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A testing time for spreadsheets



Lisa Pollack

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Despite users being dangerously error-prone, training in best practices is rarely given

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8-01	\$	7,505.02	\$	246.36
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A computer screen shows a financial spreadsheet

It's an awkward truth that popular psychology books equipped me for office life better than two university degrees. Knowledge imparted by *Working With You is Killing Me: Freeing Yourself from Emotional Traps at Work* and *Throwing the Elephant: Zen and the Art of Managing Up* has been applied at times with daily frequency. On the other hand, insights gleaned from monetary economics have become little more than fond intellectual memories.

Preparing undergraduates for the realities of the office is not the point of university, of course. But one practical module that would do everyone a world of good would be on the best use of [Microsoft Excel](#).

Spreadsheet software is ubiquitous in business and potentially disastrous errors in its use are terrifyingly common. Yet the attitude that "it's just a

spreadsheet” prevails, and little formal training is offered.

Such complacency is especially abhorrent to the specialists who belong to the European Spreadsheet Risks Interest Group. They recently held their 16th annual conference in London. Those attending were a mix of academics, trainers, modellers, consultants and exactly one journalist.

Within this community a widely circulated figure is that 5.2 per cent of numerical or formulaic cells contain an error. From this follows the estimate that 94 per cent of spreadsheets contain errors. These figures are from an update to a paper first published in 1998 by Professor Raymond Panko of the University of Hawaii. They are not without controversy, though, as they are weighted averages based on seven different studies, all of which have different methodologies. Furthermore, three of the studies are unpublished and one accounts for most of the cell error rate.

What qualifies as an error in spreadsheet land is often subjective. For example: putting a number (rather than a cell reference) directly into a formula. Such “hard-coding” is almost always bad practice, especially if there is any chance whatsoever that the value of that number will change — as with, say, an inflation or interest rate. But if the number doesn’t change, it won’t lead to a wrong result. So is it an error?

Stephen Powell, Kenneth Baker, and Barry Lawson of Dartmouth College count it as one in a 2009 paper in which they outline a full “error taxonomy” that they hope others will adopt. The taxonomy was tested on a sample of 50 spreadsheets. Only three were error-free, meaning that (quite remarkably) 94 per cent of spreadsheets contained errors, matching Prof Panko’s original, criticised average. The cell error rate was lower, though, at 1.8 per cent.

But are these mistakes that matter? Are they of the “don’t let the perfect be the enemy of the good” type; or more like “oops, earnings restatement”? To investigate, the Dartmouth trio asked five organisations to provide five spreadsheets each. The error taxonomy was applied and the impact of each mistake estimated. The files of one organisation, identified as a “small consulting company”, were described as “works of art: thoughtfully designed, well documented, easy to understand, and error free”. The mistakes in half the files of two big companies, however, led to calculation errors of more than \$10m. The biggest impact was just over \$110m. But these companies also each had one error-free spreadsheet. Within a single organisation, “spreadsheet practice can range from excellent to poor”, say the researchers.



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Error rates in spreadsheets are frighteningly high and small mistakes can have significant impacts. But is this enough to justify testing in spreadsheets along the lines of what software developers do for code? Lisa Pollack reports on this and more from the 16th annual conference of the European Spreadsheet Risks Interest Group.



This, if anything, is the ugly truth about spreadsheets: how good you are at them, and how likely you are to make serious mistakes, is a function of the culture and practice in which you learnt to use them. In the absence of formal training, at university or later on, this seems unlikely to change. Especially given the often dismissive attitude towards the tool. It is “just a spreadsheet”, after all.

Organisations will blunder on, occasionally aware, but more often entirely unaware, of the mistakes being made. As one spreadsheet risk expert wryly noted, companies often know more about their employees’ cars in the car park than they do about the spreadsheets they are using. Especially funny, that, given one needs a licence to drive a car.

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