



**Spreadsheet-based planning
in today's economy:
Why you're up against the wall**

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Abstract

Spreadsheets are useful tools in many aspects of business, but they cannot support today's complicated enterprise planning needs because they:

- Are prone to data errors
- Cannot handle the complex processes of business modeling and aligning operational tactics and financial targets
- Lack features such as workflow, metadata management and version control for inter-departmental collaboration
- Often cannot provide the immediate, real-time information necessary for rapid corporate decision making

Instead, companies in every industry are turning to more comprehensive, integrated solutions that connect operations and finance and enable continuous planning – without the limitations of spreadsheets.

Overview

Relying on the unreliable

Companies spend countless hours each year developing the business plans, forecasts, reports and analyses that they depend on to drive strategic decision-making and manage performance. It is critical that this information be accurate and timely, but it must also be easy to modify, given today's tumultuous economy. Yet, most organizations continue to rely on spreadsheets, tools that do not enable planning or managing performance with accuracy, completeness, speed and efficiency.¹

The error-riddled spreadsheet

Errors in spreadsheet-based planning can severely compromise corporate performance. Individuals and businesses will run a spreadsheet through various stages, such as designing, testing, modifying, sharing and archiving. This multi-step route introduces risk at each stage, according to Kenneth R. Baker, Lynn Foster-Johnson, Barry Lawson and Stephen G. Powell.² The research team also states, "Opportunities for poor practice, carelessness and serious mistakes exist throughout those stages, and the risk may even be magnified as the spreadsheet matures."

Spreadsheet guru Raymond Panko has observed that a number of systematic audits in recent years suggest error rates in 88% of the spreadsheets examined.³ News outlets support this recurring problem with numerous stories on the world of business problems and the restatements attributable to spreadsheet error.⁴

Given the increased regulatory scrutiny and extreme pressure-to-perform currently faced by most companies in today's turbulent business environment, it is no longer alarming to suggest that even a simple spreadsheet error in expense and risk management, profitability and cash flow can result in considerable damage to corporate credibility and share value.

A look at spreadsheet error

Three types of errors typically occur in spreadsheet model modification, according to Panko and Halverson, who have extensively researched spreadsheet effectiveness.⁵

The first is *mechanical error*, which arises from flawed typing, pointing or other simple miscues. Although a mechanical error might appear to be minimally significant, its consequences can be severe: Incorrectly entered data can affect the integrity of an entire model. Furthermore, if an item is inserted but the rest of the model is not updated to reflect this item, calculations throughout will be flawed. Also, with each added item, the likelihood of mechanical error increases.

A second type of error is *logic error*, where an inappropriate algorithm is chosen or where inappropriate formulas are created to implement the chosen algorithm. The flawed calculations that result will affect not only the worksheet where the error appears, but also the entire model.

The third and most likely type of error, according to Panko and Halverson, is *omission error*, where critical components are left out of a model entirely. As a user labors through worksheets in a complex plan, the likelihood is great that a critical item will simply not be added.

Whether a given error is one of mechanics, logic or omission, the result will be the same: a flawed model and inaccurate calculations, hence an ineffective budget, plan, or forecast.

Spreadsheet flexibility – sort of

Spreadsheets offer flexibility but no real structure. They can, for example, model a reasonable range of business scenarios. But when business users deal with complex, multidimensional plans and forecasts that involve numerous formulas, calculations and organizational drivers, such as gross-to-net planning or analyzing customer profitability, it's a different story. Spreadsheets quickly run up against their natural limits with minimal capabilities such as pivot tables, which introduce their own limitations.

As the world economy bends and buckles and market conditions change, business decision-makers need to revise goals, build contingency plans, add or delete products or services and modify plans and reports quickly. To do so, they must be able to analyze data and model scenarios in real time. To make such changes in a large, complex spreadsheet, these planners must apply both an inordinate amount of time and great care since they might not always know what changes are needed – or where.

According to a recent 2009 study, “APQC Planning and Forecasting Research Results,” budgeting assumptions for 55% of the responding companies are useless by six months into the new year, and analysts spend more than seventy-five percent of their time collecting and validating the data and administering the planning process.

Consider the modest addition of an expense item to a typical business plan. Two options present themselves, both of which are time-consuming and prone to error.

In the first option, users:

1. Manually navigate through the entire plan with its numerous workbooks, worksheets, rows and columns.
2. Insert a new row or column.
3. Enter the desired data or calculation.

In the second option, someone writes a macro. However, creating a macro requires fairly sophisticated programming skills not often found outside IT departments. After a macro is written, tested, de-bugged, and run, decision makers must review the entire model manually to ensure that the macro has achieved its desired result; if it hasn't, then a tedious process of reworking begins. The time someone needs to create, test and debug the macro and then proof the model can be even greater than the time it takes to insert the item manually in the first place. Clearly, neither option contributes to efficient enterprise planning.

Business problems

The challenges and problems of spreadsheet-based planning reverberate past simple errors and the mechanics of updating data. This section looks at the broader issues that spreadsheets create for a business during the process of planning.

Challenges to enterprise planning

Corporations need effective, real-time enterprise planning. Unfortunately, spreadsheets fail to support many aspects of effective enterprise planning.

Collaboration

Successful enterprise planning depends to a large extent on high levels of collaboration and employee participation: the greater the cross-enterprise input, the greater the accuracy and insight a plan will deliver. But spreadsheet use only inhibits collaboration and participation. Because of error frequency and deployment

“Companies that deploy commercial or internally developed software applications are 63% more likely to embrace driver-based planning, which provides critical visibility to early-warning signs.”

–“Charting the Course in Stormy Seas: Planning and Forecasting in Turbulent Times,” by APQC and Beyond the Budgeting Round Table, 2009, p. 5.

difficulties, spreadsheet-based planning demands a constrained, centralized process that – by its very nature – can represent only a small part of a given organization. Consequently, collaboration and participation are further inhibited.

It is possible, of course, to plan using drivers that reflect the way functional units actually operate by creating spreadsheet formulas to translate headcount, units produced, miles shipped and raw materials used into financial terms. But the propagation of such formulas typically leads to increasingly convoluted spreadsheet models that rapidly become impossible to maintain.

Furthermore, any misalignment or lack of alignment of operational tactics and drivers with financial goals can translate into:

- Slow or infrequent forecasting
- Errors in rollups to the P&L, cash flow and balance sheets
- A mismatch of plans down from the top and up from the bottom
- Poor accountability

The time it takes to align the organization can determine who wins or loses in this uncertain environment.

Workflow management

Another challenge to successful enterprise planning is that it is very difficult to manage planning process workflow effectively with spreadsheets. Spreadsheets cannot track data contributor progress – or even whether contributors have begun work at all. It is a laborious task for managers to check on the status of individual contributions to ensure they are submitted on time. And it goes without saying that

an increase in participation will ensure greater difficulty in tracking contributor progress, given the increased volume of spreadsheet contributions. The end result, then, is a process that can only move forward at the pace of the slowest participant.

Version control

Spreadsheet-based approaches to planning are characterized by poor version control – that is, the difficulty in knowing whether everyone is using the most recent version of a given plan. Moreover, when a plan is revised and passed on to contributors, there is no assurance that all have actually disposed of previous versions and are working on the most current one. Poor version control will result in a consolidated plan based on inaccurate data or – owing to a mismatch of model structures – the inability to consolidate at all.

Aggregation

The process of aggregating inputs from multiple users and spreadsheets also inhibits planning effectiveness. A single person or task group must collect the numerous spreadsheets and consolidate them into a single version. Even if individual spreadsheets are error-free, consolidation is a tremendous undertaking that can lumber on for weeks. A particular insurance company used to gather data from more than 27 databases; using popular spreadsheet software as the “storehouse” for 80 spreadsheets, the business team was only able to accomplish this task once a quarter.

In addition, model mismatches can arise from an item inappropriately added to a submitted model update. If submitted models are not identical, data will not consolidate correctly. And of course, aggregation difficulties increase with the number of spreadsheet contributors in the organization.

Uniform, centralized data

Spreadsheets are typically created and propagated by finance departments, who – not surprisingly – tend to use concepts and terms quite familiar to themselves, but unfamiliar to other organizational units. There is no centralized approach to metadata and business rules definitions, and no sharing of metadata or metadata definitions. This leads to mismatched numbers in models and reports. For completely aligned planning and forecasting, it is essential that all users – department heads, directors, analysts, knowledge workers, business leaders and executives – be able to access the data with a common business view and an understanding of their organization's data assets.

**Spreadsheet planning in real time?
Impossible!**

The error-prone, narrowly focused, cumbersome spreadsheet planning and analysis process simply does not permit companies to alter plans, reforecast, or modify budgets frequently, much less in real time.

For example, because the spreadsheet-based planning process moves so slowly, timely gathering of cross-enterprise information to reallocate funds for accelerating research and new product creation typically proves a near-impossibility, a competitive disadvantage in an economy in which timing is critical. When conditions demand rapid reaction, but real-time information is lacking, executives might be forced to rely on educated guesswork or even a “gut-level” hunch.

Technology can speed up planning and forecasting and even reduce budget iterations. APQC and the Beyond Budgeting Round Table (BBRT) recently reported that organizations using “commercial and internally developed software applications [for planning and forecasting] are 145% more likely than [organizations using] spreadsheets to have real-time data fully available.” (See *Figure 1*.) APQC and BBRT also report that organizations using commercial or internal applications are 59% more likely than spreadsheet users to land within 5% of planned targets.” (See *Figure 2*.)⁶

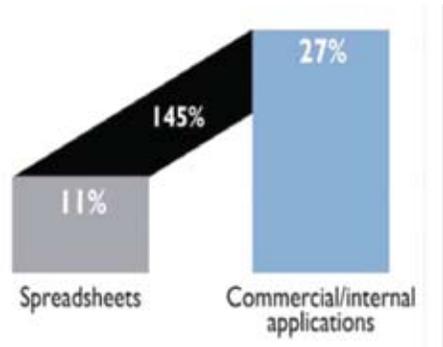


Figure 1

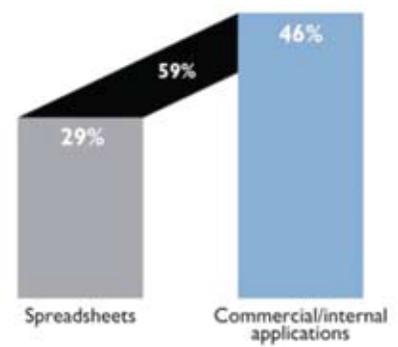


Figure 2

The solution

To be freed from the limitations of spreadsheets, companies can adopt a true enterprise planning and analysis solution that connects operations and finance and enables continuous planning. Enterprise planning and analysis solutions powered by IBM Cognos® 8 business intelligence are the undisputed leaders in planning applications. These solutions represent unrivaled domain expertise in every aspect of the planning process – budgeting, forecasting, modeling, analytics, reporting, performance management – for virtually every industry.

For organizations looking to improve both operational and financial planning, enterprise planning and analysis solutions powered by the IBM Cognos 8 platform provide unprecedented power and flexibility to turn sophisticated strategy into discrete plans, budgets and forecasts that drive business optimization and market competitiveness.

Conclusion

In fairness, it must be said that spreadsheets are useful personal productivity tools for most areas of human endeavor – but not for enterprise planning. Spreadsheets can manipulate numbers, it's true, but spreadsheets are greatly limited because they depend on fallible human users to generate complex formulas and macro routines. And, because spreadsheets work poorly in collaborative environments, they are unable to access and aggregate data from different sources and can hardly be considered an enterprise solution.

Further, the use of spreadsheets for enterprise planning and analysis can result in significant error at a cost of millions and can create serious doubt about the integrity of strategic plans. Spreadsheets make plans and reports difficult to maintain, and inhibit – rather than facilitate – a collaborative enterprise-wide planning process. And as business plans and analyses become larger, more complex and more dynamic, the inadequacy of spreadsheet-based systems is only magnified.

True enterprise planning solutions, such as the enterprise planning and analysis solutions based on the IBM Cognos 8 platform, free companies of their reliance on spreadsheets and can be applied to the planning process in virtually any industry



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Endnotes

- 1 According to a 2008 Hackett Group study, 56% of companies use spreadsheets at the corporate level as their key tool for annual planning and budgeting; 63% use spreadsheets as the key tool for these processes at the division level. (The Hackett Group, "The Book of Numbers," 2008.)
- 2 "Spreadsheet Risk, Awareness, and Control," by Kenneth R. Baker, Lynn Foster-Johnson, Barry Lawson, and Stephen G. Powell, Tuck School of Business, 2007, http://mba.tuck.dartmouth.edu/spreadsheet/product_pubs.html
- 3 "What we Know about Spreadsheet Errors," by Raymond Panko, *Journal of End User Computing's*, Special issue on Scaling Up End User Development, Volume 10, No 2. Spring 1998, pp. 15-21, Revised May 2008.
- 4 <http://www.eusprig.org/stories.htm>
- 5 Panko, R & Halverson, R (1996). "Spreadsheets on Trial: A Survey of Research on Spreadsheet Risks," Proceedings of the Twenty-Ninth Hawaii International Conference on System Sciences, Maui, HA, January 1996.
- 6 "Charting the Course in Stormy Seas: Planning and Forecasting in Turbulent Times," by APQC and Beyond the Budgeting Round Table, 2009, p. 3-4