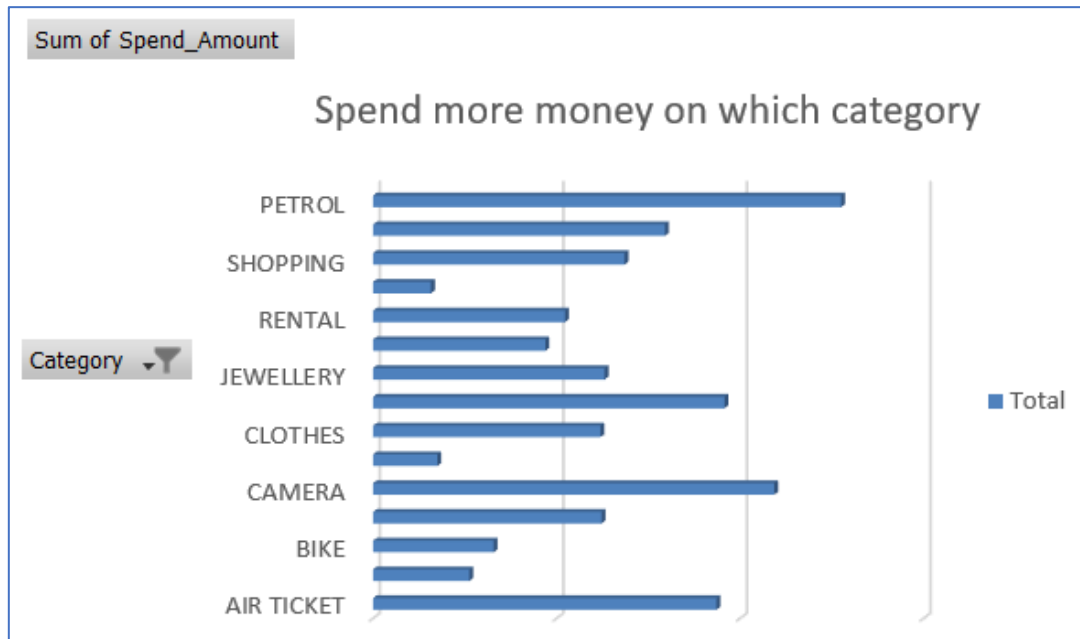
- 4) This calculation give me Due/pending amount of the customer. If there is spending amount is more and repayment amount is less then it show the value in Due + interest rate with 2.9%.
- 5) If there is spending amount is less and repayment amount is more than it shows value zero as shown in A3 row.
- 6) From this we can also analysis that which segment is profitable for a bank.



- 7) Using this Cluster Bar chart we can easily see that “Normal Salary segment” is more profitable for the bank.

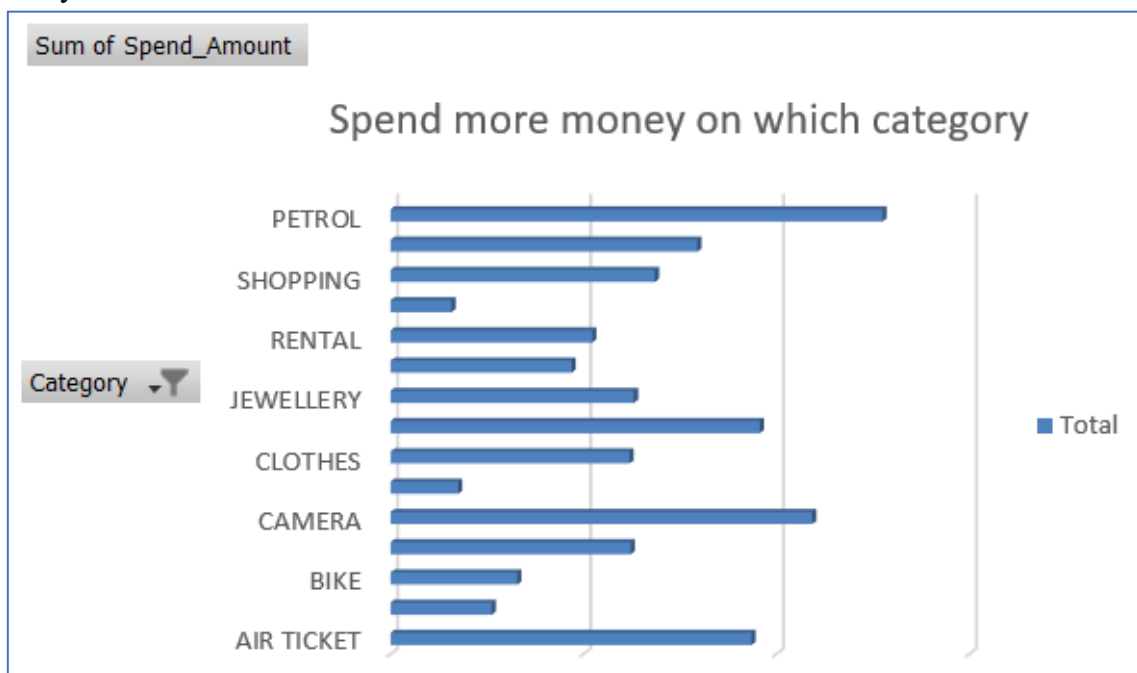
Task9:- In which category the customers are spending more money?

	A	B	C	D	E	F
1	Customer	Category	Spend_Amount			
2	A1	JEWELLERY	473776		Category in which the customers are spending more money	
3	A1	PETROL	335579			
4	A1	CLOTHES	371041		Sum of Spend_Amount	
5	A1	FOOD	141178		Category	Total
6	A1	CAMERA	398404		AIR TICKET	37435466
7	A1	SANDALS	429085		AUTO	10505087
8	A1	CAR	219342		BIKE	13152636
9	A8	BIKE	60302		BUS TICKET	24905897
10	A9	AUTO	199771		CAMERA	43721013
11	A10	SHOPPING	71117		CAR	7018278
12	A11	AIR TICKET	285356		CLOTHES	24791100
13	A12	BUS TICKET	94470		FOOD	38296463
14	A13	TRAIN TICKET	116944		JEWELLERY	25247952
15	A14	RENTAL	252037		MOVIE TICKET	18784581
16	A15	MOVIE TICKET	339606		RENTAL	20914671
17	A16	JEWELLERY	441190		SANDALS	6325017
18	A17	PETROL	473416		SHOPPING	27418683
19	A18	CLOTHES	128171		TRAIN TICKET	31812624
20	A19	FOOD	484196		PETROL	51022583
21	A20	JEWELLERY	177517		Grand Total	381352048



Explanation

- 1) In this task, we show that in which category customers are spending more money.
- 2) In pivot table, we cannot see the proper analysis in the value for that I use the bar chart from that we can easily understand.



- 3) From this chart we can easily understand that "Petrol" Category is the highest paying category.

Task10:- Monthly profit for the bank.

	A	B	C	D	E	F	G	H	I	J
1	Customer	Month	Monthly_Spend	Repayment_Amount	Segments	Due	Interest			
2	A1	Jan-2004	473776	331844	Self Employed	141932	4116		Monthly profit for the bank.	
3	A1	Jan-2004	335579	441140	Self Employed	0	0			
4	A1	Jan-2004	371041	32480	Self Employed	338561	9818		Sum of Interest	
5	A1	Jan-2004	141178	90637	Self Employed	50541	1466		Month	Total
6	A1	Jan-2005	398404	1582	Self Employed	396822	11508		Apr-2004	69526
7	A1	Feb-2005	429085	357679	Self Employed	71406	2071		Apr-2005	82973
8	A1	Feb-2005	219342	280991	Self Employed	0	0		Apr-2006	273863
9	A8	Feb-2004	60302	117697	Salaried_Pvt	0	0		Aug-2005	82601
10	A9	Feb-2005	199771	8047	Govt	191724	5560		Aug-2006	24506
11	A10	Feb-2005	71117	407419	Normal Salary	0	0		Dec-2005	41074
12	A11	Feb-2005	285356	243699	Normal Salary	41657	1208		Dec-2006	37399
13	A12	Feb-2005	94470	227657	Self Employed	0	0		Feb-2004	79458
14	A13	Feb-2006	116944	106283	Salaried_MNC	10661	309		Feb-2005	370923
15	A14	Mar-2006	252037	96147	Salaried_Pvt	155890	4521		Feb-2006	94846
16	A15	Mar-2006	339606	18443	Govt	321163	9314		Jan-2004	766467
17	A16	Mar-2006	441190	32573	Normal Salary	408617	11850		Jan-2005	84799
18	A17	Mar-2004	473416	81235	Self Employed	392181	11373		Jan-2006	23505
19	A18	Mar-2006	128171	37267	Salaried_MNC	90904	2636		Jul-2005	21962
20	A19	Apr-2005	484196	145773	Salaried_Pvt	338423	9814		Jul-2006	90487
21	A20	Apr-2006	177517	102398	Govt	75119	2178		Jun-2005	63143
22	A21	Apr-2004	371306	460017	Normal Salary	0	0		Jun-2006	44681
23	A22	Apr-2006	237612	404305	Self Employed	0	0		Mar-2004	58436
24	A23	Apr-2004	374471	8272	Salaried_MNC	366199	10620		Mar-2006	529795
25	A24	Apr-2005	270617	466261	Salaried_Pvt	0	0		May-2004	51365
26	A25	May-2004	351505	95647	Govt	255858	7420		May-2005	347687
27	A26	May-2006	311751	239200	Normal Salary	72551	2104		May-2006	151621
28	A27	May-2005	378044	385040	Self Employed	0	0		Nov-2004	39613
29	A28	May-2006	106669	366874	Salaried_MNC	0	0		Nov-2005	158097
30	A29	May-2005	91433	58901	Salaried_Pvt	32532	943		Nov-2006	83576
31	A30	May-2006	422702	91244	Govt	331458	9612		Oct-2005	20538
32	A31	Jul-2006	176296	263968	Normal Salary	0	0		Oct-2006	22761
33	A32	Aug-2005	69630	411427	Self Employed	0	0		Sep-2004	18460
34	A33	Sep-2004	337923	331595	Salaried_MNC	6328	184		Sep-2005	48144
35	A34	Nov-2005	318360	90560	Salaried_Pvt	227800	6606		Sep-2006	34488
36	A35	Nov-2006	65440	16122	Govt	49318	1430		Grand Total	3816794

Explanation

- 1) In this Last Task, I calculate the profit for the bank monthly wise using the sum of interest rate amount.
- 2) Bank revenue is generate on the basis of Service charge they provide, Interest Rate and all.
- 3) In this data we have only interest rate so i do the sum of interest for particular month and calculate the profit of bank.

