

: *What is a DSS cost benefit analysis?*

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Decision support system cost benefit analysis is one technique used to determine if a proposed DSS should be built and implemented. A cost benefit analysis identifies and quantifies all the positive factors associated with the DSS over its planned period of use. These are called the benefits. Then one identifies, quantifies, and subtracts all the negative factors for the same time period, called the costs. The net amount in dollars is usually discounted and a positive return suggests the DSS project is desirable. Some of the costs and benefits are difficult to quantify in financial terms. For example, the primary benefit of DSS should be improved decisions. This intangible benefit is very hard to quantify and claiming the benefit assumes that managers will use the decision support system. Let's examine the analytical process.

Cost benefit Analysis is grounded in finance and accounting disciplines and is closely tied to budgeting. Typical summative measures in cost benefit analysis (CBA) are ROI, NPV, and discounted cash flow. CBA facilitates the allocation of capital. Sadly CBA provides the appearance of accuracy and precision, and people forget the assumptions that must be made. CBA is useful for evaluating cost-savings projects and automation of current processes. CBA is more difficult to use for decision-support, infrastructure, and strategic information systems projects. For example, cost models for data warehouses are not available. Benefits are tough to measure and benefits are not quantifiable or easily converted to dollars.

Examples of DSS cost factors include direct hardware and software costs, project personnel costs, support services (vendors or consultants), process change costs (people, material), and incremental infrastructure costs. Examples of DSS benefit factors include improved access to data, improved accuracy and consistency of data used in decision making, faster access to decision support, and cost savings from process improvements.

In a Sentry Market survey, 30% of respondents identified "access to data" as the biggest benefit of a data warehouse. Other important benefits of DSS include: 1) improved data accuracy; 2) better control of data; 3) better data consistency; 4) decentralization of data; 5) cost savings; and 6) less reliance on legacy systems. Few managers think that DSS will result in cost savings.

We can identify both tangible and intangible costs and benefits. We call a cost or benefit tangible if we can quantify the consequences. Intangible costs and benefits are difficult and sometimes impossible to quantify. Intangible results need to be considered in an evaluation, but too many intangibles limit the validity of the cost benefit analysis.

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In summary, cost benefit analysis is a systematic, quantitative method for assessing the life cycle costs and benefits of competing DSS project alternatives. It involves explicitly stating assumptions, disregarding sunk costs and prior results, estimating direct and indirect costs and benefits, discounting costs and benefits, and performing sensitivity analysis. Discounting involves calculating how much a dollar of costs or benefits is worth today, even though it will be realized in the future. Discounting calculates the time value of money.

We perform a cost benefit analysis by following six steps:

- Define alternatives to the proposed project
- Collect Cost and Benefit Data
- Document assumptions
- Estimate Costs and Benefits (direct, indirect, tangible, intangible)
- Establish Measurement criteria (especially for benefits)
- Evaluate all alternatives using NPV, Benefit/Cost Ratio or Payback

The DSS Project Evaluator Decision Aid, available at URL <http://DSSResources.COM/decisionaids/cbanalysis.html>, may be useful in determining whether or not to implement a DSS. The program uses the annual operating cost, development cost, benefits, the number of users, and the discount rate to determine the long-term return, payback, benefit/cost ratio, and several other values important to consider when developing a DSS. The cost per user ratio is useful for determining how expensive the DSS is per person using the DSS. The benefit/cost ratio can be used to determine whether the total discounted benefits of the project are greater than the total discounted costs. Discounted means that results are adjusted for a fixed rate of inflation/return, the discount rate. If benefit/cost ratio is less than one, the total benefits are less than the total costs. The payback tells how many years it takes until overall benefits exceed overall costs (assuming they do). The long term (LT) return is the overall value of the DSS.

DSS cost benefit analysis is an analytical tool that can assist in decision making. It is a general decision support tool that can and is used to evaluate DSS projects.

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