APPENDIX A: Project Management Information Systems

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# Appendix Concepts

Numerous project management information systems (PMISs) are available that help the user to plan, track, and manage their projects. In recent years, PMISs have become very easy to use and often can be customized to fit the needs of the user. A PMIS provides a powerful suite of Web-based tools to support many of the topics covered in this text.

This appendix provides

* A discussion of the common features available in most PMISs
* Criteria for selecting a PMIS
* A discussion of some advantages of using a PMIS
* A discussion of some concerns about using a PMIS
* A discussion of how to find vendors offering PMISs

# Teaching Strategies

1. Project management information systems range for simple tracking software to complex integrated systems. The systems have common features. Have students evaluate the common features and determine what features are most appropriate for their project situations.
2. Display several project management information systems to the class. Have the class suggest industries or project types that could use the systems.

# Lecture Notes

## 1. Project Management Information System Features

Some features of project management information systems include:

### A. Budgeting and Cost Management

One of the most important features that a project management information system provides is the ability to effectively plan and manage the costs of projects. Features often include:

* Billing and billing methods
* Cost-to-completion tracking
* Earned value management
* Multiple currency
* Payroll integration
* Percent-to-complete tracking
* Project accounting and cost control
* Project cost estimating
* Time and expense reporting

### B. Communications

The communication features of project management information systems have come a long way. Most systems provide a suite of tools such as those noted below.

* Automatic e-mail notifications
* Collaboration management
* Customer collaboration
* Discussion forums
* Email integration
* File attachments
* International characters
* Message center
* Mobile access
* Multiple languages
* Online meetings

### C. Documentation Management

One of the most important features of project management information systems is the ability to document a project from beginning to end. The following is a list of some features that are available to help.

* Approval process and routing
* Change order management
* Contract management and automation
* Meeting management and action items
* Project charter information
* Requirements management
* Time-off requests

### D. Integration and Customization

Most project management information systems allow for the customization of the user interface and the reports to suit the particular needs of a project. In addition, they provide linkages with many other popular information systems.

* Customizable user interfaces
* Importing/exporting
* Multimedia integration

### E. Online Tutorials

Online help tools for project management information systems often include very detailed demos, online help, in-depth tutorials, and even full video presentations.

### F. Project Planning

All project management information systems allow the user to define the activities and resources that are needed to perform a project. The list below provides an overview of some of the important project-planning features.

* Network diagrams and bar (Gantt) charts
* Project time estimating
* Scheduling
* Task management and interdependencies
* What-if analysis
* Work breakdown structure

### G. Project Portfolio Management

Many project managers today are running multiple projects and tracking significant issues related to those projects. The list below provides some features that can help.

* Issue management
* Knowledge management
* Multiple project management

### H. Project Tracking and Control

Tracking progress, actual costs, and actual resource use is a fundamental component of project management. Project management information systems allow the user to define a baseline plan and compare actual progress and costs with those in the baseline plan. Most systems can track tasks in progress, completed tasks, associated costs, time expended, start and finish dates, actual dollars committed or spent, and resources used, as well as remaining durations, resources, and expenses.

Some of the features include:

* Critical path analysis
* Milestone tracking
* Subcontractor tracking
* Task priorities
* Task reminders

### I. Report Generation

The reports that new project management information systems can generate are:

* reports on the project as a whole
* reports on the major milestones
* reports that provide a variety of information with respect to a date range
* financial reports that show a full range of information
* earned value analysis and management reports
* resource allocation reports for each resource or group of resources involved in a project
* baseline-to-actual variance reports

The features provided by these systems thus include:

* Customizable reporting
* Dashboard indicators
* Filtering
* Real-time reporting
* Sorting

### J. Resource Management

Project management information systems can maintain a resource list consisting of resource names, the maximum amount of time resources are available, standard and overtime rates for resources, accrual methods, and textual descriptions of the resources. Constraints can be assigned to each resource, such as the number of hours or times that it is available.

The system will highlight and help correct over-allocation and perform resource leveling and resource smoothing.

Features available are:

* Assignment tracking
* Calendars
* Resource allocation and planning
* Resource utilization
* Skills tracking

### K. Risk Management

Project risks are uncertain events or circumstances that could have an impact on a project. The degree to which project management information systems support risk management varies greatly. Several tools allow the user to define possible risks, determine the probability that they will occur, and predict the impact on the schedule and budget if they occur.

### L. Sales and Business Development

Several newer project management information systems include features related to business development. Some of the features include:

* Automated lead generation
* Client management
* Sales dashboard

### M. Security and Access Controls

A critically important feature in project management information systems is security and access rights features. Some systems provide password access to the project management program itself, password access to individual project files, and password access to specific data within a project file. Different views can be given to the project manager, team members, and the client.

## 2. Criteria for Selecting Project Management Information Systems

Following is a list of factors to consider before purchasing a project management information system.

* Capacity
  + Can the system handle the number of tasks you expect to perform, the number of resources you expect to need, and the number of projects you expect to be managing simultaneously? For most organizations the information system capacity is not an issue.
* Documentation and online help facilities
  + Consider the readability of the online user’s manual, the logical presentation of ideas, and the level of detail of the manual and on-line help.
* Ease of use
  + Assess the “look” and “feel” of the system, the menu structures, available short-cut keys, color displays, the ease with which data can be entered, consistency among screens, etc.
* Features available
  + Does the system include work breakdown structures? How good are the resource-leveling and smoothing algorithms? Can the system sort and filter information, monitor the budget, produce customized calendars, help resolve over-allocation of resources, etc.?
* Installation requirements
  + Check the memory required, the amount of hard disk space required, the processing speed and power required, the type of graphics display needed, and the operating system requirements.
* Integration with other systems
  + Some systems allow very basic integration with a few popular information systems, whereas others provide sophisticated integration with distributed databases and even object-oriented databases.
* Internet features
  + Although all modern project management information systems allow project information to be posted and shared directly through the internet, there is great variation in the web-based tools they contain.
* Reporting capabilities
  + Systems vary in the number and types of reports they provide.
* Security
  + Some project management information systems provide greater levels of security than others.
* Vendor support
  + Give special attention to the price of support and the reputation of the vendor.

## 3. Advantages of Using Project Management Information Systems

Some of the numerous advantages of using project management information systems are:

* Ability to handle complexity for large-scale projects.
* Accuracy. Information systems have accurate algorithms for calculating project information
* Affordability. Excellent PC-based project management information systems can be purchased for just a few hundred dollars.
* Ease of use. They can often be mastered with only a minimal amount of training.
* Maintainability and modifiability. Any change in the data will automatically be reflected in all the project documents, such as the diagrams, the cost tables, and the resource allocation charts.
* Recordkeeping. Data can be kept on individual team members’ schedules, each task, costs, and resources used.
* Speed. Calculations and revisions can typically be performed in seconds.
* What-if analysis. One further feature allows the user to see the effects of various scenarios on a project.

## 4. Concerns about Using Project Management Information Systems

There are also a few concerns to consider.

* Distraction. A manager can spend too much time focusing on the system and forget about the most important part of a project: the people.
* False sense of security. Project managers might believe that, because they have a powerful project management information system, they can manage and accomplish more than is actually feasible. Managers might think that, although a project is slipping, the system will be able to figure out a way to get it back on track. Just because the system says everything is all right doesn’t necessarily make it so.
* Information overload. Project managers have to resist the temptation to use features that produce more reports or more data without contributing to the successful completion of the project.
* Learning curve. The amount of time required varies, depending on the individual’s background.
* Overreliance on information system. Individuals with little or no knowledge of the fundamentals of project management sometimes use the system without really understanding what they’re doing.

## 5. Project Management Information Systems Vendors

Numerous project management information systems provide support for the project management process. Almost all vendors provide online demos of their products or free trial software for download.

A simple Internet search for “project management information system,” “project management software,” or “project management information system directory” will provide links for hundreds of vendors and consultants. Several of the websites provide a list of the top-selling project management information systems, as well as a review of their features. Other sites actually compare popular systems and list the features they provide, with the strengths and weaknesses of each.

## 6. Summary

* The most common features of project management information systems are budgeting and cost management, communications, documentation management, integration and customization, portfolio management, online tutorials, project planning, project tracking and control, report generation, resource management, risk management, sales and business development, and security and access controls.
* Criteria for selecting a project management information system include capacity, documentation and online help facilities, ease of use, features available, integration with other systems, installation requirements, reporting capabilities, Internet features, security, and vendor support.
* The benefits of project management information systems include accuracy, affordability, ease of use, ability to handle complexity, maintainability and modifiability, recordkeeping, speed, and what-if analysis.
* Concerns about project management information systems include the risk of becoming distracted by the system, a false sense of security, information overload, the learning curve, and overreliance on the system.

## Questions

1. Discuss at least 10 common features of project management information systems. In your opinion, which of these are the most important?

Common features of project management information systems include:

* Budgeting and cost management
* Communications
* Document management
* Integration and customization
* Online tutorials
* Project planning
* Project portfolio management
* Project tracking and control
* Report generation
* Resource management
* Risk management
* Sales and business development
* Security and access controls

Opinions on the most important features will vary. Answers should include an evaluation of the features chosen.

2. Discuss how the Internet can facilitate project communications.

The use of the Internet has greatly impacted project communication. Project management information systems are equipped with a suite of tools such as

* Automatic e-mail notifications
* Collaboration management
* Customer collaboration
* Discussion forums
* E-mail integration
* File attachments
* International characters
* Message center
* Mobile access
* Multiple languages
* Online meetings

3. Discuss the criteria that should be considered when purchasing project management information systems. If you had to rank these in order of importance, how would you rank them?

Some of the criteria that should be considered when purchasing project management information include:

* Capacity
* Documentation and online help facilities
* Ease of use
* Features available
* Installation requirements
* Integration with other systems
* Internet features
* Reporting capabilities
* Security
* Vendor support

Rankings of the criteria will vary.

4. What are some of the advantages of using project management information systems?

Some of the advantages are:

* Ability to handle complexity
* Accuracy
* Affordability
* Ease of use
* Maintainability and modifiability
* Recordkeeping
* Speed
* What-if analysis

5. What are some of the concerns about using project management information systems? Do the advantages outweigh the concerns? Explain your answer.

Some of the concerns are:

* Risk of becoming distracted by the software
* False sense of security
* Information overload
* Learning curve
* Overreliance on software

The comparison between the advantages and the concerns will vary. Explanations should evaluate the advantages and concerns of project management information systems.

## Internet Exercises

Assign the Internet exercises to your students as homework or complete them together in a computer lab.

Search results for "project management information systems" and "project management information systems directory" include definitions, tools, techniques, and directory listings of project management information systems.

Search term suggestions for reviews of project management information systems include “project management information system,” “rating,” “evaluation,” “comparison,” “review,” and “selection criteria.”

The search for a website or recent article that compares two or more popular project management information systems results depict criteria that were used to evaluate the systems. Depending upon the requirements and needs of the organization, different criteria would have higher or lower weights in the evaluation.

Microsoft Project 2013 is a popular project management information system. Visit the Microsoft website to review the features of Microsoft Project.

## Optional Supplemental Activities

1. Have the students read the appendix and answer the questions at the end.
2. Ask students to download a project management information system and evaluate it.
3. Have the students watch videos on using project management information systems and evaluate what systems would be easiest to use and the most appropriate for their project situations.
4. Invite a guest speaker to class to talk about how his or her organization uses project management information systems.