

Chapter 2.39

Spreadsheet Errors and Decision Making: Evidence from Field Interviews

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ABSTRACT

Spreadsheets are both ubiquitous and error-prone, but there is less evidence concerning whether spreadsheet errors frequently lead to bad decisions. We interviewed forty-five executives and senior managers / analysts in the private, public, and non-profit sectors about their experiences with spreadsheet errors and quality control. Almost all report spreadsheet errors are common. Most can report instances in which errors directly led to losses or bad decisions, but opinions differ as to whether the consequences of spreadsheet errors are severe. Quality control procedures are in most cases informal. A significant minority of respon-

dents believe such ad hoc processes are sufficient because the “human in the loop” can detect any gross errors. Others thought more formal spreadsheet quality control could be beneficial.

INTRODUCTION

The information revolution has provided leaders with many powerful decision support tools, and none is more frequently used than the familiar spreadsheet. Spreadsheets have made enormous contributions to decision making by democratizing analysis and speeding decision-cycles. Field audits and laboratory studies consistently find,

though, that a very large proportion of spreadsheets contain errors. Given these two observations, one might expect that (1) spreadsheet errors frequently lead to poor decisions that impose tangible costs and (2) concerned organizations would invest heavily in quality control procedures governing spreadsheet creation and use. However, there is little empirical evidence from practitioners regarding either proposition.

We investigated what executives and senior managers/analysts report concerning both hypotheses through 45 semi-structured interviews with respondents in the public, nonprofit, and private sectors. Semi-structured field interviews have strengths that complement those of laboratory studies and spreadsheet audits. Laboratory studies inevitably raise questions of external validity; do their results pertain only to laboratory exercises or also to business practice. Auditing spreadsheets can overlook something that we discovered to be crucial. Spreadsheets inform decisions but rarely make them, so errors in spreadsheets do not inevitably lead to errors in decisions. To understand the impact of spreadsheet errors on decision making, it is important to think about the decision making process more generally, not just the spreadsheet artifact.

The approach has two important limitations. First, the respondents are a convenience sample. Second, self-report data can be flawed, whether through imperfect memories, self-serving bias, conscious deception, and/or limited self-awareness. Given these limitations, we focus on broad qualitative conclusions.

In brief, it was found that most respondents could describe instances in which spreadsheet errors contributed to poor decisions, some with substantial consequences, yet few reported that their organization employs quality control procedures specific to spreadsheet analysis.

The rest of this article is organized as follows. The second section reviews some literature relevant to spreadsheet errors. The third section describes data and methods. The fourth section

discusses results pertaining to spreadsheet use, frequency of errors, reported effects on decisions, and error control procedures. The fifth section discusses the decision processes within which spreadsheets were embedded and also implications for practice and future research.

REVIEW OF THE LITERATURE

Two literatures are directly relevant to the question, "How often do spreadsheet errors lead to major losses or bad decisions?" One notes that spreadsheets are widely used in diverse domains (Gerson, Chien, & Raval, 1992), ranging from familiar manufacturing and supply chain applications (e.g., Buehlmann, Ragsdale, & Gfeller, 2000) to the sciences (e.g., Jain, Banerjee, Gupta, Thomas, & Chandra, 2000) and social sciences (Rydell and Everingham, 1994), and for many purposes, including support of high-level managerial decision making (Chan and Storey, 1996). A second literature documents the frequency of spreadsheet errors. In a dozen studies reviewed by Kruck, Maher, & Barkhi (2003), the average proportion of spreadsheets with errors was 46%. A wider synthesis of audit literature by Panko (1998, 2000, 2005) suggested a rate of 94%, representing the weighted average for spreadsheet audits published since 1995.

Given that spreadsheets are frequently used and frequently flawed, one might expect that spreadsheet errors lead to many bad decisions. Indeed, the European Spreadsheet Research Interest Group (EUSPIG) maintains a Web page of news stories reporting the consequences of spreadsheet errors (<http://www.eusprig.org/stories.htm>). However, spreadsheets are used by so many organizations that even if only a small proportion were hurt badly by spreadsheet errors, there could still be scores of examples. We started with a population of individuals and organizations for which we had no a priori reason to think spreadsheet errors were a particular problem. This

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