

UNCOVERING THE STRATEGIES OF BOOSTING THE SALES OF ZEDEF CORPORATION

1. Problem Definition:

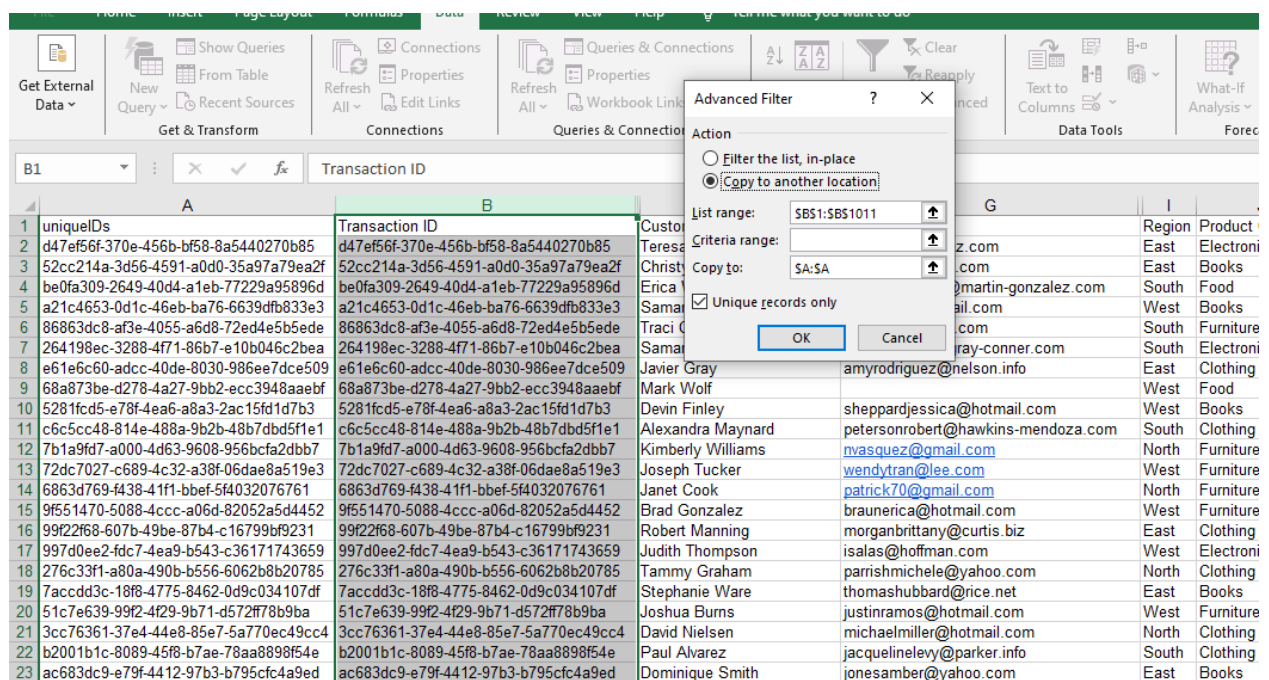
What should the management do to boost the sales of ZEDEF Corporation?

2. Data Collection:

An unstructured extensive sales data was provided. The dataset contains 1010 rows of data and 11 columns. The columns are: Transaction ID, Customer Name, Customer Email, Region, Product Category, Product, Quantity, Unit Price, Total Sales, Transaction Date, and Payment Method. Quantity, Unit Price and Total Sales are numeric columns. Transaction date is a date column while the rest of the columns are text columns.

3. Data Cleaning:

1. Generic Use of VLOOKUP: VLOOKUP was used on all the columns to bring their values from the raw data to the new sheet where they will be cleaned. The lookup values are the unique transaction IDs that were copied from the raw data sheet.
2. Removal of Duplicates in the Transaction ID Column: Data > Advanced Filter was used to select the unique Transaction IDs and copy them to a newly created column called uniqueIDs in column A. The IDs in the uniqueIDs were copied to the cleanedDataSet sheet where further cleaning processes were carried out selecting only the unique transactions by using these unique IDs as lookup values.



The screenshot shows the Microsoft Excel interface with the 'Advanced Filter' dialog box open. The dialog box has the 'Copy to another location' option selected. The 'List range' is set to '\$B\$1:\$B\$1011', the 'Criteria range' is empty, and the 'Copy to' is set to '\$A:\$A'. The 'Unique records only' checkbox is checked. The background shows a data table with columns A through I. Column A is labeled 'uniqueIDs' and contains transaction IDs. Column B is labeled 'Transaction ID' and also contains transaction IDs. Columns C through I contain customer information: Customer Name, Customer Email, Region, Product Category, Product, Quantity, Unit Price, and Total Sales.

uniqueIDs	Transaction ID	Customer Name	Customer Email	Region	Product Category	Product	Quantity	Unit Price	Total Sales
d47ef56f-370e-456b-bf58-8a5440270b85	d47ef56f-370e-456b-bf58-8a5440270b85	Teresa	teresa@z.com	East	Electronics	Smartphone	1	1000	1000
52cc214a-3d56-4591-a0d0-35a97a79ea2f	52cc214a-3d56-4591-a0d0-35a97a79ea2f	Christi	christi@z.com	East	Books	Novel	1	10	10
be0fa309-2649-40d4-a1eb-77229a95896d	be0fa309-2649-40d4-a1eb-77229a95896d	Erica	erica@martin-gonzalez.com	South	Food	Pasta	1	5	5
a21c4653-0d1c-46eb-ba76-6639dfb833e3	a21c4653-0d1c-46eb-ba76-6639dfb833e3	Sam	sam@jail.com	West	Books	Textbook	1	15	15
86863dc8-af3e-4055-a6d8-72ed4e5b5ede	86863dc8-af3e-4055-a6d8-72ed4e5b5ede	Traci	traci@com	South	Furniture	Chair	1	200	200
264198ec-3288-4f71-86b7-e10b046c2bea	264198ec-3288-4f71-86b7-e10b046c2bea	Sam	ray-conner.com	South	Electronics	Tablet	1	150	150
e61e6c60-adcc-40de-8030-986ee7dce509	e61e6c60-adcc-40de-8030-986ee7dce509	Javier Gray	amyrodriguez@nelson.info	East	Clothing	Shirt	1	20	20
68a873be-d278-4a27-9bb2-ecc3948aaebf	68a873be-d278-4a27-9bb2-ecc3948aaebf	Mark Wolf		West	Food	Bread	1	2	2
5281fcd5-e78f-4ea6-a8a3-2ac15fd1d7b3	5281fcd5-e78f-4ea6-a8a3-2ac15fd1d7b3	Devin Finley	sheppardjessica@hotmail.com	West	Books	Comic	1	5	5
c6c5cc48-814e-488a-9b2b-48b7dbd5f1e1	c6c5cc48-814e-488a-9b2b-48b7dbd5f1e1	Alexandra Maynard	peteronrobert@hawkins-mendoza.com	South	Clothing	Jeans	1	30	30
7b1a9fd7-a000-4d63-9608-956bcfa2dbb7	7b1a9fd7-a000-4d63-9608-956bcfa2dbb7	Kimberly Williams	nvasquez@gmail.com	North	Furniture	Table	1	100	100
72dc7027-c689-4c32-a38f-06dae8a519e3	72dc7027-c689-4c32-a38f-06dae8a519e3	Joseph Tucker	wendytran@lee.com	West	Furniture	Chair	1	200	200
6863d769-f438-41f1-bbef-5f4032076761	6863d769-f438-41f1-bbef-5f4032076761	Janet Cook	patrick70@gmail.com	North	Furniture	Table	1	100	100
9f551470-5088-4ccc-a06d-82052a5d4452	9f551470-5088-4ccc-a06d-82052a5d4452	Brad Gonzalez	braunerica@hotmail.com	West	Furniture	Table	1	100	100
99f22f68-607b-49be-87b4-c16799bf9231	99f22f68-607b-49be-87b4-c16799bf9231	Robert Manning	morganbrittany@curtis.biz	East	Clothing	Shirt	1	20	20
997d0ee2-fdc7-4ea9-b543-c36171743659	997d0ee2-fdc7-4ea9-b543-c36171743659	Judith Thompson	isalas@hoffman.com	West	Electronics	Smartphone	1	1000	1000
276c33f1-a80a-490b-b556-6062b8b20785	276c33f1-a80a-490b-b556-6062b8b20785	Tammy Graham	parrishmichele@yahoo.com	North	Clothing	Jeans	1	30	30
7accdd3c-18f8-4775-8462-0d9c034107df	7accdd3c-18f8-4775-8462-0d9c034107df	Stephanie Ware	thomashubbard@rice.net	East	Books	Novel	1	10	10
51c7e639-99f2-4f29-9b71-d572ff78b9ba	51c7e639-99f2-4f29-9b71-d572ff78b9ba	Joshua Burns	justinramos@hotmail.com	West	Furniture	Table	1	100	100
3cc76361-37e4-44e8-85e7-5a770ec49cc4	3cc76361-37e4-44e8-85e7-5a770ec49cc4	David Nielsen	michaelmiller@hotmail.com	North	Clothing	Jeans	1	30	30
b2001b1c-8089-45f8-b7ae-78aa8898f54e	b2001b1c-8089-45f8-b7ae-78aa8898f54e	Paul Alvarez	jacquelinelevy@parker.info	South	Clothing	Shirt	1	20	20
ac683dc9-e79f-4412-97b3-b795cfc4a9ed	ac683dc9-e79f-4412-97b3-b795cfc4a9ed	Dominique Smith	jonesamber@yahoo.com	East	Books	Textbook	1	15	15

3. Conversion of Transaction Date Column to Consistent Date Data Type

- a. Creation of three helper columns – transactionDay, transactionMonth, and transactionYear – using IFERROR, TEXT, FIND, LEFT, DAY, MONTH, AND YEAR functions

The screenshot shows an Excel spreadsheet with the following data and formulas:

	G	I	J	K	L	M	N	O	P	Q	R	S
	Customer Email	Region	Product Category	Product	Quantity	Unit Price	Total Sales	Transaction Date	transactionDay	transactionMonth	transactionYear	Payment Method
1	brentclark@lopez.com	East	Electronics	Make	1.00	453.78	453.78	18/05/2024	18	5	2024	Debit Card
2	dmacias@gmail.com	East	Books	Production	8.00	382.55	3060.40	10/2/2024	10	2	2024	Bank Transfer
3	williamsanders@martin-gonzalez.com	South	Food	Program	20.00	49.68	993.60	27/01/2024	27	1	2024	Credit Card
4	darrell84@hotmail.com	West	Books	Probably	3.00	420.73	1262.19	19/02/2024	19	2	2024	Credit Card
5	zwade@hotmail.com	South	Furniture	Reality	18.00	113.41	2041.38	2/1/2024	2	1	2024	Bank Transfer
6	brownjenifer@gray-conner.com	South	Electronics	Fine	2.00	35.51	71.02	12/2/2024	12	2	2024	PayPal
7	amyrrodriguez@nelson.info	East	Clothing	Second	12.00	143.49	1721.88	9/3/2024	9	3	2024	Debit Card
8	sheppardjessica@hotmail.com	West	Food	South	3.00	231.24	693.72	21/06/2024	21	6	2024	Bank Transfer
9	peteronrobert@hawkins-mendoza.com	South	Books	Focus	12.00	426.35	5116.20	16/08/2024	16	8	2024	Bank Transfer
10	nvasquez@gmail.com	North	Clothing	South	15.00	424.01	6360.15	18/06/2024	18	6	2024	Debit Card
11	wendytran@lee.com	West	Furniture	Into	18.00	468.66	8435.88	12/6/2024	12	6	2024	Debit Card
12	patnick70@gmail.com	West	Furniture	Rule	14.00	134.19	1878.66	5/6/2024	5	6	2024	PayPal
13	brauneric@hotmail.com	North	Furniture	Bank	2.00	442.29	884.58	26/02/2024	26	2	2024	Debit Card
14	morganbrittany@curtis.biz	West	Furniture	Relationship	10.00	237.92	2379.20	15/07/2024	15	7	2024	PayPal
15	isalas@hoffman.com	East	Clothing	Player	16.00	63.76	1020.16	23/03/2024	23	3	2024	Credit Card
16	parrishmichele@yahoo.com	West	Electronics	Where	13.00	44.08	573.04	20/01/2024	20	1	2024	PayPal
17	thomashubbard@rice.net	North	Clothing	Baby	16.00	253.51	4056.16	5/5/2024	5	5	2024	Bank Transfer
18	justinramos@hotmail.com	East	Books	Begin	9.00	343.81	3094.29	18/05/2024	18	5	2024	Debit Card
19	michaelmiller@hotmail.com	West	Furniture	Standard	16.00	192.46	3079.36	19/08/2024	19	8	2024	Credit Card
20	jacquelinelevy@parker.info	North	Clothing	Hope	12.00	419.30	5031.60	24/05/2024	24	5	2024	PayPal
21	jonesamber@yahoo.com	South	Clothing	Service	19.00	234.64	4458.16	6/2/2024	6	2	2024	PayPal
22	holmesgregory@hernandez.com	East	Books	Task	4.00	126.34	505.36	25/07/2024	25	7	2024	Credit Card

- b. Generation of consistent date values based on the initial inconsistent date values using VLOOKUP and DATE functions.

The screenshot shows an Excel spreadsheet with the following data and formula:

	C	E	F	G	H	I	J	K	L	M	N	O	P
	Customer Email	Region	Product Category	Product	Quantity	Unit Price	Total Sales	Transaction Date	Payment Method				
3	dmacias@gmail.com	East	Books	Production	8.00	382.55	3060.40	10/2/2024	Bank Transfer				
10	sheppardjessica@hotmail.com	West	Books	Focus	12.00	426.35	5116.20	8/16/2024	Bank Transfer				
11	peteronrobert@hawkins-mendoza.com	South	Clothing	Blank	15.00	424.01	6360.15	6/18/2024	Debit Card				
12	nvasquez@gmail.com	North	Furniture	Into	18.00	468.66	8435.88	12/6/2024	Debit Card				
18	parrishmichele@yahoo.com	North	Clothing	Baby	16.00	253.51	4056.16	5/5/2024	Bank Transfer				
19	thomashubbard@rice.net	East	Books	Begin	9.00	343.81	3094.29	5/18/2024	Debit Card				
20	justinramos@hotmail.com	West	Furniture	Standard	16.00	192.46	3079.36	8/19/2024	Credit Card				
21	michaelmiller@hotmail.com	North	Clothing	Hope	12.00	419.30	5031.60	5/24/2024	PayPal				
22	jacquelinelevy@parker.info	South	Clothing	Service	19.00	234.64	4458.16	6/2/2024	PayPal				
24	holmesgregory@hernandez.com	East	Electronics	Security	20.00	444.55	8891.00	7/3/2024	Debit Card				
26	tsteevens@yahoo.com	East	Furniture	Population	12.00	474.30	5691.60	5/29/2024	Credit Card				
41	dustin69@frazier.com	North	Furniture	Inside	19.00	267.26	5077.94	9/4/2024	Bank Transfer				
42	romeromichelle@smith.com	East	Electronics	Way	7.00	483.68	3385.76	8/24/2024	Bank Transfer				
48	replacement@mail.com	South	Furniture	State	15.00	362.41	5436.15	12/4/2024	Credit Card				
58	michelleobrien@hotmail.com	East	Electronics	Information	16.00	250.70	4011.20	9/2/2024	Credit Card				
60	rachel01@anthony.com	North	Clothing	Serve	18.00	410.88	7395.84	3/4/2024	Credit Card				
62	david80@hotmail.com	West	Books	During	15.00	306.28	4594.20	1/3/2024	Debit Card				
63	hoffmaneric@hotmail.com	East	Furniture	What	18.00	441.42	7945.56	6/29/2024	PayPal				

4. Removal of extra spaces in the three number columns – Quantity, Unit Price, and Total Sales - using TRIM, NUMBERTVALUE, and VLOOKUP.

5. Elimination of extra spaces in the text columns using TRIM

6. Identification of Missing values in the email column: Home > Conditional Formatting was used to highlight cells with missing values.

7. Replacement of Missing Values: replacement@mail.com was used to replace all missing mail values and 'Blank' was used to replace all missing product values. This decision was made because an invalid mail or product is not totally relevant to the

question of this analysis but not having an email or product value at all for a confirmed transaction reduces the completeness of the data set.

Font	Alignment	Number	Styles			
=IF(TRIM(VLOOKUP(A1,rawData!B:5,6,0))="" ,"replacement@mail.com",TRIM(VLOOKUP(A1,rawData!B:5,6,0)))						
A	B	C	E	F	G	H
-4a73-b42f-0c6ff-4093a	Customer Name	Customer Email	Region	Product Category	Product	Quantity
-449d-e5bf-06ad2f9e746	Laura Potts	melendeztonya@rose.net	West	Books	Prevent	15.00
-4507-80cf-4ee53572e94a	Samantha Smith	brandonturner@hotmail.com	West	Food	Result	10.00
-4219-98e5-e8de6b06cad	Rhonda Kane	john00@gmail.com	North	Food	Blank	10.00
4540-b66d-e93d552bb111	Jessica Li	piecechad@hotmail.com	North	Electronics	Quite	2.00
49ea-bed9-4e544e6dd769	James Nichols	danielvebb@garcia-johnson.biz	South	Furniture	Practice	9.00
1e08-95fa-0e02c-0041103	Jennifer Blevins	rcole@powers-allen.org	West	Clothing	To	1.00
1961-b2ae-a7e8aacd081b	Jennifer Lucas	replacement@mail.com	North	Food	Loss	8.00
45a0-9e0f-e0109a3cc9a7	Mark Thornton	victoriahodge@nguyen-davis.net	North	Food	Help	17.00
-4c3d-b8f1-9acc68feae50b	Samuel White	gonzalezkimberly@gmail.com	East	Food	Civil	17.00
-41ab-8c51-61cda4219b4	David Hines	dustin69@frazier.com	North	Furniture	Inside	19.00
4106-806-98c1a6e2a0b	Matthew Hernandez	romeromichelle@smith.com	East	Electronics	Way	7.00
4cba-87e4-c73b017c4355	Tammy Allen	harrischristopher@gmail.com	East	Electronics	Seat	1.00
-1b0-a5ec-122039b486aa	Alexa Greene	dbrooks@yahoo.com	East	Food	Writer	14.00
-4450-bb95-163d264c8762	Stacey Smith	michael49@miller-graves.net	North	Electronics	Which	18.00
490f-bd35-76c4e5c1006d	Walter Olsen	victoria67@hotmail.com	North	Food	Own	6.00
9b0-ac3d-994c706a5e91	Christina Johnson	walkergorge@poppe.com	North	Furniture	Everyone	10.00
-4733-ac0f-01cfb5684937	Christopher Wilkerson	replacement@mail.com	South	Furniture	State	15.00
1221-8c77-955df1254c7a	Rebecca Smith	acevedodestiny@yahoo.com	South	Electronics	Table	4.00
-42db-9b71-9c2f1256d61c	James Woodard	hannahharris@hotmail.com	West	Clothing	Cause	9.00
4fc5-a3ad-7178b6496b49	George Moore	keysandra@perkins-anderson.com	West	Food	Born	2.00
-45f3-9c1c-06c3be0525a4	Matthew Hill	jyoung@yahoo.com	South	Food	Any	6.00
	Michael Ramos	barbara32@gmail.com	South	Clothing	Trouble	12.00

Font	Alignment	Number	Formating	Issue	Styles	Cells
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
=IF(TRIM(VLOOKUP(A1,rawData!B:5,10,0))="" ,"Blank",TRIM(VLOOKUP(A1,rawData!B:5,10,0)))						
A	B	C	E	F	G	H
c77-955df1254c7a	Customer Name	Customer Email	Region	Product Category	Product	Quantity
9b71-9c2f1256d61c	James Woodard	hannahharris@hotmail.com	West	Clothing	Cause	9.00
3cd-7178b6496b49	George Moore	keysandra@perkins-anderson.com	West	Food	Born	2.00
3c1c-06c3be0525a4	Matthew Hill	jyoung@yahoo.com	South	Food	Any	6.00
b1ff-223a332abb1	Michael Ramos	barbara32@gmail.com	South	Clothing	Trouble	12.00
318-7668e4170e5	Colton Kim	pateljohn@griffin-perez.info	North	Clothing	Blank	5.00
354f-d76df616240	Laura Dixon	david72@hotmail.com	East	Furniture	War	8.00
45c8-16104a63026	Christopher Howe	moorecynthia@brown-sullivan.com	West	Food	Policy	8.00
a6c6-c6b10f226a9e	Eric Alexander	comptonanna@johnson.com	South	Books	Place	2.00
32f-5524c98351da	Katlyn Rosales	michellebrien@hotmail.com	East	Electronics	Information	16.00
b9f3-e3e1f5a10730	Bryan Parsons	amyscott@yahoo.com	West	Furniture	Be	13.00
9eb7-1a8c56a33c07	James Allen	rachel01@anthony.com	North	Clothing	Serve	18.00
7a1a-99f7-a000-4d63-9608-956bca2dbb7	Ashley Collins	millerjacob@yahoo.com	North	Food	High	10.00
93b0-75f68e764c24	Jordan Lane	david80@hotmail.com	West	Books	During	15.00
9333-9d797339d098	Mrs. Kelly Park PhD	hoffmanenica@hotmail.com	East	Furniture	What	18.00
ac31-d4d833982e2	Michael Mooney	norman05@yahoo.com	East	Books	Hotel	19.00
9936-c49fac87f6	William Cummings	sullivanpatrick@hotmail.com	North	Furniture	Lot	6.00
9ce1-320597d2e2b	Laura Dixon	harrisdaniel@aguirre.net	South	Food	Heart	9.00
b884-c2155c7acae0	Timothy Gutierrez	johnson@gmail.com	East	Electronics	Best	11.00
366a-2ccf77fdd43fa	Brian Johnson	andrewskelly@yahoo.com	West	Furniture	Smile	9.00
d42-cc44d07b9068	Donna Casey	charles96@hotmail.com	North	Books	How	6.00
	Jessica Roy	barbaraweiss@allen.com	East	Electronics	Beat	17.00

4. Data Exploration:

Sorting and Filtering

All sorting was done with Data > Sort and all filtering was done with Data > Filter

1. Regions: 4

Transaction ID	Customer Name	Customer Email	Region	Product Category	Product	Quantity	Unit Price	Total Sales	Transaction Date	Payment Method
647f4569370e-456b-b58-89c440270b05	Teresa Armstrong	brnickclark@goxiz.com	East	Electronics	Male	1.00	453.78	453.78	5/18/2024	Debit Card
bed9a309-2649-46d4-1eb-77229a65596d	Erica Walsh	williamsanders@martin-gonzalez.com	South	Food	Program	20.00	49.68	993.60	1/27/2024	Credit Card
a21c4653-0d1c-46eb-ba76-6639db833e3	Samantha Webb	darell84@hotmail.com	West	Books	Probably	3.00	420.73	1262.19	2/19/2024	Credit Card
7b1a99f7-a000-4d63-9608-956bca2dbb7	Kimberly Williams	masquez@gmail.com	North	Furniture	Info	18.00	468.66	8435.88	12/6/2024	Debit Card

2. Product Categories: 5

3. Product Type Count: 622

4. Product Category Count Summary

5. Summary of Top Performing Products and Regions

[illegible]

6. Use of helperColumn: In calculating the top performers, helperColumn was used to evaluate the products that have highest sales in a particular region or the region that performed best with a particular product in the Summary of the top-performing products and regions.

G	H	I	J	
il	helperColumn	Region	Product Category	Pro
ez.com	EastElectronics	East	Electronics	Ma
il.com	EastBooks	East	Books	Pro
@martin-gonzalez.c	SouthFood	South	Food	Pro
nail.com	WestBooks	West	Books	Pro
il.com	SouthFurniture	South	Furniture	Rea
gray-conner.com	SouthElectronics	South	Electronics	Fin
nelson.info	EastClothing	East	Clothing	Sec
	WestFood	West	Food	Sou
a@hotmail.com	WestBooks	West	Books	Foc
@hawkins-mendoza	SouthClothing	South	Clothing	
ail.com	NorthFurniture	North	Furniture	Int
e.com	WestFurniture	West	Furniture	Rul
ail.com	NorthFurniture	North	Furniture	Ban
itmail.com	WestFurniture	West	Furniture	Rel
@curtis.biz	EastClothing	East	Clothing	Pla

7. 375 transactions worth more than 3000 total sales threshold.

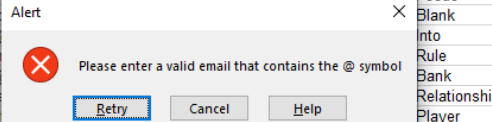
Excel - Project.xlsx - Data															
File Home Insert Page Layout Formulas Data Review View Help Tell me what you want to do															
Get External Data New Query Refresh Show Queries From Table Recent Sources Get & Transform Refresh Properties Edit Links Workbook Links Queries & Connections Sort & Filter Filter Reapply Advanced Text to Columns Data Tools What-If Analysis Forecast Sheet Outline Data Analysis Analysis															
J1	=TRIM(VLOOKUP(A1,rawData!B:5,13,0))														
	C	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
	Customer Email	Region	Product Category	Product	Quantity	Unit Price	Total Sales	Transaction Date	Payment Method						
1	Customer Email	Region	Product Category	Product	Quantity	Unit Price	Total Sales	Transaction Date	Payment Method						
3	dmacias@gmail.com	East	Books	Production	8.00	382.55	3060.40	10/2/2024	Bank Transfer						
10	sheppardjessica@hotmail.com	West	Books	Focus	12.00	426.35	5116.20	8/16/2024	Bank Transfer						
11	petersonrobert@hawkins-mendoza.com	South	Clothing	Blank	15.00	424.01	6360.15	6/18/2024	Debit Card						
12	masquez@gmail.com	North	Furniture	Into	19.00	468.66	8915.88	12/8/2024	Debit Card						
18	parishmichele@yahoo.com	North	Clothing	Baby	16.00	253.51	4056.16	5/5/2024	Bank Transfer						
19	thomashubbard@rice.net	East	Books	Begin	9.00	343.81	3094.29	5/18/2024	Debit Card						
20	justinramos@hotmail.com	West	Furniture	Standard	16.00	192.46	3079.36	8/19/2024	Credit Card						
21	michaelmiller@hotmail.com	North	Clothing	Hope	12.00	419.30	5031.60	5/24/2024	PayPal						
22	jacquelinelevy@parker.info	South	Clothing	Service	19.00	234.64	4458.16	6/2/2024	PayPal						
24	holmesgregory@hemandez.com	East	Electronics	Security	20.00	444.55	8891.00	7/3/2024	Debit Card						
26	tslevens@yahoo.com	East	Furniture	Population	12.00	474.30	5691.60	5/29/2024	Credit Card						
41	dustin69@frazier.com	North	Furniture	Inside	19.00	267.26	5077.94	9/4/2024	Bank Transfer						
42	romeromichelle@smith.com	East	Electronics	Way	7.00	483.68	3385.76	8/24/2024	Bank Transfer						
48	replacement@mail.com	South	Furniture	State	15.00	362.41	5436.15	12/4/2024	Credit Card						
50	michelleobrien@hotmail.com	East	Electronics	Information	16.00	250.70	4011.20	9/2/2024	Credit Card						
60	rachel01@anthony.com	North	Clothing	Serve	18.00	410.88	7395.84	3/4/2024	Credit Card						
62	david80@hotmail.com	West	Books	During	15.00	306.28	4594.20	1/3/2024	Debit Card						
63	hofmanica@hotmail.com	East	Furniture	What	18.00	441.42	7945.56	6/29/2024	PayPal						
67	tjohnson@gmail.com	East	Electronics	Blank	11.00	470.13	5171.43	3/16/2024	Bank Transfer						
70	barbaraweiss@allen.com	East	Electronics	Beat	17.00	404.99	6884.83	6/20/2024	Debit Card						
73	bburns@gmail.com	North	Furniture	Heart	8.00	456.78	3654.24	8/16/2024	PayPal						
76	replacement@mail.com	South	Electronics	Sing	15.00	418.09	6271.35	4/14/2024	Credit Card						
77	brandon31@briggs.net	North	Food	Event	20.00	420.08	8401.60	5/14/2024	PayPal						
82	penny78@hedges.org	South	Electronics	Window	20.00	278.93	5578.60	5/31/2024	PayPal						
90	david74@brown.biz	East	Furniture	Put	15.00	293.87	4408.05	5/27/2024	Debit Card						
92	mosborne@hunter.com	East	Furniture	Blank	15.00	258.10	3871.50	1/17/2024	Debit Card						
Ready 374 of 1078 records found Accessibility: Investigate Average: 5263.71 Count: 375 Sum: 1958625.80															

8. Sorting the data in descending order of the sales amount.

=TRIM(VLOOKUP(A1,rawData!B:5,13,0))										
	B	C	E	F	G	H	I	J	K	L
	Customer Name	Customer Email	Region	Product Category	Product	Quantity	Unit Price	Total Sales	Transaction Date	Payment Method
31132	Michael Johnson	ricky22@walters-burch.net	West	Furniture	Economic	20.00	492.26	9845.20	4/23/2024	PayPal
3908	Summer White	ryanking@mason.com	North	Books	Rule	20.00	490.80	9816.00	1/25/2024	Credit Card
1ad9	Eric Gutierrez	amber59@gmail.com	West	Books	Land	20.00	489.85	9797.00	5/3/2024	Credit Card
792	Dennis Grant	annette34@hotmail.com	South	Furniture	Blood	20.00	486.22	9724.40	6/21/2024	PayPal
7ea2	Kimberly Fletcher	brandjones@hotmail.com	North	Furniture	Recognize	20.00	482.84	9656.80	9/4/2024	PayPal
1d1b	Michelle Robinson	johansonshawn@luna.org	South	Clothing	Natural	19.00	485.22	9219.18	3/15/2024	Credit Card
815d	Victoria Monroe	swatson@watkins.com	East	Food	Relate	19.00	484.53	9206.07	1/13/2024	Debit Card
1ee3a	Janet Collins	stephanie91@phillips-peters.com	South	Food	Environmental	18.00	498.21	8967.78	5/24/2024	Bank Transfer
ae464	Nicole Davidson MD	holmesgregory@hemandez.com	East	Electronics	Security	20.00	444.55	8891.00	7/3/2024	Debit Card
4bb6	Christopher Dyer	courtney07@yahoo.com	West	Furniture	Support	20.00	442.85	8857.00	5/3/2024	Debit Card
711	Glenn Bell	willistammy@gmail.com	East	Books	Wait	18.00	486.86	8763.48	12/7/2024	Credit Card
30b4	Lisa Castillo	michael27@jackson-hopkins.com	East	Clothing	Blank	20.00	435.89	8717.80	4/20/2024	Bank Transfer
32d	Cody Murphy	anthonypatricia@hampton.com	South	Books	By	20.00	431.44	8628.80	2/16/2024	PayPal
b90	Anthony Rhodes	pking@herrera.com	East	Clothing	Set	18.00	477.45	8594.10	10/4/2024	Debit Card
845b	Lisa Strong	pricejamie@larsen.com	South	Electronics	Protect	20.00	429.46	8589.20	6/14/2024	Credit Card
b1d7	Ricky Nichols	nrios@webb.net	North	Clothing	Cover	18.00	474.61	8542.98	6/4/2024	Debit Card
625a	Amv Nav	patrickknooks@mnerns-green.com	South	Books	Direction	20.00	423.38	8467.60	3/14/2024	Bank Transfer

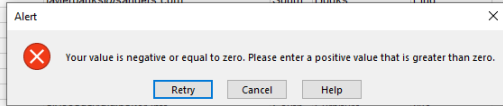
- Application of data validation on email column to allow only values that contain the @ symbol of an email

A	B	C	E	F	G
	Customer Name	Customer Email	Region	Product Category	Product
f58-8a5440270b85	Teresa Armstrong	brentclark@lopez.com	East	Electronics	Make
-a0d0-35a97a79ea2f	Christy Payne	dmacias@gmail.com	East	Books	Production
a1eb-77229a95896d	Erica Walsh	williamsanders@martin-gonzalez.com	South	Food	Program
-ba76-6639dfb833e3	Samantha Webb	darrell84@hotmail.com	West	Books	Probably
a6d8-72ed4e5b5ede	Traci Carpenter	zwade@hotmail.com	South	Furniture	Reality
86b7-e10b046c2bea	Samantha Griffin	brownjennifer@gray-conner.com	South	Electronics	Fine
-8030-986ee7dce509	Javier Gray	amyrodriguez@nelson.info	East	Clothing	Second
-9bb2-ec3948aaebf	Mark Wolf	jjj	West	Food	South
i8a3-2ac15fd1d7b3	Devin Finley	sheppardjennine@hotmail.com	West	Books	Focus
-9b2b-48b7dbd5f1e1	Alexandra Maynard	petersonr			Blank
9608-956bcfa2dbb7	Kimberly Williams	nvasquez			Into
-a38f-06dae8a519e3	Joseph Tucker	wendytran			Rule
ibef-5f4032076761	Janet Cook	patrick70			Bank
a06d-82052a5d4452	Brad Gonzalez	braunerica			Relationship
i7b4-c16799bf9231	Robert Manning	morganbri			Player
b543-c36171743659	Judith Thompson	isalas@hoffman.com	West	Electronics	Where
b556-6062b8b20785	Tammy Graham	parrishmichele@yahoo.com	North	Clothing	Baby
8462-0d9c034107df	Stephanie Ware	thomashubbard@rice.net	East	Books	Begin
ih71-4f77f78h9ha	Inchua Burns	iustinramos@hotmail.com	West	Furniture	Standard



- Application of data validation on the total sales column to allow only nonzero positive numbers. It therefore rejects negative numbers and zero.

-1	B	C	E	F	G	H	I	J	K
	Customer Name	Customer Email	Region	Product Category	Product	Quantity	Unit Price	Total Sales	Transaction Date
la52	Kristin Jenkins	tjenkins@hotmail.com	West	Furniture	Seem	16.00	315.48	5047.68	11/4/2024
82a	Aaron Johnson	replacement@mail.com	West	Books	Surface	3.00	323.48	970.44	2/4/2024
ad2fc	Holly Lambert	ricardo90@beard.info	North	Clothing	Radio	19.00	183.26	3481.94	3/6/2024
7c31	Adam Hudson	morgan09@fisher.info	East	Clothing	Hard	3.00	494.24	1482.72	10/1/2024
f1d	Stephanie Martinez	hmartinez@salazar.net	South	Clothing	National	5.00	340.57	1702.85	2/20/2024
1811	Lawrence Hayes	lawbanks@sanders.com	South	Books	Find	5.00	263.96	1319.80	4/28/2024
f13	Eric Oliver					6.00	380.86	2285.16	1/20/2024
ef3	Todd Avila					6.00	133.42	800.52	5/14/2024
b1d7	Ricky Nichols					18.00	474.61	8542.98	6/4/2024
f65e	Katherine Sharp					7.00	58.48	409.36	5/23/2024
5ca	Zachary Kane					14.00	317.22	4441.08	11/2/2024
817	Mr. William Lowe					11.00	387.21	4259.31	5/8/2024
lad1	Robert Stewart	aliyssadawson@parker.info	South	Furniture	we	2.00	261.29	522.58	7/8/2024
a67b	Carrie Orozco	vicki54@gmail.com	West	Electronics	Never	4.00	431.03	1724.12	6/15/2024
4137	Christopher Williams	fandrews@james-johnston.com	West	Food	Quite	5.00	299.05	1495.25	7/5/2024
c7b	Rebecca Gentry	carl99@hotmail.com	East	Electronics	Quality	1.00	321.36	321.36	4/4/2024
b4e9	Andrea Williams	james55@gmail.com	South	Clothing	Pressure	10.00	352.40	3524.00	7/14/2024
fb3	Tina Ortega	connie02@gmail.com	North	Furniture	Remember	11.00	248.35	2731.85	3/16/2024
20d	Denise Hayes	janetfriedman@gmail.com	South	Books	Although	5.00	359.38	1796.90	12/7/2024
601	Whitney Carlson	smithjoy@hotmail.com	West	Books	Perform	4.00	87.65	350.60	8/24/2024
xb3c	Alyssa Sanchez	xjones@miller.org	South	Furniture	Return	17.00	337.57	5738.69	1/4/2024
								12	
								-1	

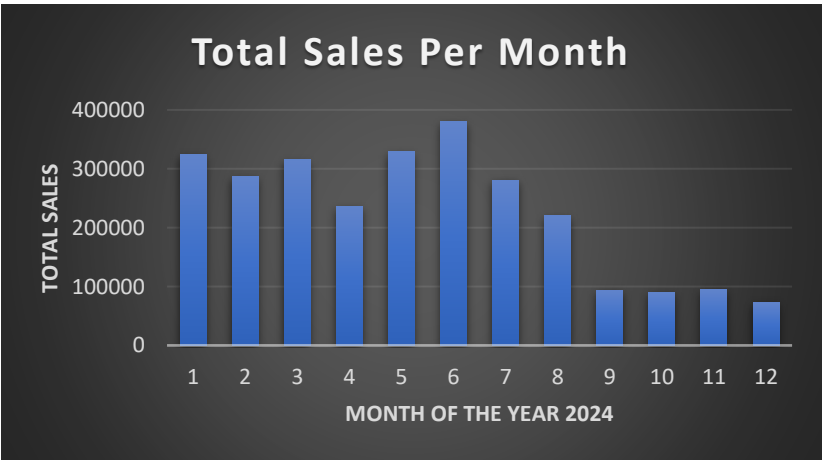
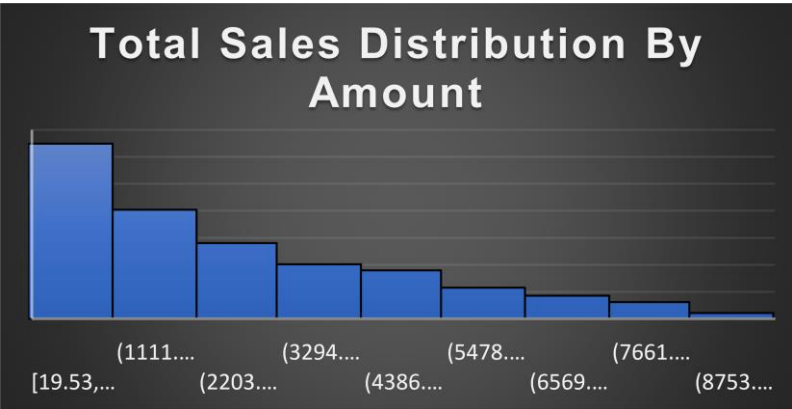
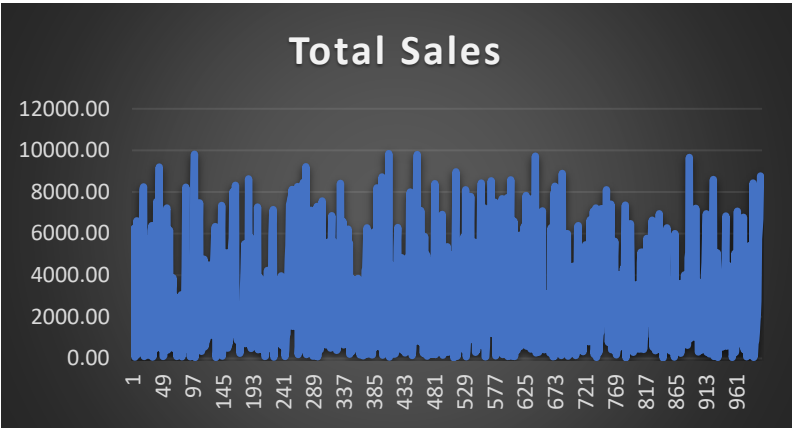


6. Data Analysis:

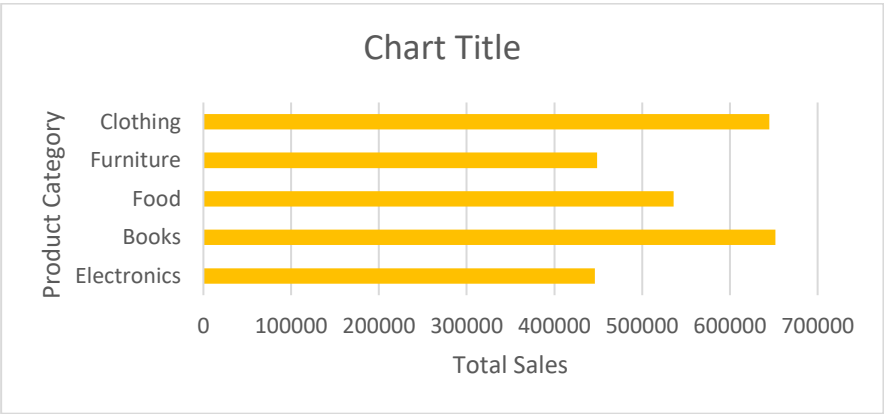
Descriptive Data Analysis

A	B
	<i>Total Sales</i>
Mean	2726.21468
Standard Error	73.02932117
Median	2078.28
Mode	#N/A
Standard Deviation	2309.389909
Sample Variance	5333281.751
Kurtosis	-0.01498451
Skewness	0.921875351
Range	9825.67
Minimum	19.53
Maximum	9845.2
Sum	2726214.68
Count	1000
Largest(1)	9845.2
Smallest(1)	19.53
Confidence Level(95.0%)	143.3084648

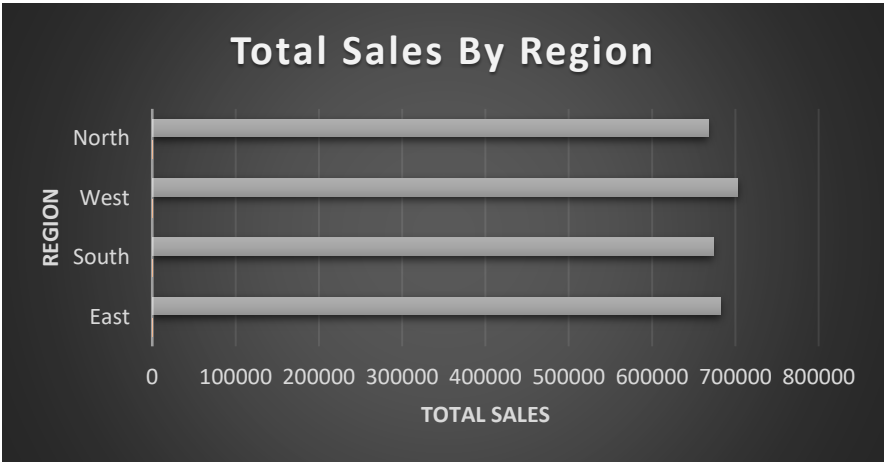
There is a total of 1000 sales captured in the dataset after cleaning. The high value of standard deviation implies that there is high variability in the data, and this can be verified by the first chart below.



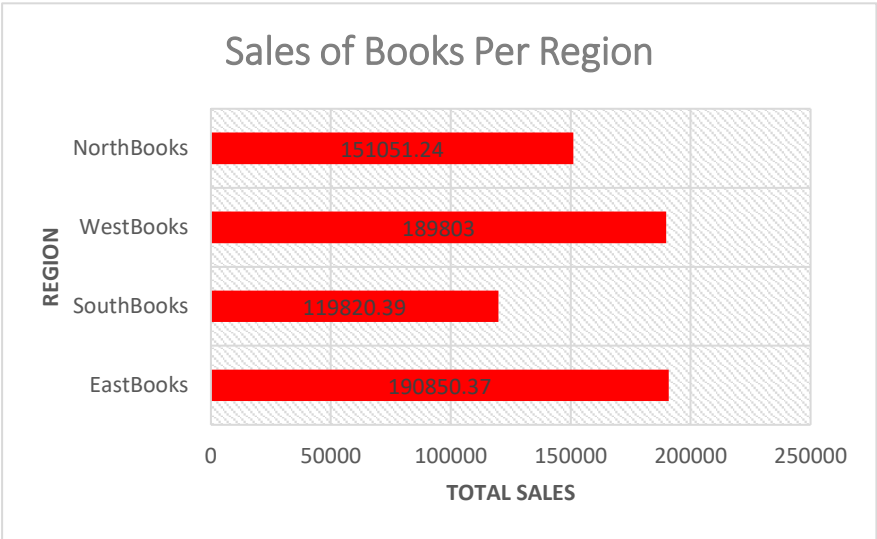
The *Total Sales Per Month* column chart above shows that throughout the whole year, highest number of sales was recorded in the sixth month, which is June.



Even though clothing and Books are very close, the total Sales recorded on books is higher than the one recorded on Clothing.



This bar chart shows that the West region records the highest number of sales throughout the period under study.

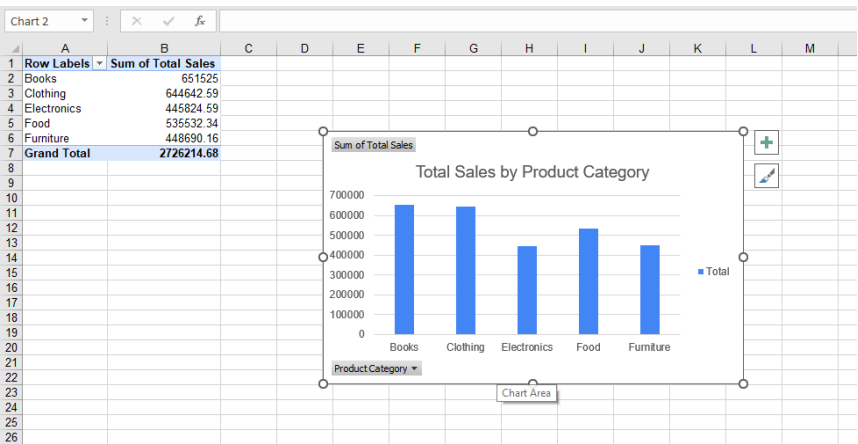


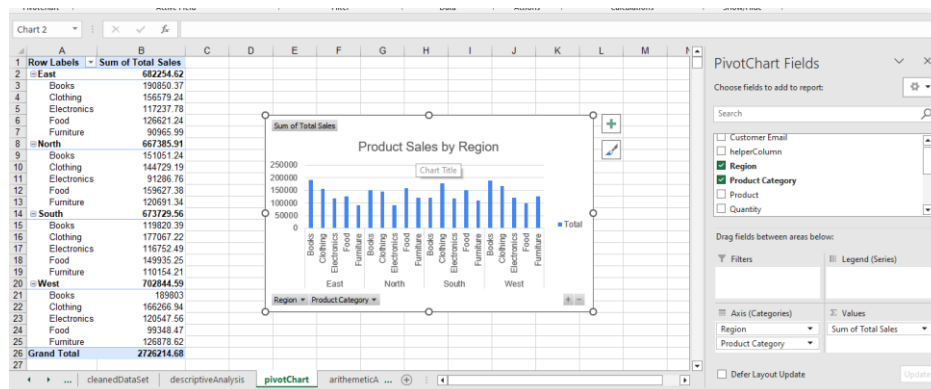
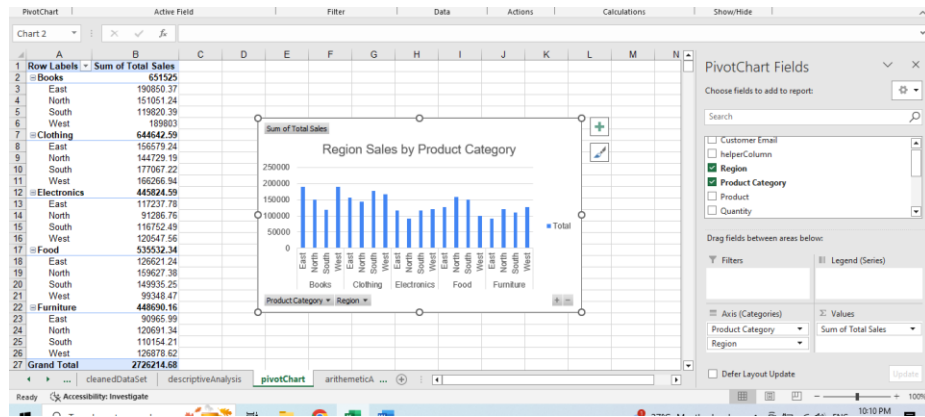
This bar chart shows that the books, which was discovered to have the highest sales throughout the period under study, has its highest sales in the East. This means that people love to read books in the East more than other regions.



The chart above shows that Books are the most sold product in the West region which recorded the highest among all regions.

Using Pivot Charts





Underperforming Products and Regions

Product Category	Region	helperColumn	Unit Sales Count	Sales Total
Electronics			188	445824.59
Books			215	65152.5
Food			196	535532.34
Furniture			182	448690.16
Clothing			219	644642.59
Max	Books			65152.5
Min	Electronics			445824.59

Product Category	Region	helperColumn	Unit Sales Count	Sales Total
	East		250	682254.62
	South		243	673729.56
	West		264	702844.59
	North		243	667385.91
Max	West			702844.59
Min	North			667385.91

Product	Region	helperColumn	Unit Sales Count	Sales Total
Books	East	EastBooks	62	190850.4
Books	South	SouthBooks	40	119820.4
Books	West	WestBooks	62	18980.37
Books	North	NorthBooks	51	15105.24
Max		EastBooks		190850.4
Min		SouthBooks		119820.4

Product	Region	helperColumn	Unit Sales Count	Sales Total
Electronics	West	WestElectronics	46	120547.56
Books	West	WestBooks	62	18980.37
Food	West	WestFood	44	99348.47
Furniture	West	WestFurniture	49	126878.6
Clothing	West	WestClothing	63	166266.9
max		WestBooks		18980.37
Min		WestFood		99348.47

Electronics is the product with the least sales. For Books product that have the highest sales, they have the least sales in the South Region. This implies that people in the South do not like reading Books.

Also, the region with the least sales is the North region. And in the West region where we have the maximum sales, the product with the least sales is Food. This implies that people in the West do not like eating Food!

It is also important to note that in all categories, Clothing has the second highest record of sales and can therefore be considered alongside Books.

7. Interpretation of Results:

Green Area	Books	East	West
	Clothing		
	West	Books	Clothing
Red Area	Electronics		
	South	Books	
	North		
	West	Food	

The above illustration shows the products and regions where the management can fund further and the regions they should start withdrawing fund from. The regions and products in the Green Area are the regions and products where the management can invest to increase their sales. While the regions and products in red are the regions where the company should not for once consider investing in them due to their bad sales.

So the following are the recommendations for the management:

1. Invest in Books in the East region (Recommended)
2. Invest in Books in the West region
3. Invest in Clothing generally
4. Invest in Books in the West region. (Recommended)
5. Invest in Clothing in the West region

And the investments that the management should watch out for are the following:

1. Do not invest in Electronics product
2. Do not invest in Books in the South (Recommended)
3. Do not invest in the North
4. Do not invest in Foods in the West.