

Sustaining an Effective ABC/ABM System

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Abstract. *The purpose of this paper is to describe the Activity-Based Costing (ABC) and Activity-Based Management (ABM) system and techniques to sustain them as a permanent and repeatable production reporting system, not just for one-off analysis. A comparison is made between ABC/ABM modeling software that extracts source data and business systems that include ABC/ABM modeling features. There are presented the stages of updating, running and rerunning the ABC/ABM system. The resulting information calculated and provided by the ABC/ABM system are analyzed and interpreted in terms of a multidimensional data analysis. The article ends with the authors' conclusions about the benefits of continued operation of sustaining the ABC/ABM system.*

Keywords: Activity-Based Costing; Activity-Based Management; system; multidimensional data analysis; update.

JEL Codes: M41, M15.

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1. The ABC/ABM system. Conceptual approach

The Activity-Based Costing system is used to determine product, channel and customer costs needed to gain insights and make business decisions. This system is commonly used as a supplement to the existing system's financial accounting system of a company. Most organizations that use the ABC system have two systems:

1. The official costing system, which is used to prepare external financial reports for investors and regulatory agencies;
2. The Activity-Based Costing system, which is used for internal decision making and management activities.

The ABC system(1) can be defined as a methodology that measures the cost and performance of cost objects, activities and resources based on cause-and-effect relationships. Cost objects consume activities and activities consume resources. Resource costs are assigned to activities based on their use of those resources, and activity costs are reassigned to cost objects (outputs) based on the cost objects' proportional use of those activities.

ABM(2) is defined as a discipline focusing on the management of activities within business processes as the route to continuously improve both the value received by customers and the profit earned in providing that value. ABM uses activity-based cost information and performance measurements to influence management action.

In short, ABC calculates the math (that converts data into information), and ABM deploys the math's resulting information for analysis, insights and decisions.

Sustaining an Activity-Based Costing (ABC) system goes beyond fulfilling its initial implementation success factors to avoiding the factors that in some cases cause companies to abandon (sometimes temporarily) maintaining the system. Most experts agree with the idea of regularly refreshing the calculation of ABC data contained in the enterprise's database. The Activity-Based Costing model assignment structure should be regularly modified as relationships change. The source input data and its extraction typically remains the same (unless new data sources are added).

2. Individual ABC/ABM Model vs. integrated ABC/ABM System

In many enterprises, a well-designed ABC/ABM model that is regularly updated is sufficient for their informational needs. An off-line ABC/ABM model implementation allows enterprises to significantly improve their management costs information without affecting the daily transactional information system. The ABC/ABM system gathers and applies non-financial

information (e.g., resource and activity driver quantities) to re-assign incurred resource expenses into calculated costs.

The commonly accepted approach for organizations of any size – small to large – is with commercial ABC modeling software (e.g. SAS' SAS ABM) that extracts transactional data from business systems (e.g., general ledger, production management). In some cases, an ABC module may be included with enterprise resource planning (ERP) software. (Calculating ABC in a spreadsheet is problematic because there are multiple levels of cost re-assignments and not all have a direct column-to-row relationship. Spreadsheets, like Excel, are also not scalable in size.)

It is eventually valuable to integrate a permanent and repeatable ABC/ABM system (Figure 1) into the daily management accounting and ultimately with the entity's management system. In effect, the ABC/ABM system expands beyond its traditional role of management accounting reporting and becomes a primary source of information to improve product and customer rationalization, profitability performance, and planning, and to reduce or eliminate non-value-added by activities to improve productivity. In short, all input data collection is defined to satisfy the ABC/ABM system requirements, such as the general ledger chart of accounts, cost center structure, inventory/cost of sales accounting procedures, interdepartmental charges, accounts payable practices and payroll distribution costs, and any other facet of the cost accounting system. No major changes are needed with the business process data processing systems (Figure 2) because these transactional systems are supporting the effort of collecting, storing and processing the data used in the managerial accounting reporting.

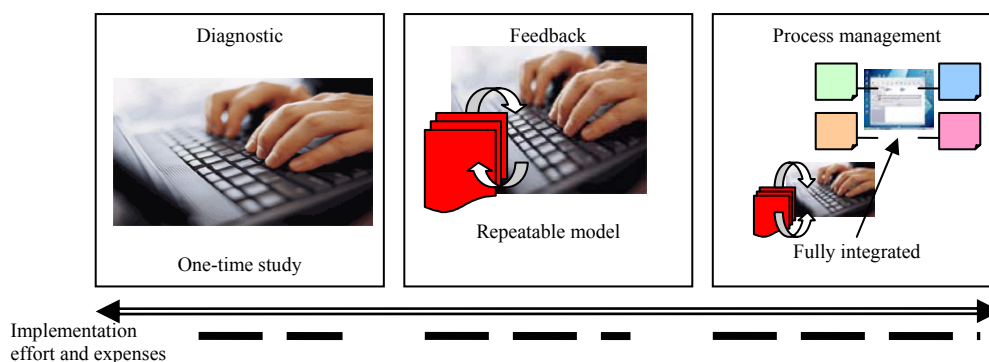


Figure 1. Stages of implementing an ABC/ABM system

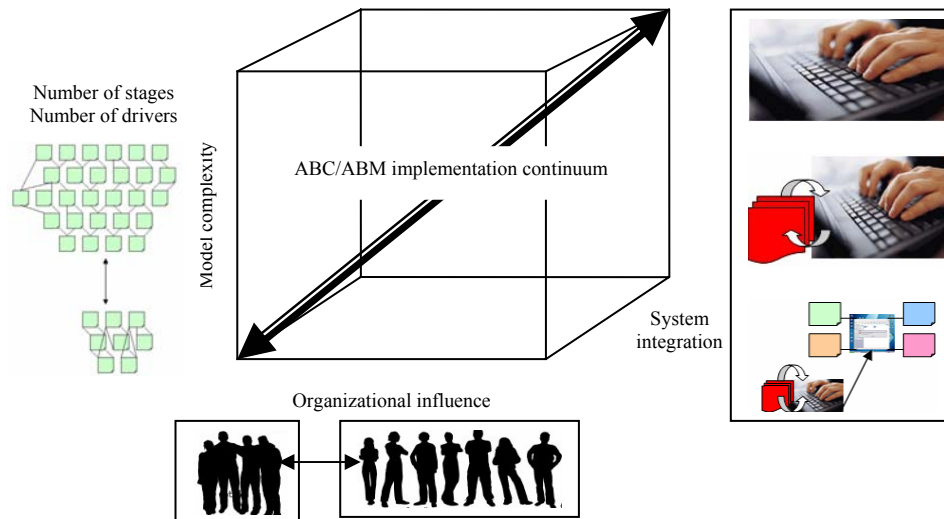


Figure 2. Diagram of a higher-level integrated ABC/ABM system

3. Updating, refreshing and rerunning the ABC/ABM system

Enterprises that have successfully implemented an initial “pilot” ABC/ABM model, although designed with less granularity (i.e., more summarized) and acceptable but not with perfect cost accuracy, will benefit by improving their activities’ and cost drivers’ dictionary of descriptions based on their initial learning. The initial ABC/ABM model can be iteratively revised with disaggregation (e.g., work activities into sub-activities; product families into individual products).

If the approach, methods and assumptions used in the initial run of the pilot system are not fully documented, this makes the reconstruction of later stages (i.e., iterations) more difficult. Preparation and loading of all data can be a difficult task because often the source input data comes from multiple and disparate databases that use various software languages. Hence, the source data is disconnected and non-similar. But these obstacles are surmountable through automation.

As a rule, to earn acceptance from employees and managers, any new information that is not already collected for business process management should be collected. For missing but required data, estimates from the fewest (ideally most knowledgeable) employees can be collected. Remember that all ABC cost assignments will normalize to 100%. Therefore reasonable estimates from informed employees are adequate for reasonably accurate costs. The dominant determinate of cost accuracy comes from the ABC model cost assignment relationships. Cost driver quantities are secondary influencers. If the cost driver quantities (or %s) are reasonable, with a good ABC model cost structure design, the final cost objects’ costs should be accurate enough for the decisions that use the cost information.

Most companies that develop an integrated and automated ABC/ABM systems proceed further to regularly re-running it. Re-running the model is a periodic event (e.g., monthly or quarterly). This means that the pilot system will eventually become a permanent production system. The ABC/ABM model will have to be manageable, reliable and repeatable. The resource expense data (e.g., from the general ledger) must be complete for the period. It is 100% accurate. However not all resource and activity drivers need to be refreshed each period unless the time period's quantity distribution is sufficiently different than the ABC model's existing distribution from a past period. This reduces the administrative effort to maintain the model without introducing significant error. Remember that the level of detail and accuracy depends on the type of decision being made with the cost information. Few if any decisions require 99.9% accuracy – and most much less.

In practice, all data in the final model should not be discounted entirely, even when he went from being a pilot system to a permanently production system (Figure 3). This figure shoes a diagram of a high-level, integrated ABC/ABM system.

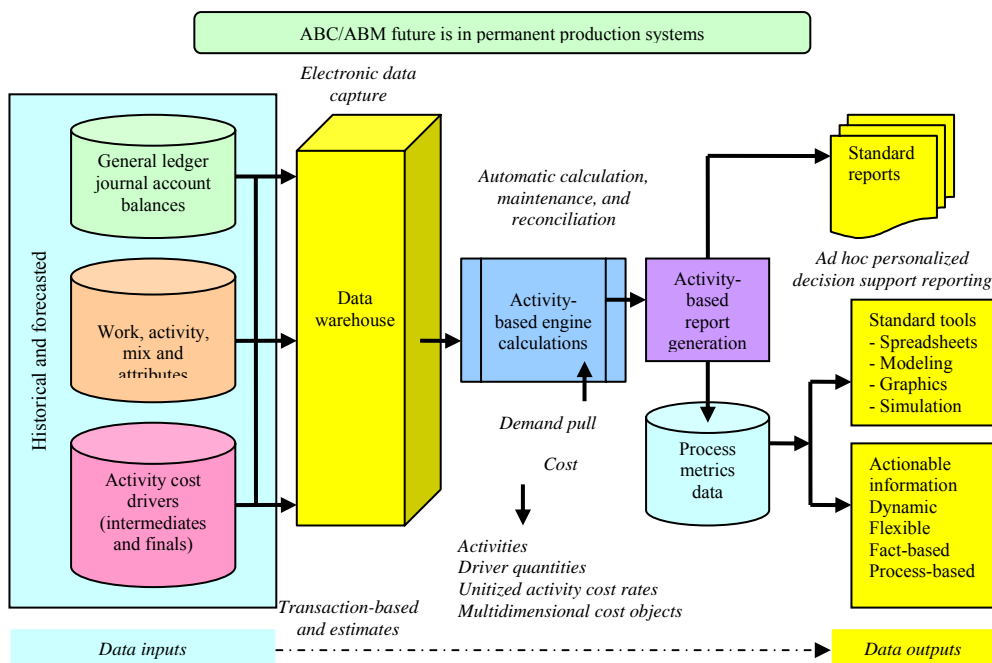


Figure 3. ABC/ABM production system

An ABC/ABM model is built modular (Figure 4). For an ABC management accounting specialist, the model must fully reconcile in its monetary amounts. That is, the total monetary amount of resource expenditures must be equal to the expenditure record log of activities; then those two equivalent totals must also be the same total costs of the final cost objects. In short, an ABC model is full absorption costing that complies with costing's "causality principle" from its resources through activities to its final cost objects. It models a consumption view of how cost objects place demands on the resources' capacities. Tracing and assigning costs according to the flow of costs from resources through activities and eventually into cost objects will accurately capture the diversity of cost objects. Tracing captures the distribution in which the employees' time is estimated to their work activities, all during the same period of time. To reduce the administrative effort, it is advisable for a knowledgeable functional representative to estimate the time distribution for his/her co-workers. This relieves employees from this burdensome work, and the representative's estimates will rarely introduce any significant cost inaccuracy.

There is a popular ABC/ABM principle that states, "It is better to be approximately correct rather than precisely inaccurate". That is, it is better to be roughly right than exactly wrong. Although it may be counter-intuitive to many, precision with input data does equate to accuracy of the calculated costs. The accepted 80/20 law of Pareto applies to ABC modeling, and enterprises cannot afford to construct a perfect and precise ABC model. It will be excessively over-designed well past diminishing returns of extra cost accuracy for the incremental administrative effort. If some managers believe they require more accuracy, then through sensitivity analysis, it can be determined what one driver (or cost assignment relationship) will yield the highest incremental improvement. The model does not need to be improved everywhere – just locally. Before refining the model for more accuracy, always ask the user, "Is the climb worth the view?" That is, will the user make a different decision with just a little more cost accuracy?

When parts of the organization's events and costs behavior in the next period of time (e.g., the sales mix by product and the time distribution of the employees' work activities) are almost identical as in the past (existing) period, then, as previously mentioned, it is acceptable to repeat using some of the earlier cost driver data without the need for revision.

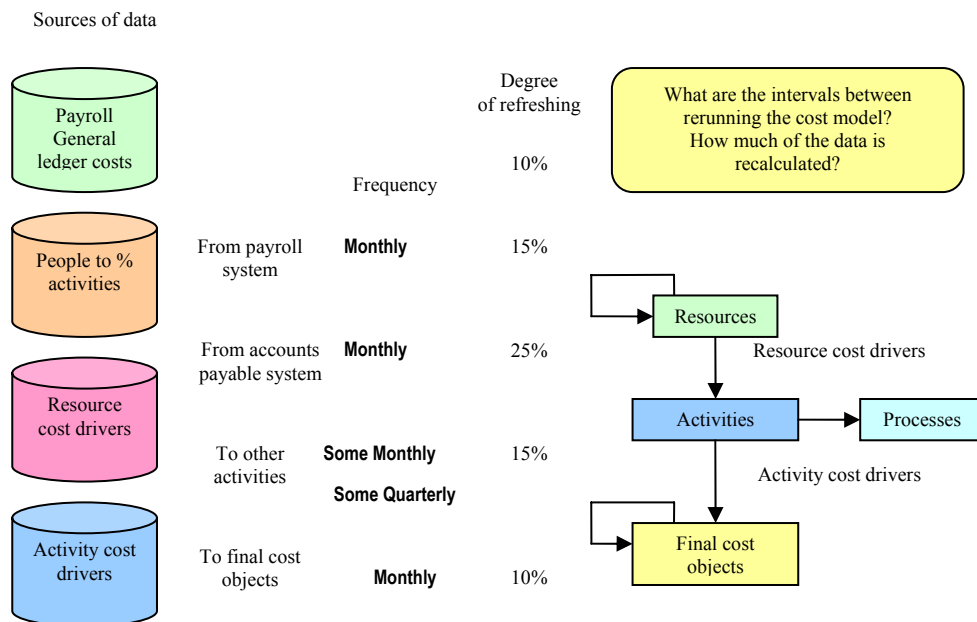


Figure 4. Modular approach of refreshing cost data

Figure 4 shows that only the data that should be replaced, excluding the general ledger expenses which all are new, are those that significantly change and are not constant between successive time periods. This practice will not significantly degrade the accuracy of the costs from the calculations. This ability to retain reasonable accuracy eases the otherwise huge amount of administrative effort that would be required to update the current model. The result of this practice is each time period's ABC model's costs provides reasonably accurate information for users to gain insights and make decisions with the least administrative effort.

For next period changes to the past period model (except for the obvious new period's total resource expenses), the changes should be justified by these three conditions:

1. The number of employees hired or removed or the employees' time distribution on work activities would have changed significantly.
2. There is a substantial change in the consumption distribution profile of the final cost objects (e.g. products) consuming activities. This includes any additions and abandonment of products, services or customers.
3. New activities within a business process are initiated or existing activities are eliminated.

In practice, management accountants will typically download the expense balances from the general ledger's accounts of expenditure management log record with automated links. This interface of a journal register maintains credibility for end users that might discredit the results of the model where balances do not reconcile with the "official" record spending register. This interface takes into account both direct costs and indirect costs of activities.

The processing time for resource and activity drivers can be significantly reduced. Commercial ABC/ABM software provides automated collection of data in ways that are simple and noninvasive to employees. Much source data can be directly downloaded from a business system. Where that is not the case, for most data providers, they can receive electronically (via e-mail or through their organization's communication network) an online entry form for either or both resource and activity cost driver quantities (or %s). The only task is to collect reasonably good driver quantity data from the functional estimators. For resource drivers, this would include how much time (or the percent distribution totaling 100%) employees are spending on their specific work activities (from the "activity dictionary") over the defined period. For activity drivers, this would include how many "units" (or the % distribution) that final cost objects consumed of the activity. The data for both types of cost drivers will then be returned electronically to the ABC/ABM model as input for the model's calculation.

This technology solves any problems, inconsistencies, or lack of responses. Firstly, if the employee's responses are not reported per pre/agreed scheduled due dates for the input form, a notification of the non-completed form will be transmitted to the non-respondent's supervisor (which is an incentive for an estimator to complete and submit them).

4. Multidimensional data analysis

One of the key objectives of an ABC/ABM system is to provide managers and employees with knowledge about their organization's economic and cost structure and to stimulate them to ask profound questions about the cost behavior of their organization. ABC/ABM is a focusing method providing cost transparency and visibility. As organizations put more emphasis on learning and discovery, managers and employees will be encouraged to explore more unanswered questions than through traditional and standard reports. Standard reports do not provide answers quickly enough. Most managers and employees are impatient when it comes to discover and learn – they want immediate answers and do not want to wait for the next reporting period. Luckily for them, the union between an ABC modeling system and multidimensional exploration software provides immediate answers.

Multidimensional analysis allows visualization of the same costs by multiple categories such as: products, customers, distribution channels (e.g. wholesale, retail), sales regions, sales types (e.g. promotion, standard, special), etc. Multidimensional reporting enables end users to separate, mix, sort, forecast, pivot and sum up data on organizational and the ABC model's structure's categories. It can perform calculations instantaneously. One of the ideal applications of the ABC system is the cause-effect analysis of profit (or loss). For example, which customers are more or less profitable – and why?

Commercial ABC/ABM software includes a multidimensionality feature that turns a day's effort of analysis into minutes for the employees accustomed to work with standard reports for end of month. This allows them to interactively explore and analyze the organization's costs at the enterprise level and at the cost driver level. For the first time, managers can really understand what it means to really run a business.

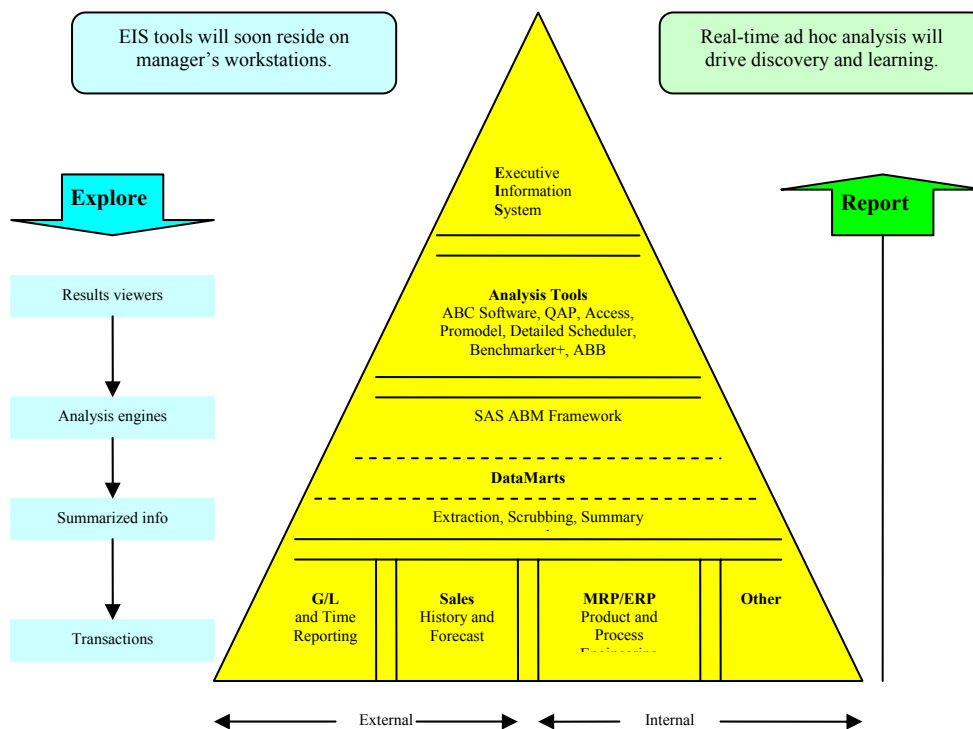


Figure 5. Multidimensional ABC system

Figure 5 shows a pyramid of software tools with the source data at the base. In the Information Age, the employees will use analytical tools and executive information systems (EIS) to analyze data. The ABC/ABM system is a modeling tool, not a complete solution. Its information brings visibility to problems and their symptoms for which solutions can be derived, researched, and implemented. Software like On-Line Analytical Processing (OLAP) for query and drill-down reporting is an essential tool in the tool box, along with other tools like regression and correlation analysis.

In the future, as ABC/ABM software is designed for the casual user, analysis for the business will expand from dedicated analysts to all managers and employees with computer workstations and laptops in the network. Instead of the few analysts who spend their time analyzing and trying to communicate conclusions, managers and employee teams will spend a part of their time browsing and analyzing data using multidimensional software. They will navigate intuitively with the ABC data system that matches their mental model in the chain of activities and costs flow through the internal and external supply chain buildup. Proficiency with OLAP will be common.

5. Advantages and disadvantages of the ABC/ABM system

The ABC/ABM system helps managers to properly manage the indirect costs (by activity) and to understand the profitability of products, channels and customers. It therefore provides a powerful tool for making decisions.

Advantages of implementing the ABC/ABM system include:

- Correct determination of costs associated with products, services, customers, distribution channels, etc;
- A better determination and understanding of the activity costs behavior;
- Allows cost calculation of processes, and supply and value chain flows;
- It integrates well with other programs providing continuous improvement;
- It makes visible non-value and low-value added activities;
- It supports the performance management dashboards and balanced scorecards;
- It facilitates benchmarking by assuring comparability.

Disadvantages of the ABC/ABM system include:

- Implementing an ABC/ABM system is a project that initially requires some dedicated resources. Once implemented, such a system must be maintained, and its model's cost assignment structure will need

revisions. Source input data (e.g., resource expenses, cost driver quantities or %) must be collected, verified, and entered into the system.

- Managers are still accustomed to use traditional systems that cost less to operate.
- Activity-Based Costing information can be easily misinterpreted and should be used with care when it is used for analysis and in making decisions. Before taking any significant decision using Activity Based Costing data, managers must identify which costs are truly relevant to those decisions.
- Reports generated by these systems are typically not in accordance with generally accepted accounting principles (GAAP). Therefore, an organization using ABC/ABM will have two cost systems – one for internal use and one for preparing external reports. For example, there will be two different costs for the same product, which can be confusing unless the employees are educated as to why a difference exists.

6. Conclusions

In conclusion, the objective of an ABC/ABM system is to provide knowledge to managers and employees, not just basic data. Standard reports usually do not provide answers, but ideally should lead to questions. Both standard reports and software programs are two-dimensional environments with limitations. The objective is to assist employees to shift from being reactionary to being active participants where they can intelligently create and shape the future of their organization. In conclusion, the ABC/ABM pilot system needs to become repeatable with credibility so that it can lead to operational improvements and better strategic decisions about rationalizing products, services, channels and customers. Having ABC/ABM reporting systems that communicate in monetary terms (e.g. Euros, dollars, lei), the language of business, will serve to operationalize process-based thinking.

Notes

(1) The CAM-I Glossary of Activity-Based Management, version 3.0, edited by Paul A. Dierks and Gary Cokins, (Bedford: CAM-I, 2000).

(2) Idem.

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