

DeltaMaster clicks!

12/2007

Greetings, fellow data analysts!

Who wants to simply follow the next trend, when being a trendsetter is so much more interesting! Or if you prefer to stay on the safe side, you can simply label something a trend – in this case then, something *really* big: a megatrend. Although the term was originally coined by sociologists to characterize social or technological changes, trends apply just as easily to hairstyles or fashion. Although it's very alluring to be the one to spot a new development and run with it, you first need to take a very close look to ensure that something that looks like a trend is truly one.

Methods, such as regression analysis, can help you spot trends much more easily than you might think. Using the *Trend barometer*, you can even integrate these analyses right into your graphical tables. We'll show you how you can transform *DeltaMaster* into a trend scout in this edition of clicks!

Best regards,

Your Bissantz & Company team

DeltaMaster 5.3.3

The latest release now allows you to reuse axis definitions in the pivot table, filter member properties and access Infor PM10. Download it today at www.bissantz.com/deltas/en

OLAP seminars in 2008

Mark your calendars for our upcoming events in 2008. www.bissantz.com/olap-seminar

DeltaMaster Matinee

12 February 2008, Mannheim
Thomas Wieland, Business Director for Knauf Bauprodukte, will be our guest speaker. www.bissantz.com/matinee/en

DeltaMaster@Work

31 January 2008, Nuremberg
Create reports that report something! www.bissantz.com/dm@w

Archive

Get past editions of DeltaMaster clicks!: www.bissantz.com/clicks/en



Management Information - Between Efficiency and Infotainment: Executive Forum in Berlin

In the ballroom of the Hotel de Rome, *DeltaMaster* users had the opportunity to discuss the future of Business Intelligence with the Bissantz team and our prominent panel of speakers. An excellent day! www.bissantz.com/rueckschau/executive2007

Tip of the month *Recognizing and visualizing trends with the Trend barometer*

Take a good look at this section of a pivot table.

As a *DeltaMaster* user, you have probably become accustomed to the sparklines, which in this case explain product revenues in the context of time. But what about the arrows behind the numbers?

These elegant trend arrows explain if the time series displayed as a sparkline shows a trend in the statistical sense. If yes, the arrow shows the direction as well as its correct geometric strength. “nt” means that there is no trend – which is information in itself if you think of typical planning tasks. After all, how should a development carry on in the future if it really isn’t one to begin with?

Products	Measures
DCW Plywood	Revenues 11.397.903 →
Softpad 217	3.366.930 nt
Softpad 117	1.362.250 nt
Jackson ZZ	966.150 ↑
Precisio LF	687.123 →
Jackson 10	614.820 →
Arcade AM 44	426.697 nt
Softpad 208	413.161 ↘
DCW Steel	126.220 →
Arcade AM 55	125.006 →
Ergoplus Nova	94.069 nt
Precisio JK	80.784 ↘

Although these arrows may look inconspicuous at a first glance, they are really quite spectacular. They don’t just signify a simple change of plus or minus as you often see in the papers, where they use one of two symbols – regardless of how significant this change is – to explain an increase or decrease from the previous day. *DeltaMaster* can, of course, replicate this type of functionality using conditional formatting in a *Flex report* (see *DeltaMaster clicks!* 01/2007). But the *Trend barometer*, the function that creates these trend arrows, can do so much more. It is one of many options, in which *DeltaMaster* can transform conventional pivot tables into graphical tables to display a high level of information in very little space.

This edition of *clicks!* will explain how you can use *Trend barometers* as well as how they work. Although detailed information on statistical techniques is probably better suited for a textbook, we will touch upon this background briefly to help you better interpret and evaluate the results in *DeltaMaster*.

Regression analysis

When statisticians search for trends, they tend to use regression analyses. Generally speaking, this technique analyzes one dependant and one or more independent variables in order to recognize and explain relationships and forecast the values of the dependant variables.

DeltaMaster uses the principles of regression analysis in many of its built-in analytical functions. The most obvious is *Regression*, in which you can observe the possible correlations between two given measures. *DeltaMaster*, however, also uses these principles in the trend lines of a *Time series analysis*, the regression lines of a *Portfolio analysis* as well as in the *Trend barometer* of a pivot table.

Integration in a pivot table

Adding a *Trend barometer* to a pivot table is very easy. Just select one of the display options from the



context menu. (These options will be explained in detail below.) The only requirement is that the column or line sparklines must be activated in the pivot table. In addition to displaying the graphical elements, *DeltaMaster* also accesses the time series that comprise the sparklines so that you can use them for further analysis.

When you use this approach to embed trend arrows in a pivot table, you already have all of the parameters you need to run the analysis, because each cell contains a dependent variable (i.e. the individual measure) as well as an independent one (i.e. time). Since the historical values displayed as a sparkline serve as the control sample, you can immediately start the calculation.

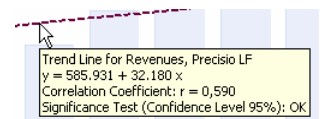
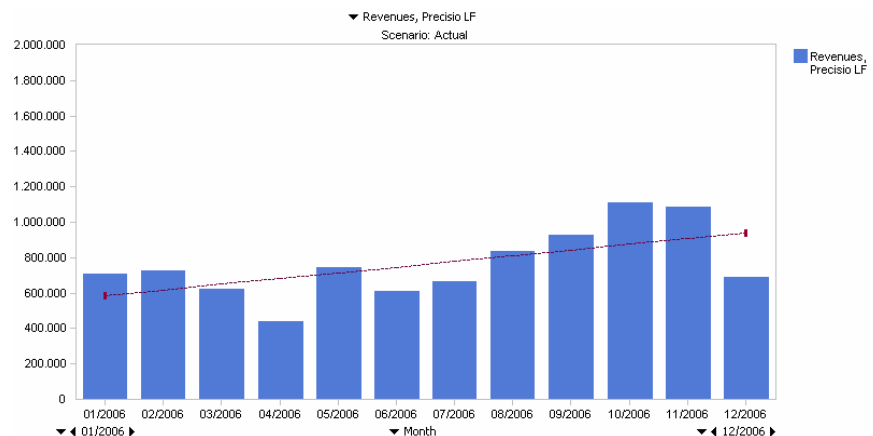
Testing marathon

In order to test the existence of trends, *DeltaMaster* treats each cell in the table (i.e. the current value and the historical values stored as a sparkline) as a separate data record. It then runs a regression analysis and further tests for each cell or data record.

The first step is to estimate the mathematical regression, a linear function based on the formula $y = a + b \cdot x$. This is based on the method of the least squares. As a result, you will receive two parameters for each cell: the constant axis intercept “a” and the regression coefficient “b”. This allows you to create a line that runs through the points of data in our record. Sometimes it intercepts the points exactly and sometimes it is very close or far away from them.

You can clearly see this step in a *Time series analysis*, which is basically nothing more than an enlarged sparkline. By double clicking on a sparkline in a pivot table, you can open the same data record as a *Time series analysis*.






You can view the formula expression in the trend line tooltip.



After *DeltaMaster* determines the regression function, you will need to determine its quality. In other words, you need to know if the mathematical function describes our data records vaguely or accurately. In particular, you need to see how well the model explains the dependant variable.

The correlation coefficient “r” explains how the actual values are scattered around our line. The value of “r” always lies between -1 und +1. If the value is exactly -1 or +1, all of the values lie exactly on the line and the function is an exact description of the actual value allocation. The closer “r” is to 0, the weaker the correlation is. The value of “r” is also displayed in the tooltip. This value, however, is a standardized, purely statistical indicator that cannot be interpreted from a business perspective. Our data record then runs a third examination: a significance test. Using F-statistics, you can then determine if the relationships found are coincidental or not. The result of this test also appears in the tooltip.

Back to the trend arrows in the pivot table: the line is now shown as a small arrow and accounts for all of the measures discussed above. Instead of using the formula, *DeltaMaster* refers to the

Measures		...
Products	...	Revenues
Precisio LF		687.123
Precisio LM		9.098
DCW Cow		6.029
DCW Plywood		11.397.903
DCW Steel		126.220

∅ change per period: +32.180
 Correlation Coefficient: r = 0,590
 Significance Test (Confidence Level 95%): OK

average change per period, which is equivalent to the regression coefficient “b”, as you can tell from the numbers. The color of the arrow signifies the measure’s business factor. If a measure has a positive effect on revenues, it will be blue if the trend is positive and red if negative. When you are working with cost measures, however, a rising trend will be marked red and a falling one blue.

Exaggerations allowed

The trends that you will observe in day-to-day use are usually weak, especially when you are dealing with compact KPIs. You shouldn’t really expect more than a plus or minus of a few percentage points. Presenting this type of line geometrically is not very enlightening, because it would only be a slight change from the level state. With trend arrows, this is even more so the case. To ensure that you can make any differentiation at all, *DeltaMaster* offers an option in the context menu to show the *Gradient exaggerated*. In this model *DeltaMaster* amplifies the arrows so that the one with the starkest slope is displayed perpendicularly – in other words at a 90 or 270 degree angle – and the other arrows are adjusted accordingly.

Questions? Comments?

Just contact your Bissantz team for more information!