e-Prelude.com

Educational Module

Forecasting Method Simulator

Forecasting Simulator Principle

- The purpose of the forecast simulator is to illustrate the implementation of the forecasting methods taught theoretically
- The system calculates forecasts based on past time series of sales
- It can be used either on weekly periods or on monthly periods
- Methods used:
  - Moving average
  - Exponential smoothing
- With trend adjustment and seasonal adjustment
- The history of demand must be entered

Access to Forecasting Simulator

- Access to the forecasting simulator is only possible for instructors and if the Educational module is activated for the course.
- In the Educational module (from the list of directories on the Document Management page), select the Forecasting Simulator subdirectory.
- In the file list, select Forecasting and click on Open.

- The list of files includes other databases with history of demand.
- Several forecasting bases can be recorded
- The instructor can make these bases available to participants by copying the file into the Course Documents directory

Forecasting Simulator

e-Prelude | Contact | Monday January 3rd, 2022

Demand Forecasting Simulation

Quit | New | Edit | Open | Save | History | Calculate | Table | Optimize

Forecasting Method

- Naive forecast
- Moving Average — Number of periods: 3
- Exponential Smoothing — Smoothing Coefficient: 0.9

Forecasting Horizon

Number of periods to forecast: 12

Optimization Criteria: Minimize...

Fct Error | MAD | MSQ

Trend Adjustment

- None
- Additive
- Multiplicative — Smoothing Coefficient: 0.05

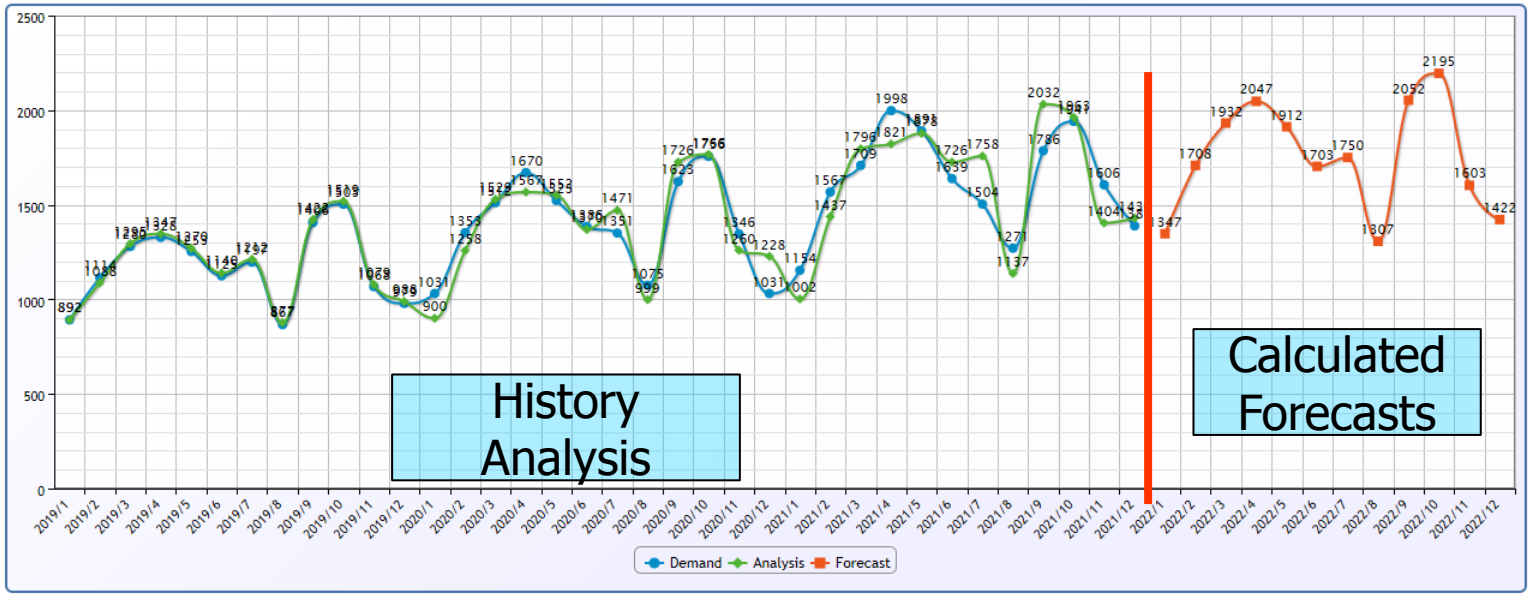
Seasonal Adjustment

- None
- Additive — Number of periods: 12
- Multiplicative — Smoothing Coefficient: 0.14

Model parameters

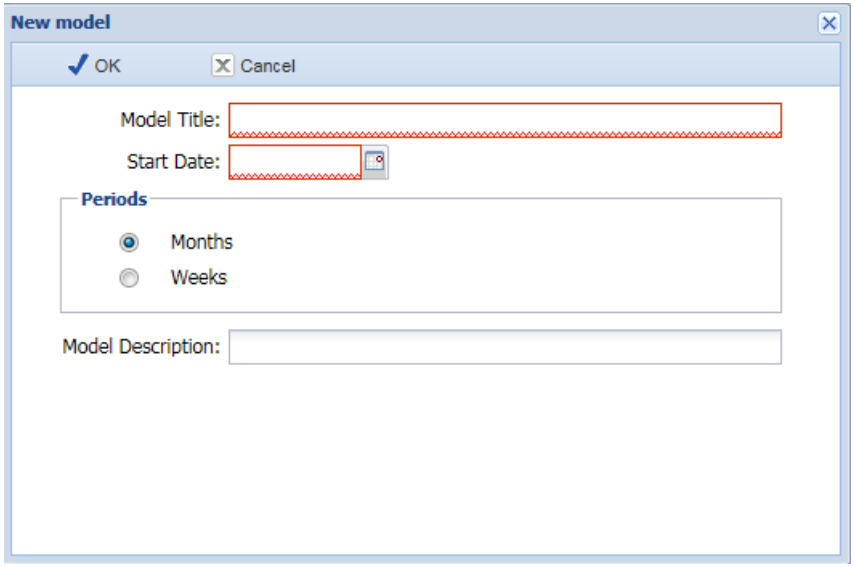
	Method	Coef.	Trend	Coef.	Saisonality	Coef.	Fct Error	MAD	MSQ
1	Exponential Smoothing	0.9	Multiplicative	0.05	Multiplicative	0.14	0.37	76.98	105.53

Results of successive simulations



Creating a new model

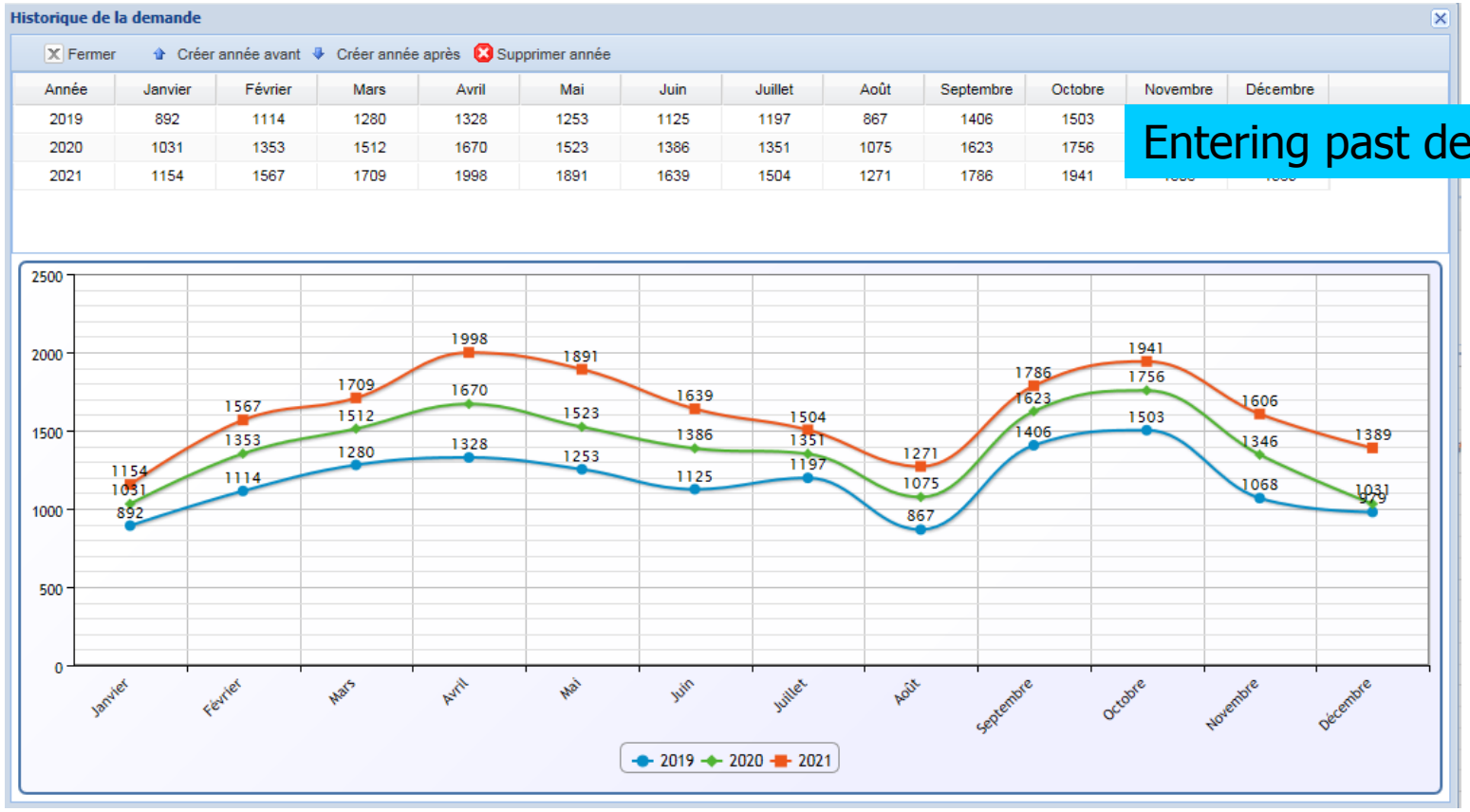
- Click on button New
- Enter
  - The file name
  - The model current date
  - The time bucket: Month or Week
  - A comment to describe the model



Entering Demand History

Click on button History

- Enter one line per year (Monthly periods) one line per quarter (Weekly periods)
- Years can be created or deleted
- The history is taken into account from the first non-zero data



Année	Janvier	Février	Mars	Avril	Mai	Juin	Juillet	Août	Septembre	Octobre	Novembre	Décembre
2019	892	1114	1280	1328	1253	1125	1197	867	1406	1503		
2020	1031	1353	1512	1670	1523	1386	1351	1075	1623	1756		
2021	1154	1567	1709	1998	1891	1639	1504	1271	1786	1941		

Forecasting Model Parameters

- Select forecasting method
  - Naïve Forecast (forecast is the last demand)
  - Moving average > specify the number of periods
  - Exponential smoothing > specify smoothing coefficient
- Trend adjustment
  - Additive or multiplicative > specify smoothing coefficient
- Seasonal adjustment
  - Additive or multiplicative > specify smoothing coefficient
- Number of periods to forecast
- Click the Calculate button

Results of successive simulations

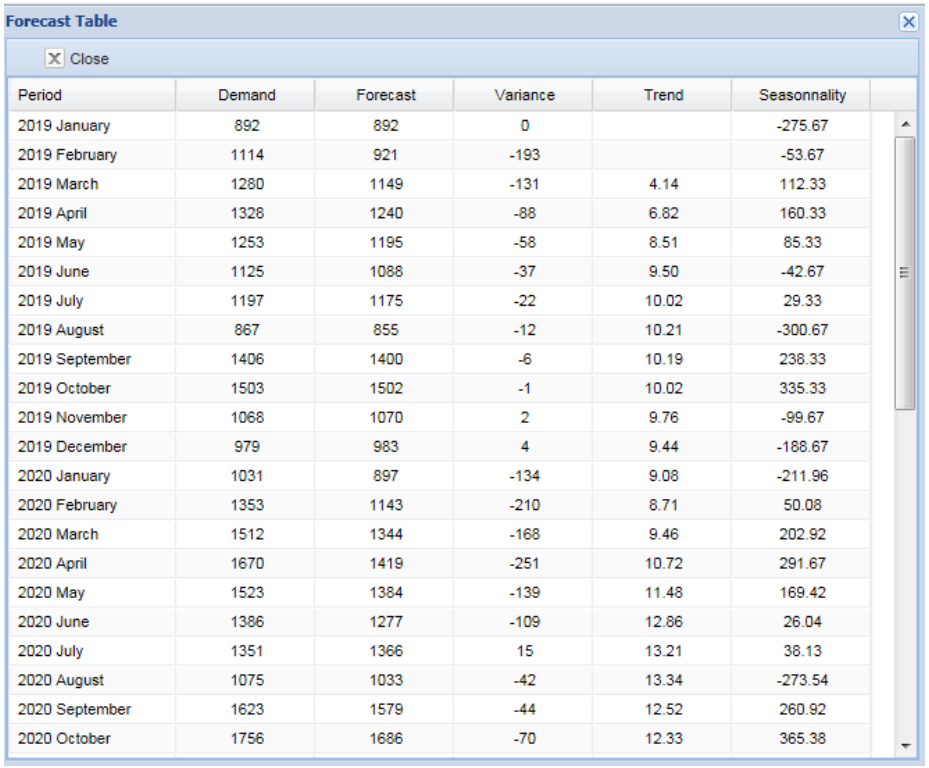
	Method	Coef.	Trend	Coef.	Saisonality	Coef.	Fct Error	MAD	MSQ
1	Exponential Smoothing	0.3	Additive	0.05	Additive	0.5	-65.65	88.12	115.51
2	Exponential Smoothing	0.3	None	0	Additive	0.14	-65.17	93.27	122.75
3	Moving Average	3	None	0	None	0	-23.84	281.11	314.02
4	Exponential Smoothing	0.9	Multiplicative	0.05	Multiplicative	0.14	0.37	76.98	105.53

- The grid shows the results of the last simulations to compare them
  - Forecast Error
  - Mean Absolute deviation
  - Mean Squared Error

- By clicking on a line, the model parameters are recalled

Detailed results table

Presents detailled calculation
- over history
- over forecast periods



Forecast Table

Close

Period	Demand	Forecast	Variance	Trend	Seasonnality
2019 January	892	892	0		-275.67
2019 February	1114	921	-193		-53.67
2019 March	1280	1149	-131	4.14	112.33
2019 April	1328	1240	-88	6.82	160.33
2019 May	1253	1195	-58	8.51	85.33
2019 June	1125	1088	-37	9.50	-42.67
2019 July	1197	1175	-22	10.02	29.33
2019 August	867	855	-12	10.21	-300.67
2019 September	1406	1400	-6	10.19	238.33
2019 October	1503	1502	-1	10.02	335.33
2019 November	1068	1070	2	9.76	-99.67
2019 December	979	983	4	9.44	-188.67
2020 January	1031	897	-134	9.08	-211.96
2020 February	1353	1143	-210	8.71	50.08
2020 March	1512	1344	-168	9.46	202.92
2020 April	1670	1419	-251	10.72	291.67
2020 May	1523	1384	-139	11.48	169.42
2020 June	1386	1277	-109	12.86	26.04
2020 July	1351	1366	15	13.21	38.13
2020 August	1075	1033	-42	13.34	-273.54
2020 September	1623	1579	-44	12.52	260.92
2020 October	1756	1686	-70	12.33	365.38

Optimization

- The Optimize button is only seen by instructors
- Active only with Exponential smoothing method
- Search for the combination of the three smoothing coefficients which leads to minimize the chosen gap

- Warning! Calculation time may be long

Additionnal functions

- Button Open
  - To open a parameter file
- Button Save
  - To save the model parameters in a file whose location is chosen
  - This file can be made available to students by copying it into the Course Document Library directory