Managing labour productivity

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Introduction

Productivity is one of the most challenging topics of interest in the hospitality industry. It has been written about in depth in the USA (Mill 1989) and the UK (Johns 1996; Jones 1990). There have also been an increasing number of empirical research studies on the topic. Many have commented on the importance of managing labour productivity (Mill 1989; Johns 1996; Riley and Jones 2000), largely because labour represents such a large percentage of the cost of running a hospitality operation. The average full-service hotel spends between 32% and 36% of revenue on direct labour, so improving labour efficiency can have a significant impact on profit improvement and is a key performance area in hotels (Johnson and Ball 2006; Pickens 2006). Despite this, there is still much that is not known about the extent to which any operation's performance can be judged efficient or its labour force productive.

Just what is 'productivity'? Productivity is concerned with the efficient use of resources. It can be defined as outputs divided by inputs (Jones and Lockwood 1989). Going further, it is the total amount of output, goods and services, per unit input used. This can be broken down in several ways (Pickens 2006). Inputs are the resources used in producing a product or service. These can be such things as the labour, customers, capital and natural resources used in creating outputs (Johnson and Ball 2006). Outputs are the products or services that are produced (e.g. meals served, guests housed, rooms cleaned).

In this chapter the challenge of selecting the 'right' input/output measures is identified. The performance of the industry is then evaluated, before discussing specific studies of operational performance. Finally, alternative approaches to labour productivity improvement are reviewed.

The productivity challenge

Productivity is easy to state but difficult to measure (Ball et al. 1986). In its simplest form, it is the ratio of an input (or inputs) to an output (or outputs). The challenge comes from selecting the 'right' input and output variables and developing a ratio which genuinely measure productivity (Johnson and Ball 1989). Three articles in the late 1990s illustrate this in three different sectors – hotels, restaurants and on-site foodservice.

Brown and Dev (1999) proposed six single-factor productivity measures. Three were used to measure 'capital productivity' – SalesPAR (total annual sales per number of available

rooms), GOPPAR (gross operating profit per number of available rooms), and ProfitPAR (income before fixed charges per number of available rooms). The other three measured labour productivity – SalesEmp (total annual sales per number of full-time equivalent employees [FTEs]), GOEmp (gross operating profit per FTE) and ProfitEmp (income before fixed charges per FTE).

Muller (1999) approaches this problem for a restaurant setting by suggesting that the unit of production is one complete turn of the service cycle, from the time the guest is seated to the time the table is reset for the next guest. The time period for measurement can range from a meal period to the entire time the restaurant is operating each day. The restaurant's maximum capacity is a function of the number of seats in the restaurant, the service-cycle time and the hours of operation. The ratio of capacity use is found by comparing the number of service cycles in a given period to the maximum number of cycles. This number is then used as a gauge for analysing the effects of changes in the restaurant's operation. What happens, for example, when demand is shifted to off-peak hours or the service-cycle time is shortened?

Reynolds (1998) considers productivity measurement in the context of the on-site foodservice sector. For the business and industry (B & I) segment, he proposes a multiple partial-factor measure with inputs of productive labour cost, cost of goods and amortized leasehold improvements and an output of revenue. For the education segment, he proposes a simpler productivity measure to that for B & I, without including amortized leasehold improvements. Whereas for the healthcare segment, he proposes inputs of food cost, labour cost, direct operating costs and amortized leasehold improvements, with the output of revenue from all activities.

The relationship between productivity and profitability can be viewed as the interaction of two primary factors: profit margin and asset utilization (Douglas 2000). When room revenue and occupancy are combined, the result is a measure of yield – revenue per available room (RevPAR).[1] It is argued that the operational focus of the traditional measures of productivity and performance limit their usefulness (Douglas 2000). They fail to provide a fair picture of the business side of the operation while, as a managerial tool, do not encourage responses that are strategic in nature.

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[1] See also Chapter 11.

Industry productivity performance

Productivity growth in service industries has generally tended to be lower than in manufacturing industries. This is also certainly true of the hospitality sector. There are a number of reasons for this. Many of the operations management techniques that have proven successful in the manufacturing sector have not been adopted by hotels (Witt and Witt 1989). There are some who claim that many of these techniques are not suitable for adoption in the hospitality industry. Others indicate that some of the practices can work successfully in any type of operation – manufacturing or service. This has led to a conclusion that techniques are not being adopted, in part, because of a lack of management skills on the part of managers in the hospitality industry (Witt and Witt 1989).

A related problem is the labour-intensive nature of the hotel industry. In delivering a service – in being hospitable – there is only so much substitution of machines for people that can be made. In the hotel business, service is tied to people. This puts great pressure on managers to increase the most efficient use of employees rather than rely totally on technological innovations to produce a more productive operation. Although employees are critical to improved productivity, Mill (1989) argues that the industry has traditionally placed little emphasis on employee development and training. He suggests that managers can understand the investment necessary in a machine and the value of a preventative maintenance programme for that machine. However, they do not regard money spent on an employee as an investment; rather it is seen purely as a cost. He proposes that ROI means Return on Individual as well as Return on Investment.

Given the service nature of hospitality, to what extent can technology be used to improve productivity? One study that examines the utilization of information technology (IT) in all hotel sectors in the United States, from deluxe to budget, reveals strategic differences and similarities. Overall, the findings suggest that the U.S. lodging industry has focused on employing technologies that improve employee productivity and enhance revenue but has not given strategic priority to technologies designed to improve guest services (Siguaw et al. 2000). Various studies in the UK indicate that productivity gains come not from the total amount of investments in Information and Communication Technologies (ICT), but rather from the extent to which the entire range of ICT tools and applications are fully exploited. One example is the use of ICT informational and networking capabilities for redesigning and streamlining operations (Sigala 2004).

The study of hotel productivity is made even more complex by the number of variables that might affect performance. Sigala (2004) reviews previous studies of hotel productivity and identifies the following as potentially having some influence:

● Location – rural, city centre or suburban
● Property size
● Hotel design – old/new, purpose built/converted
● Ownership – independent or chain
● Business format – owned, franchise, consortium
● Demand variability
● Level of repeat custom
● Average length of stay
● Market segments served
● Distribution channels
● Proportion of part-time staff

Many of these were then tested in Sigala's (2004) study of 93 three star hotels in the UK. Demand variability, hotel design and ownership were found to affect productivity, but location, level of repeat customer, market segments served and distribution channels did not.

So concerned were the UK government about low productivity in the hospitality industry, especially in small- and medium-size enterprises (SMEs), that they funded a nationwide initiative – 'Profit through Productivity' – in order to improve the situation (Jones 2002). Begun in 2001, the programme's fund of £2.5 million over five years is based on £1.2 million from the Department of Trade and Industry (DTI) to pump prime the project and a similar sum from industry through sponsorship and revenues generated by the sale of deliverables. Profit through Productivity had an annual impact assessment made against seven agreed performance targets. By the end of five years, it was expected that the impact on industry performance would be:

● Sales per employee up by 15%
● Value added per employee (profits) up by 10%
● Levels of customer complaint down by 25%
● Average length of stay per employee up by 20%
● Reject deliveries down by 7.5%
● Capital employed up by 2.5%
● New business from new markets up by 12.5%

One study of North American hotels (Brown and Dev 1999) found that productivity is affected by the hotel's size, its

service orientation, its strategic orientation and its ownership arrangement. Large hotels, the study finds, use their labour more productively, and generate the most income from their capital investments. Upscale hotels are more productive overall than mid-market hotels, while hotels operated by branded management companies use their labour resources more efficiently than do hotels operated independently or by independent management companies. Finally, company-owned properties generally employ their labour more productively than do franchised hotels.

Measures of productivity

Before management can improve labour productivity, agreement must be reached on how to measure labour productivity. Measures of productivity have tended to focus on the effectiveness of the labour force based on ratios of input to output. Typically they have been such things as (Mill 1989):

- Payroll ratio: payroll costs divided by sales
- Sales per employee: sales divided by the number of employees
- Sales per hour: sales divided by the number of hours of operation
- Sales per employee-hour: sales divided by departmental employee-hours

If sales were defined as sales per employee, then it could be increased by increasing room rates. A hotel may be housing fewer guests, but the increase in prices could camouflage that – and inefficiencies in management as well.

The best measures of productivity are those that are inflation proof and that measure the performance of output. Productivity could be measured as the number of guests, rooms occupied or meals served divided by the number of employee-hours required. The U.S. Bureau of Labor Statistics defines productivity as output per employee-hour (Mill 1989). It defines output as sales receipts adjusted for inflation and indexed to a base year to facilitate comparisons. Input is the number of hours worked by all employees, both supervisory and non-supervisory. The resulting ratios are productivity indices that are not affected by increases in prices or wages.

A focus on a one-dimensional measure of productivity fails to take into account relationships among resources. Using aggregate or multiple-factor measures allows managers to

compare units that are directly managed with those that are, in the case of foodservice, contracted out (Reynolds 1998).

Data envelopment analysis

One particular approach that has been adopted to examine productivity in hospitality is data envelopment analysis (DEA), as advocated by Andersson (1996). First developed by Charnes et al. (1978), DEA is a powerful non-parametric, multivariate, multiple linear programming technique that benchmarks units by comparing combinations of inputs and outputs at the same time. Since DEA uses the production units that are 'best in its class' as reference material, the method is very much in line with the basic ideas underlying the concept of benchmarking. The best performing units are assigned 100% efficiency, and all other units a level of productivity proportional to these best ones. Hence, there is no absolute measure of productivity, as with a ratio. There is also no way of knowing if those units that achieve 100% efficiency are the 'best'. There may be other units, not included in the sample, which are performing even better.

This approach to measuring productivity also has to be applied with care. In particular the right inputs and outputs need to be included. One way to approach this is by the step-wise approach to DEA, based on stepwise regression. This is an iterative procedure in which productivity is measured according to one combination of inputs and outputs and then evaluated by their correlation with the measure of effi-ciency and applying judgements in terms of cause and effect. Subsequently, inputs and outputs can be added or excluded to see if the correlation increases or decreases, until no fur-ther important factors emerge. At that stage, a metric account-ing for all the identifiable factors that influence productivity is constructed. The stepwise approach also helps to interpret why particular units are efficient, since the efficiency scores of the units at each step can be produced, thereby identifying how respective inputs/outputs affected their efficiency.

Sigala et al. (2005) summarizes DEA's advantages as follows:

- It provides a comprehensive productivity evaluation as it generates a single aggregate score by comparing simultan-eously multiple inputs and outputs of comparable units and using a benchmark of 100% efficiency;
- It is independent of the units of measurement allowing flexi-bility in specifying inputs/outputs to be studied;
- It objectively assesses the 'importance' of the various per-formance attributes;

- It evaluates each entity in the best possible light – all alternative priorities will reduce performance;
- It calculates efficiency based on observed best practice – not against an 'average' or 'ideal' model;
- Best practices are identified;
- No functional relationship between inputs and outputs needs to be prespecified;
- Inefficient DMUs are identified as well as the sources and amounts of their inefficiency. Thus, DEA answers both questions: *'how well a unit is doing'*; and *'which dimension and how much could the unit improve'*;
- DEA can identify economies of scale and take them into account.

DEA has been extensively used for productivity benchmarking in the hotel industry (Morey and Dittman 1995; Avkiran 1999; Anderson et al. 1999, 2000; Wöber 2000; Brown and Ragsdale 2002; Hwang and Chang 2003; Sigala 2004; Sigala et al. 2005), as well as in the restaurant industry (Andersson 1996; Reynolds and Thompson 2007).

Hotel productivity

Hwang and Chang (2003) used DEA to measure 'managerial efficiency' of 45 hotels in Taiwan, and how this had changed between 1994 and 1998. They concluded that urban properties, serving international visitors and operated as part of an international chain, were the most efficient type of hotel. Their input/output measures were number of FTEs, number of guest rooms, total floor area for food and beverage (F & B), operating expenses, rooms revenue, F & B revenue and other revenues.

Sigala (2004) explored productivity in both rooms division and F & B. She found that productivity in rooms division was determined by the inputs of number of rooms, front-office payroll, administration and general expenses and demand variability, along with the outputs of average room rate, number of room nights and non-rooms revenue. Whereas F & B productivity was derived from F & B capacity, F & B payroll, F & B materials expenses, demand variability, F & B revenue, percent of banqueting covers to restaurant covers and F & B capacity.

Restaurant productivity • • •

Andersson (1996) explored the use of DEA through applying it to a sample of 46 restaurants in Sweden. He demonstrated that

the selection of different combinations of inputs and outputs could have a significant impact on the relative productivity levels of restaurants in the sample. Reynolds and Thompson (2007) investigated 62 full-service restaurants and were concerned with identifying the uncontrollable variables that affected restaurant productivity. They found the inputs to be hourly server wage, number of restaurant seats and whether the unit was standalone or not, and the outputs to be daily sales and tip percentage. They argue that it is only once the effect of these uncontrollable variables is understood, that it becomes possible to understand the effect that management is having on productivity performance.

Improving productivity

In reality, there are five ways in which the input–output ratio can be changed[2] (Jones and Lockwood 1989):

- Decrease inputs and increase output: theoretically possible but unlikely to occur, unless through major innovation.
- Decrease inputs and maintain output: appropriate where there are inefficiencies that can be corrected by reducing costs.
- Constant inputs and increase output: this is a marketing approach to correcting inefficiencies.
- Increase inputs, relatively greater output: this market-oriented approach concedes that an increase in outputs can only be achieved at additional costs.
- Decrease inputs, relatively smaller decrease in output: a reduction in costs will have some impact on output that is offset by savings in cost.

Early attempts to improve productivity focused on two strategies (Jones and Lockwood 1989). Companies with high fixed costs, such as hotel companies, were encouraged to adopt a market-oriented approach that concentrated on increasing output while holding inputs steady. Those companies that had a high proportion of variable costs were encouraged to adopt a cost reduction approach that suggested holding output steady while reducing costs.

Traditionally the focus on how to improve productivity has been to maximize the efficiency with which inputs are

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[2] See also Chapter 10.

converted to outputs. There are those, however, who argue that the emphasis on efficiency and the quantitative side of productivity has led to researchers and managers ignoring such things as effectiveness and quality. It may be that the application of a holistic productivity metric that combines both traditional operational variables, such as revenue, profit, food cost, and labour cost, and such things as guest and employee satisfaction is what is needed.

One study of restaurants in metropolitan areas in the United States finds that employee satisfaction as an input variable is the most important variable in determining unit-level profit and guest satisfaction (Reynolds and Biel 2007). A study in Cyprus finds that staff recruitment, staff training, meeting guest expectations, and service quality are the main productivity factors in hotels, while research of Wimpy International in England finds that customers consider customer satisfaction and effectiveness as important dimensions of productivity Ball (1993). Lockwood and Bowen (2004) finds that there are significant gains in revenue production (an output) and cost reduction (an input) when such best practices as achieving standards; partnerships and networks; communication; measurement and performance evaluation; transformational leadership; adding value to operators; operational planning and control; and staff development and retention are implemented.

Thus, it is argued that the qualitative dimension of outputs cannot be ignored in any consideration of productivity in hotels. Productivity is not improved if the quantity of output is increased at the expense of lower quality. It is too narrow to view productivity increases only in terms of producing more with the same number of employee-hours (Douglas 2000). Are employees more productive if they register more guests per hour – but in a slipshod, surly manner? Is a hotel restaurant more productive if convenience foods are used to reduce employee preparation time, but food costs are thereby increased to the point that contribution margin is less? Productivity is not improved when more rooms are cleaned, but they are not up to the quality standard of the hotel. When something must be re-done (e.g. the carpet must be vacuumed again), the amount of time to clean the room increases. This increase in input will reduce productivity. Management must set performance standards of both quantity and quality and then manage employees in such a way that these standards are met.[3]

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[3] See also Chapter 13.

There are three major approaches to improving labour productivity (Mill 1989), to which a fourth can be added. Productivity can be enhanced through better workplace design; through the development of improved work processes; through more efficient employee scheduling; and through workforce flexibility.

Workplace design

The interaction of employees and the environment in which they work affects productivity; designers must develop facilities with productivity in mind. There are several sequential steps in the development of a hospitality operation that will determine how productive the end product is. A market analysis is conducted to determine the potential market. From this information, a mix of products and services are developed that will appeal to the market segments being sought. The operating characteristics are set, the equipment characteristics determined and the resulting space requirements and arrangements finalized.

Little has been researched on the relationship between hotel design and hotel operation. One article describes the Marriott Courtyard concept, in which the construction, services and operational style of the hotels have been expressly designed to maximize productivity (Johns 1996). Rooms were specifically constructed taking employee productivity into account. The amount, type and placement of services and amenities in guest rooms and their impact on productivity is also noted.

Objectives • • •

There are several objectives involved in planning a new facility or revamping an existing one (Mill 1989). First, the planner aims to ease the production process. Spaces are arranged and laid out to ensure a smooth flow of people and things. Employee costs can be reduced through the efficient layout of individual work stations, designed in accordance with the tasks to be performed there (Lawson 1994: 187).

A second objective is to minimize the cost and time required to handle goods within the operation. This means moving many items mechanically rather than by hand; routing things over straight paths while minimizing backtracking; and carrying a minimum amount of inventory while ensuring proper storage to protect materials from damage.

The planner must also try to minimize the investment in equipment. Case-by-case cost-benefit analysis will determine to what extent machines should replace people. Because of the

increasing costs of building, the planner must make full use of both horizontal and vertical space for workplaces, aisles and storage so that work can be completed in a minimum of wasted space without the feeling of being cramped.

A final objective should be to facilitate cleaning and maintenance. The wise planner will select surfaces that can be easily cleaned. Maintenance comes into play in the design of equipment. Placing equipment on wheels, for example, allows for ease of movement during cleaning. This is another objective when planning facilities. Portion control, for example, can be made easier by selecting serving utensils of an appropriate size.

The productive use of space and of the people who operate in that space is achieved by applying certain principles of flow to the functions inherent in the operation. The first step is to identify all of the functions that take place in an operation. In F & B, for example, goods are received and sent to either dry or refrigerated storage. From there they might go to preparation, then to the chef, dining room and dishwasher.

Designing flow ● ● ●

Productive use of space occurs when two functional areas – receiving and storage, for example – are placed near each other. Evaluation of flow can be undertaken for materials, employees, guests or paperwork in order to minimize the flow of what is considered important. The same type of analysis can be conducted for a guest entering the hotel in order to ensure a minimum of inconvenience in getting the guest to his or her room. Whichever criteria are considered important, the principles to minimize movement are the same. Wherever possible, flow should be along straight paths. In addition, the amount of cross traffic, backtracking and bypassing should be kept to a minimum.

Keeping flow in a straight line – over the shortest distance – is crucial. Cross traffic causes bottlenecks and congestion; consequently, it should be avoided. Backtracking occurs when a person moves from one place or piece of equipment to another, and then returns along the same path. This probably cannot be eliminated but should be cut down as much as possible, perhaps with wide aisles or circular routes of flow. Bypassing occurs when someone has to move past one or more pieces of equipment to perform the next stage in a process. Different arrangements of equipment, fixtures and areas may be necessary to find the best arrangement.

Flow diagrams or string charts – in which pieces of string are used to simulate movement – can be useful in finding the best

arrangement. Five layouts are common in the design of equipment and workplaces. A single straight-line arrangement – in which pieces are placed along a wall or in an island – is simple but limited in the number of pieces that can be accommodated. An L-shaped arrangement can accommodate more pieces of equipment and can be used where space is limited to keep pieces of equipment or workplaces separated better. A U-shaped arrangement is also suitable where space is limited, but the lack of space limits it to where only one or two employees are working. An additional restriction is that pass-through movement through the area is not possible. A parallel, back-to-back arrangement allows for centralizing any utilities required for two banks of equipment, which are set up parallel to each other, their backs adjacent to each other. A parallel, face-to-face arrangement consists of two rows of equipment facing each other, with a work aisle in between. In this arrangement, two utility lines are required.

Work processes

Work processes can be improved through task planning. Task planning involves the analysis of specific actions involved in carrying out a job, in order to establish a more productive procedure for completing that job. The first step in this process is to select the task to be analysed. For the novice task planner, it is wise to select a simple task such as buttering bread or assembling salads. A complex task such as cleaning a room might be broken down initially into components such as making the bed and dusting the room. As the task planner develops more skill and confidence, more complex and time-consuming tasks can be identified and analysed. It is preferable to select tasks that can cause bottlenecks in production or are frustrating for employees. Holiday Inns found that wheeling a small cart into the guest room saved money when cleaning the room. The materials needed were easily accessible, limiting much walking. In addition, the room attendants felt more comfortable cleaning the room with the door closed. Energy costs were reduced because heat or air conditioning did not escape from the room as before, when carts were left outside the open door.

Reynolds (1998) suggests that eliminating unnecessary tasks and doing the same tasks more efficiently are the keys to productivity improvement. All factors must be identified and made part of the analysis. Tasks are affected by the accessibility and storage of raw materials used in performing the job. In one hotel studied by the author, it was found that 20% of a

housekeeper's time was spent in getting linen from the linen room. One reason was that a linen shortage made adequate stocking impossible. The answer was to establish a system of stocking linen and other supplies in a closet on each floor. Because housekeepers had adequate, accessible supplies, they were able to clean 16 rooms instead of 13 on a regular day. This resulted in a savings of 10% on the housekeeping payroll. A key principle is that the handling of materials does not add to their value. Such handling, therefore, should be kept to a minimum.

The standard of performance desired affects which tasks must be performed. A hotel restaurant emphasizing its use of fresh ingredients will require different preparation methods for its menu items than a hotel lobby coffee shop that relies heavily on convenience products. Each aims at a quality product – within the boundaries of the price–value relationship. That is, there must be a guest perception that the value received is more than, or at least equal to, the price paid.

The method of preparation and even the process used can be affected by the quantity to be produced. For large-quantity jobs, the capital investment for a piece of equipment may be less in the long run than the labour cost of several employees. Work stations should be sufficiently large to allow for the tools and utensils necessary to complete the required task. Tasks that require the use of the same tools or utensils should be performed at the same place, whenever possible.

The number and type of employees used greatly affects the cost of performing a task. Maximum efficiency results from having the least number of employees necessary. Another factor that must be considered is the quality of the service provided. Sufficient employees must be scheduled to ensure guest satisfaction. The saving of an employee's hourly wage must be weighed against any loss of business through guest dissatisfaction. The skill level of the employee must also be considered. The key is to delegate tasks as far down the line as possible commensurate with the employee's ability to perform the delegated task. In other words, have a seven-dollar-an-hour task performed by a seven-dollar-an-hour employee.

Timing refers to both how long it takes to perform a task and when it has to be done relative to the completion of other tasks. With certain menu items, for example, several tasks may have to be completed at the same time. This probably means that more than one employee would have to be involved. Alternatively, some tasks might be completed ahead of service and the products combined by one employee at the last minute. After a lunch banquet, a decision might be made to leave the

washing of the dishware and utensils until later at night. At that time, utility costs are less and the task could be carried out by a skeleton crew who would otherwise be under-utilized.

Employee schedules

The third strategy to improve labour productivity involves creating efficient employee schedules. As noted earlier, payroll costs in the hospitality are typically more than 30% of sales revenue (Kavanaugh and Ninemeier 1999). The importance of controlling labour costs in the labour-intensive hospitality business cannot be over-stressed. Indeed, labour has been identified as the last cost area to be effectively controlled in the hospitality industry. The development of reliable technology sufficient to allow for a cost-effective and systematic approach to the 'purchasing' and scheduling of labour is a relatively recent phenomenon. Labour scheduling means having the right staff with the right skills in the right place at the right time (Mogendorff and Simonds 2003). The process of doing this has typically been carried out in some simple form through the production of manual or spreadsheet rotas for the coming week(s) often by retrospectively using the previous month's financial reports. The type of reactive approach to employee scheduling is no longer sufficient. Recent advances in technology include the development of systems capable of supporting enhanced reservations, table assignment, pre-checking and production and guest service. This technology can assist management in balancing seating and table service patterns. Work loads can be balanced among service staff. Output can be defined in terms of such things as table turns, average chair occupancy and service productivity.

The development of a labour schedule involves four steps (Thompson 1998). The first step is forecasting customer demand, the second involves translating customer demand into employee requirements, while the third requires the development of a labour force schedule. The fourth step involves assessment and real-time control of the outputs of the first three steps to ensure that customers are properly served.

Forecasting demand • • •

There are certain truths about forecasting that must be appreciated (Kavanaugh and Ninemeier 1999). First, forecasts are more difficult to make and are subject to greater error if the forecast is made far in advance of the actual event. It is easier to

forecast tomorrow's room occupancy than that of next month's. As a result, forecasts are being reviewed and updated as the hotel moves closer to the actual date.

Second, forecasting involves uncertainty. As a result, judgements have to be made. For example, when making a forecast of room sales one year in advance, it is important to have information on the competition, demand for room nights, room rates, and so on. When definitive information is not available, judgements have to be made.

Third, the starting point for forecasting the future is to look at historical data. This is not always a true reflection of the future if there are significant changes in past environments compared to future scenarios. It may be that several hotels in the vicinity have closed down. If it is not anticipated that new hotels will be built in the short-term and if demand is expected to hold steady, then our hotel should expect a share of the demand that is available because of the closure of the competing hotels.

Finally, it should be noted that forecasts are not as accurate as we would hope. The key is to continuously apply better, more sophisticated methods of forecasting while revising prior forecasts immediately after there is a change in the circumstances that existed when the forecast was made.

A major reason for forecasting is to assist with accurate employee scheduling (Schmidgall 1995). Most hotel revenue-management systems require inputs of the forecasted demand by rate category and length of stay. At least one study demonstrates that a purely disaggregated forecast (even though it meant forecasting smaller numbers) strongly outperforms even the best aggregated forecast (Withiam and Thompson 2004). Most hotels prepare monthly, ten-day and three-day forecasts of business volume (Kavanaugh and Ninemeier 1999). Monthly forecasts are used to prepare an employee schedule which is then refined based on the ten- and three-day updates of upcoming business. The most popular method of forecasting room demand, especially for properties with a reservation system, is to use room reservations at the time of the forecast with an estimate for walk-ins (Schmidgall 1995).

Forecasts of food sales are also used for staffing purposes. However, in a majority of situations, they are also used to determine how much food to order (Schmidgall 1995). The most common forecasting method used (though by less than half of respondents to a major study) is to use the previous period's sales figures and adjust for expected differences. Two other methods are used by approximately the same percentage of hotels. Forecasts are based either on the number of meal

reservations plus estimated walk-ins or on a capture rate – the percentage of hotel guests who are expected to eat in the hotel restaurants. This ratio is applied to the number of expected guests and the result, as such, depends on the accuracy of the rooms forecast (Schmidgall 1995).

Employee requirements • • •

There are three basic methods to transition from a forecast of demand to a determination of the number of employees needed – using productivity standards, using service standards and using economic standards (Thompson 1998).

The American Hotel and Lodging Association believes that managers should be able to (Kappa et al. 1997):

● Determine productivity standards taking into account fixed and variable employee positions;
● Develop and utilize a staffing guide as a labour scheduling and control tool;
● Use weekly labour hour reports to evaluate scheduling practices;
● Revise performance standards to increase productivity.

The planning process involves a number of steps (Kavanaugh and Ninemeier 1999). The development of a schedule for housekeepers is used as an exemplar. Area inventory lists and frequency schedules form the starting points for planning the work of employees. Productivity standards are then developed based on performance standards. The standards are then the basis for developing a staffing guide. The staffing guide is combined with a business forecast to create employee work schedules. Productivity is then continuously enhanced by revising the performance standards.

The first step in this process is to develop inventory lists of everything in each area that needs attention. Separate inventories are needed for each type of guest room as well as all of the other areas in the hotel that require cleaning. In preparing a list for a guest room, it is a good idea to follow the sequence in which the room will be cleaned and inspected. In this way, the list can form the basis for developing cleaning procedures, training plans and inspection checklists (Kappa et al. 1997). A list for a guest room might show items listed from right to left and from top to bottom. This replicates the way a room would be cleaned. The idea is to identify all of the items within specific areas that have to be cleaned or maintained.

The next step involves developing a frequency schedule – a chart indicating how often the items in an area should be cleaned or maintained. Items that are to be cleaned on a daily or weekly basis are part of a routine cleaning schedule that is later incorporated into standard operating procedures. This would include making the beds, dusting the room, cleaning the bathrooms, and so on. Some items will be cleaned or maintained on a biweekly, monthly, bimonthly or other schedule. They become part of a deep-cleaning programme that schedules special projects. It may be, for example, that guest elevators, meeting rooms and registration area are shampooed once a month.

Guest rooms that are scheduled for deep cleaning should coincide with periods of low occupancy. The work should also be coordinated with that of other departments. If maintenance is scheduling repair work on several guest rooms, it would make sense for housekeeping to deep clean those rooms at the same time.

The development of performance standards answers the question: 'What must be done in order to clean or maintain the major items within this area?' (Kappa et al. 1997). Standards represent the level of performance required for that task for that particular operation. Performance standards indicate what must be done and how the job should be done. Developing performance standards is the first step to ensuring that all employees carry out the work in a consistent manner. Having the employees who will perform the jobs involved in setting the standards will help ensure that the standards that are developed are accepted by all employees. The developed standards are then communicated through ongoing training programmes.

Productivity standards 'define the acceptable quantity of work to be done by trained employees who perform their work according to established performance standards' (Kavanaugh and Ninemeier 1999: 145). The productivity standard for a housekeeper is the time allocated to clean a room according to the performance standards set by that hotel. Positions within the hotel are either fixed or variable (Kavanaugh and Ninemeier 1999). Fixed staff positions are filled irrespective of business volume. This would encompass positions that are salaried as well as those that are supervisory and managerial. There will typically be a small number of hourly positions that are fixed. Since business demand is variable and management's task is to keep labour costs under control, there is an incentive to minimize the number of fixed staff positions. During slow times, certain positions may be eliminated, salaried employees may perform duties ordinarily done by hourly employees or cross-trained employees may be assigned to another job.

The number of variable staff positions will depend on business volume on any given day. Front-desk employees will be assigned based on the number of expected check-ins and the pattern of their arrival. The number of housekeepers or room attendants will depend on the number of occupied rooms that need to be cleaned. Kitchen and dining rooms staff numbers depend on a forecast of breakfast, lunch and dinner guests.

According to one author, the use of economic standards is better than the use of productivity standards to deliver service most economically (Thompson 1999a). The use of economic standards involves forecasting demand, translating the demand forecast into employee requirements, scheduling the employees and controlling the schedule during the day (Thompson 1999a; Withiam and Thompson 2004).

Workforce scheduling ● ● ●

Labour costs can be controlled through sound scheduling (Pavesic 2004; Thompson 1999a). The task is both essential and complex. The objective is to match the number of workers available to the customer demand that exists in any given time period (Thompson 1999a). Traditional methods of creating the actual schedule tend to match employee supply and customer demand in isolation for each planning period. It is better to take employee-related factors into account when developing the schedule rather than setting a schedule and then assigning employees to fill it (Thompson 1999a). By taking employee work constraints into account in advance, the result is a schedule that reflects a better match between employees and their shifts.

The following tips have been found useful in developing employee work schedules (Kavanaugh and Ninemeier 1999):

- Schedule should cover a full week.
- Schedule should be approved by management before it is posted or distributed.
- Schedule should be posted at least three days before the work week.
- Schedules should be posted in the same place and at the same time.
- Days off and vacation time must be planned as far in advance as possible.
- The daily work schedule should be compared with forecasted demand and revised if necessary.

- Scheduling changes should be made directly on the posted work schedule.
- A copy of the schedule can be used to monitor employee attendance and retained as a permanent record.
- Schedules should be developed to meet the day-to-day and, in some cases, hour-to-hour volumes of business.

Real-time control ● ● ●

To close the scheduling loop, it is necessary to compare employee-hours scheduled with the actual number of hours worked. This is typically done on a weekly basis. Significant variances are noted and investigated. The reasons for the discrepancy are determined and corrective action taken.

The three causes of labour expense variance are volume, rate and efficiency (Mill 2005). Volume variances occur when more work is done than was forecast. If we estimated that 300 rooms would be sold, each requiring 30 min to clean, we would forecast 150 h of work. If, however, 360 rooms were sold, the actual hours worked would be 180. Rate variances look at the average wage rate that was forecast compared to that actually paid. Perhaps, housekeepers are paid $8.50 an hour but, because of increased volume, they were paid overtime and the actual wage was $9.25 an hour. In certain situations, overtime may be warranted. In other cases, it may be the result of poor planning. Efficiency variances refer to the amount of work performed on an hourly basis. It may be that the standard time for cleaning a room is set at 30 min. Perhaps, some unruly convention goers left especially dirty rooms that meant that it took 40 minutes on average to clean a room. The result is an efficiency variance. As before, there is a small effect caused by the interrelationship of these factors.

Increasingly, this is being enabled by web-based rostering systems that enable real-time monitoring of performance (Thompson 1999b; Mogendorf and Simonds 2003). The advantage of scheduling on the web is that it is a common platform that can be shared by everyone within an operation with rostering responsibility. The software can also incorporate forecasts of likely demand, along with rules as to staffing levels relative to demand, so that department heads or line managers cannot over-staff. Moreover, more senior members of the management team can have oversight of the labour scheduling decisions made by their subordinate managers and can forecast the impact these will have on operational performance. Finally, the system can easily facilitate adjustment to the rosters if demand changes in the short term.

Workforce flexibility

Several principles can be identified that, when put into practice, will result in more productive employee scheduling (Mill 1989), notably temporal flexibility and functional flexibility.

Temporal flexibility • • •

Temporal flexibility is concerned with the pattern of hours worked by individual workers and the use of different types of worker – full time, part time, casual and seasonal. Individual workers in the hospitality industry, especially in foodservice, have typically worked split shifts. A split shift means scheduling employees for two time periods during the day with time off in between. This concept is feasible when employees live close to the operation. It does, however, make for a very long day for the employee. It would also encounter strong opposition if the employees were unionized.

The idea of irregular scheduling is that an employee should be called into work at the time that business warrants, rather than starting at the same time each day. For example, businesspeople will tend to check out early during the week to get on the road or to make appointments. On the weekend, the hotel may cater to families seeking a getaway experience. It makes sense to bring in housekeepers later on the weekends compared to during the week. Many hotels employ staff on annualized hours contracts, so that they may work more hours during the peak season and less hours during the off-season.

It is unproductive to staff for peak periods using full-time employees. Full-time personnel can provide a steady, well-trained core of employees to meet average business conditions, while part-time workers can be used to supplement that core during peak periods. As noted above, a staffing guide links forecasted business and productivity standards to determine the number of employees needed at each hour of the day. Its use is critical to establishing control of labour cost.

Functional flexibility • • •

Functional flexibility is the selection and training of staff so that they are able to work in more than one job position within the operation. It is often referred to as 'multi-skilling'. Hospitality operators adopt this for a number of reasons (Jones 2004):

● More efficiently schedule staff, especially during relatively quiet periods of operation.

- Increase staff retention, especially amongst part-time employees.
- Improve team working.

But organizations that have adopted multi-skilling have reported additional benefits to those that they expected:

- Improved work processes, as multi-skill employees approach their second role with experience of the organization but objective insights towards their new department;
- Lower induction training costs, as multi-skilled staff need only be inducted into the organization once;
- Better coordination and collaboration between heads of department

Management have a number of choices to make if they are interested in multi-skilling their organizations. First, there are choices about the breadth of the scheme: the extent to which it will operate across the business unit and the degree of inclusion of the workforce. How are staff to be selected and what skills need they acquire? Secondly, there is the question of depth – will staff be expected to perform all or a selected number of the tasks in their second (or subsequent) role.

At the operational level, there are choices about whether staff will be moved between departments within a shift, or only on separate shifts. In practice, although some of the cases had policies about not moving staff within a shift, this did occur in all cases to cope with unanticipated short-term changes. Seasonal hotels have found that multi-skilling its staff has been particularly useful in keeping labour costs down in periods of low demand. It has significantly reduced the number of staff it employs on a full-time basis during the winter months because of this flexibility. Not only do they report cost savings, but they also report high job satisfaction amongst staff and improved quality of service that derived from the staff working together more closely and understanding each others' roles.

Summary and conclusion

Because hotels are labour intensive, improving the productivity of employees can add significantly to the bottom line. But it remains a challenging area. As Iunius et al. (2006) conclude: 'the concept of labour productivity is still very vague … the

more effort put into understanding [it], the more nebulous the concept becomes'. In the research field, DEA appears to be one approach that addresses many of the complexities of measuring productivity. However, due to its complexity as a technique, it seems unlikely that this will be used in industry itself.

From a practical, applied perspective, productivity can be improved through better workplace design; through improved work processes; through better employee scheduling; and through temporal and/or functional flexibility. A coordinated approach in these areas will result in reduced inputs and increased outputs resulting in improved productivity and greater income.

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