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Using Tableau to visualize data and drive decision-making☆

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ABSTRACT

This case emphasizes the importance of data analysis through the usage of data visualization software to help you gain an understanding of data and how it can be transformed into information that can enhance the decision-making process. In the data visualization software, Tableau, you will be asked to connect to an Access data file to analyze six months of sales transaction data of a small start-up ice cream manufacturer. Consistent with AACSB Accounting Standard A7, the case focuses on familiarization with data visualization software to "convey data, results, and insights" (AACSB, 2013) and apply higher-order thinking. Upon familiarization with the data and data visualization software, you will be required to perform an exploratory analysis to identify key trends in the data to prepare and report that information to enhance the business decision-making process. This case is intended to be utilized in an undergraduate accounting information systems course; an introductory managerial course; or a course focusing on data analytics as a basic introduction to data visualization software.

1. Case

Ivana's Ice Cream just finished its first six months of manufacturing and selling ice cream. The company has two main product lines, ice cream cups and ice cream bars, both of which are available in vanilla or chocolate flavors. Ivana Cone, the sole owner of Ivana's Ice Cream, has carefully recorded basic accounting data, including sales transaction data over the company's first two quarters of operations using Microsoft Access. Unfortunately, Ivana lacks formal business and accounting training. You have been hired as a consultant to utilize Tableau data visualization software to analyze the company's data from the first two quarters of operations and to provide a detailed breakdown of sales, product mix, and gross profit by product line and geographic region. In addition, Ivana would like to expand the business in future years and you have been asked to provide insights and recommendations. First, you will need to understand the business and operations.

The first step in any data analytics project is to thoroughly understand the data and its current format. To learn more about data analytics in the field of accounting and the benefits and uses of data visualization software see Appendices A and B, respectively. When creating visualizations, it is important to consider which type of graph or chart best fits the data. Although there are numerous types of visualizations (graphs and charts) from which to choose, some of the most common include bar charts, line graphs, pie charts, and maps. The data can help you determine which visualizations would help convey the information most effectively. For example, bar charts are useful when data are separated into different categories, while line graphs are useful to show changes in data over time. Pie charts display categories as a portion of a total, and maps represent data geographically and should only be used if the

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data contains location information. Furthermore, Tableau has the ability to suggest a visualization based on the types of fields that you select; this can be a very convenient feature when learning to create visualizations.

Before you examine the Access database Ivana has given you, she would like to tell you a little about the current state of her startup company and the three tables she created to store the company data. She created individual tables for customers, orders, and company products. Currently, Ivana's Ice Cream only sells boxes of ice cream cups and ice cream bars, and each come in either vanilla or chocolate. Below is the unit cost and sales price for each item Ivana's Ice Cream currently sells (see Exhibit 1):

ProductID	Product	Flavor	Unit cost	Sales price
1	Ice Cream Cup	Chocolate	$2.55	$4.00
2	Ice Cream Cup	Vanilla	$2.50	$4.00
3	Ice Cream Bar	Chocolate	$3.00	$5.00
4	Ice Cream Bar	Vanilla	$2.85	$5.00

Exhibit 1. Product table.

Ivana's Ice Cream currently has twenty-two customers. In general, these customers are smaller retailers, including convenience stores and local supermarkets. Currently, Ivana's Ice Cream only sells to retailers in the Midwest states of Missouri and Illinois. Below is a list of all of the customers with which Ivana's Ice Cream has done business with since its inception (see Exhibit 2).

Ivana's Ice Cream currently has four sales representatives. For simplicity, Ivana has assigned Levi Adams to western Missouri; Gabby Bennet to eastern Missouri; Russell Bishop to western Illinois; and Carly Marshall to eastern Illinois (see Exhibit 3).

Your instructor will provide you with the Microsoft Access data files to complete the requirements of this case.[1] Your instructor may also assign you specific training videos from the Tableau website (www.tableau.com) to familiarize you with the data visualization software, as well as information related to downloading your free student copy of Tableau. Watching the first few training videos at http://tableau.com.learn/training will help better prepare you for the requirements of this case study.

Before beginning the following case requirements, download the Microsoft Access file provided to you by your instructor and save it to your desktop or a personal flash drive. Open the Access file and examine each of the tables, as well the data types of each of the fields, and any primary keys identified. You will connect to Ivana's data and analyze the data using Tableau, as described below.

2. Requirements

Being new to Tableau, a colleague has provided the following tips to help you begin your analysis of Ivana's Ice Cream using Tableau:

1. Ensure you have downloaded the latest version of Tableau. Visit https://www.tableau.com/academic/students to obtain a free one-year Tableau license for students.
2. Ensure you have saved the Ivana's Ice Cream Access file provided by your instructor to your desktop or personal flash drive.
3. Double click on the Tableau Desktop icon to open Tableau.
4. Under "Connect To a File," select "Access."
5. Browse for the Ivana's Ice Cream file and select "Open."[2]
6. Drag each table to the open pane.[3]
7. Select Sheet 1 to go to your first worksheet.

Before you conduct your own exploratory analysis, Ivana Cone would like to understand some basic information related to her enterprise. Specifically, she would like you to answer the following questions to be included and returned in a formal memo to her (below, your colleague has provided step-by-step instructions to enable you to successfully address each of Ivana's questions in Tableau):

1. What is the total quantity sold of chocolate ice cream cups?
   - From the Dimensions pane, drag Flavor and Product to the Rows pane (by holding the Ctrl button down after you select Flavor and before you select the Product dimension, you can drag and drop both dimensions at the same time).
   - From the Measures pane, drag Quantity to the Columns pane.
   - Hover your pointer over the bar for chocolate ice cream cups and record the quantity of chocolate ice cream cups sold during the period.
   - Click on the top of the graph where it is currently titled "Sheet 1." Rename the graph "Quantity Sold by Product."

[1] Please e-mail jamie.hoelscher@gmail.com to request the Microsoft Access file for this case.

[2] If you are unable to connect to your Access database in Tableau, please go to https://www.tableau.com/support/drivers and search for Microsoft Access to download the driver necessary to connect to your Access file.

[3] Drag the tables over in order so they may properly join. Notice how the Customer table and Orders table are inner joined on the Customer ID field, and the Orders table and Products table are inner joined on the ProductID field.