ACCTN578 AIS - Power BI Assignment
Applying Your Data Analytics Skills to a Real-World Data Set

This is an individual assignment. You may refer to our class notes. However, for this assignment, I will not provide step-by-step instructions.

The case focuses on your ability to use Power BI to conduct analytics and your ability to determine the meaning of findings from data analyses. You will need to be familiar with the basic use of Power BI to make calculations, create columns, create measures, create tables, and create visualizations.

You need to get data from the Excel file *Transactions Data.xlsx* to analyse. There will be no requirement to clean the data. However, you need to check whether or not the data format of each field (i.e. column) makes sense; **if not, change the format to the correct one.**

Case Description

Introduction

John Jumpers (JJ) is a manager at NASDAX, a midsize non-for-profit entity in the Midwest. He just received an Excel file with all purchase card (P-Card) transactions for the period of 1 April 2017 to 31 March 2018 from his bank. Also, last week he attended a "data analytics" seminar where he learned about drill-down, visualizations, dashboards, KPIs, and much more. NASDAX just hired you as an intern, and JJ knows that you have outstanding data analytics skills. He asks you to apply them to the PCARD data set and to help him generate some insights. To get you started, he gives you some background information about purchase cards. Second, he discusses the data set with you and gives you access to it. Third, he discusses the different types of assignments he wants you to work on. Finally, he gives you several specific assignments.

Purchase Cards: Some Background

Purchase cards, procurement cards, or simply P-Cards, are a payment form used along with cash, checks, ACH, and wire transfers. In a P-Card system, a bank is responsible for issuing the cards and the data processing. The end user, NASDAX in our case, makes monthly payments to the bank. The cardholders, i.e., the employees, do not have any personal liability. However, they need to follow the policies and procedures established by the end user (NASDAX). Figure 1 below shows the different parties involved in a P-Card system and their responsibilities (NAPCP, 2019).

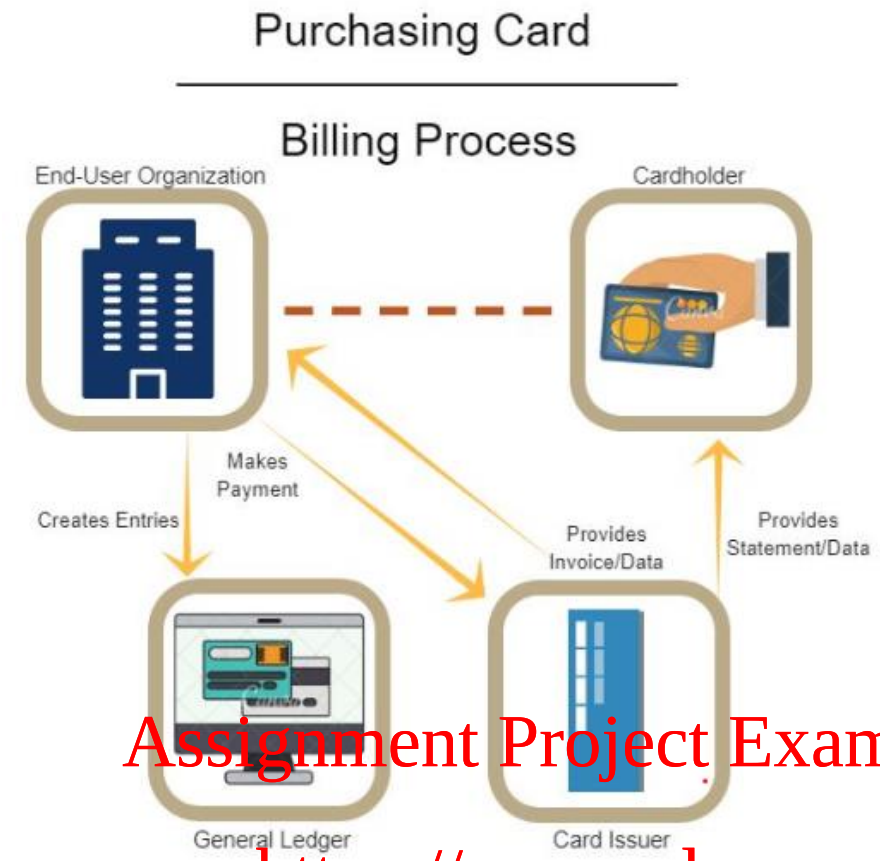


FIGURE 1: STRUCTURE OF A P-CARD APPLICATION

The following are some generally-recognized benefits of using P-Cards by an organization (Paystream Advisors, 2012; Schaeffer, 2004; Thorpe, 2016; van der Scheer, 2014):

- Reduced processing cost per transaction
- Simplified purchasing and payment processes resulting in lower accounts payable labor cost
- Increased convenience for employees due to fewer reimbursement requests and reduction of personal funds usage
- Higher rebates and incentives from the p-card issuer or administrator
- Expedited purchasing time (from 17.2 days to 4.9 days)
- Improved working capital benefits due to increase in the number of Days Payable Outstanding
- Improved employee morale as employees enjoy perceived control in purchasing
- Vendor pricing negotiation
- Increased efficiency via process automation
- Improved visibility to spending patterns
- Improved reporting capabilities with reduced paperwork load
- Integration into the existing accounting system
- Strengthened relationships with suppliers due to expedited payments

The Data Set

The data set has one table, TRANSACTIONS, which contains all NASDAX's P-Card transactions for the period 1 Aril 2017 to 31 March 2018. The Data Dictionary presented in table 1 describes the different fields (data elements) recorded for each transaction, and thus, the different columns in the TRANSACTIONS table.

TABLE 1: DATA DICTIONARY

NAME	DESCRIPTION
CITY	Merchant's city
CATEGORY	Merchant's category
COUNTRY	Merchant's country
DATE	Date the transaction was posted by the bank, could be a couple days delayed from the date of occurrence.
EMPID	Uniquely identifies the employee who paid for the transaction
MERCHANT	Merchant's name that charged the card for goods or services
STATE	Merchant's state
TRANSACTION NUMBER (T#)	Uniquely identifies the transaction
TAX	Taxes (amount) charged such as sales (city, county) or entertainment tax
ZIP	Merchant's city zip code
AMOUNT	Transaction amount before tax

JJ wants you to be aware that specific codes are being used for international transactions. This makes it impossible to create maps for them. **You do not need to create any maps.** Transactions are divided into two categories: US and INT for international.

Assignment Formats/Types

In this assignment, SIX questions (i.e. problems) are given, and you need to design and implement Power BI dashboards (i.e. report pages) to answer the questions.

For the questions that examples are given, you just need to replicate the examples. You also need to design visualisations by yourself for the questions with no examples.

Where required, you also need to analyse the results (i.e. the information generated by Power BI dashboards) to provide insights that can help with decision making.

PROBLEM 1 (10 Marks)
Type: Example given

DETERMINE THE TOTAL NUMBER OF TRANSACTIONS, THE TOTAL ($) AMOUNT SPENT, THE AVERAGE ($) AMOUNT SPENT PER TRANSACTION, AND THE TOTAL NUMBER OF CARDHOLDERS. USE CARDS TO DISPLAY YOUR FINDINGS.

TOTAL NUMBER OF TRANSACTIONS	27398
TOTAL AMOUNT SPENT	$3,870,358.20
AVERAGE AMOUNT SPENT PER TRANSATION	$141.26
TOTAL NUMBER OF CARDHOLDERS	393
TOTAL NUMBER OF MERCHANTS	7766

PROBLEM 2 (10 Marks)
Type: No example

PER MERCHANT CATEGORY, USE A TABLE TO DETERMINE: NUMBER OF TRANSACTIONS, TOTAL EXPENSES ($AMOUNT), AND AVERAGE ($) AMOUNT PER TRANSACTION. ORDER THE CATEGORIES FROM HIGH TO LOW (DESCENDING), USING TOTAL EXPENSES.

PROBLEM 3 (15 Marks)

Type: Example given

PROVIDE A LIST (TABLE) OF ALL EMPLOYEES WHO HAVE "RETURN" TRANSACTIONS (i.e. payment amount is a NEGATIVE number, means “refund” or “payment return”) FOR AIRLINE VENDORS (i.e. the Merchant Category is Airlines). ADD A SECOND TABLE THAT SHOWS THE FOLLOWING INFORMATION FOR EACH OF THE TRANSACTIONS: TRANSACTION NUMBER (T#), MERCHANT, DATE, AND AMOUNT. THE SECOND TABLE WILL ALLOW YOU TO VIEW THE SPECIFIC TRANSACTIONS FOR ANY EMPLOYEES IDENTIFIED IN THE FIRST TABLE.

EMPID	THE NUMBER OF TRANSACTIONS
348	20
181	2
362	2
73	2
126	1
133	1
149	1
15	1
159	1
165	1
194	1
198	1
205	1
21	1
234	1
257	1
4	1
414	1
65	1
Total	**41**

TRANSACTION NUMBER (T#)	MERCHANT	AMOUNT	DATE
13579	UNITED AIRLINES	-$1,100	Monday, 4 September 2017
5761	UNITED AIRLINES	-$92.36	Monday, 8 May 2017
Total		**-$1,192.36**	

PROBLEM 4 (15 Marks)

Type: No example

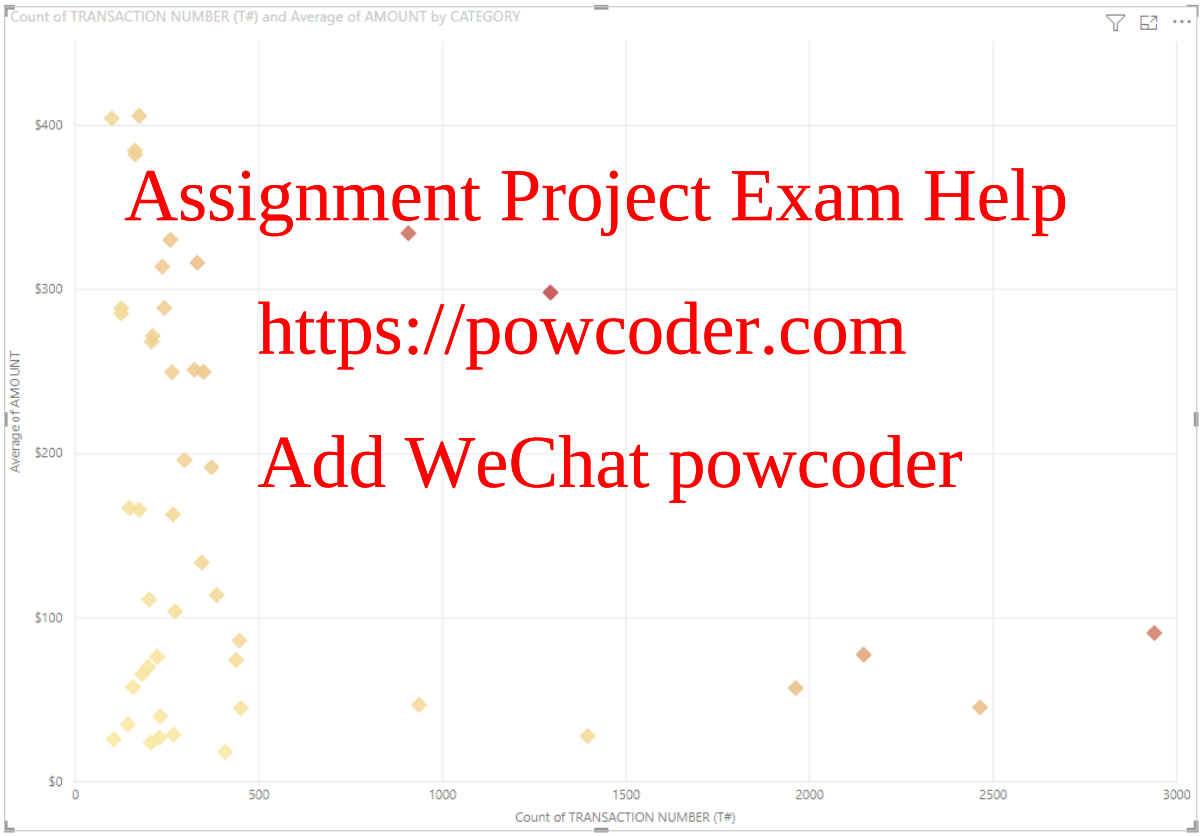
ASSUME THAT ALL EMPLOYEES HAVE A $60,000 PCARD LIMIT. LIST ALL EMPLOYEES WHO EXCEEDED THEIR $60,000 LIMIT FOR THE 2017-2018 FISCAL YEAR (assume the fiscal is 1 April 2017 – 31 March 2018). FOR EACH EMPLOYEE, SHOW THE TOTAL $ AMOUNT SPENT AND HOW MUCH S/HE EXCEEDED THE LIMIT. SORT THE EMPLOYEES USING THE "OVERSPENT" AMOUNT FROM HIGH TO LOW.

PS. You need to create a simple measure for “OVERSPENT”.

PROBLEM 5 (20 Marks)
Type: Example given and Analysis required

PROVIDE A SCATTER CHART TO LINK THE AVERAGE TRANSACTION AMOUNT WITH THE NUMBER OF TRANSACTIONS PER MERCHANT CATEGORY.
ONLY CATEGORIES FOR WHICH THERE ARE AT LEAST 100 TRANSACTIONS ARE INCLUDED. FURTHER, THE COLOR RED INDICATES A CATEGORY WITH A HIGH TOTAL $ AMOUNT WHILE THE COLOR YELLOW INDICATES A CATEGORY WITH A LOW TOTAL $ AMOUNT.
DISCUSS AT LEAST <u>TWO INSIGHTS</u> PROVIDED BY THE SCATTER CHART.

PS. You need to create a Textbox to write your analysis.



PROBLEM 6 (30 Marks)
Type: Design your own dashboard and analysis required

WHAT OTHER VALUABLE INSIGHTS CAN YOU GENERATE FROM THE DATA? CREATE AT LEAST FIVE ADDITIONAL VIRULISATIONS IN ONE OR MORE DASHBOARDS. EXPLAIN WHAT YOU DISCOVER WITH YOUR DASHBOARD(S).