**Seasonal Decomposition and Forecasting**

For this case study we will consider a company that sells cars (Car Dealer). The goal is to deseasonalize the data represented by car sales. Data were collected quarterly for a period of 3 years. Thus, being quarterly data we will consider a moving average of order 4, and for the centering of the moving average we will consider a moving average of order 2.

Thus, we will initiate the calculations starting from the following table:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Year** | **Trimester** | **Period** | **Yt** | **MA 4** | **YTMM** | **Yt-YTMM** |
| 1 | I | 1 | **Yt** |  |  |  |
| II | 2 | 72 |  |  |  |
| III | 3 | 68 |  |  |  |
| IV | 4 | 84 |  |  |  |
| 2 | I | 5 | 98 |  |  |  |
| II | 6 | 74 |  |  |  |
| III | 7 | 70 |  |  |  |
| IV | 8 | 88 |  |  |  |
| 3 | I | 9 | 102 |  |  |  |
| II | 10 | 77 |  |  |  |
| III | 11 | 73 |  |  |  |
| IV | 12 | 90 |  |  |  |

Where,

* Yt – trimestriala sales
* MA 4 – moving average of order 4
* YTMM **–** seasonal component