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Answer Sheet:

Time Series Analysis – Sales Forecast

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| --- | --- |
| Camera | **Provide screenshots to support your answers.** |

1. Define MAPE. What is the significance of MAPE in this forecast?

MAPE is the mean absolute percentage error, which is a relative measure that essentially scales MAD (Mean Absolute Deviation) to be in percentage units instead of the variable’s units. Mean absolute percentage error is a relative error measure that uses absolute values to keep the positive and negative errors from canceling one another out and uses relative errors to enable you to compare forecast accuracy between time-series models. Formula:

Graphical user interface, diagram, application

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Font: <https://docs.oracle.com/en/cloud/saas/planning-budgeting-cloud/pfusu/insights_metrics_MAPE.html>

The Average Expected MAPE for GBL Sales Forecast is 13.89%. The mean absolute percent error (MAPE) communicates accuracy as a percentage of the error. Because the MAPE is a percentage, it can be easier to understand than the other accuracy measure statistics. For example, if the MAPE is 13.89, on average, the forecast is off by 13.89%.

Font: <https://support.minitab.com/en-us/minitab/21/help-and-how-to/statistical-modeling/time-series/how-to/trend-analysis/interpret-the-results/all-statistics-and-graphs/>

Text

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1. Take a screen shot of the visualization of your U.S. forecast.

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Graphical user interface

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Graphical user interface, table

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Graphical user interface, table

Description automatically generated

1. What are the forecasted sales for December 2021 in Germany?  
   What are the forecasted sales for December 2021 in the US?

Graphical user interface, application

Description automatically generated

1. Are there any signal outliers in the US data? If so, what are they? How might these types of outliers affect this analysis?

There are three outliers in the US data. They are listed below:

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Description automatically generated

When analyzing the impact of cycles, we observe that the months with the highest sales are May and June. On the other hand, the actual sales results for the outliers listed above show the sales with a much lower number than forecasted for the same months. Furthermore, the outliers only happened in two consecutive years, over 10 years ago. As a business Analyst, I would run an investigation seeking what caused the issue. I would start checking if there is any data entry or measurement errors, or sampling problems and unusual conditions, and/or natural variation.

Chart, bar chart

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Question 5: Use the model Explanation for the US forecast to determine which components had the largest impacts on the Time Series predictions. Compare these to the impacts for the Germany predictions; are there any differences? Include screenshots to support your conclusion.

The components that had the largest impacts on the Time Series predictions when comparing the results for the US and Germany sales forecasts are described below:

USA

Graphical user interface, application

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Germany

Graphical user interface, application, Teams

Description automatically generated

As observed above, the components that caused difference in the USA is Cycles, and for Germany, it is fluctuation.

Germany:

Text

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Chart

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USA

Chart

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Graphical user interface, text, application, email

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Chart

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