COMM394 Coding Literacy For Managers

Inventory Valuation Application: User Manual

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October 10th, 2021

I. The Inventory Valuation Application

The Inventory Valuation Application allows a user to calculate the value of their inventory across various stores, cities, areas and products. The application utilizes the "Lower of Cost or Net Realizable Value" to determine the balance sheet value of the inventory. The cost of inventory refers to the expense incurred when initially acquiring the inventory, whereas the net realizable value is the expected selling price, less the costs associated with selling the inventory. The "Lower of Cost or Net Realizable Value" concept aligns with the conservatism principle in accounting and ensures that the reported value of inventory represents the minimum, or conservative amount that can be collected from the eventual sale of the inventory.

In addition to calculating the value of inventory, the application provides users with a filtering menu to further narrow in on the specific inventory valuation for certain stores, cities, areas, and/or products. The application displays a dashboard of various metrics including the minimum, maximum, and the average cost of inventory and retail price, the breakdown of inventory sold and inventory available, along with a scoreboard of the instances with the highest or lowest inventory valuations.

The Inventory Valuation Application provides an overview snapshot of a company's relevant inventory to assist the user in making better business decisions via the illustrated metrics. One critical component of the application is the ability to compare the impact that the cost of selling goods has on the value of inventory. Thus, this application is intended for users who seek to increase their inventory valuation by improving the net realizable value of their inventory. In other words, the ability to vary the cost of selling goods allows the user to determine the minimum retail price needed to break even with respect to the net realizable value. Alternatively, the application can be used as a tool to better understand the strengths and weaknesses of the company regarding its inventory. However, at its very core, the application is a calculator which can be used by anyone looking to calculate the balance sheet value of their company's inventory.

II. Input: The Inventory Dataset

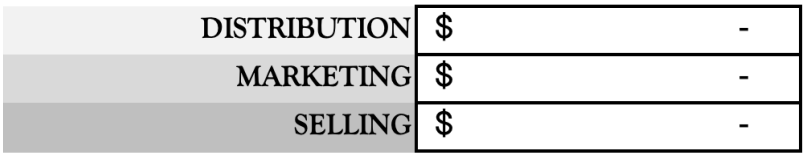
The Inventory Valuation Application accepts a dataset of any row length that can be supported by Exel (a maximum of 1,048,575 rows). The dataset is inputted in the *data* worksheet in columns *A* through *I* and must be formatted as described in the summary table below:

Column	Column Header	Description
A	Inventory ID	The identification number for the associated line item
B	Store Name	The name of the store
C	City	The name of the city
D	Area	The address of the store
E	Product Name	The name of the product
F	Quantity Sold	The number of units sold
G	Quantity Available	The number of units available
H	Cost	The **total** cost of inventory (including columns F & G)
I	Retail Price	The **unit** selling price of inventory

Note that the values in columns *A*, *F* and *G* are integer values, whereas the values in columns *H* and *I* are decimal values. Moreover, the values in columns *B* through *E* can be any string of text.

III. Input: The Cost of Selling Goods

On the *User Application* sheet, cells *C6* to *C8* are where the user inputs the **unit** cost of selling goods. Note that the default value is set to zero and inputted values are expected to be greater than or equal to zero. The three expense types are broad enough to include several expenses that are similarly related:



a) Distribution costs include the logistics and transportation, or shipping cost that is required to sell the inventory.

b) Marketing costs consist of the relevant advertising and promotion expenditure for the particular inventory item.

c) Selling costs encapsulate staffing-related costs such as wages and commissions associated with selling the inventory.

IV. Input: The Filtering Menu

The filtering menu in cells *B11:E13* optionally allows a user to specify various search criteria to narrow the focus of the inventory valuation. The four possible criteria include *Store Name*, *City*, *Area*, and *Product Name*. The application is limited to three filters for any one of the four criteria, for a total of 12 filters in conjunction with each other.

STORE NAME	CITY	AREA	PRODUCT NAME

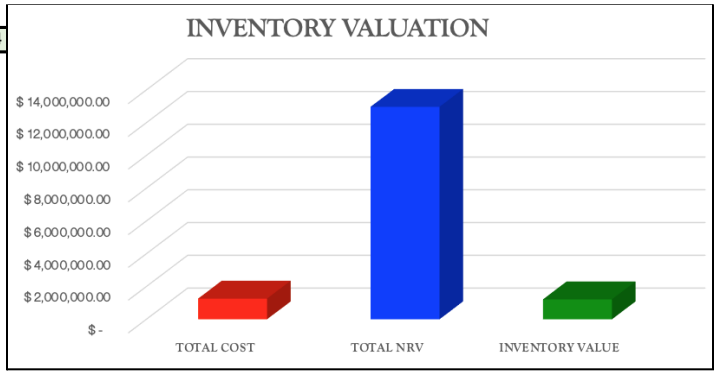
Each cell contains a drop-down list that displays all of the possible values for a given criteria. The user is expected to select one of the items or, alternatively, type the value they wish to filter on. Note that the second and third rows are initially greyed out; the user is restricted to input the first filter in the first row before the second row for a given column becomes available. This is to prevent multiple criteria that are not in line with one another as the application does not support this style of filtering. The filtering system is ideal for filtering multiple stores, cities, areas, or products independently, however, the application is able to support a combination of filtering criteria.

Note that the menu is initially set to no filters. When the user does not supply any filters, the application displays the inventory valuation for the entire dataset. Otherwise, the outputted values along with the metrics dashboard update to reflect the users' filters.

V. Output: Total Cost vs Total NRV vs Total Inventory Value

In cells *B16:D16*, the application produces the *Total Cost*, *Total NRV*, and *Inventory Value* respectively. An accompanying graph is displayed in cells *G2:L17* to view the relative magnitude of the three values in observation. Note that the inventory value is not the minimum of the total cost and total NRV, but rather the minimum of each line item used in the calculation. For the example inventory dataset, when no filters are applied, the output is shown below:

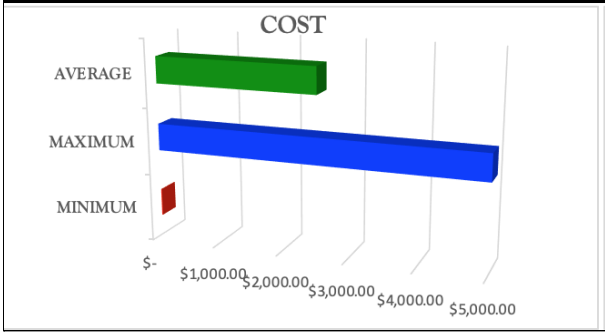
TOTAL COST	TOTAL NRV	INVENTORY VALUE
$ 1,261,554.51	$ 12,967,664.72	$ 1,215,650.84

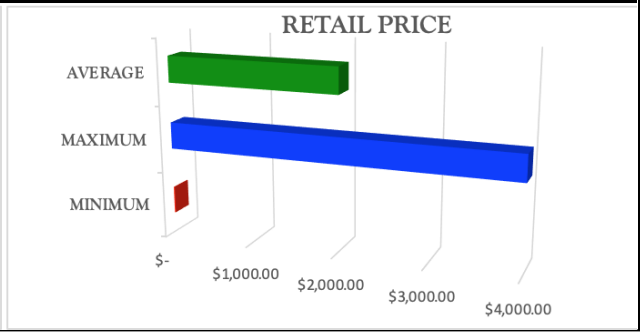


VI. Output: The Metrics Dashboard

Below the primary output outlined above, the application includes an interactive dashboard to aid in visualizing the data. Firstly, in cells *B21:E34* two more bar graphs are produced to display the minimum, maximum, and average *Cost* and *Retail Price* with respect to the filtering criteria. Note that when several filters are applied, it is likely that the minimum, maximum, and average values will be equal since there is only one instance of the combination of search criteria. For the example inventory dataset, when no filters are applied, the output is shown below:

COST			RETAIL PRICE		
MINIMUM	$	12.27	MINIMUM	$	12.78
MAXIMUM	$	4,999.42	MAXIMUM	$	3,999.06
AVERAGE	$	2,512.07	AVERAGE	$	2,006.41



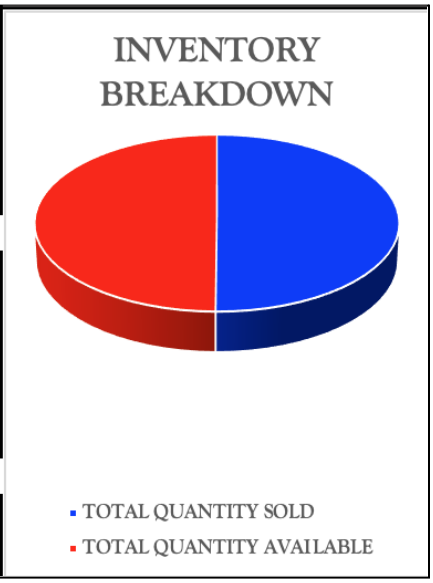


Directly to the right of this, in cells *G21:L34*, the dashboard displays the two instances in the dataset with the highest and lowest inventory valuation. Furthermore, a pie chart that reflects the ratio of *Quantity Sold* to *Quantity Available* is included in this section as well. For the example inventory dataset, when no filters are applied, the output is shown below:

HIGHEST VALUE OF INVENTORY	$	4,466.98
STORE NAME	National Stores	
CITY	Ouro Branco	
AREA	9 Springview Point	
PRODUCT NAME	Chocolate Bar - Smarties	

LOWEST VALUE OF INVENTORY	$	3.76
STORE NAME	Stein Mart	
CITY	Shimen	
AREA	8402 Luster Parkway	
PRODUCT NAME	Shrimp - Black Tiger 26/30	

TOTAL QUANTITY SOLD	6413
TOTAL QUANTITY AVAILABLE	6386



VII. Output: The Scoreboard

To the right of the primary output and metrics dashboard is a scoreboard that provides a snapshot of the dataset. The upper half of the scoreboard displays the top 13 instances with the highest inventory valuation in descending order. Similarly, the lower half displays the bottom 13 instances with the lowest inventory valuation in ascending order. The dollar amounts in column *S* are coloured on a red-yellow-green scale to highlight the relative magnitude of the inventory values. This scoreboard allows users to easily see the company's strengths and weaknesses. Since the scoreboard is a dynamic feature of the application, varying the three expense types will produce different rankings; allowing users to potentially identify the ideal cost of selling their inventory or the ideal retail price.

For the example inventory dataset, when no filters are applied, the resulting scoreboard is shown below:

TOP 13 HIGHEST INVENTORIES

INVENTORY ID	STORE NAME	CITY	AREA	PRODUCT NAME	INVENTORY VALUE
1	National Stores	Ouro Branco	9 Springview Point	Chocolate Bar - Smarties	$ 4,466.98
147	Ross Stores	Portorož	44 Drewry Street	Energy Drink Bawls	$ 4,396.51
313	Burlington Coat Factory	Timpas	2 Roth Park	Wine - Merlot Vina Carmen	$ 4,374.20
299	Harbor Freight Tools	Kakhovka	59902 Fisk Road	Kaffir Lime Leaves	$ 4,203.56
47	Five Below	Vostochnyy	7329 Esch Avenue	Monkfish - Fresh	$ 4,193.34
489	Fred Meyer	Helie	51 Springview Plaza	Oil - Olive Bertolli	$ 4,183.59
587	Marshalls	Podu	5 Moulton Junction	Shiratamako - Rice Flour	$ 4,146.88
742	Gabe's	Loukísia	4104 Kings Drive	Steam Pan - Half Size Deep	$ 4,075.53
495	Dd's Discounts	Qesarya	67754 Fallview Junction	Lamb - Rack	$ 3,988.06
808	Ben Franklin	Lucma	49 Lighthouse Bay Lane	Lettuce - Boston Bib	$ 3,958.83
552	Renys	Sandviken	678 Evergreen Lane	Cheese - Comte	$ 3,925.94
977	Dollar General	Ōdachō-ōda	77 West Lane	Sole - Fillet	$ 3,885.10
458	Harbor Freight Tools	Victoria	79408 Grover Drive	Five Alive Citrus	$ 3,829.65

BOTTOM 13 LOWEST INVENTORIES

INVENTORY ID	STORE NAME	CITY	AREA	PRODUCT NAME	INVENTORY VALUE
341	Stein Mart	Shimen	8402 Luster Parkway	Shrimp - Black Tiger 26/30	$ 3.76
777	Marshalls	Tubigan	3 Glendale Point	Lettuce - Escarole	$ 4.44
578	Harbor Freight Tools	Wang Sombun	61 Corscot Alley	Cocoa Powder - Natural	$ 7.36
953	Target	Trollhättan	02193 Mifflin Avenue	Cheese - Cream Cheese	$ 7.97
4	Ocean State Job Lot	Al Madīd	684 Bunting Lane	Zucchini - Green	$ 8.28
895	Gordmans	Xinghua	2230 Evergreen Pass	Wine - Red, Antinori Santa	$ 12.78
579	Gabe's	San Andrés	4 Debra Court	Appetizer - Mango Chevre	$ 13.73
352	Harbor Freight Tools	Oklahoma City	4310 Hollow Ridge Street	Cotton Wet Mop 16 Oz	$ 15.21
948	Bi-Mart	Luzern	6 Dottie Circle	Cheese - Parmigiano Reggiano	$ 15.82
866	Fred Meyer	Tongjiaxi	878 Corry Circle	Lamb - Whole, Fresh	$ 17.94
71	Ollie's Bargain Outlet	Béja	0317 Pond Hill	Cattail Hearts	$ 18.07
230	Renys	Çepan	9 Knutson Point	Peas Snow	$ 20.66
810	Tuesday Morning	Lipník nad Bečvou	6246 Sugar Pass	Cheese - Grie Des Champ	$ 23.59

VIII. Troubleshooting Tips

Given that the user supplies a valid dataset in the *data* sheet that satisfies the conditions outlined in Part II, the *helper* sheet should not encounter any issues. The example dataset included 1000 rows, however, the *helper* sheet can accept up to 1,048,575 rows. The application carefully tries to generalize the dataset by referring to entire columns rather than referring to specified cells that may vary from dataset to dataset. For example, when extracting the unique values in the *helper* sheet, the entire column is used and the blank cells are then filtered out in order to provide an accurate drop-down menu for the user to filter from. Therefore, it is imperative that the structure of the data must not change when using the application, as this is one of its major limitations.

All of the input cells have been equipped with data validation to minimize the potential for user error and to increase the robustness of the application. As mentioned earlier, the three expense types are expected to be a decimal value greater than or equal to zero. Moreover, all of the cells in the filtering menu are expecting a valid entry from the corresponding drop-down list. The user should not try to overwrite the data validation methods used as this will cause the application to behave unexpectedly. In addition to input cells, the output information has been equipped with Excel's built-in error checking to handle cases where a cell may display one of the following errors: *#DIV/0*, *#NUM!*, *#REF!*, or *#VALUE!*.

Moreover, there are instances where the outputted graphs may not immediately appear, or perhaps may disappear when the user changes an input cell. To resolve this, simply resize the screen (zoom in or out on the Excel file) and the graphs should then be visible.

Lastly, with regards to the filtering menu, Part IV states that the filtering system is ideal for filtering multiple stores, cities, areas, or products independently, however, the application is able to support a combination of filtering criteria. After much experimenting and testing with the applications' filtering ability, it is best to supply several of the same criteria, for example, filtering by 3 stores, or to supply a single combination of criteria, for example, one store and one city. Providing the maximum of all 12 filters will often result in zero output and the user should avoid overloading this menu.