# M6L5. Regression Analysis

## Slide #1Regression Analysis

In this topic, we will discuss forecasting using the regression method.

## Slide #2Forecasting: Regression Method

If your business experiences obvious upward or downward trends, regression is a practical forecasting method that we can use to forecast future performance based on historical trend.

Regression analysis is a modeling technique for analyzing the relationship between two variables, in this case, monthly sale and time.

Microsoft Excel provides multiple easy to use trend regression options.

Rather than discussing the underlying statistics principles of the regression analysis, we will focus on how to use regression tools to forecast the trend, simply because the tool is very intuitive to use.

## Slide #3Forecasting: Regression Method Demo

The video clip demonstrates how to calculate the trend with the chart and linear regression function of Microsoft Excel.

How to use Microsoft Excel to build a linear regression forecasting model.

This is the monthly sale data of the OCT machine.

First, select the sales data and then insert chart.

This plot shows the historical sales data in the past 24 months.

Right click on the data and add trend line.

We use linear and we can display the equation on the chart.

Now this shows us the linear regression.

Also to do the forecast, we need to calculate the monthly sale using the equation from the linear regression.

For example, this cell is equal to January times 1.1513 minus 46639.

This gives us the forecast of the monthly sale based on the linear regression.

The video clip demonstrates how to forecast future sales from the equation from the linear regression tool that Microsoft Excel provides.

We are going to use Microsoft Excel to build a forecasted chart.

So, due to a standard format of forecasting, select the data, including extra data and your forecasted data.

Click insert, then scatter with straight line.

Because this is forecasted data, typically we use a dotted line to represent forecasted data.

Also, we remove markers for the forecasted data.

That is the standard presentation of forecasted data.

Change the title to monthly sale.

## Slide #4Forecasting: Regression Analysis Method

The linear function represents the relationship between monthly sales and the time.

With Microsoft Excel, the regression analysis is very simple and intuitive.

However, we can derive very useful business trend insight from the regression method.

In this case, the linear regression analysis tells us the annual sales growth was 5 million dollars.

Between 2016 and 2017, the annual growth is consistent for the following years also, so we can use the same annual growth number to forecast the monthly sales in 2018.

The linear regression method is useful for the forecasting of long-term trends of business performance.