

## MIS3505 – Advanced Micro

### Final Examination – Spring 2022



#### PROBLEM DESCRIPTION

The grocery store chain Best Fresh wants to analyze its relationship with one of its small but popular dairy vendors, Randall Dairy. The purpose of this analysis is to understand how much Randall Dairy product Best Fresh sells, the type of service Best Fresh receives, and the revenues generated from these sales. Best Fresh has noticed that products from this dairy sell very well within the local Indiana region where they are available. Customers have stated that the products are fresher than other dairy products and that they like the idea of supporting local industry. Consequently, Best Fresh wants to analyze its business dealings with Randall Dairy thoroughly and determine whether to expand this relationship.

You are currently working at the Best Fresh corporate office as a marketing analyst and have been assigned the job of retrieving and analyzing the Randall Dairy data. Currently, each Best Fresh store has its own method of gathering vendor data, making it time-consuming to obtain and combine the information. Because Randall Dairy is interested in expanding its relationship with Best Fresh, Scott Vandenberg, the general manager at Randall Dairy, will allow you to use a copy of part of Randall Dairy's Microsoft Access database—specifically data for deliveries in May 2008. Using this partial database will make your job easier and let you complete your analysis more quickly. You anticipate this is a one-time request because Best Fresh's new corporate database is now in the final stages of development, and after this system is online, you can use the complete Best Fresh database as necessary.

The first part of your assignment is to retrieve the specific sales information you need from the Randall Dairy database. You will then transfer the data into a Microsoft Excel spreadsheet to complete several analyses, which will help you identify the Randall Dairy products sold in Best Fresh stores, in what quantities, and the amount of time these products can be offered before their expiration dates. Your manager expects you to present your findings at the monthly purchasing meeting.

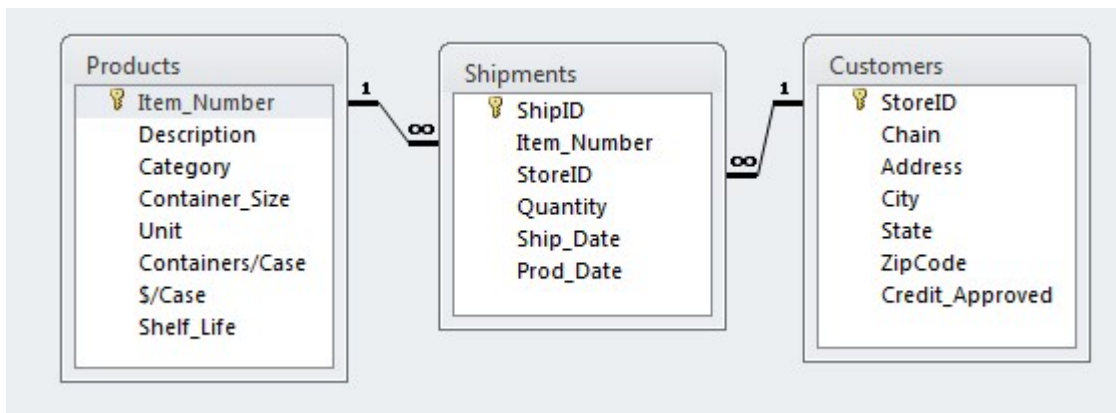
#### REQUIRED FILES

To complete this project, you need the following files:

BestFresh104.txt, BestFresh107.txt, BestFresh117.txt, BestFresh126.txt, Randall.accdb

#### EXTRACTING SALES DATA

When you examine the Randall Dairy database, Randall.accdb, you find that it contains the following tables:



**Customers**—This table contains the details of each Store to which Randall Ships, including store identification number (storeID), associated store chain, address, city, state, zip code, and credit approval status, which is Yes (credit granted] or No (credit not granted).

**Products**—This table lists detailed information on each product sold, including the item identification number (Item\_Number), description, category, container size, unit (unit of measurement for the container, such as ounces or pounds), number of containers per case, wholesale case price (\$/case), and item shelf life (the number of days to expiration from production).

**Shipments**—This table provides the details of each shipment made, including a shipment identification number (ShipID), item number, store ID number, quantity of cases shipped, ship date, and production date.

Your first task is to analyze each shipment from Randall to a Best Fresh store during May 2008. You also need to report your findings to your manager by completing each of the following tasks.

1. Modify the field captions as necessary so that the data is easy to read in datasheet view and in the reports (caption field in design view)
2. Create a summary query that combines the detailed sales information for each shipment. Include only items shipped from Randall Dairy to the Best Fresh supermarket chain during May 2008 (both criteria). For each of these shipments, include the following: Shipment ID number, Store ID Number, Store Zip Code, Item Number, Shipment Quantity, Item Description, Item Category, Item container unit, Item container size, Number of containers per case, Item Price (\$/case), Date Produced, Date Shipped, and Item Shelf Life. Save the query as Best\_Fresh\_Shipments\_By\_Item

## TRANSFERRING AND VERIFYING THE DATA

Your next task is to transfer/import the data into an Excel workbook for further analysis to identify the Randall Dairy products sold in Best Fresh stores, the quantities, and the amount of time these products can be offered before their expiration dates.

1. Import your extracted data to an Excel worksheet named RShipments, and name the workbook file Lastname\_FirstName\_Final\_Exam.xlsx.
2. To verify the data, match the shipment data from Randall Dairy to the shipment data kept by each of the Best Fresh stores. Each Best Fresh store maintains a list of receipts from Randall Dairy, which includes the shipment number and shipment status (A—Acceptable condition, I—Incorrect products or quantity, D—Damaged). These lists are adequate for matching shipment receipts, but do not contain

details such as item numbers or costs. Match the items from Randall's data to a combined list of the Best Fresh store data by completing the following steps:

- a. Combine the shipment data for each of the four Best Fresh stores onto a separate worksheet named BFShipData in your Excel workbook. Structure the data into the following columns: Ship#, Item#, Quantity, Ship Date, Shipment Status
  - b. The files containing shipment data for each store have been saved in a delimited text format. Each store file is named as BestFresh###.txt, where the # symbols are replaced by the store number, as in BestFresh104.txt.
  - c. Copy this data into the BFShipData worksheet and modify the data as needed to align columns in a consistent format.
3. Add a column to the RShipments worksheet to automatically look up the corresponding Best Fresh shipment status based on the shipment number. Shipment numbers that do not match should display #N/A for the status.
  4. On the RShipments worksheet, instruct Excel to highlight any damaged shipments by shading the row (Conditional Formatting). This formatting should change as necessary when the corresponding data is later updated.
  5. Filter the data to show only those shipments that match from both lists and that are not an incorrect product or quantity. These are the shipments that Randall Dairy sent to Best Fresh stores and that each store accepted.
  6. Copy the filtered data into a new worksheet named Analysis.

## EVALUATING THE SALES DATA

Now you have successfully compiled the data on acceptable shipments Best Fresh received from Randall Dairy. On the Analysis worksheet, you are ready to analyze the service Best Fresh receives from Randall Dairy, determine the wholesale and modified wholesale values of the dairy shipments received, and calculate store revenues and profits based on the number of cases shipped, the cost per case, and the category markups. Because you might need to reuse these analyses for data from different time periods or from other vendors, be sure that you use worksheet functions that automatically update your values.

1. **Service Analysis** – Because dairy products have varying but short shelf lives, the product must be shipped to the stores promptly. You can measure the quality of the service Randall Dairy provides by calculating the amount of time Best Fresh has to sell Randall Dairy products. The interval from when Best Fresh receives a shipment to the last day it can sell a dairy product is a product's remaining shelf life. On the Analysis worksheet, in a column adjacent to the existing data, determine the remaining shelf life status for each shipment as follows. Assume that the arrival date and ship date are the same because all of the stores selling Randall Dairy products are within a two-hour drive.
  - a. Excellent: If the shipment arrival is at least seven days before the product expiration date (production date + number of days of shelf life) it has an "Excellent" remaining shelf life.
  - b. Satisfactory: If the shipment arrival is less than seven days before expiration but at least four days before expiration, it has a "Satisfactory" remaining shelf life.
  - c. Unsatisfactory: If the shipment has less than four days before expiration, it has an "Unsatisfactory" remaining shelf life.
2. **Supplier Comparison**—On a separate worksheet named Comparison, enter the data listed below and compare the percentage of Excellent, Satisfactory, and Unsatisfactory shipments from Randall Dairy to those from other dairy suppliers listed. Percentages are calculated as the number of shipments in a

specific category divided by the number of total shipments. This also shows the average profit margin percentages, which will be calculated later in step 9.

Dairy Vendor	Excellent %	Satisfactory %	Unsatisfactory %	Profit Margin %
Elsie Inc.	77	18	5	22
Stouts Farms	65	34	1	28
Willow Foods	49	49	2	23
Randall Dairy				

On this Comparison worksheet, use several cells highlighted in yellow to summarize your findings and state your recommendations regarding the current service levels of Randall Dairy to the Best Fresh grocery chain compared to the other dairy vendors.

- Wholesale Value of Shipments** - In an adjacent column on the Analysis worksheet, calculate the wholesale value of each shipment based on the number of cases shipped and the cost per case. Calculate the total value of all shipments Randall Dairy made to Best Fresh during May that are included in this analysis.
- Display Data Graphically**—On a separate worksheet named WSValue, create a chart showing the relative percentage breakdown of wholesale shipment values by store and another chart comparing the wholesale value percentages by item. Format your charts so that they are easy to read and understand and include appropriate headings.
- Modified Wholesale Value**—In an adjacent column on the Analysis worksheet, calculate an alternative wholesale value of each shipment and for total shipments based on the Following criteria:
  - Apply the full wholesale value to shipments in the Excellent category.
  - Apply a 15% discount to shipments in the Satisfactory category.
  - Apply a 75% discount to shipments in the Unsatisfactory category.

Be sure to list these values somewhere in the workbook, so they can be easily modified, if necessary. Include a comment in the column title cell documenting how you completed this calculation and referencing where you placed these input values or performed any intermediate calculations.

- Forecast Store Revenues**—In an adjacent column on the Analysis worksheet, forecast store revenues from these shipments based on the pricing structure listed below

Category	Description	Container Size	Markup of Modified Wholesale Price
C, LFC, SC, LFSC	Cottage Cheese and Sour Cream	<16 oz.	60%
C, LFC, SC, LFSC	Cottage Cheese and Sour Cream	>=16 oz.	40%
M, 2M, 1M, SM	Milk	<1 Gallon	50%

<b>M, 2M, 1M, SM</b>	Milk	>=1 Gallon	35%
<b>HC, USB, B</b>	Cream and Butter	All Sizes	75%

*Hint:* Product categories are defined in the Randall database. Forecasting revenues might be easier if you group the categories. For example, assign the value 1 to any item in category C, LFC, SC, or LFSC, or the value 2 if an item is in category M, 2M, IM, or SM. You can add extra columns to the worksheet as necessary. After you group the categories, test for a value (such as 1 and size (such as <16 oz.) to assign a markup value.

7. **Expected Profit**—in an adjacent column on the Analysis worksheet, calculate the expected profit defined as follows:
  - a. Expected profit = revenues — modified wholesale value — store overhead
  - b. Store overhead is calculated as \$0.10 per container. The number of containers per case varies by item number.) Again, be sure this value is explicitly listed in your workbook and include a comment in the column heading cell documenting how you completed this calculation and referencing where you placed these input values or performed any intermediate calculations.
8. **Item Category Summary**—In a separate worksheet named Summary, create a summary by item category (such as C, LFC, and SC), including the following:
  - a. The modified wholesale value of these shipments, revenues, and expected profits.
  - b. Totals for each of these values for all categories combined. Be sure these totals correspond to the appropriate values on the Analysis worksheet.
  - c. On the same worksheet, a stacked column chart that displays the wholesale value, revenue, and profit data by category.
9. **Profit Margin Comparison**—Evaluate the overall profit margin of Randall Dairy's products (profits/revenues) as they compare to other Best Fresh dairy vendors. Profit is the calculation of revenues from sales minus wholesale costs and other overhead expenses. This profit is then divided by revenue to arrive at the profit margin percentage. Other comparison data was displayed in Step 2. Complete the table on the Comparison worksheet and highlight the profit margin value in light blue so it is easy to find. Below the data, enter your conclusions regarding Randall Dairy's competitiveness and highlight your conclusions in the same color.

## EXAMINING ALTERNATIVE PROFIT SCENARIOS

Before expanding the sales of Randall Dairy products, management wants to explore the revenue and profit implications by modifying various cost elements.

1. On the Summary worksheet of the workbook, report the new profit expected if the markup for all Randall Dairy milk products (M, 2M, IM, SM) is increased to 55% regardless of container size. Report this new profit in a separate cell below the category profit summary. Highlight the cell in blue with white text so that the new profit is easy to find. Enter a label to the left of this value: marked Alternate

Markup 1. Except for this reported value on the " Summary worksheet" restore the original markup values, profits, and other values in the workbook.

2. Copy the Analysis worksheet I (including formulas) to a new worksheet named Analysis2. Change the revenue calculation to equal the modified wholesale value plus 55%, representing, a 55% markup on all items regardless of category or size. Explicitly list this markup value (55%) in a cell inserted above the revenue column. Determine the new profit with this simplified markup.
3. Using this same Analysis2 worksheet, determine what this simple markup percentage would have to be to obtain a total profit of \$1,000 instead of the current profit obtained using a 55% markup. Record this markup percentage in a cell on the Summary worksheet, just below your Alternate 1 value, highlighted in dark green with white text. Enter a label to the left of this value marked Alternate Markup 2. If necessary, restore the Original markup of 55% on the Analysis2 worksheet.

### **COMPLETING THE FINANCIAL ANALYSIS**

Best Fresh knows that products from Randall Dairy sell so well that customers are willing to pay a premium for them, even though the wholesale costs of the products are comparable to the national brands. Based on your analysis, Best Fresh might want to expand its relationship with Randall Dairy. To greatly increase this business, however, Randall Dairy needs to expand its operations. This expansion will require additional capital investment, and as a small dairy, Randall's access to low-interest loans and the capital markets is limited.

To fund the expansion, Best Fresh is considering borrowing \$200,000 at a favorable interest rate, and then lending that amount to Randall Dairy at no interest over the next three years. Randall Dairy will pay the principal portion of any loan Best Fresh obtains, and Best Fresh will pay the interest. In exchange for this loan, Randall Dairy guarantees it offer all additional capacity product to Best Fresh at wholesale prices at or below the competitive prices of the three national brands. This capital investment will allow Randall Dairy to increase its shipments to Best Fresh tenfold. You need to analyze the effects the loan. Complete your analyses on a new worksheet named Financial as follows:

1. Assume that in a typical month Best Fresh makes a profit \$10,000 from the sale of dairy products. By investing with Randall Dairy, Best Fresh expects to increase this profit by 5%. Calculate the total additional profit expected each month and over the three year period. (Do not factor in any interest.) Label these values "Additional monthly profit" and "Additional 3 year profit."
2. If Best Fresh borrows the requested amount (\$200,000) from their bank at 3.5% interest compounded monthly, what is the monthly payment required to pay back the loan, assuming it will be completely paid off at the end of three years? Label this value "Monthly loan payment." Be sure to explicitly list your input values so they can be easily modified.
3. Create an amortization table detailing the interest and principal portion of each payment of the proposed loan over the next three years. Summarize the total value of the interest payments made over the three-year period. Label this value "Total interest expense."
4. Compare the value of interest payments over this three-year period to the additional profits expected from selling Randall Dairy products over the same three years. In an adjacent cell, discuss if paying the

interest on this loan so that Randall Dairy can increase production is profitable for Best Fresh. Highlight your calculations and discussion in yellow.

### **FORMATTING THE WORKBOOK**

To prepare your workbook for review before the upcoming management meeting, make sure your workbook contains the following;

1. Worksheets that are clearly labeled and identified
2. Worksheet headings that are centered and merged over the relevant data
3. Column headings that are clearly labeled and sized, with text wrapped as necessary
4. Number values that are consistently displayed, using the appropriate number of decimal places

### **COMPLETED EXAM**

Submit the following files as part of the final exam

1. The Randall database, including the created query.
2. The completed xlsx workbook that contains all of the worksheets you have used in your analysis, including the ones explicitly specified (the workbook may contain additional worksheets as needed).
3. Include an Academic Honesty Statement on the Summary Worksheet.
4. Due –
  - a. Section 001 – Due Tuesday, 05/03/2022 @ 2:45pm