PESIT Department of Computer Science and Engineering

Course: Data Analysis
Semester: 2014 Spring (January – May)
Instructor: BNR (Dr. B. Narsing Rao)

Assignment: 01
Topic: R Plots
Due by: Midnight on Thursday, January 16, 2014
Method: Send zip archive (.zip, .rar, etc.) by email to bnrao@pes.edu
              The name of the zip archive should be: DA-A01-your USN-your name
              (USN must be upper case and your name should be in mixed case)
              The zip archive should contain the following (see below for details):
              1. PDF file (named DA-A01-USN-Name.pdf)
              2. Source file containing R functions (named DA-A01-USN-Name.R)

Problem

You have been assigned the task of making a news story (on next page) more attractive by inserting suitable plots (i.e. graphs or charts) in the story. You must generate plots of the appropriate type to depict the following information and insert them at the appropriate location:

1. Growth of India's e-commerce market
2. Age analysis on on-line shoppers
3. Reluctance to shop online

One problem is that the size of the e-commerce market is missing for the years 2010 and 2011. However, these values must be estimated and shown on the chart. For this purpose, you must write an R function that interpolates missing values. Here is an example:

Input to function: (10, NA, NA, 40, NA, 80) [NA stands for Not Available]
Output: (10, 20, 30, 40, 60, 80)

The above is an example of linear interpolation. However, you must implement interpolation for a **constant growth rate**, not the linear case. The input can have any number of missing values other than the first and last elements of the vector, which must be given.

Note: **Do not** use an R function that is readily available; you must implement your own interpolation function since the purpose is to learn how to implement such functions in R.

Solution

You must submit the following:

1. Source file containing R functions that generate the required plots and save them in some image format (e.g. jpeg or png). Note that the plots must be as informative as possible and attractive.
2. PDF file that contains the text of the news story (**do not** modify any of the text), interspersed with plots generated in step 1

Indian e-commerce market up 88% in 2013

NEW DELHI: India's e-commerce market grew at a staggering 88% in 2013 to $16 billion, riding on booming online retail trends and defying slower economic growth and spiralling inflation, according to a survey by industry body Assocham.

"The increasing internet penetration and availability of more payment options boosted the e-commerce industry in 2013," Assocham secretary general DS Rawat said.

"Besides electronics gadgets, apparel and jewellery, home and kitchen appliances, lifestyle accessories like watches, books, beauty products and perfumes, baby products witnessed significant upward movement in last one year," Rawat said.

According to the survey, India's e-commerce market, which stood at $2.5 billion in 2009, reached $8.5 billion in 2012 and rose 88% to touch $16 billion in 2013. The survey estimates the country's e-commerce market to reach $56 billion by 2023, driven by rising online retail.

As per responses by 3,500 traders and organised retailers in Delhi, Mumbai, Chennai, Bangalore, Ahmedabad and Kolkata who participated in the survey, online shopping grew at a rapid pace in 2013 due to aggressive online discounts, rising fuel prices and availability of abundant online options.

Among the cities, Mumbai topped the list of online shoppers followed by Delhi, while Kolkata ranked third, the survey found.

The age-wise analysis revealed that 35% of online shoppers are aged between 18 years and 25 years, 55% between 26 years and 35 years, 8% in the age group of 36-45 years, while only 2% are in the age group of 45-60 years. Besides, 65% of online shoppers are male while 35% are female.

To make the most of increasing online shopping trends, more companies are collaborating with daily deal and discount sites, the survey pointed out.

The products that are sold most are in the tech and fashion category, including mobile phones, iPads, accessories, MP3 players, digital cameras and jewellery, among others, it found.

India has Internet base of around 150 million as of August, 2013, the survey said.

"Having close to 10% of internet penetration in India throws a very big opportunity for online retailers to grow and expand as future of internet seems very bright," Rawat said.

Those who are reluctant to shop online cited reasons like preference to research products and services online (30%), finding delivery costs too high (20%), fear of sharing personal financial information online (25%) and lack of trust on whether products would be delivered in good condition (15%), while 10% do not have a credit or debit card.