

**A BPM Partners White Paper**

# Performance Management Data Strategies for Small and Medium-sized Businesses

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## Executive Summary

Most organizations today rely on multiple transactional systems to run their businesses. The list often includes transactional application/general ledger/enterprise resource planning (ERP) systems, customer relationship management (CRM) applications, supply chain management (SCM) solutions, human resources systems, and so on. Each is a purpose-built system usually with its own unique database structure. If a best-of-breed approach were followed, it is likely that each of the systems would run on its own database platform. Even if all of the components were purchased from a single vendor there still would be the possibility that the databases were not integrated. This is especially likely if the vendor has engaged in significant merger and acquisition activity, as many have in recent years.

The lack of integrated transactional or back-end systems is especially common in the small and medium-sized business (SMB) market. While this scenario is acceptable when utilizing only the data in any one of these systems, it presents problems when analyses require data from more than one system. As an example, most business performance management analyses require retrieving and combining data from multiple systems. This paper discusses the ways some companies have tried to address this issue in the past and proposes a solution targeted to SMBs.

## Performance Management for the SMB

There are a number of ways a company can pull together transactional data in order to do the analysis required for managing performance. We will look at some historical options, including:

- Loading data from flat files (text files)
- Open database connectivity (ODBC)
- Data warehousing with a business intelligence (BI) layer

We will then explore an alternative to these approaches based on technology that has been built specifically to address this challenge:

- Performance management applications

## Alternative 1: Flat Files (Text Files)

Flat files date back to the earliest days of computing when they were used for batch processing. To transfer information from one application to another, the source application will export the information into a flat file (or ASCII text file) and the target application will import the data from that intermediary flat file. Since text files are universally accepted by all server platforms, there is no problem moving your information from one server to another. However, flat files are very prone to data corruption especially if the size of the database grows beyond the server resource design.

This approach is also somewhat labor intensive. It is essentially a manual process that requires files to be in the precise format supported by both the receiving and sending systems. If they support different formats, someone typically has to intervene with data transformation processes to clean up the extracted file before it can be loaded into the receiving system. In most cases a data map needs to be created to define how items flow from one system to the other.

Lastly, this method is the least secure of all the approaches. If this flat file is intercepted by anyone they can most likely read the line items and data values contained in the file without any special software.

## Alternative 2: Open Database Connectivity (ODBC)

The ODBC [specification](#) offers a procedural Application Programmable Interface (API) for using [SQL](#) queries to access data. ODBC provides the standard of ubiquitous data access because hundreds of ODBC drivers exist for a large variety of data sources. Data can be transferred directly from one application to another using an ODBC driver without the need of an intermediate staging area, as long as both the source and the target are ODBC compliant. This approach is much more secure than flat files in that it requires an ODBC compliant application to access the data and usually requires an ID and password.

ODBC setup is as easy as writing a SQL statement, but there are some limitations to using only ODBC. For one thing, it requires that the target database has the correct fields and that no data transformation is required. And of course if there are changes to the source or target database structures, the ODBC connection may need to be modified. The best scenario for ODBC in a data warehousing environment is when it is used in conjunction with some ETL (extract, transform and load) capabilities. Typically there is going to be some requirement for joining fields, flipping signs, etc., as data moves from one database to another. Ideally the system should maintain the ability to drill down to transactions using the ODBC functionality.

## Alternative 3: Data Warehouse

Data warehouses were designed to answer the need to simultaneously access disparate data sources. A Data Warehouse can enable an organization to centralize historical information for reporting purposes as well as perform complex queries and analysis, such as [data mining](#), on the information without slowing down the [operational systems](#). With all of the data in one place, holistic performance analysis should run smoothly. However, there are several implications when implementing a data warehouse in the SMB space.

### Data Warehouse Drawbacks for the SMB

If considering implementing a data warehouse, the SMB would do well to consider some of the possible downside factors, outlined below. This is not to say that data warehouses are bad, just that they may not be the right solution for every business, and even where they exist are likely not the complete solution.

### Complex Projects with High Maintenance

A number of factors make data warehouses complex. One is the need for data transformation, as discussed in relation to flat files. Data from various source systems needs to be normalized in order to bring it together in a common staging area, then may need further transformation to meet the requirement of the DW platform (see the illustration below). Someone has to create and maintain these transformation processes.

Complexity generally increases maintenance requirements and costs. Most data warehouses are challenged to keep up with the pace of business change (reorganizations, acquisitions, etc.) and so are constantly out of date. Several studies point out that over three quarters of respondents were forced to make decisions "blind" due to late or insufficient business information. Consider a data warehouse with just ten source systems. A major change in one of its sources will impact the warehouse schema,

and it may take months to fix the schema, the load routines, and the reports that are impacted by the change.

Given the velocity of events in the business world, many companies can't afford to wait for the implementation of a data warehouse. Some experts have even said that these complications can eventually strangle a business. So what happens in reality? Armies of Excel analysts in Finance get the data via email and have to manually number-crunch to generate analysis for anything really critical while the warehouse lumbers on with out-of-date information.

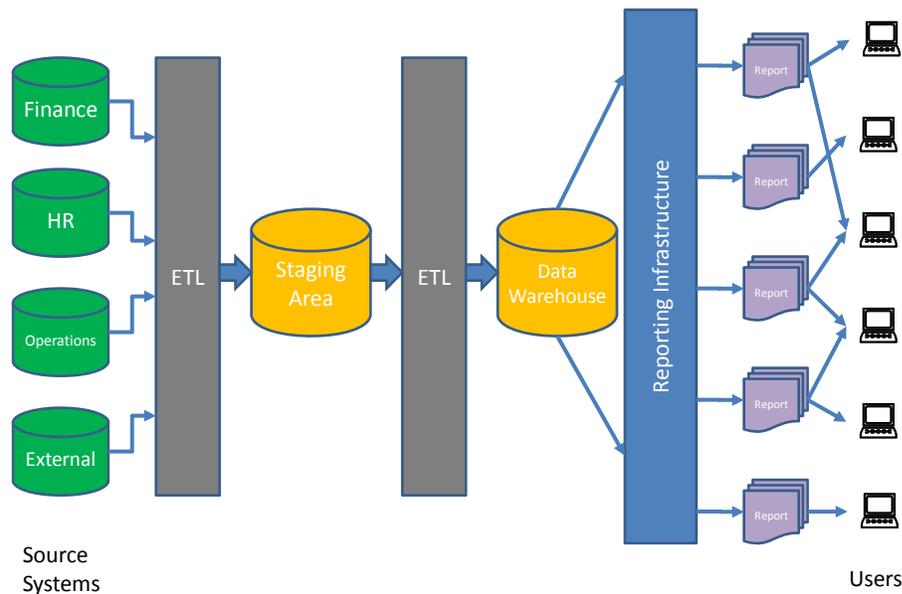


Figure 1- Structure of a data warehouse

### High Cost of Ownership

Data warehousing infrastructure requires not just the underlying transactional software, but also data transformation and analysis tools, expensive hardware and servers, and the high salary costs of data warehousing and business intelligence professionals. In addition, development efforts can easily take up to two years. In addition to software licenses and infrastructure, the maintenance requirements of a complex system, discussed earlier, also add to cost of ownership. In other words, data warehouses may be too costly for many businesses. This is especially true for SMBs who, while they need to analyze their transactions, are less able to justify the total cost of ownership.

### Missing Data

Cleansing and extracting data from multiple systems is a great way to centralize data into a single repository, but in the finance world of reporting, budgeting and forecasting, you almost always need to connect to the data source directly. Why? Because the information

you need simply isn't in the Data Warehouse. The detail you need got lost in the normalization process, and is available only in the HR system or the Sales system.

You can have as many pretty reporting tools and dashboards as you like but you need accurate and timely information which may not be available in the data warehouse. Interfacing directly to multiple data sources offers a definitive advantage in that the data is fresher and more dynamic. When you can relate to the data at a metadata level, then if the data definitions of the source change, your reporting application will be synchronized to the changes. In a data warehouse, the data may have become detached from the metadata and thereby become static.

So what's the point of having a data warehouse in the finance world in the first place? That's a good question from a Finance point of view. It is arguable that Data Warehouses may not provide a high ROI for a finance executive when it comes to budgeting, forecasting and corporate performance management purposes, where data typically changes only once a month.

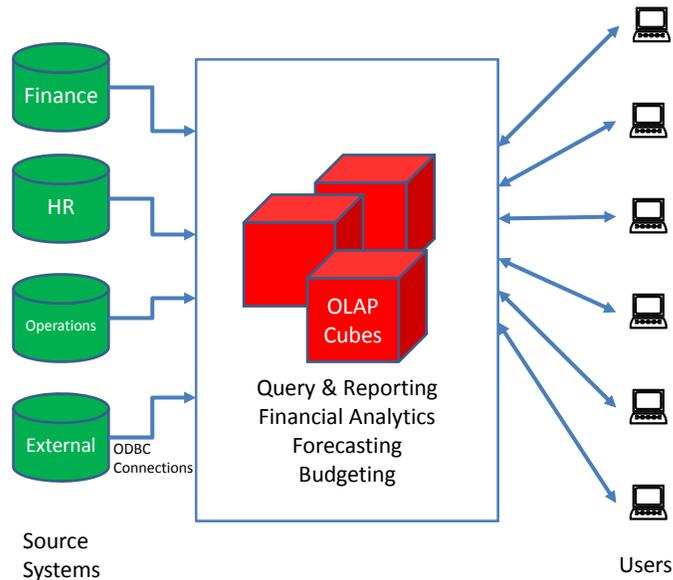


Figure 2- Direct link to operator data sources

### Limited data drill-down capabilities and data ownership

Related to the problem of missing data is the lack of drill down capability. As discussed, reports from a data warehouse are generated from a subset of information that has been transformed and cleansed. This results in the problem of static reports with connection to the underlying transactional detail, and therefore no ability to drill down into that data for further analysis.

In general, the complex structure of the data warehouse typically does not allow a business user to create queries independently. Furthermore, the cleansing process often sheds various business rules which may lead to data owners losing control of their data and raising issues of ownership (responsibility and accountability), security and privacy.

It is easy to see why SMBs should be careful in deciding whether to use a data warehouse. The data warehouse is a technology architecture that has brought value to many companies. However, vendors often paint a rosy picture and fail to highlight the challenges that come with data warehouses. Only after a company has analyzed both the pros and the cons should they decide if a data warehouse is truly worth the time and cost.

### **Data Entry Dilemma in Data Warehousing**

Data warehouses are primarily constructed for reporting purposes with new information added continuously added in from different line of business applications and sources. Information that is derived from historical data (e.g. budgeting, forecasting) does not reside in LOB application and hence does not reside in a Data warehouse.

For users to enter this data in a user friendly fashion would require IT development of an application to interface with the data warehouse. Each template for data entry purposes would require a separate application to be built and would involve developers, data warehouse administrator(s) and a thorough understanding of the implication and impact of the changes. This will very quickly result in focusing more on the data warehousing aspect of the issue rather than the business challenge of the budgeting and forecasting process, as continuous IT resources will be required even for simple tasks and modifications.

### **Lack of Focus on the Business End User**

Data warehouses are built and maintained by technology experts in the IT department. On the surface this seems appropriate, but it can present issues for the finance team. Since the primary market for the business intelligence vendors that provide data warehousing tools is IT, they assume a certain level of technical knowledge that is not always present in the business user community. This becomes a problem when a financial analyst tries to perform an ad-hoc query. A typical data warehouse reporting tool will require the end user to define the rows, columns and specific cells on a grid where they want to access their data. Purpose-built performance systems, on the other hand, will allow finance users to reference line items, cost centers and data categories using familiar terms. For example, users can simply request 'sales for France for last quarter compared to budget'. Modifying or creating new reports is also a challenge that often will require the assistance of IT. The holy grail of end user self-sufficiency is often not achieved with a data warehouse approach.

## A New Alternative for Financial Analytics

So the question is: How can SMBs leverage their data, as larger enterprises are doing with data warehouses, but without the complexity and cost?

The ideal answer for an SMB is to implement a purpose-built performance management application solution. This approach avoids re-inventing the wheel and as such can be highly cost-effective. The product already understands the budgeting, consolidation, and reporting processes. It has built-in financial intelligence that enables it to distinguish between balance sheet and income statement accounts. It speaks the language of business and will be relatively intuitive for the typical end user.

Most importantly, the system will create the necessary data structures behind the scenes. IT will still be involved, of course, and will play a critical role in helping set up the initial links to the source transactional systems and in maintaining the physical infrastructure. However, much to the relief of both IT and the business users (especially during high pressure closing cycles), IT will not be required for routine access and report maintenance.

What can a purpose-built application offer? This could be a document unto itself, but some of the things to look for include:

- User-friendly ad-hoc reporting and analysis
- Drill down to transactional data
- Budgeting input functionality (spreads, allocations, etc.)
- Easy Forecast/Re-forecast creation
- Scenario modeling
- Workflow management
- Dashboards and scorecards

All of the above are available in BPM offerings on the market today.

## BPM Contribution to Existing Data Warehouses

In cases where companies may have the budget to implement a data warehouse, or already have an existing data warehouse, it still makes sense to have a BPM application as part of the environment. For one thing, BPM offers a business management layer that is not intrinsic with data warehouses.

Furthermore, the OLAP cubes generated by some performance applications can become a direct consumable for the data warehouse ecosystem. This is similar to creating a data mart – a specialized version of a data warehouse. Data marts contain a snapshot of operational data based on past trends and experiences. The creation of a data mart is predicated on a specific, predefined need for a certain grouping and configuration of select data. The integration of the OLAP cubes enhances the overall corporate reporting and business intelligence demanded by senior executives.

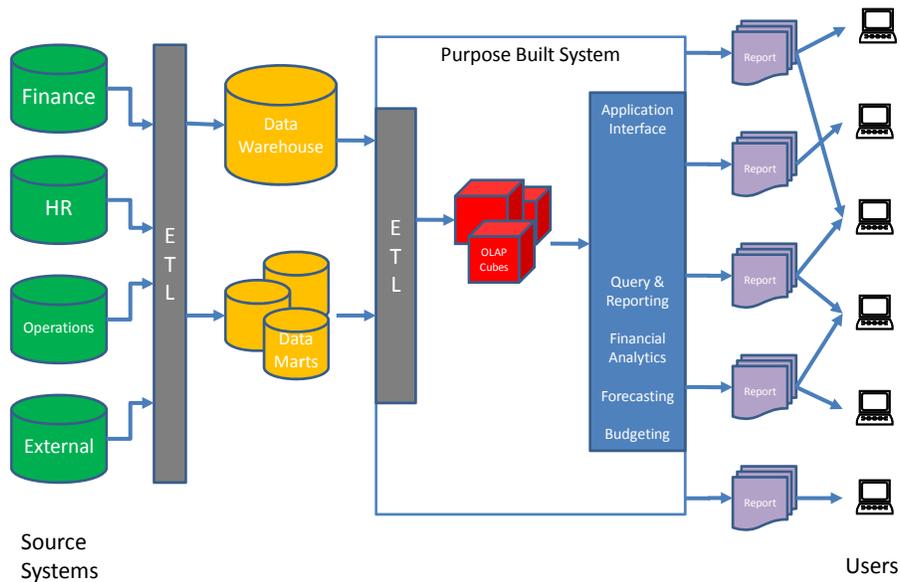


Figure 3- Business Performance Management solution integrated with a data warehouse

## Conclusion

If the primary goal of an SMB's data warehouse is to enable holistic, comprehensive analysis of key business data, then a performance management system can meet that need. It can do so without committing significant IT resources and without a major technology investment. There is no need for a substantial expansion of the IT infrastructure, nor the in-depth training required by a typical data warehousing project. Using its own database, a performance management system can collect plan data directly. This, along with access tools designed for business end users, allows a performance management solution to provide all of the benefits of a data warehouse without the cost and maintenance headaches.