

Auditmetrics Pro 7 AI Forecasting*

Auditmetrics Pro 7 has the same opening screen as the small business version V6 which relies on Excel Toolpak for forecasting. With Pro 7 the regression forecasting process is now automated. Pro 7 also includes *Benford's Analysis* which is an important forensic accounting tool. Chapter five of Springer text covers this valuable resource.

Auditmetrics LLC
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Detail

No. Strata

Precision
(Margin of Error)

Efficiency

Total Sample

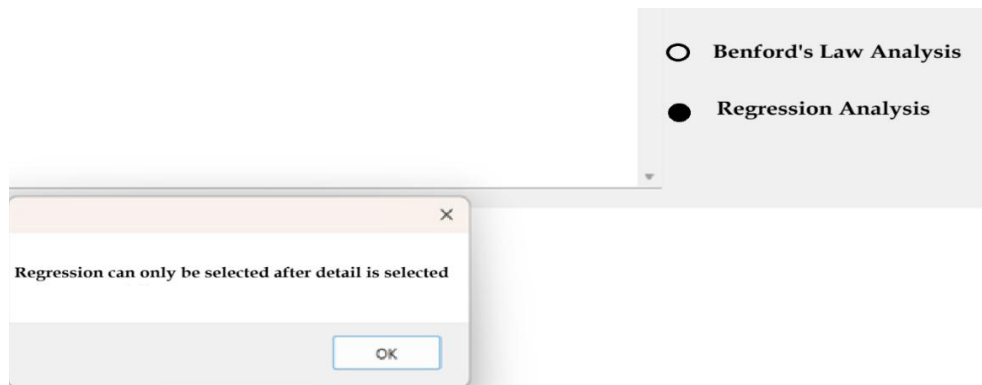
Potential Detail Cutoffs

Sample Size Excel File
 Sample Validation Excel File

1. Sample Size Calculations

Benford's Law Analysis
 Regression Analysis

1. The process starts with to first follow all the steps to generate a random sample.
2. The next step is to start the process of forecasting with AI pro 7.
3. The selection of the regression button only take place after a detail cut off has been decided upon and entered. If not get the error message:



*For a complete overview follow-up with Auditmetrics Primer Link:



Step 1: The sample has been selected with all validity tests passed

0 -49.99
50-124.99
125-274.99
275-499.99
500-924.99
925-1600
> 1600

Benford's Law Analysis
 Regression Analysis

4. Regression Forecast

Population:
N Mean Total \$
10101 19.02 192150.03
4473 76.58 342547.06
2929 180.75 529415.54
1776 362.74 644217.39
1196 641.54 767278.79
722 1176.33 849307.72
458 1869.44 856205.07

Sample Summary:
Validation Tests Listed Below

n	Mean	SD.	Total \$		
62	21.24	19.04	1317	ok	ok
61	81.87	37.7	4994	ok	ok
88	174.87	103.18	15389	ok	ok
90	361.3	155.19	32517	ok	ok
135	645.62	277.68	87158	ok	ok
152	1214.84	359	184655	ok	ok
458	1869.44	633.62	856205		

Validation #1- Observed precision under 0.03 no need to resample

Now the regression process can be started but be sure there is only one date field in the U.S. standard of MM/DD/YYYY:

4. Regression Forecast

Start Regression Analysis
make sure the date of transaction data is US format M/dd/yyyy

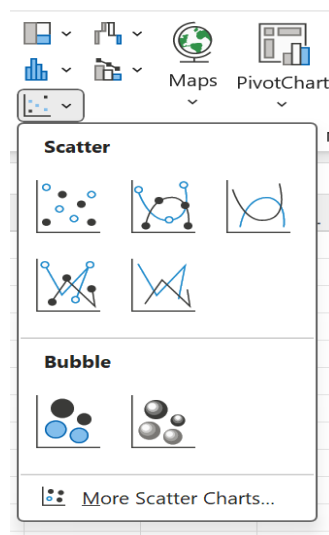
OK

Step 2 Generated Model with Regression Coefficient, Intercept and Correlation

The displays on the screen are tab delimited so one can simply copy and paste the screen results onto an excel file. Then one can now use Excel to graph the results:

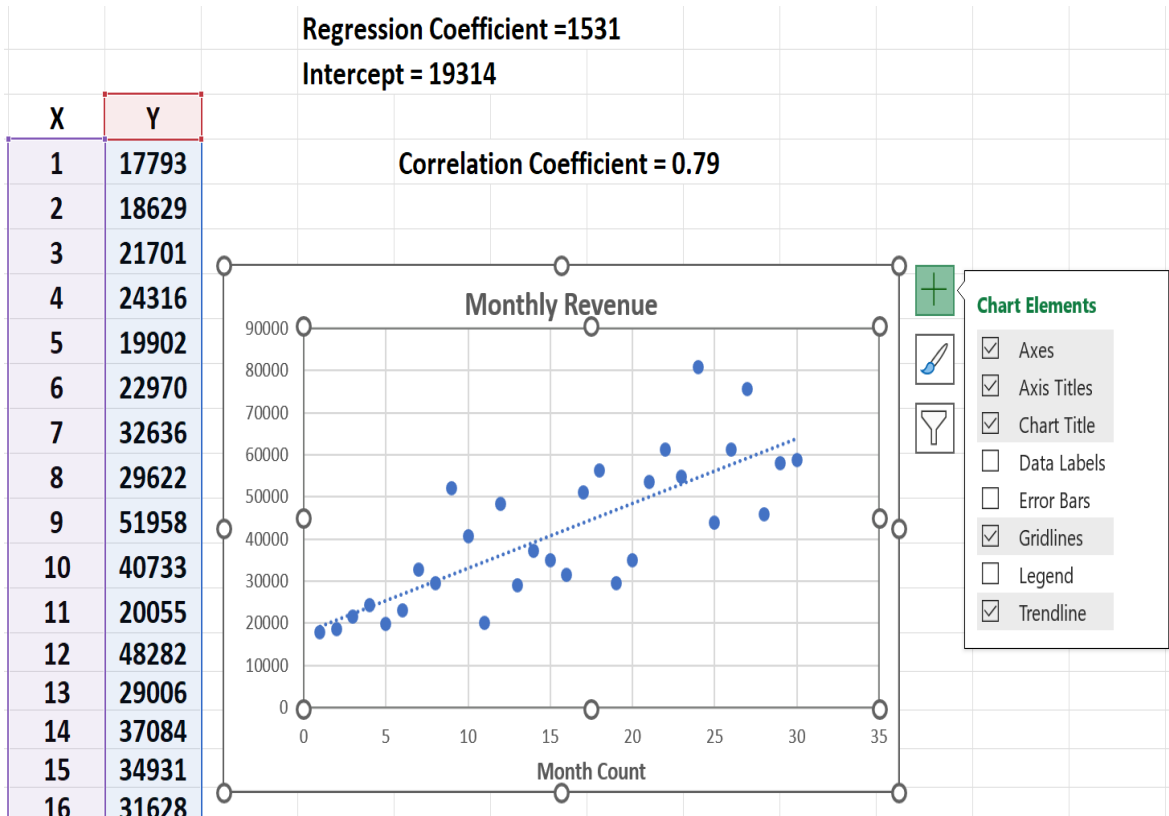
Regression Coefficient 15931		Intercept 19314
Correlation Coefficient = 0.79		
X	Y	
1	23132.33	
2	17831.87	
3	20770.36	
4	21993.38	
5	24759.83	
6	24961.35	
7	31240.02	
8	35892.74	
9	50566.15	
10	44187.64	
11	25742.22	
12	54467.16	
13	29395.84	
14	35721.28	
15	32921.56	
16	27674.69	
17	42915.33	
18	52385.76	
19	37523.84	
20	35586.82	
21	48237.21	

Be sure to select the X and Y Excel data columns and insert them into a Scatter Plot:



Step 3 Finalize Regression results

Creating a forecasting exhibit using Excel graphs that add titles and trendline.



Step 4 The Moving Regression Predictor

Below is the result of regression of an account with a million transactions:

Regression Coefficient = 3655		X	Y
Intercept = -3440		1	19988
		2	5819.3
Correlation Coefficient = 0.47		3	15735
R ² =	22.1%	4	14083
N	1,134,251 Transactions	5	17573
		6	31967
		7	34779
		8	27586
		9	35230
		10	47800
		11	24789
		12	63335
		""	""

As a rule of thumb, a correlation greater than 0.75 is considered to be strong between two variables. Correlations between 0.45 and 0.75 are moderate, and those below 0.45 are considered weak. A weak correlation does not mean the business is failing. Its financials may be good; it just means it is not growing. The statistical model section of Appendix 1 of Springer book goes into more detail discussing R and R². The regression line is an estimate with statistical uncertainty as indicated by the data points around the straight line.

X	Y
1	19988
2	5819
3	15735
4	14083
5	17573
6	31967
7	34779
8	27586
9	35230
10	47800
11	24789
""	""
27	58830
28	48227
29	43270
30	59653
31	53049
32	47597
33	65618

The Regression model can now be used to monitor progress. The weak growth is indicated by a baseline R² with predictor efficiency is only 22%. The business is doing well financially but it seems to exhibit only a modest growth (pp 59-67). If there is a desire for more growth then a marketing plan must be implemented. Some options are discussed in chapter eight of the Springer Book, but it is not intended to be an exhaustive discussion. Market research is much more open ended process where AI will be a valuable tool.

The original analysis involved 30 months of data. But once a marketing plan is implemented, a three-month quarter should be analyzed to determine if there is a measurable improvement in forecasted revenue. One could do monthly projections but the projections would be more volatile.

If there is no growth then it is back to the drawing board to see what can be done to improve performance. The key is to maintain focus and as in an audit concentrate on concise data inputs to measure progress. There can be many options to a small business.

To reach a wide range of local customers there are mixes of digital and print marketing strategies. One could run social media ads that target specific groups, and place eye-catching print ads in local publications.

One can get involved in local events, sponsor charity functions, or host workshops to show off expertise. In doing so, use analytics of Auditmetrics to track how well these separate strategies are working. Then, refine what's working by adjusting approaches based on the data. For example, if social media ads are driving more sales than print ads, focus more on social media marketing.

Integrating with the community in advertising in community publications, sponsoring a little league team or local nonprofit, or paying to put up a banner at a local event can position a business as an active part of the community. This not only gets the brand in front of relevant eyes, but it establishes trust with your first impression.

If analysis indicates progress, then update the model by adding the new data. At the same time removing the first quarter of data and in essence having an ongoing moving predictor of revenue growth. If any quarter seems to be flat, the time should be taken to assess if it is a transient fluctuation or some problem to be solved.

Seasonal Adjustment

This regression model so far, though very useful, is not complete. The model is a bivariate linear model, a dependent variable with only one predictor variable. There is a good fit and is specifically designed as an ongoing monitoring tool.

Suppose a business starts a marketing plan and it seems to work because there is a measurable increase of cashflow. However, the correlation coefficient is always in the moderate to weak range. This indicates the regression model may need additional information.

Many Small businesses, such as retail outlets, experience cashflow seasonal fluctuations. With the bivariate prediction model the next month will always be higher than the previous month. But business activity does have seasonal fluctuations. The fourth quarter of the year and its increased commercial activity will always be higher than the first quarter of the following year. The regression model so far does not allow for this fluctuation.

For more information on this topic: [Seasonal Fluctuations PDF](#)

Auditing, Forecasting & Market Research: [Auditmetrics Primer](#)