A number of methods exist to evaluate project proposals, either from the perspective of selecting the best option available, designing an ideal option, or rank-ordering options. Objective methods seek quantified values for project proposals. Formal objective techniques are not used in all cases, and where they are used, it is often for after-the-fact justification. However, studies have found a growing use of cost-benefit analysis, more often in larger firms, for specific classes of information systems (IS) and information technology (IT) projects. The problem with objective methods is that the cost and benefit of strategic factors are very difficult to quantify accurately.

Subjective methods acknowledge the frailty of such value estimates and hence emphasise attitudes and opinions. Simple techniques such as payback are often preferred over more complex quantitative models.

The presentation below illustrates how project selection practice fits in the project management roadmap.

In the adoption phase, the organisation is concerned with selecting and evaluating which projects to undertake. In this phase, the creation of a business case for a project is a key technique.

Objectives: Information Systems Project Selection Practice

Upon completion of this topic, you should be able to
- apply techniques used for financial evaluation of projects
- discuss the advantages and disadvantages of using objective methods and subjective methods for analysis
- explain the importance of IS investment appraisal

2. Information Systems Project Approval

Cabral-Cardoso and Payne (1996) surveyed 152 UK research and development decision-makers about their use of selection techniques. Financial techniques were used by about two-thirds of those surveyed, with the simpler payback method used most often. About one-third of those surveyed used subjective techniques (or techniques combining subjective and objective features), including checklists, project profiles and multiple criteria analysis.
Ballantine and Stray (1998) also studied UK methods to appraise IS/IT projects. This study confirmed prior studies that cost-benefit was the most commonly used method, but that the much simpler payback method was also widely used. Specific numbers for common quantitative methods were:

**Survey results of selection techniques**

<table>
<thead>
<tr>
<th>Quantitative methods</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost/benefit analysis</td>
<td>76%</td>
</tr>
<tr>
<td>Payback</td>
<td>70%</td>
</tr>
<tr>
<td>NPV</td>
<td>31%</td>
</tr>
<tr>
<td>IRR</td>
<td>28%</td>
</tr>
</tbody>
</table>

Use of *net present value* (NPV) and *internal rate of return* (IRR) were found in less than one-third of the cases. These methods require more data and greater accuracy, which are simply not available in many IS/IT project proposals. The survey results are slightly different, but compatible with earlier studies from the US. We will describe the common quantitative methods in more detail later on in the segment. In the following chart, payback, cost-benefit and NPV/IRR strive to be objective. Organisations will tend to use these methods if they have reasonably precise information about the costs and financial benefits of a project.

The other three methods shown (checklist, profile and scoring) include direct treatment of subjective factors, and are more likely to be used in IS projects where precise information about costs and financial benefits is unavailable.
Subjective factors

The importance of subjective factors has been cited by many studies. For instance, Jiang and Klein (1999), interviewed 88 IS managers to explore the criteria perceived as important in the context of strategic relevance. They found three groups of evaluation criteria:

- The first group comprised financial criteria and organisational needs.
- The second group comprised technical IS matters and user need and management support.
- The third group comprised factors such as customer/supplier requirements, industry standards, legal requirements and response to competition.

The importance of subjective factors was also emphasised in recent specific studies of large IT projects such as ERP (Murphy and Simon, 2002) and data warehousing (Counihan et al., 2002).

IS investment appraisal is important due to the large capital expenditure involved and the impact these systems have on organisations. However, such systems are often needed to keep up with competition. Evaluation of IS project proposals is notoriously difficult. Costs are hard to estimate because of the risk involved in such projects. Benefits are often subjectively stated by those who desire the project. While conventional quantitative financial analysis would be ideal, it is difficult to accurately apply in this domain. Thus, simplified approaches (payback) or other techniques are often used, such as checklists, profiles and scoring.

Reading: Information Systems Project Selection Practice

You may wish to read the following articles:


3. Exercise

Click the link below for an exercise to practise making decisions about IS project selection.

**Exercise: IS project selection**

Read the scenario given in the exercise about a proposed end-to-end patient handling system. After reading the scenario, you will be asked questions regarding the adoption of the proposed system.
Downtown Medical is a clinic served by a variety of specialist doctors. A staff of three executive assistants, an accountant and a pharmacist jointly runs the clinic's administration services and pharmacy. Since the clinic's inception, patients' records have been manually filed and appointments have been tracked in a diary. The clinic has been collecting feedback from their patients over the past year. Most of this feedback has been in the form of a survey, covering areas such as waiting time for booking and billing. With a new integrated end-to-end patient handling system, the clinic's staff believe that they can reduce the time they spend on administrative work from 100 person-hours a week down to 60 person-hours a week, so allowing more time to be spent caring for patients. The doctors have also been keeping notes of how integrating records and prescriptions will help streamline their service. They believe that with the new integrated system, they can reduce their own administration work from around 3 hours a day to 1 hour per day.

The clinic's billing and accounts have been processed by simple office software. Under the existing system, the accountant needs to manually check paper records and input these into the office software. The manual nature of the activity, however, meant that data was often wrongly input into the office software, causing various accounting errors. However, under the new integrated system, there will not be any need to manually check paper records and input these into the office software.

The new integrated system is estimated to cost around US$150,000, with annual running costs of US$5,000.

The doctors have hired you, as an IS consultant specialising in medical administration, to prepare a report to present to the clinic's board of directors. As part of this report, you need to evaluate the business case for the clinic’s new integrated system.

**Q1.** How should you approach evaluating the proposal for the new integrated end-to-end patient system?

1. You should accept the qualitative argument that patient care is the top priority for the clinic
2. You should consider both objective and subjective benefits in your evaluation
3. You should consider only quantitative data that is available because it is objective

The correct answer is
- option 2, You should consider both objective and subjective benefits in your evaluation

**Q2.** Based on the information given in the scenario, which three of the following types of data could be collected in evaluating the quantitative or objective part of the proposal?

1. Reduction in the clinic's administrative work from 100 person hours per week to 60 person hours per week
2. Reduction in the doctor's administrative work from 3 hours per day to 1 hour per day
3. Patients feel more satisfied that they have greater human contact with the clinic staff and doctors
4. Estimated cost of the integrated system plus annual running costs
5. The accountant is able to address more urgent accounting work

The correct answers are as follows:
- option 1, Reduction in the clinic's administrative work from 100 person hours per week to 60 person hours per week
• option 2, Reduction in the doctor’s administrative work from 3 hours per day to 1 hour per day
• option 4, Estimated cost of the integrated system plus annual running costs

Q3. Under the new integrated system, there will not be any need to manually check paper records and input these into the office software, thus reducing accounting errors. In which one of the following ways could this improvement be quantified?

1. The new integrated system is estimated to cost around US$150,000, with annual running cost of US$5,000
2. The effort required to correct accounting errors is about 6 hours per week, with the accountant being paid at a rate of about US$60 per hour
3. The number of accounting errors is reduced drastically from an average of 20 per month down to 2 per month

The correct answer is
• option 2, The effort required to correct accounting errors is about 6 hours per week, with the accountant being paid at a rate of about US$60 per hour

4. Summary

This topic covered the following main points:

• There are well-established techniques for financial evaluation of projects.
• These methods draw upon traditional financial analysis and, ideally each project’s alternative costs and benefits are estimated, discounted by time period and economically rational decisions can be made.
• Techniques used in IS project evaluation in recent years include simplified financial analyses, such as payback analysis, as well as methods allowing subjective factors, including checklists, profiles and scoring.
• The problem with objective methods is that they rely on accurate data which may not be available at the proposal stage of an IS project.

References