Property Management Systems

OPENING DILEMMA

At a recent hotel trade show, you noticed a new property management system

that seems to produce all the types of reports that your current system cannot

produce. The vendor at the show said she will set up a meeting with you in a

week or two to talk more about this system. How would you prepare for her

visit?

- Physical structure and positioning of the front desk

- Selecting a property management system (PMS)

- Using PMS applications

The first three chapters of this text provided an overview of the hotel industry, organization of the hotel, organization and management of the front office, and interdepartmental communication, which laid the groundwork for understanding how the front office fits into a network for providing service to the guest. In this chapter, we focus on the operational aspects of the front desk department, which include considering the physical structure and positioning of the front desk, selecting a property management system (PMS), and using PMS applications.

Computer applications are central to front office operations in today's modern hotels. For new properties, computers are standard pieces of equipment; for existing hotels, computers are being integrated into everyday operations to assist in providing hospitality to guests. Computer applications include routinely processing reservations as well as handling registrations, guest charges, guest checkout, and the night audit. **Interfacing,** electronic sharing of data, of hotel departments such as food and beverage and the gift shop through **point-of-sale,** an outlet in the hotel that generates income (restaurant, gift shop, spa, garage); maintenance through monitoring of energy and heating and cooling systems;

and security through control of guest keys are just a few of the applications that are explored in this chapter.

As you begin your career in the lodging industry, you will want to develop a thorough understanding of front office computer applications. This text does not refer to one particular computer hardware or software system; your training at any lodging property will include specific operating procedures to produce various reports or review information from the database. Instead, this chapter provides general information on which you can base your understanding of computer applications at the front desk. These applications are encompassed by the term **property management system (PMS),** a generic term used to describe applications of computer hardware and software used to manage a hotel.

You will notice that PMS is not confined to the front office; it interfaces with housekeeping, food and beverage, marketing and sales, gift shop, controller, engineering, safety and security, and other departments, all of which are service departments of a hotel. Each department plays a role, along with the front office, in serving the needs of the guest—before, during, and after the guest's stay. It is the front office staff which coordinates the communications, accounting, security, and safety requirements of the guest. As the nerve center of the hotel, the front office handles most of the recordkeeping and so benefits most from a computerized system.

The first part of this chapter sets the stage for adopting a PMS. Software and hardware considerations are discussed,[1] as are other considerations in choosing a PMS. The final section of the chapter discusses the various computer modules of the PMS as they apply to the lodging industry.[2]

This revision of *Hotel Front Office Management* includes references to a student manual for a hotel front office software simulation prepared by Dr. Sheryl Fried Kline and William Sullivan. This tutorial will allow students to process reservations and registrations, post guest charges, handle customer service issues, and perform the night audit procedure. It is a great opportunity for students to practice capturing and maintaining the many details of managing the guest experience in a hotel front office and then understand how those details support the administrative function of the hotel. The application of this student manual and software simulation will begin in Chapter 5.

Physical Structure and Positioning of the Front Desk

Figure 4-1 shows the layout of a computerized front office. While manual equipment is still being used in some independent properties, the computerized system has become the system of choice, primarily because of the needs of guests, management, and owners.

Guest First Impression

The front desk has always held a pivotal position of importance in the lodging operation. It is one of the first points of contact with the guest, and, as such, its ambience sets
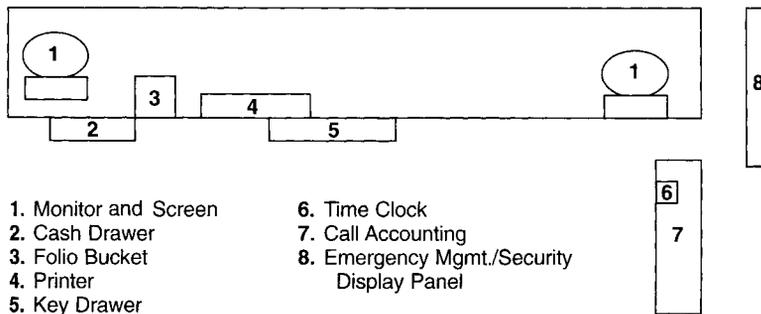
Figure 4-1. *The layout of computerized equipment centers on guest service and employee efficiency.*

the tone for the hotel. Neatness, orderliness, attractiveness, quality, and professionalism are just a few of the impressions that the front desk should convey to a guest. The guest wants to feel important, safe, and in the hands of professionals. The impression the physical layout of the desk creates will assist the front office in creating a positive image for the operation. Providing hospitality to the guest and promoting in-house sales (covered in more detail in Chapters 11 and 13) are of great importance to the continued financial success of the operation. To provide an environment for these objectives to be met, a well-planned physical arrangement of the front desk is important.

Creating a Balance between Guest Flow and Employee Work

EQUIPMENT

The front desk should be positioned so that it accommodates the guest while enabling employees to work efficiently. Guests who wait in line for ten minutes only to be told they are in the wrong line will have a negative first impression. Likewise, a desk clerk who has to wait to use a printer or share a computer terminal will not be as efficient as possible. As you become familiar with the practice of processing guests at the front desk, you will see how easy it is to plan a layout of the physical equipment needed.

GUEST SAFETY

The position of the front desk is usually determined by the main entrance of the building and the location of the elevator. The front desk clerk and the night auditor must be able to see anyone who enters the hotel, to ensure a safe environment for the guest. Positioning the front desk on the same side as the main entrance and the elevator is not recommended. Figure 4-2 shows a few arrangements that allow entrances to be monitored. In all three settings, the front desk clerk has a view of who is coming into the hotel
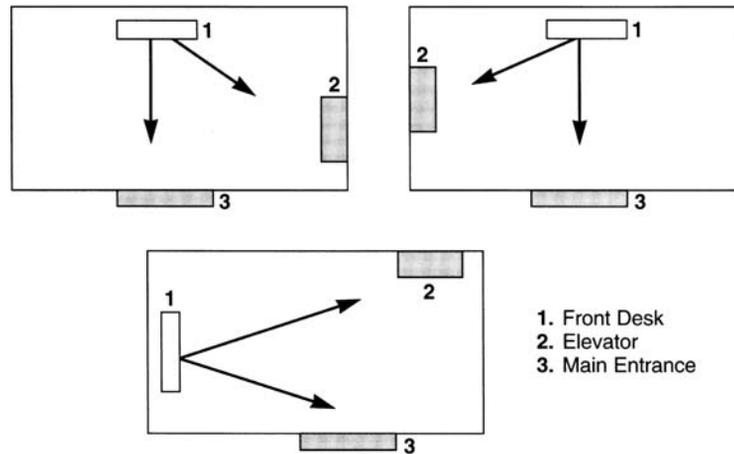
Figure 4-2. *Front office staff have a clear view of persons entering the lobby from the street entrance or elevator.*

HOSPITALITY PROFILE

Kevin Corprew, director of rooms operation at the Marriott in Overland Park, Kansas, is a graduate of the University of Houston in hotel and restaurant management. Mr. Corprew has worked with Marriott Hotels in various places and positions, including the Marriott Medical Center in Houston, Texas, as a desk clerk, rooms controller, and supervisor; the Airport Marriott in Houston, Texas, as a banquet manager; and the Marriott Courtyard in Legacy Park, Dallas, Texas, in rooms care (housekeeping and engineering), front office, and restaurant and bar areas. He also worked at the Hilton Washington and Towers in Washington, D.C., in sales.

Mr. Corprew indicates that setting the ambience of the front desk requires a simple, elegant appearance. Preliminary discussions of new trends in front desk structure include a walk-through for associates that will allow them to pass in front of and behind the desk to accommodate guests. Also, the front desk and lobby are to be considered together in design and function.

The organization of the front desk, with its computers and vast amounts of details, revolves around an uncomplicated guideline: keep it simple. Mr. Corprew provides plenty of key machines (electronic devices to make electronic guest room keys); ensures that all staff follow standard operating procedures, such as keeping faxes and mail in one location; and requires associates to be considerate of guests' needs. His organizational principle is continued at the time of check-in, when a 100 percent automated use of a property management system only requires the associate to swipe a credit card and to prepare and present the room key to the guest.

Kevin Corprew urges young professionals who want to make a career in the hospitality industry to lead by example with high morals and standards and not to be something that they are not. He encourages students to start in entry-level jobs so they will have a basis for dealing with employees.

from the street entrance and who is coming off the elevator. This view is essential to the night auditor, who assists security in monitoring the activities in the hotel lobby.

Selecting a Property Management System

This section focuses on the components that should be included when deciding to adopt a PMS. The decision-making process begins with understanding the importance of a needs analysis performed by a team of frontline staff members. The needs analysis should focus on the flow of the guests through the hotel and interdepartmental communication needs. A review of administrative paperwork produced by management in all areas of the hotel is also a consideration. After management has gathered relevant data concerning the operational needs, it must objectively determine whether a computer will help to improve guest service. Other important concepts covered here include software selection considerations and computer hardware terminology. A review of how people interact with computers and how a hotel must make provisions while hardware is being installed is also offered. The importance of computer training and planning a backup power source for continued computer operation is reviewed. The often overlooked maintenance agreement and the very important financial payback complete the discussion of selecting a PMS.

Importance of a Needs Analysis

Selecting new equipment for a hotel property is best done after a needs analysis is performed.[3] A **needs analysis** indicates the flow of information and services of a specific property to determine whether the new equipment—in this case, computers—can improve the flow. The bottlenecks that occur at registration or the lack of information from the housekeeping department on the occupancy status of a room can be alleviated by the use of computers at the front desk. Only after the completion of an operational flow analysis can computer applications be developed to improve the situation.

The importance of needs analysis can be most clearly seen when you consider what can go wrong if such an analysis is not made. The first area of concern for property owners and managers is cost, both initially and over the long term. As the technology evolves and the equipment becomes more common, the cost of computerizing a hotel has decreased and the payback period has shortened. However, even with these lower costs,

installing and operating a PMS is not inexpensive, and the cost of installing and operating a system that does not meet the specific needs of a particular property is exorbitant.

A system that works very well for one downtown hotel may not meet the needs of a downtown hotel in another city or of a motel in the same area. All the technological gadgetry in the world will not impress a guest if the equipment fails to deliver service. The system must meet the needs of the staff as well as the guests. An inappropriate PMS will produce control reports that are not useful to management; the functions of such software therefore become limited, and the cost of the system exceeds its value. For example, a hotel owner who believes that a PMS would speed up registrations and decides to purchase a system that does not allow housekeeping staff to input room status from the guest room phone will be disappointed.

Procedure for Performing a Needs Analysis

The following list shows the procedure for performing a needs analysis.

1. Select a team to analyze needs.

2. Analyze the flow of guests through the lodging property.

   - Reservations
   - Registration
   - Guest accounting
   - Checkout
   - Night audit
   - Guest history

3. Analyze the flow of information from other departments to the front office.

4. Analyze the administrative paperwork produced in other departments.

5. Review the information gathered in steps 2, 3, and 4.

6. Evaluate the needs that have been identified—such as control reports, communication, and administrative paperwork produced in other departments—in terms of importance.

7. Combine needs to determine desired applications.

Selecting a Team

The first and most important step in performing a needs analysis for adopting a PMS in a hotel is to select a team to determine the reports and information being generated. The analysis team should include employees at both the management and staff levels.

Such a team is better able to see all aspects of the operation: management can provide input on the overall objectives, while staff is more aware of day-to-day needs. The front office manager who feels the reservation system is very inefficient may find that the desk clerk not only agrees but can offer suggestions for improving the situation. This desk clerk may not know the first thing about **flow analysis processes**—preparing a schematic drawing of the operations included in a particular function—but the hands-on information provided will assist the front office manager in evaluating the reservation system. In another instance, the general manager may request that certain additional room sales analysis reports be produced by the marketing and sales department only to find the front office manager producing that information.

Analyzing the Flow of Guests through the Hotel

The second step in the needs analysis is to analyze the flow of guests through the visit to the property, which provides a structure for this very detailed analysis process. The guest stay does not start at registration but at the time a reservation is made. (In reality, the guest stay starts even before this, because guests often select a property as a result of marketing efforts.)

Issues that can be analyzed are quite diverse. They include analyzing the ease with which the telephone system can be used, the availability of room occupancy status for guests on any specific date, the length of time it takes to complete a reservation request, the method used to confirm a reservation, the procedure used to block rooms, and the means of finding a single reservation. Also subject to analysis are the methods for gathering guest information upon check-in and the processes for ensuring the correct posting of guest charges, the time required for a guest to check out, the procedure used to resolve a guest's dispute of charges, and the process for posting meal and phone charges just before checkout. How are the daily room charges and taxes posted to the rooms? How long does it take to do this? Are there any vital statistics that are not being produced by completion of the night audit report? How is the information assembled in the night audit? How long does it take to produce this information? Also determine if guest information already on hand from reservation, registration, and guest accounting is being applied for additional visits.

Communicating Information

The third step in the needs analysis process is to look at the information coming from other departments to the front office. How is information concerning occupancy status received from the housekeeping department? How can a guest report an emergency or fire on the property? How do the food and beverage department and gift shop report guest charges? How does the marketing and sales department determine if blocks of rooms are available on certain dates? How does the engineering department monitor energy use in guest rooms? How does the security department ensure the integrity of guest keys? A good PMS can embrace all of these lines of communication.

Reviewing Administrative Paperwork

The fourth step is to review the administrative paperwork produced in the hotel that is necessary to assist management. How does the human resources department maintain personnel files and former employee records? How is direct-mail advertising generated in the marketing and sales department? How are function books and individual function sheets maintained? How are **tickler files,** files used to prompt notice of when certain events will be occurring, maintained? How are work orders processed? What method is used to devise daily menu specials?

Management Review of Information

In the fifth step of this analysis, management must take charge of reviewing the information compiled to determine if needs are being met. Is the marketing and sales department making mistakes because incorrect information concerning the inventory of available rooms was provided by the front office staff? Are desk clerks unable to check the occupancy status of a guest room because the housekeeping department is not providing immediate information? Have misquotes on room rates caused lost revenue for the hotel? Is the night auditor unable to retrieve room status information to confirm or guarantee reservations?

The significance of each need and the consequences if the need is not met are then established. Customer satisfaction and quality of service as well as financial implications are considered. How often have conventions not been booked because accurate information on room availability was not at hand? How much revenue was lost as a result? How frequently does a general manager receive complaints because a guest was sent to a room that was under repair or not cleaned? How often must the front office manager adjust a guest's room rate because of a misquote? How does the number of guaranteed reservations compare with the number of confirmed reservations? Why are guaranteed reservations not requested by the night auditor?

Assessing Needs Based on Findings

The final step in the analysis is to combine various operational and administrative needs to determine which computer applications are appropriate for the property. Often the shared use of a room inventory database is well worth the financial investment. A word-processing program to produce direct-mail letters, regular correspondence, and daily menus may also justify a particular module of a PMS. The needs analysis enables you to know what you need and what you do not need and will help you choose from the many systems available.

Choosing Software

Selecting **software,** computer-designed applications that process data such as guest information and aid in financial transactions and report generation, is more important

than selecting **hardware,** computer equipment such as central processing units, keyboards, monitors, and printers. The effectiveness of a PMS depends on selecting software that allows management to increase guest satisfaction and to access financial and informational data for control purposes. The information obtained from the needs analysis will provide a framework for evaluating the numerous software packages on the market today.

Each software package offers numerous features; it is important to choose one package that is most appropriate for your needs. Software on the market today includes those guest service, accounting, and information options that are standard in the hotel industry. Investigate the guest service features, accounting options, and information applications to determine which PMS is best for your property. If you feel that the applications of a particular software package will not help you manage your property, that adding a particular guest service will not increase guest satisfaction, that no significant savings will result from producing more sophisticated accounting reports, or that the arrangement of historical information about guests will not be beneficial, then you should not adopt that particular PMS. You control the software selection; its function is to assist you in doing a better job. Only you can decide which applications are most useful in your facility. Some of the more common options for various departments are listed in Figure 4-3.

Choosing Hardware

Choosing hardware for a PMS is not as difficult as choosing software. Today most available hardware is compatible with standard computer operating systems (such as Microsoft Windows). This consideration is essential because most software programs are written to run on these standard operating systems. In short, you must choose your hardware based on its ability to handle the software; check on this with your hardware vendor.

Other technology factors to consider include the following working concepts:

Processor speed: how fast a central processing unit (CPU) makes calculations per second; expressed in MHz (the abbreviation for "megahertz")

Disk drive: a place in the computer where data is stored or read; hard or floppy—3½-inch versus Zip drive

Megabyte: 1,024 kilobytes of formatted capacity

Gigabyte: 1,024 megabytes of formatted capacity

Access time: the amount of time required for a processor to retrieve information from the hard drive; recorded in milliseconds

Internet: a network of computer systems that share information over high-speed electronic connections

I/O ports (input/output devices): keyboards, monitors, modems, mouse, joystick, light pen, printers, and track balls

Monitor: a television screen with color or monochrome capacity to view input and output data, control column width and line length of display, adjust height of character display, and allow visual control

Figure 4-3. *Common software options in a PMS.*

MARKETING AND SALES
- Client file
- Direct mail
- Guest history
- Travel agent
- Meeting room information

NIGHT AUDIT
- Room and tax posting
- Various operational reports

ACCOUNTING
- Accounts payable
- Accounts receivable
- General ledger
- Payroll
- Profit-and-loss statement
- Balance sheet

HUMAN RESOURCES MANAGEMENT
- Personnel files
- Time and attendance

ELECTRONIC MAIL

SECURITY

RESERVATIONS
- Room availability
- Yield management

FRONT DESK
- Check-in
- Room status
- Postings to guest accounts
- Guest credit audit
- Advance deposits
- Cashier

CALL ACCOUNTING
- Guest information
- Phone call posting

HOUSEKEEPING
- Room status

MAINTENANCE
- Work orders

FOOD AND BEVERAGE
- Point-of-sale
- Menu profitability
- Inventory
- Recipes

Keypad: a numeric collection of typewriter keys and function keys that allow the operator to enter numbers or perform math functions in a computer

Keyboard: a standard or Dvorak-type typewriter-style keypad that allows the operator to enter or retrieve data

Printer: computer hardware that produces images on paper:

   Dot-matrix: produces small dots printed with an inked ribbon on paper

   Ink-jet: produces small dots printed with liquid ink on paper

   Laser: produces photo images on paper

   Letter-quality: a better type of dot-matrix print

   Draft-style: a good type of dot-matrix print

   Tractor-fed: a type of printer that uses a continuous roll of paper

   Single-sheet: a type of printer that uses single-sheet paper

Modem: computer hardware that allows for transfer of data through telephone lines; expressed in baud—information transfer—rates

CPS (characters per second): measure of the speed with which individual characters are printed

Computer supplies: paper, forms, ribbons, ink cartridges, and floppy disks needed to operate the system

Megahertz (MHz): one million cycles per second; indicates computer speed

PPM (pages per minute): printing speed capability

Zip drive: a computer accessory that holds data; a 100-megabytes Zip drive holds an equivalent of 70 floppy diskettes

The front office manager must be aware of the operational capabilities of the PMS. Computer texts and trade journals can help you understand the various hardware options available; *Personal Computer* magazine, in particular, is very helpful for keeping up to date on hardware configurations and software applications. Visits to hospitality industry trade shows will also keep you informed on state-of-the-art systems.

The standard hardware used to operate a PMS is shown in Figure 4-4. The basic hardware requirements are organized around the various points-of-sale and customer service areas. Keyboards, monitors, disk drives, and printers constitute the basic user setup. The data manipulation and storage area is part of the mainframe, minicomputer, or personal computer.

The ability to interface among computer databases (sharing or networking of information) is very important. As computer applications become more sophisticated, sharing

Figure 4-4. *Computer hardware includes a keyboard, monitor, central processing unit, and printer. (Photo courtesy of IBM.)*

databases is essential. For example, the information secured at the time a reservation is made can be used by the marketing and sales department to generate more business.

The positioning of the hardware at workstations should be based on the same workflow analysis used for any new process or equipment. Consider the needs of the guest (who will be the end user), the employee who will operate the equipment, and the other staff who will want access to information. The information you have gained from the needs analysis will assist you in explaining your particular needs to the computer consultants who will install your PMS.

The installation of the electronic cables that connect all of the hardware must also be analyzed. Installation and replacement of cables that run through walls and floors can be costly. The requirement for air-conditioned atmospheres for proper computer functioning should also be investigated; in guest service areas, this may not present a problem, but in other areas, it may pose difficulties.

Ergonomics, the study of how people relate physiologically to machines, is also a consideration for the front office manager. Glare and flicker from the **cursor,** a flashing point on a monitor that indicates where data can be entered, and movement on screens can cause eyestrain. In fact, it is fairly common for computer operators to require lenses to correct eyestrain. Another common complaint is neck pain due to improper positioning of the monitor. The swivel base provided on most hardware helps to eliminate these problems. Pain in the wrist may also occur if the keyboard is positioned above the waist of the operator. Carpal tunnel syndrome, compression of a nerve in the wrist and fingers,

is another unfortunate result of overuse of computer keyboards. Because carpal tunnel syndrome causes extreme pain for a computer operator, the keyboard should be positioned at waist level. Also, pains in fingers and hands can occur with extensive entry of data on a keyboard.

Other PMS Selection Considerations

Other factors to consider in choosing a PMS are vendor claims, installation plans, training, backup power sources, and maintenance.

Vendor Claims

The prospective PMS purchaser should contact current users of the system being considered and ask relevant questions: How easy is it to operate this system? How useful are the reports you obtain? Has the vendor been available to help train staff and provide emergency service? Answers such as "I don't know how the property could manage without it" or "It is very difficult to operate, and the reports are awkward" may alert you to potential advantages or problems. (Remember, however, that different properties have different needs and priorities; a rave review because the system provides an option that you consider unimportant is meaningless for your purposes.) Consider the amount of time these properties spent on needs analyses. A visit to the hotel property is worth the effort invested. Learning how different features of the system work, how various departments interact with the PMS, and what kinds of forms are used will help you with part of your decision. You will also get a feeling for how guest services are affected.

Hardware Installation Plans

A careful plan for hardware installation will help the management maintain guest service and employee morale. First, it is key to determine who will install wiring or cables. Next to be determined is which hardware will be installed and at what times, followed by which departments will receive hardware first, and what methods will be required to get all departments of the property **on-line,** a term used to indicate that a computer is operational and connected with a central computer. This information should be used to develop a flowchart, which will help departments adapt and interact using on-line operations.

Computer Training Programs

The training offered by a computer company ranges from classes held at the corporate headquarters to on-the-job training sessions and informal consultant hot lines. The staff that will use the computers must be thoroughly trained if the equipment is to be put to

Figure 4-5. *Employees need time to practice using computer hardware and software. (Photo courtesy of Red Lion Hotels.)*

its best use. Training at the terminals should be preceded by an explanation of how the system will help staff members in their work. Some computer companies will lend a dummy computer setup to a lodging property so that the staff can experiment with the training modules (Figure 4-5). This allows them to make mistakes in private and to become familiar with the keyboard configuration. Documentation of procedures will also assist the staff in developing an awareness of the system's capabilities, as will individual hotel-developed step-by-step computer application cue cards.

It is also important to note that employee resistance to change can be overcome with an early buy-in to a new concept and a training program that is very user-friendly. The team concept will help employees to overcome resistance to change because they are included on the team. Members of the needs analysis team will see an idea develop from concept to fruition. Also, many employees resist change because they fear they will be unable to perform a new task. A training program that allows adequate time and practice will help introduce technology.

Backup Power Sources

What happens if the power goes out? This concern, as well as the possibility of **brown-outs,** partial loss of electricity, or **blackouts,** total loss of electricity, has been addressed

by computer dealers. Battery-powered temporary energy units are used when power is lost or cut, to ensure that operational data are not lost. Hotel managers who have experienced power losses are well versed in maintaining communication among the various departments and posting charges as required. Once the power returns in full, the staff can catch up on posting to the electronic folio.

Maintenance Agreement

One final consideration in adopting a PMS is the maintenance agreement, which should spell out the related costs of repair and replacement of hardware and software. Allowance for emergency service and times available for general service should also be listed. When loaner or backup equipment is available, it enhances the attractiveness of the agreement.

Financial Considerations

Purchasing or leasing a PMS for hotel use is a major financial decision. Such an investment can tie up cash flow. If the costs and benefits are not realistically projected, profits may be in jeopardy. The first part of this chapter stressed the importance of performing a needs analysis. Hotel properties that match needs with computer applications by going through this process will achieve the most realistic assessment of costs versus benefits when adopting computers.

The controller of a lodging property has usually prepared a budget in consultation with the general manager. Sales of room nights, food and beverages, and other products and services are projected. Considered with these projections are the related costs of producing those goods and services. The controller is usually aware of the specific costs in each department—the amount of overtime pay required at the end of the month to produce the monthly inventory in the food and beverage department, the extra part-time help required to staff the front desk for a busy checkout or check-in, the cost to produce a direct-mail piece for the marketing and sales office, and the fee charged by the outside accountant to produce a monthly profit-and-loss statement. This knowledge is very helpful in determining how much money can be saved if a PMS were to be introduced. The amount of money that can be saved (along with tax depreciation advantages) must be equal to or greater than the amount spent on the computer system. Sometimes management may feel that less tangible benefits, such as greater service to the guest or improved morale among employees, justify the cost even when dollar savings are not quite equal.

The decision about whether to purchase or lease must also be made. The outright cost of purchase, related finance charges (if applicable), discount for cash, and depreciation are only a few of the points to review if the hotel decides to purchase. These considerations have to be weighed against continuance of cash flow, application of lease payments to the purchase price, and tax advantages of leasing.

Determining the **payback period**—the period of time required for the hotel to recoup purchase price, installation charges, financing fees, and so forth through cost savings and increased guest satisfaction—will also assist management in deciding whether to install computers. If the controller reports a series of financial problems such as the following, the payback period becomes clearer:

- 5 percent of all local phone calls are not posted at the front desk
- 2 percent of sales are lost every month because guest checks are inaccurately totaled in the food and beverage department
- Ten hours of overtime could be saved through internal preparation of paychecks for each pay period

As the department directors go over their respective profit-and-loss statements with the controller, additional areas for cost recovery can be noted. The time invested in preparing an accurate needs analysis will pay off in the long run.

The above concerns of the controller include areas in addition to the front desk. Remember that the adoption of a PMS includes the management of all guest services and accounting functions. While the needs of the front desk alone—for a call-accounting system or the rental of a reservations system—may not justify the expense of a PMS, the needs of all departments can make such a system cost-effective.

PMS Applications

The property management system is organized around the functions needed to assist in delivering service to the guest. The software options listed earlier in this chapter are only a few of the many that are available to hoteliers. For purposes of this review, assume that the lodging property has been equipped with a state-of-the art PMS and the system is up and running. The software program **main menu** lists on the screen all the available individual programs (modules) that are included in the system. Refer to Figure 4-6.

The options shown in Figure 4-6 are similar to those previously listed in this chapter. The front desk clerk can access any of these individual programs by typing the designated keystrokes or following directions on a **touch screen,** a type of computer monitor screen that allows the operator to input data by the touch of a finger. The documentation, which consist of either printed or on-screen (monitor) instructions, explains how to operate the hardware or software that accompanies a specific PMS. This documentation will consist of written step-by-step instructions as well as a flowchart of individual programs and subprograms, all of which is very valuable in training staff. The flowcharts are comparable to the blueprints of a building. The following discussion of individual modules and subprograms will highlight the applications of these software options in a property management system.

Figure 4-6. *Main menu of a property management system.*

1. Reservations
2. Yield Management
3. Registration
4. Room Status
5. Posting
6. Call Accounting
7. Checkout
8. Night Audit
9. Inquiries/Reports
10. Back Office
11. Housekeeping
12. Food and Beverage
13. Maintenance
14. Security
15. Marketing and Sales
16. Personnel
17. Electronic Mail
18. Time Clock

Reservations

The reservations module (refer to Figure 4-7) consists of subsystems that can receive individual guest or group data, check a guest's request against a data bank of available rooms, and store this information. The guest data are received through a personal phone call or through another computer in the referral system. All of the possibilities or room types and locations, room rates, and special requests can be matched with the existing room inventories. This information can be stored for up to 52 weeks (or more) in most systems.

Information concerning guarantees with credit cards or confirmed reservations is captured at this time. Details on deposits, blocking, times of arrival and departure, VIP guest lists, projected occupancies and reports on these reservation functions assist the front office manager.

The guest who is checking out of the Limited-Service Inn in Dallas, Texas, and wants to make a reservation at the Limited-Service Inn in Chicago for that evening can have the reservation confirmed within seconds. The guest information is already available in the data bank, and through electronic transmissions, the request is verified (via a check of the existing room inventories held in the data bank for the Limited-Service Inn in Chicago) by a central computer. Similar procedures are followed by other referral agencies. (Further examples of computerized reservations options are provided in Chapter 5.)

Figure 4-7. *Reservations module.*

1. Guest Data
2. Room Inventory
3. Deposits
4. Special Requests
5. Blocking
6. Arrivals
7. Departures
8. VIP
9. Projected Occupancy
10. Travel Agents
11. Guest Messages
12. Reports

Yield Management

Yield management, a process of planning to achieve maximum room rates and most profitable guests (guests who will spend money at the hotel's food and beverage outlets, gift shops, etc.), encourages front office managers, general managers, and marketing and sales directors to target sales periods and develop sales programs that will maximize profit for the hotel. This module (Figure 4-8) shares similar databases with the reservations module—room inventory, room rates, reservation status, and guest information. If a hotel is entering a maximum demand sales period, the yield management module will allow the reservations manager to block out that time period to prevent guest requests for room reservations for less than the minimum time period. Also, the computer will prompt the reservations clerk on which room rate category to apply. Daily reports on how well the front office achieved maximum yield of **rack rates,** the highest room rate charged in a hotel, provides feedback to the general manager and owners. A history of guest sales in food and beverage also assists sales and marketing managers in determining if a group reservation has potential for profitability.

Figure 4-8. *Yield management module.*

1. Master Rate Table
2. Per-Person Increments
3. Guest Type Increments
4. Yield Management

Figure 4-9. *Registration module.*

1. Reservations
2. Guest Data/Registration
3. Room Inventory
4. Room Status
5. Security
6. Reports
7. Self-Check-in

Registration

Guest registration modules have greatly improved the check-in process. Because information has already been captured at the time of reservation, less time is required for registration. The front desk clerk need only verify the guest's request for room type, location, and rate with room inventory and room status. Provisions for walk-in guests without reservations are similarly handled. Method of payment is also established. The hard-plastic key can be issued after the security module has changed the entrance code for the room. The guest registration procedure can also be completed by the **self-check-in process,** a procedure that requires the guest to insert a credit card having a magnetic stripe containing personal and financial data into a self-check-in terminal and answer a few simple questions concerning the guest stay (Figure 4-9). (Self-check-in is discussed in more detail in Chapter 7.)

As an example of how this module works, consider the guest who flies to Chicago from Dallas, signs a guest registration form, waits until the desk clerk checks the status of the room, and receives a key—check-in is complete. All guest information was captured when the initial reservation at the Dallas Limited-Service Inn was made. The data bank of room occupancy information provided by the housekeeper is available to the front desk via the computer. The front desk clerk chooses the room the guest will occupy and issues a key. The total time required for registration is less than five minutes.

Room Status

Access to the **room status** module provides information on availability of entry to a guest room. There are two types of room status—reservation and housekeeping. Reser-

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FRONTLINE REALITIES

The general manager of the hotel asks you to help determine the payback period for a $20,000 PMS. How would you begin?

Figure 4-10. *Room status module.*

1. Room Inventory
2. Availability
3. Reports

vation status can be open, confirmed, guaranteed, or repair. Housekeeping status can be ready, on change, or out-of-order. Reservation status is maintained by the reservation department or reservation system, while housekeeping status is provided by the housekeeping department. The room status feature is one of the most valuable features of the PMS (Figure 4-10). It streamlines the operation problems of check-in and assists other departments as well. This module, which may share the same room data bank with reservations, provides very useful reports used by the housekeeper, front office manager and staff, maintenance engineer, night auditor, reservations clerk, and marketing and sales department. The housekeeper must know which guest rooms have been occupied and need cleaning; desk clerks must know if the guest room is reserved or open for sale; the maintenance engineer must plan in advance for routine painting and refurbishing; the night auditor must verify which rooms have been sold to complete the night audit; the reservations clerk needs information on the availability of guest rooms; and the marketing and sales department must have current information on room availability for conventions.

Posting

The **posting** module of a PMS often supplies one of the first benefits realized by the front office manager, because it allows immediate posting of charges incurred by the guests (Figure 4-11). Not only is the posting operation streamlined, but accuracy is ensured. A PMS allows the posting to occur at the point-of-sale in the restaurant, lounge,

Figure 4-11. *Posting module.*

1. Point-of-Sale
2. Room
3. Tax
4. Transfer
5. Adjustment
6. Paid-out
7. Miscellaneous Charges
8. Phone
9. Display Folio
10. Reports

or gift shop. Similarly, room and tax charges or telephone calls can be posted to the electronic folio in a very short time. Transfers and adjustments of guest charges (with approval by management) to folios are easily made. Charges incurred on behalf of the guest can be posted to the electronic folio by entering room number, amount of charge, department, and transaction type. These data are stored in memory and are retrieved after an inquiry, during report generation, or at checkout. The accuracy of these charges still depends on the employee operating the point-of-sale terminal in the restaurant. Entering an inaccurate room number (room 412 entered as 712) or a reversed amount ($32.23 entered as $23.32) will still result in an incorrect posting.

Our guest at the Limited-Service Inn in Chicago wants to charge his valet expense of $20.95 to his room account. After the desk clerk has processed the paid-out to the deliveryperson, this charge is posted to the electronic folio by entering the room number, amount of charge, department, and type of transaction. The night auditor verifies the integrity of all department totals.

Call Accounting

The **call-accounting** module of a PMS is a system that automatically posts telephone charges and a predetermined markup to a guest's folio (Figure 4-12). The individual subscriber to the telephone system (the lodging property) can charge a service fee for any local or long-distance call. The hotel can now use the telephone system to generate profit rather than to simply supply service to the guest. The ability to make a profit through adding service charges, combined with the increased frequency and accuracy of electronic posting, has made the call-accounting option very desirable. However, with the increased use of cell phones, phone cards, and personal digital assistants (PDAs), telephone revenue has declined in some properties. The PMS call-accounting feature retrieves data for time, charges, and service fee and then posts these charges to the electronic folio. The accuracy of processing telephone charges is greatly increased through the use of a PMS call-accounting feature.

Figure 4-12. *Call-accounting module.*

1. Guest Information
2. Employee Information
3. Post Charges
4. Messages
5. Wake-up Calls
6. Reports

Figure 4-13. *Checkout module.*

1. Folio
2. Adjustments
3. Cashier
4. Back Office Transfer
5. Reports
6. Guest History

Checkout

The inconvenience of guest checkout (long lines, disputes over charges) is greatly re-duced with the PMS checkout feature, which prints out an accurate, neat, and complete guest folio within seconds (Figure 4-13).

Disputes over guest charges still occur at the time of checkout, but not as often. The posting of a long-distance telephone call to room 295 instead of room 296 is less likely to occur with a PMS, because the PMS interfaces with the call-accounting system and the phone charge is automatically posted to the guest's electronic folio.

Efficiency at time of checkout is also improved when the desk clerk retrieves a hard copy of the folio and presents it for review to the guest. The guest has already indicated method of payment at check-in. An imprint of the credit card has been made, or prepay-ment has occurred. The **floor limit,** a dollar amount of credit allowed by the credit-card agency, and **house limit,** a dollar amount of credit allowed by the hotel, have been mon-itored by the PMS. These controls help to avoid high **debit balances,** the amount of money the guest owes the hotel. Last-minute purchases of products or services are automatically posted at the point-of-sale terminals.

The guest completes the checkout process by confirming the method of payment. The desk clerk may suggest the possibility of making future reservations at this property or other properties in the chain or referral group. Transfers to the city ledger are made electronically at this time. Cashier activity reports are monitored as well as other infor-mation about the day's checkouts (such as number of guest departures and time of de-partures). A PMS can generate a **paid in advance** (PIA) listing, which monitors guests who paid cash at check-in. The PIA prevents guests from charging any products or services to their guest folio.

Guests can avoid checkout lines by using **in-room guest checkout,** a feature of the property management system that allows the guest to use a guest room television to check out of a hotel. For this process, the night desk staff slips a copy of an updated guest folio under the door the night prior to checkout. The guest enters a few digits on the television control panel to start the process. After he or she answers a few questions (regarding multiple guest accounts in the same room, accuracy of charges, and method of payment, for example), the process is complete. The guest can pick up a copy of the folio at the front desk if desired.

Figure 4-14. *Night audit module.*

1. Guest Charges
2. Department Totals
3. City Ledger
4. Cashier
5. Financial Reports
6. Housekeeping

Night Audit

The night audit has always been very labor-intensive. In addition to acting as a desk clerk and posting the room and tax charges, the night auditor must balance the guest transactions of the day. To extend credit to guests, debits and **credits,** the amount of money the hotel owes the guests, must be balanced on a daily basis. The debits originating from the various departments must be checked against the totals posted to the various guest folios. The credits, in the form of guest payments, must be accounted for by reviewing the guests' outstanding balances. Although this sounds like a simple process, the procedure can be very involved (Figure 4-14).

The PMS simplifies the night audit by producing totals from departments and guest folios. These data are assembled into standard report forms. Various financial information is then used in the daily report. The daily report is used by the management of the lodging property to determine the financial success of a particular day.

Inquiries/Reports

The **inquiries/reports** feature of the PMS allows management to retrieve operating or financial information at any time. The front office manager may want to check the number of available rooms in the room inventory for a particular night, the status of the number of guests to be checked in, the number of guests to be checked out for the day, the current room status from the housekeeping department, or the **outstanding balance report,** a listing of guests' folio balances. These reports can be produced easily on a PMS (Figure 4-15). The inquiries/reports feature of the PMS enables management to maintain a current view of operations and finances.

Back Office

The hotel's accounting office, known as the **back office,** uses the accounting module of a PMS, which assists in the overall financial management of the hotel (Figure 4-16). PMS simplifies the accounting processes. These include: the labor-intensive posting procedure of **accounts payable,** which is the amount of money the hotel owes vendors; the transfer of **accounts receivable,** which is the amount of money owed to the hotel, based

Figure 4-15. *Inquiries/reports module.*

1. Reservations
2. Registrations
3. Checkouts
4. Housekeeping
5. Credit Balances

on the guest ledger and city ledger; compilation and production of the payroll; budget preparation; the production of the **profit-and-loss statement,** which is an official financial listing of income and expenses; and the **balance sheet,** which is an official financial listing of assets, liabilities, and owner's equity at a certain point in time. For example, financial information concerning a certain vendor is entered once on a terminal located in the back office (controller's office). This information is then reflected throughout various parts of the accounting process. Likewise, the financial information produced through the night audit can be accessed for various reports. These and other features assist in streamlining the accounting process.

Housekeeping

Obtaining current information concerning guest room status has always caused problems for the front desk staff. Guests become very impatient when they are delayed in the check-in process. Desk clerks who have not received a room release from housekeeping have no choice but to remain calm and try to appease the guests. The process of obtaining ready status is quickly achieved with a PMS (Figure 4-17). The maid or houseman enters the ready status immediately through a computer terminal on the guest floor, instead of waiting to report a block of rooms to the floor supervisor. The housekeeper no longer needs to make several trips per day to the desk clerk to release blocks of rooms. The efficiency of this module depends on the continued efforts of the housekeeping staff in reporting room status.

Personnel assignments of room attendants for cleaning rooms can also be made very

Figure 4-16. *Back office module.*

1. Accounts Payable
2. Acounts Receivable
3. Payroll
4. Budgets
5. General Ledger
6. Reports

Figure 4-17. *Housekeeping module.*

1. Room Availability
2. Personnel Assignment
3. Analysis
4. Housekeeper's Report
5. Equipment/Supplies Inventory
6. Maintenance Requests

easily. Labor analysis of number of guest rooms cleaned by room attendants and amount of labor hours required to clean guest rooms is performed faster, and the daily housekeeper's report is quickly generated. Inventory of equipment and guest room supplies is also readily available.

Maintenance requests for guest rooms can be communicated through the PMS. The maintenance department staff can also check room status information to determine if the housekeeping staff noted repairs to be made. If the maintenance department wants to take a room out of service for a few days to perform repairs, this information can be relayed to the housekeeping and front desk staff through the housekeeping module.

Food and Beverage

The food and beverage module reduces paper flow (vouchers) as well as telephone calls from the restaurants and lounges to the front desk (Figure 4-18). It also facilitates the accounting process, verifying the integrity of the point-of-sale system. Cashier reports (cash, credit, room service) are easily produced. Other features include inventory control and calculation, recipe development, pricing, item profit evaluation, and sales projections. Sales production analysis and labor analysis are also possible with this module.

Figure 4-18. *Food and beverage module.*

1. Point-of-Sale
2. Posting
3. Cashier Reports
4. Food/Beverage Inventory
5. Recipes
6. Sales Control
7. Sales Production Analysis
8. Labor Analysis

Figure 4-19. *Maintenance module.*

1. Review Work Order
2. Room Status
3. Cost/Labor Analysis
4. Inventory
5. Repair Cost Analysis
6. Energy Usage Analysis
7. Guest Room Power Start

Maintenance

Using a PMS streamlines the processing of work orders. Repair orders are entered by various department members. Incomplete jobs can be prioritized, and completed jobs can be analyzed for cost. Inventories of equipment and parts can be maintained. This module is also used to track energy costs and areas of use. In fact, heating and air-conditioning in guest rooms can be activated at the front desk. This module enables the management of a hotel to analyze operational information of this vital department (Figure 4-19).

Security

Electronic key production has enhanced key control. Each guest receives an electronic key that has a unique electronic code, because the PMS changes the key configuration or combination for each new guest room. Blank key cards plastic or metal) can be coded at the front desk for each new guest.

Continual monitoring is a feature of the security module of the PMS. Fire-alarm systems in guest rooms, public areas, and operational areas are kept under constant surveillance via a **fire-safety display terminal,** a device that ensures a constant surveillance of sprinkler systems and smoke detectors. An alarm system or a voice telephone monitoring system will alert guests to a fire anywhere on the property. Elevators return automatically to the main lobby area or other designated floor. Burglar alarms are also monitored through this module. The security feature of a PMS monitors the use of security codes in other modules as well (Figure 4-20).

Figure 4-20. *Security module.*

1. Keys
2. Fire Alarm
3. Burglar Alarm
4. Security Code Transactions

Figure 4-21. *Marketing and sales module.*

1. Guest History
2. Word-processing
3. Client Files
4. Banquet Files
5. Desktop Publishing
6. Reports
7. Travel Agencies
8. Room Status—Meeting Rooms

Marketing and Sales

The marketing and sales department makes extensive use of the PMS (Figure 4-21). This department can retrieve **guest histories**—information on guests' previous stays that reveals geographic origin, telephone information, organizational affiliation, credit-card usage, personal room accommodation preferences, and the like—from reservation and registration files. The source of the reservation (secretary, group, travel agent), type of accommodation requested, and zip code of business office or personal domicile are only some of the data that can be obtained from the reservation files. Additional marketing data (newspapers read on a regular basis, radio stations listened to on a regular basis, source of recommendation) can be collected at the time of registration to give the marketing and sales department information on advertising media for target markets.

Another PMS application that the marketing and sales department can use is the ability to produce **direct-mail letters,** which are letters sent directly to individuals in a targeted market group. Individual letters advertising certain products and services, together with mailing labels, can be prepared. Weekly **function sheets,** listings of the daily events in a hotel such as meetings, banquets, receptions, and so forth, can be produced by assessing various individual **banquet sheets,** listings of the details of an event at which food and beverages are served. Information on clients can be stored and updated as required. Contracts can also be produced. Tickler files on upcoming events are a great asset in keeping an edge on the competition. In addition, monthly newsletters can be produced through the word-processing and desktop-publishing applications. This module provides a great organizational feature in maintaining reserved occupancy status of meeting and banquet rooms.

Personnel

The maintenance of personnel files is greatly enhanced by using a PMS (Figure 4-22). Information concerning job category, date of hire, record of orientation and training, rate of pay, last evaluation date, promotions, pay increases, payroll deductions, and the like will assist management in developing a well-operated human resources department. The

Figure 4-22. *Personnel module.*

1. Employee File
2. Job Control List
3. Word-processing
4. Analysis
5. Reports

amount of paper involved in employee recordkeeping can be kept to a minimum. The word-processing application is used to generate form letters, job descriptions, reports, employee procedures, and policy manuals. The PMS also permits labor analysis to be performed with ease.

Electronic Mail

The electronic mail feature, often called **E-mail,** is a communication system that uses an electronic network to send messages via computers. It is very helpful in distributing current information on policies and procedures to a large staff as well as communicating with current and former hotel guests. When E-mail is used, security codes are issued to maintain privacy. Staff members are able to check their E-mail at the computer terminal. Copies of E-mail can be printed if needed for future reference (Figure 4-23).

In a large corporation with many company-owned properties or franchises, E-mail allows for communication among establishments. In a hotel with many operating departments and thus many department heads, this feature is a great asset to the communication process.

Time Clock

Individual employees are issued a security code and an individual personal identification number. Upon entering their work area, they need only enter that number to record their start time. As they leave the work area for breaks or at a shift's end, they again need only enter that number. This information is stored and used by the controller's department when compiling the payroll. This feature saves a great deal of time in calculating the number of hours an employee worked on any given day (Figure 4-24).

Figure 4-23. *Electronic mail module.*

1. Security Codes
2. Mail
3. Hard Copy

Figure 4-24. *Time clock module.*

1. Security Codes
2. Personal Identification Number
3. Time In
4. Time Out
5. Analysis
6. Reports

Solution to Opening Dilemma

Prior to the vendor's visit, it is advisable to perform a needs analysis. Although such an analysis may have been performed five years ago, the needs of hotel guests, management, and operations change over time. Forming a team of frontline employees and supervisors will allow for a good decision. This team should analyze the flow of guests through the duration of their stay to establish a list of guest needs that could be enhanced through technology. Because the team is composed of employees from different departments, other departmental requirements, including administrative paperwork, will also need to be discussed. These discussions will enable the team to prepare a list of needs that will enhance the guest's stay, assist departments in preparing reports, and improve communications among departments. The final step is to prioritize the needs and measure them against the budget. Other considerations include verifying vendor claims, developing installation plans, discussing training programs provided by the computer company, finding out about the availability of backup power sources, and securing a reasonable maintenance agreement. Financial considerations will include cost-benefit analysis, the decision to purchase or lease, and working out a realistic payback period.

Chapter Recap

This chapter reviewed the importance of positioning the front desk to allow front office personnel a view of guests who enter the lobby from the street entrance and elevators. The guest's first impression is enhanced by the ambience, physical appearance, and orderliness of the equipment and personnel. The front office manager must establish a balance between guest service and work processing to allow for efficiency.

This chapter examined the use of computers by a hotel property, particularly in the front office. Deciding to purchase a computer system and choosing the system begins with a thorough needs analysis, a detailed procedure that allows the front office manager (and other department managers) to assess the value of automating particular systems. The process of evaluating software is a prime prerequisite in determining which computer

applications best meet the needs of a particular property. The front office manager will also want to evaluate the hardware needed to operate the selected software package. The decision to adopt a system is further clarified by considering vendor claims concerning operation, installation, training, backup power sources, and the maintenance agreement. The financial considerations of purchasing or leasing will complete the computer decision. Front office managers should be aware of the computer applications—reservations, registration, room status, posting, call accounting, checkout, night audit, inquiries/reports, back office, housekeeping, food and beverage, maintenance, security, marketing and sales, personnel, electronic mail, and time clock—of a property management system as they relate to the successful operation of a front office.

End of Chapter Questions

1. When arranging equipment at the front desk, what factors should be considered?

2. Why is the position of the front desk in a hotel lobby important?

3. Describe the evolving role of computers in the hotel industry.

4. Explain in your own words what a property management system is. How does a property management system help to provide hospitality to a guest?

5. Why should a needs analysis be performed before computers are purchased? What are the components of a needs analysis?

6. Why are computer software considerations more important than computer hardware considerations?

7. If you are employed at a hotel that uses a property management system, which of the software options listed in the text do you use? Explain the advantages of these modules.

8. If you are employed in a hotel with a property management system, discuss computer hardware descriptions with your front office manager. What does your manager find most valuable? Why?

9. Why is interfacing important in a property management system? What are some examples of interfacing?

10. What is ergonomics? How does the ergonomics of computer terminals affect the front office staff?

11. How would you go about verifying vendor claims when considering the purchase of a property management system?

12. How does a well-developed installation plan for a property management system assist hotel management?

13. Why should management be sure employees are properly trained to use a property management system?

14. If the power goes out in a 200-room lodging property for four hours, how would you preserve the data in a property management system?

15. If you are employed in a hotel, ask your front office manager if there is a maintenance agreement for the property management system. What items are covered? How well has the computer company stood behind the agreement?

16. Discuss the "purchase versus lease" consideration in terms of financial profitability.

17. What does the main menu of a PMS tell an operator? How is it organized?

18. Review the computer applications described in this chapter. Explain how they are used to provide better service to the guest and to improve financial control in the hotel.

Software Simulation Exercise

Review Chapter 1, "Getting Started," of Kline and Sullivan's *Hotel Front Office Simulation: A Workbook and Software Package* (New York: John Wiley & Sons, © 2003), and work through the various concepts as presented in the chapter.

- How to Use This Demonstration Software
- Using the Innstar Program
- How to Exit Innstar
- Printing from Innstar
- Clerk ID Number
- Description of the Hotel Property
- Summary of the Basics
- System Requirements
- Chapter 1 Exercises

CASE STUDY 401

Ana Chavarria, front office manager, and Lorraine DeSantes, director of marketing and sales, have just returned from a computer conference at which they were able to take a look at the latest property management systems for hotels. Ana is very enthusiastic about updating and adopting front office applica-

tions for reservations, registration, room status, posting, call accounting, checkout, and night audit. Lorraine is sure the marketing and sales applications will help her department be more efficient.

Both realize the cost involved in obtaining modules for a property management system. What would you suggest they do prior to discussing this issue with Margaret Chu, general manager of The Times Hotel?

Assuming Ms. Chu is willing to consider the purchase of a PMS, how should Ana and Lorraine proceed? Whom should they include in developing a PMS adoption plan and why? What areas should they investigate?

CASE STUDY 402

The computer team of The Times Hotel is in the process of updating a computer needs analysis. The team is ready to decide which new modules should be adopted. Ana Chavarria, front office manager and chairperson of the committee, is seeking some consensus on whether the team should recommend the purchase of a point-of-sale module for the restaurant operation or a guest history module for the marketing and sales department. Eric Jones, food and beverage manager, says the point-of-sale module will pay for itself in six months because guests are walking out of the hotel without having their breakfast charges posted to their folios. Lorraine DeSantes, director of marketing and sales, says the purchase of the guest history module will increase business by 25 percent in the first year. The budget will allow for only one purchase. What concepts would you recommend to the team to break the stalemate?

Notes

1. CARA Information Systems, Inc,.; Computerized Lodging Systems, Inc.; ECI/EECO Computer, Inc.; Hotel Information Systems; and Lodgistix, Inc.

2. Ibid.

3. Reprinted from *Hospitals* 56, no. 9 (May 1, 1982), by permission. Copyright 1982 by American Hospital Publishing, Inc.

Key Words

access time	computer supplies
accounts payable	CPS (characters per second)
accounts receivable	credit
back office	cursor
balance sheet	debit balance
banquet sheet	direct-mail letters
brownouts	disk drive
call accounting	dot-matrix

draft-style
E-mail
ergonomics
fire-safety display terminal
floor limit
flow analysis processes
function sheets
gigabyte
guest histories
hardware
house limit
ink-jet
inquiries/reports
in-room guest checkout
interfacing
Internet
I/O ports (input/output devices)
keyboard
keypad
laser
letter-quality
main menu
megabyte
megahertz

modem
monitor
needs analysis
on-line
outstanding balance report
paid in advance (PIA)
payback period
point-of-sale
posting
printer
processor speed
profit-and-loss statement
property management system (PMS)
ppm (pages per minute)
rack rate
room status
self-check-in process
single-sheet
software
tickler files
touch screen
tractor-fed
yield management
Zip drive