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# Case Exercise — ABC Store Inc. Part 2

ABC Store Inc is constantly evaluating requests for opening new stores and promote LOHAS lifestyle (Lifestyles of the Healthy and Sustainable).

 This is an increasing number of applications for new store locations.

 The company would like to formalize the process for handling many requests so that only the qualified candidates are selected for detailed evaluation.

 You are asked by the CEO to develop a decision tree for evaluating new store applications.

 The CEO gave you the following table generated from the previous store application history.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| City Size | Average Income | Local Investors | LOHAS Awareness | Decision |
| Big | High | Yes | High | Yes |
| Med | Med | No | Med | No |
| Small | Low | Yes | Low | No |
| Big | High | No | High | Yes |
| Small | Med | Yes | High | No |
| Med | High | Yes | Med | Yes |
| Med | Med | Yes | Med | No |
| Big | Med | No | Med | No |
| Med | High | Yes | Low | No |
| Small | High | No | High | Yes |
| Small | Med | No | High | No |
| Med | High | No | Med | No |

 The new application has the following features:

|  |  |  |  |
| --- | --- | --- | --- |
| City Size | Average Income | Local Investors | LOHAS Awareness |
| Med | Med | No | Med |

Tasks:

1. Build a decision tree, showing detailed steps, including Error Tables, Root Node selection, subbranches constructions.
2. Make a decision tree in Word using Organization Chart.
3. Use the decision tree model to advise the CEO on approving this new store location.

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The CEO wants to forecast its sales revenue for next year (Yl 3) using a regression model.

The CEO gave you the sales history in the past 12 years.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Year | lobäl GDP Iridex per capita | Customer Service calls ('OOOS) • | Employees(tOOO) | # Items ('000) | Revenue ($M) |
| YOI | 100 | 25 | 45 | 11 | 2000 |
| Y02 | 112 |  | 53 | 11 | 2400 |
| Y03 | 115 | 22 | 54 | 12 | 2700 |
| Y04 | 123 | 27 | 58 | 14 | 2900 |
| Y05 | 122 | 32 | 60 | 14 | 3200 |
| Y06 | 132 | 33 | 65 | 15 | 3500 |
| Y07 | 143 | 40 | 72 | 16 | 4000 |
| Y08 | 126 | 30 | 65 | 16 | 4200 |
| Y09 | 166 | 34 | 85 | 17 | 4500 |
| YIO | 157 | 47 | 97 | 18 | 4700 |
| Yll | 176 | 33 | 98 | 18 | 4900 |
| Y12 | 180 | 45 | 100 | 20 | 5000 |

Tasks:

1. Compute the correlations.
2. Based on your calculation, which variables are strongly correlated? Explain in 50  1 00 words.
3. Create a regression model that best predicts the revenue.

## Bonus Questions on NEXT page



## Bonus Tasks

The CEO wants to find suitable number of segments for its customers, for targeted marketing.

The CEO gave you a list of representative customers as below.

|  |  |  |  |
| --- | --- | --- | --- |
| Cust # | # of transactions | Total Purchase ($) | Income ($K) |
| 1 | 5 | 450 | 90 |
| 2 | 10 | 800 | 82 |
| 3 | 15 | 900 |  |
| 4 | 2 | 50 | 30 |
| 5 | 18 | 900 | 60 |
| 6 | 9 | 200 | 45 |
| 7 | 14 | 500 | 82 |
| 8 | 8 | 300 | 22 |
| 9 | 7 | 250 | 90 |
| 10 | 9 | 1000 | 80 |
| 11 | 1 | 30 | 60 |
| 12 | 6 | 700 | 80 |

Tasks:

1. Using Cluster Algorithm, determine the right number of customer segments for ABC Store.
2. Calculate the centroids of these customer segments.