

Real World Application of Data Mining: US Army Customs in Germany

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Abstract

The United States Army in Europe uses a data mining on a Customs database to help stop illegal activities from happening. The use of data mining is not only for businesses, it also has law enforcement uses as well. The ability to search through hundreds of thousands of documents help investigators in Germany to find and stop black-marketers faster than before. The ability to get accurate results while making queries using dates, frequency, and other factors allow for more work to get accomplished in less time.

Keywords: *Data mining, applications, customs and crimes.*

Introduction

In Europe, the United States Army uses a database that stores Customs information about imports, exports, tax free fuel usage and other tax related information. These forms contain not only monetary values, but hidden information as well. Black marketing, illegal transfer of goods and tax avoidance is a common occurrence, however, finding these occurrences, when they are most likely to take place and the responsible parties is only possible when using data mining application. Because this database or repository, receives, roughly, 60,000 to 100,000 forms yearly, which needs to be screened and processed, finding these instances is only possible with the help of a query. (USAREUR Customs, 2014)

In Germany, all Americans stationed with the military or working for the US Government are exempt from paying German taxes and import tax on any goods. These goods are only transferrable to Germans when they pay the proper taxes to import that item and this is where the problems start. On most items transferred, a German will have to pay up to 29% for the item they are taking possession of before they are considered the rightful owner. Failure to do this will result in the item being confiscated, fines and/or jail time to both seller and buyer if caught. This is why the forms must be completed by

each of the US military members, who in turn, takes the form with the buyer to German Customs. Afterwards, all our forms are scan into a PDF file, the metadata is extrapolate and everything is imported into a database, where we can run queries to find unique occurrences. (Kofax, 2014). We look for trends where certain companies or individuals are buying or selling, we look for time frame of when people are buying or selling items and we look for unique instances where the item and the price do not match what the worth or value of the product should be. These last unique occurrences are what we are looking for as investigators.

Data mining methodology

The average purchase form shows normal values for items that are transferred to German nationals as well as those item being bought by the Americans. However, the Data Mining shows the trends in the purchasing of items as well as the selling of items throughout the year. It allows to see who is buying and who is selling during certain times of the year. This mining tells what is normal and what is not normal by frequency and prices. Who is selling the most as well as who is buying more frequently. The buying more frequently people are the ones that are more interested in because they are the ones that have the most potential to have illegal activities. So long as they are paying taxes and reporting the information correctly, no actions is needed. However, if the value of the items they are purchasing are lower than normal, than there is cause for concern.

While most unique occurrences might be a mistype or a misprint of data, most of these occurrences are where individuals have transferred items to individuals or companies at lower values than that the item is actually worth. Some of the time the US Army official will find where someone has given a gift to a friend. While this is authorized, the reporting of the true values on this document is mandatory. Even people who receive gift have to pay taxes on that item. However, these are not the people that military officials are looking for and generally do

not bother those individuals. The ones the military are looking for are the individual or business that frequently buys or sells items at lower values or no value at all. Once they find that one particular business or person, they would run other queries to find out how many times that person or business has had numerous transfers and what the value of each instance was to determine if more investigation is needed. What the military official are looking for is how much the difference is of the recorded price and what the actual value of the item is according to numerous sources. If there is more than a 20% discrepancy and this is a frequent buyer or seller, then they know they have a possible case of black-marketing. More investigation will be done and a case would be built and all because of data mining techniques and algorithms.

While transferring of goods might seem very lucrative, they also deal with the selling of tax free gasoline. The price at \$4.20 US dollars a gallon is 50% cheaper than that of the local Germans, which is close to \$9.00 US dollars a gallon. Once again, the military official job is to find trends of when people are buying more gasoline throughout the year and to find the illegal black-marketing of gasoline. As one can see, it could be a very lucrative market to sell gasoline to locals, however, getting caught would end your military career and possible land you in jail. Still, people try to make a quick dollar wherever they can, even if the consequences are that strict.

To receive tax free fuel a form must be filled out and the information is entered into the same database. These forms take up the majority of the time with over 40,000 to 100,000 forms being completed each year. This makes finding the illegal selling of gasoline so difficult. The US military look for frequency, location and price of each purchase to determine if anything looks wrong or out of the ordinary. If a person has a car that can only hold 10 gallons of gas but they purchase more than that at one filling, it could be a sign they are selling their gasoline. Or if a person buys 20, 30 or even 50 gallons of gasoline at the same gas station within an hour or two of time, it is a good indicator that the individual is selling their gasoline. Specific queries have to be done in order to find people doing these illegal activities. These queries would be done using date, location, frequency of visit in a day time frame and quantity sold. If this had any results, those results would be added to a query to see if this people have done this on any other days or even other months. If a person is found to have done this numerous time, it would be an indicator that this would be a black-marketing scam. More investigation would be completed on this individual to get more evidence for a case. Once again, because of data mining.

Conclusion

Data mining, while normally used to help businesses thrive and be more productive, can also be used in law enforcement to stop people and business from committing crimes. While those crimes might not be that serious to some, is considered heinous to others. With the help of data mining, the US Army officials in Germany have the possibility to lighten their work load and save their eyes from looking at thousands of sales and duty forms. Its accuracy and its ability to go through so much data in so little time, allows for more work to be accomplished in a shorter period.

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