

Performance measurement

Introduction

Organizations need to know how well they are performing, not only in an absolute sense but relative to:

- Predetermined standards set out in organizational goals and objectives
- Competitors (if there are any)
- Customer expectations
- Resources deployed (capital, labour, materials, energy, information).

Performance appraisal will inevitably mean undertaking some form of measurement. Questions will be asked about:

- What is being measured
- How it is being measured
- Why it is being measured.

Two areas in particular help in addressing the issue of organizational performance. They are productivity and customer retention.

10.1 Productivity

Productivity is a measure of relationships between an input and an output namely:

$$\text{Productivity} = \frac{\text{Output}}{\text{Input}}$$

It is a standard measure that has been used by manufacturing industries for a very long time, where, for example:

$$\text{Total Productivity} = \frac{\text{Total outputs}}{\text{Sum of all inputs}}$$

The real difficulty lies in aggregating a range of partial measures into a composite measure for the whole organization. In other words, how the organization's total output and the value added are explained by the mix and deployment of resources. As total productivity, therefore, can be difficult to determine and fail to detect specific explanations for poor performance, a number of disaggregate measures are used:

$$P = \frac{\text{Production}}{\text{Machine hours}}$$

$$P = \frac{\text{Production}}{\text{Number of employees}}$$

$$P = \frac{\text{Sales}}{\text{Number of square feet}}$$

$$P = \frac{\text{Passenger miles (railway)}}{\text{Number of guards}}$$

Output is, of course, influenced by a host of factors such as the level of automation, the quality of raw materials, scheduling of labour, layout of operations and customer behaviour. The danger of using only one partial measure of productivity in the form of labour input is that poor performance may wrongly be attributed to unproductive workers. The explanation may quite easily be found in poor materials and equipment, poor layout and awkward customers. Ball, Johnson and Slattery¹ give an example of the range of productivity measure in the hotel industry (Table 10.1).

Nowadays the term performance indicator is often used to describe productivity measures. Given the distinctive characteristics of services, the pursuit of productivity measurement is a challenging one. It is a topic that generates a great deal of attention. Exhortations are often made about the need to increase efficiency (as distinct from effectiveness) and invariably this is supposed to be achieved by getting more output from the same input or getting the same output from less input. Inevitably, calls are made for more output from less input!

Labour is a major input in any organization (particularly a service) and the focus for this call for increased productivity has been, and still is, 'blue-collar' workers. Their counterparts, white-collar workers, have escaped being subjected to productivity measurement. Increasingly, however, the picture is changing. The performance of white-collar workers is being measured, although the term 'performance indicator' seems to take precedence over productivity.

It is generally agreed that it is much easier to measure productivity on an assembly line than in a service business where the 'product' is often the customer's intangible experience. Services, themselves, will of course vary in terms of how susceptible they are to measurement and the form that measurement will take² (Figure 10.1).

Table 10.1 Example ratios of hotel productivity

	Physical measures	Physical/financial measures combined	Financial measures
Labour measures	$\frac{\text{Kitchen meals produced}}{\text{No. kitchen staff}}$	$\frac{\text{Restaurant revenue}}{\text{Hours worked in restaurant}}$	$\frac{\text{Banqueting revenue}}{\text{Banqueting payroll}}$
	$\frac{\text{Housecount}}{\text{Total employee hours}}$	$\frac{\text{Total room sales}}{\text{Total reception employees}}$	$\frac{\text{Hotel revenue}}{\text{Total management salaries}}$
	$\frac{\text{Restaurant covers}}{\text{Hours worked in restaurant}}$	$\frac{\text{Total room sales}}{\text{Chambermaid day}}$	$\frac{\text{Total added value}}{\text{Hotel payroll}}$
Energy measures	$\frac{\text{Total guest rooms}}{\text{Total kilowatt hours}}$	$\frac{\text{No. cooked meals}}{\text{Total cooking costs}}$	$\frac{\text{Hotel revenue}}{\text{Total energy cost}}$
Capital measures	$\frac{\text{Total hotel customers}}{\text{Square foot of hotel}}$	$\frac{\text{No. rooms sold}}{\text{Total capital expenditure}}$	$\frac{\text{Net profit after tax}}{\text{Equity capital}}$
Raw material measures	$\frac{\text{Chips prepared (lb)}}{\text{Potatoes used (lb)}}$	$\frac{\text{No. bar customers}}{\text{Cost of liquor used}}$	$\frac{\text{Food revenue}}{\text{Cost of food consumed}}$
Total factor measures	$\frac{\text{No. satisfied hotel customers}}{\text{Total no. hotel customers}}$	$\frac{\text{Housecount}}{\text{Cost of contributing resources}}$	$\frac{\text{Net profit after tax}}{\text{Cost of contributing resources}}$

Source: Ball *et al.* (1986)¹

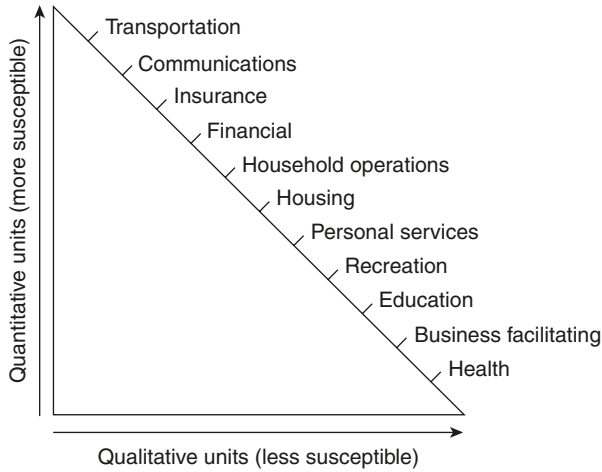


Figure 10.1 Productivity of services: susceptibility of output to measurement
 Source: Rathmell (1974)²

Established productivity measures are less easily applied as one moves from the left to the right of Figure 10.1. Measuring productivity in a transportation service poses fewer problems than in a counselling service. For a transportation service, input (e.g. driver hours) and output (e.g. tonne-miles) and the relationship between the two offers a clear measure of productivity. For a counselling service, quantitative input and output measures and the relationship between the two are not so readily available. Counselling involves advice and human relationships, and because of that, understanding the process and impact of such a service is far from straightforward. It is a service where the proper application of knowledge and skills should take precedence over attempts to apply input/output ratios.

10.2 The productivity framework

To develop our understanding of productivity we need to add to the ideas of input and output already mentioned (see Figure 10.2). There are two words featured in Figure 10.2 that are frequently mentioned in everyday discussion but often without clear understanding of their meaning. They are used loosely and often interchangeably. The words are, of course, efficiency and effectiveness. The meanings will become clearer as we look at some examples. However, in general they can be defined as follows:

- **Efficiency:** the rate at which inputs are converted into outputs, e.g. calls per sales representative; customers served per catering assistant. The emphasis is often on quantitative measurement and the objective is one of securing the maximum output from the minimum input.
- **Effectiveness:** the extent to which purposes/goals are achieved, e.g. the number of productive and profitable calls per sales representative and the nature of customer relationships established and fostered; the number of satisfied customers served per catering assistant. The emphasis is on qualitative measurement and the objective one of meeting customer needs and delivering service quality.

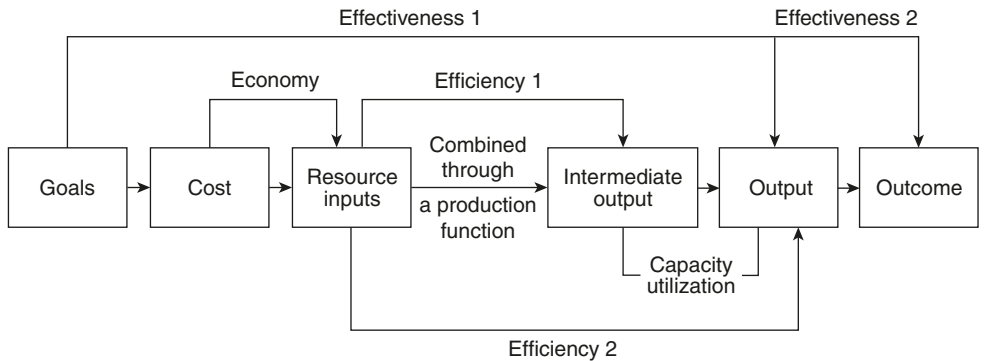


Figure 10.2 The productivity framework

The distinction between efficiency and effectiveness has been defined as ‘doing things right’ (efficiency) and ‘doing right things’ (effectiveness).³ What this amounts to is that efficiency is ‘the rate at which inputs are converted into outputs’ and effectiveness is ‘the extent to which purposes are being achieved’.⁴

Figure 10.2 offers a guide to developing an understanding of the various elements and their relationships:

- **Economy:** the cost of selecting and hiring people, materials and equipment and conversion through training and installation into resource inputs capable of providing service. It is not a measure of performance, but can have an impact on the level of performance.
- **Efficiency 1:** the ratio of inputs to intermediate outputs, e.g. the cost per unit of capacity (cost per place in a private nursing home) or cost per anticipated level of demand (cost per meal prepared in a hotel).
- **Production function:** all the resources (staff, buildings, equipment, consumables) are combined to produce intermediate outputs, i.e. the capacity to produce the relevant service (school places, hospital beds, train seats, restaurant seats).
- **Efficiency 2:** the ratio of inputs to outputs, e.g. the cost per college graduate or cost per number of meals sold in an hotel.
- **Capacity utilization:** the ratio of intermediate output to final output, i.e. how good is management at converting the intermediate output into customer take-up. For example, what percentage of seats will be taken up by customers in a restaurant or what percentage of places will be taken up in a residential home. For services in general, and in particular where advance preparation is involved (meals in a restaurant), accurate demand forecasting will become part of effective marketing management.
- **Effectiveness 1 and 2:** there is no overall agreement as to how effectiveness should be defined. Is it to be in terms of ‘output’ or ‘outcome’?

Output means the service actually delivered to customers. Outcome, on the other hand, is the impact which the service may have on the recipients. It is the quality of the service delivered and its effectiveness in meeting users’ needs or achieving its underlying purpose (Audit Commission)⁵. For example, a college educates students

(output) but has a certain responsibility for graduate employability and destination (outcome). A management consultancy produces a report and advises a client (output) but has a certain responsibility for the impact of the report on the performance of the client company (outcome). In both cases, however, the outcome measure is not completely under the control of the service provider.

For many services, output is defined in a straightforward manner, as in:

- Number of commuters transported
- Number of home help clients assisted
- Number of restaurant meals served
- Number of admissions to a leisure centre.

What is missing is any reference to the quality of service delivered.

Some services simply have no output or outcome that can practically be measured in quantitative terms; for example, a counselling service.

If the output of a process appears to defy identification with precision, a surrogate measure of output may be used. For example, the true output of the police service could be its contribution to the maintenance of a peaceful, crime free, ordered society, or a public library's true output might be the contribution it makes to expanding the knowledge base of, and to entertaining, the constituent community. As both of these outputs are likely to prove difficult to quantify, proxy measures in the form of 'percentage of reported crime solved' and 'ratio of loans to book stock' are used.⁶

The difficulties surrounding the measurement of output and outcome has led to the development of a different approach which is known as process productivity. It has been argued as being a more realistic and expedient measure.⁷ How well the service is delivered is, arguably, a better way for a service like health, where it is difficult to measure changes in health status and where factors other than medical care affect health outcome.

10.3 Improving productivity

Given the standard ratio there are, in theory, five ways to increase productivity:

- 1 Output increases faster than input
- 2 Output remains unchanged with fewer inputs
- 3 Output increases from the same inputs
- 4 Input decreases more than output
- 5 Maximum increase in the ratio through an ideal combination of outputs and inputs.

Whatever method is selected, the true test will be the effect on the quality of service delivered. Improved productivity must, therefore, take into account effectiveness as well as efficiency. A number of practical steps can be taken to improve productivity in terms of efficiency and effectiveness:

- 1 Careful cost control, driven by a management desire to become 'leaner and fitter'
- 2 Job design – management and employees in pursuit of productivity improvements must attempt to answer questions such as:⁸
 - What work do we do?
 - How do we do it?

- Why do we do it this way?
 - How can we do it better?
- 3 Replace human labour with automation
 - 4 Improve employee motivation:
 - How do employees perceive the organizational culture?
 - Do they feel part of the organization?
 - Are rewards commensurate with the tasks done?
 - 5 Select people more predisposed for productivity, for example the predisposition of an air traffic controller is more important than that of a security guard in a low-crime area
 - 6 Isolate, and even extend, the back office so that the benefits of manufacturing technology can be achieved
 - 7 Schedule resource deployment to match fluctuations in the level of customer demand
 - 8 Involve customers more in the production and delivery of service
 - 9 Make sure that highly skilled employees are not doing jobs that could be undertaken by less fully trained staff.

10.3.1 Practical examples: some undesirable consequences

In the drive for greater efficiency, productivity increases may produce an adverse effect:

Example 1: a 300-bedroomed hotel has reduced the number of chambermaids from 30 to 20 as a result of a productivity drive. There are to be no changes in time to do the job and materials/equipment available. The result is a reduction in the cleanliness of rooms, in particular those occupied by families who leave the room very untidy.

Example 2: an insurance company decides to measure the productivity of its employees by client satisfaction. As a result, the claims department rapidly settled claims and nearly bankrupted the company.

Example 3: a hospital increased patient throughput by decreasing the average duration of bed occupancy. Efficiency could be said to have increased. However, to achieve this efficiency, the hospital selected patients offering the likelihood of shorter lengths of stay. Fundamentally, a faster throughput may increase efficiency but at what cost to full and lasting patient recovery (effectiveness). An increase in the number of early deaths would certainly increase efficiency!

What these examples clearly demonstrate is an overriding concentration on increases in quantity and cost reduction. The consequence is an adverse effect on service quality. Greater efficiency is achieved by increasing the numerator (faster turnover of patients) while maintaining the denominator or maintaining the numerator and decreasing the denominator (fewer chambermaids).

There is often a tension between the drive for efficiency and the achievement of effectiveness⁹ (Figure 10.3). A service can be efficient but ineffective; alternatively it

	Ineffective	Effective
Inefficient	Die quickly	Survive
Efficient	Die slowly	Thrive

Figure 10.3 The contrast between efficiency and effectiveness

Source: Brown (1987)⁹

can be effective but inefficient. This can be illustrated by a hypothetical emergency ambulance service:

One can envisage an ambulance with a highly trained crew that is very efficient and dashes about from accident to accident promptly, treating injured persons with expert skill, placing them in the ambulance and rapidly driving them to the nearest hospital, then racing off to service yet another emergency. The unit would be extraordinarily efficient if it handled two such emergencies in an hour or about sixteen in an eight hour shift. However, it would be utterly ineffective if the actual number of emergencies in the area averaged twenty per shift. This would be an example of a highly efficient service that is utterly ineffective; more ambulances are needed. Alternatively, one can conceive of a very effective ambulance service where no one has to wait more than five minutes to receive expert medical attention, ambulances are promptly dispatched, and many lives are saved. However such a service may be extremely inefficient, if in fact it is staffed with so many ambulances and crews that most of them sit around doing nothing for hours on end because there is little demand for their service.¹⁰

10.4 Consumer participation and productivity

As the consumer is the central character in the provision of service, the question arises, 'What contribution can the consumer make to the delivery of an efficient and effective service?' To test the impact of the consumer's contribution to service productivity, consider the four following real-life service scenarios.¹¹

Scene 1: a major hotel:

Guest A called the desk right after check-in to report a burned-out light bulb and an absence of hot water; both were fixed in an hour. Guest A also slept better, as the hotel assigned him a quiet room when he identified himself as a light sleeper.

Guest B did not communicate to management until check-out time, when he complained that there was no hot water and he had to read in the dark; he was overheard by new guests checking in, who asked if the hotel was undergoing a disaster.

Scene 2: an airline flight from New York to Los Angeles:

Passenger A arrives for the flight with a portable tape player and tape, with a large supply of reading material, and wearing warm clothes. Passenger A also booked a special meal ahead of time.

Passenger B, who arrives empty-handed, becomes annoyed when the crew runs out of blankets and magazines, complains about the lunch and starts fidgeting after the movie.

Scene 3: office of a professional tax preparer:

Client A has organized the necessary information into categories that will help the accountant.

Client B has a shoe box filled with papers, including laundry receipts mixed in with cancelled cheques.

Scene 4: a health club:

When a new aerobics instructor includes a routine that seems hard to follow. Member A modifies the steps and adjusts the pace to allow for her individual physical limitations.

Member B complains that the routine is too hard to follow and suggests that the instructor be fired immediately.

Reflecting on the four scenarios, two related questions are worth remembering:

- 1 How many of the Customer B type are there around?
- 2 What can a service provider do to encourage more of the Customer A type?

In trying to turn the service consumer into a valued participant in the service delivery process, the service provider must recognize the following factors and how they could be managed:

- Consumer predisposition, e.g. personality, attitudes, values – may be difficult to change
- Consumer potential commitment/willingness to become involved – low to high
- Consumer knowledge and skills – how easily can they be developed if need be?

In addition to the degree of consumer involvement, the service provider must consider the nature of consumer involvement, i.e. when, where and how in the service delivery process will customer involvement occur? From self-service at a restaurant or petrol station through to interactions with a doctor, teacher or accountant, the potential for exploiting improvements in productivity can be substantial. Whatever changes in service delivery are proposed, the consumer must be the major beneficiary.

10.5 White-collar productivity

The working day for blue-collar workers is often prescribed down to the finest detail (tasks to be done and time taken to do them). For white-collar workers, what they do and how much time they spend doing it, is often left to their own judgement. Within the blue-collar category the tasks are largely standardized and repetitive, e.g. railway

porter, catering assistant, bus driver, street sweeper. The white-collar category, on the other hand, includes a diversity of jobs with differing sets of authority, responsibility and duties. Ruch sought to clear up the problem of the white-collar category by isolating two relevant dimensions.¹²

- 1 The amount of discretion involved – not the amount of skill, but the degree to which there is a specified procedure to follow in the performance of the job. For example, the hotel receptionist's job is not highly skilled but judgement may be required in handling the different customer enquiries and complaints. On the other hand, the dentist's job is a highly skilled procedure in contrast to the procedure for handling complaints. It would be easier to measure, therefore, the productivity of the dentist (number of fillings, extractions per dentist) than the hotel receptionist's performance in handling customer enquiries and complaints. The general rule is that the less discretion there is in the job, the easier it is to measure. The dentist's job, in productivity terms, is, therefore, more akin to the blue-collar worker.
- 2 The degree to which there is a physical product involved in the process. For the McDonald's cook or the dentist there is a tangible output that can be counted and checked for quality (the hamburger and the filling). The hotel receptionist's job has to be experienced, as once it is performed, the evidence disappears. There is no output left to count or check for quality. The general rule is that the more there is a tangible output, the easier it is to measure.

There are problems then in measuring white-collar productivity:¹²

- Difficulties in determining the output or contribution
- Tendency to measure activities rather than the results, e.g. number of reports created says nothing about the quality of these reports
- The input may not show up in output until some time later; there is a lagged effect
- Quality of output is even more difficult to determine than quantity
- Distinction is often not made between efficiency and effectiveness; the white-collar worker may be efficient at developing reports but ineffective by not having enough to do, attending unproductive meetings, or assigned work outside the area of expertise
- White-collar workers are not accustomed to being measured.

Although there are difficulties, effort should be made to measure white-collar productivity. The inputs may be relatively straightforward, e.g. number of hours worked, number of hours paid, resources used. It is the process and the output that pose the difficulties. The following issues are worth consideration:

- Creativity of white-collar employees in the sense of developing and implementing new ideas
- Efficiency and effectiveness of the utilization of the working day – this is an overriding factor upon which everything else depends
- Satisfaction level of the customers – care needs to be exercised since no matter what the white-collar worker does, the customer may remain dissatisfied, e.g. lecturer and student, doctor and patient
- Ability to handle non-standard situations, i.e. crisis management
- Communication skills and success in keeping people properly informed.

The above list is by no means exhaustive but simply indicates the kind of analysis that needs to be undertaken.

The single greatest challenge facing managers, according to Drucker¹³ is to raise the productivity of knowledge and service workers. He stresses that for all their diversity in knowledge, skill, responsibility, social status and pay, knowledge and service workers are remarkably alike in terms of:

- What does and does not work in raising their productivity.

The first lesson that came as a rude shock, according to Drucker, is that the replacement of labour with technology does not, by itself, raise productivity. The key to raising productivity is working smarter rather than harder or longer. Drucker believes that fundamental questions need to be asked if the productivity of knowledge and service workers is to be raised. For example:

- What is the task?
- What are we trying to accomplish?
- Why do it at all?

Drucker bemoans the fact that in many professional service jobs, e.g. nursing, teaching, a great deal of effort and time is taken up with paperwork and meetings, much of which contributes little if any value and has little if anything to do with what these professionals are qualified and paid for. The result is job impoverishment rather than enrichment and a reduction in motivation and morale.

Drucker recognizes that for a good many service jobs, e.g. making hospital beds, handling insurance claims, performance is defined on a quantity basis, very much like production jobs. The application of industrial engineering techniques will determine how long it should take, for example, to make up a hospital bed properly. For other service jobs, e.g. knowledge-based, raising productivity, in Drucker's view, requires asking 'What works?' plus analysing the process step by step and operation by operation.

Process is the subject of an approach that could achieve for office productivity what just-in-time techniques did for manufacturing practice. Business process redesign (BPR) looks at procedures and the way things are organized. BPR is attracting the interest of large service organizations looking for new ways of raising productivity and cutting costs. By simplifying the workflow and reducing the number of stages involved in a procedure, BPR can speed up customer service and involve fewer staff.

The development of schemes relating pay to individual performance has grown dramatically in recent years. According to one survey,¹⁴ 47% of private sector companies have performance related pay (PRP) schemes for all non-manual grades and a further 21% were using it for some non-manuals. There was no significant difference between manufacturing and service industries, but there was a difference between the public and private sectors. In the public sector 37% of organizations in the survey were operating PRP schemes for some of their non-manual grades, but only 6% covered all non-manuals. Non-management grades in the public sector were significantly less likely to be covered by PRP than in the private sector, and those employed in senior management. Management and professional occupations were nearly twice as likely to be eligible for PRP in the private sector as those in the public sector.

The supporters of PRP put forward a number of reasons for introducing it, e.g. it's a motivator, it improves quality and productivity and it's fair. The evidence in support of these claims is inconclusive. Instead, it can be argued that the actual assessment of performance is open to charges of unfairness. Questions are raised about who does the assessment and how it is done. Furthermore is PRP appropriate to all organizational cultures? Even if it is appropriate, how far can PRP help to promote changes in organizational culture? Can it make organizations more customer performance oriented through improved productivity and service quality?

The challenge of implementing PRP is arguably greater for service organizations than their manufacturing counterparts. There is more uncertainty in terms of process and output and factors outside their employees' control may figure prominently in service situations, e.g. infinite variety of possible breakdowns in the service delivery system, difficulties in managing customers.

Some jobs or tasks may not easily lend themselves to concrete performance measures. It is easier to evaluate if hard quantifiable, technical measures can be set. However, softer measures, e.g. related to communication skills, should also be encouraged.

It is argued that PRP is a distinct improvement on previous incentive schemes. According to Kessler and Purcell,¹⁵ 'the link between pay and performance remains as obscure as ever and further research is necessary to throw some light on this vexed issue'.

Of course, the most radical question of all in any discussion of white-collar productivity would be, 'Why not give the workers a say?' Giving subordinates a 'voice' in formal performance evaluation of their bosses can prove invaluable as a source of feedback for everyone concerned.¹⁶ Employees can be asked their view of how effective the bosses are in, for example:

- Providing feedback on performance
- Looking for ways to improve existing systems
- Taking action on urgent requests
- Keeping people well informed
- Handling a disruptive employee.

Care must be exercised over what to appraise and how to do it. Some might question the accuracy of subordinate appraisals. To some extent this misses the point. Their true value is in offering a view of management performance from those directly affected by it. That view can then be compared with management's view of itself. One study¹⁷ found that managers who perceived themselves to be effective at 'providing clear instruction and explanation to employees when giving assignments', were not perceived as such by those persons supposedly on the receiving end of the instructions!

Involving employees in management appraisal can influence their own productivity as well. What they believe and say about management's expectations of them may hold the key to explaining levels of productivity. The 'Pygmalion in Management' view suggests that most managers unintentionally treat their subordinates in a way that leads to lower performance than they are capable of achieving.¹⁸

The way subordinates are treated is very much influenced by management expectations of them. The result is that high expectations lead to high productivity and low expectations lead to low productivity. However, expectations must, in the view of the subordinate, be realistic and achievable.

A concluding comment about white-collar productivity: it is not so readily observable and measurable as blue-collar productivity, e.g. the bricklayer is both easily observed and measured – number of bricks laid per hour; whereas a nurse comforting a patient after a major operation may not be viewed as productive activity in the conventional wisdom.

10.6 Service productivity as a relationship between input and output

Efficiency and effectiveness in a service organization are measured in terms of inputs and outputs. But unlike manufacturing or extractive industries, service is a process with customer involvement. Understanding the process is fundamental to explaining the relationship of inputs to outputs. This process, and the inputs and outputs, can be portrayed as approximating to a triangle. The base could be a point (making it truly a triangle) or as wide as the top (making it a square) (Figure 10.4).

An example will serve to illustrate. Colleges take in students who have expectations. After a period of time one output will be student satisfaction. The width of the base will indicate what percentage of those who have entered were satisfied at the finish with what they received. In this case (Figure 10.4) the percentage satisfied would be of the order of 25%. The dotted line would represent a situation where all the customers who used the service were satisfied. Of course, in addition to determining how many customers were satisfied, consideration would have to be given to how satisfied they were. Notwithstanding dropouts and failures, the percentage satisfied will serve as a measure of how effective the process they have gone through has been. This kind of analysis could apply to many services, e.g. hotels, package holidays, rail commuters.

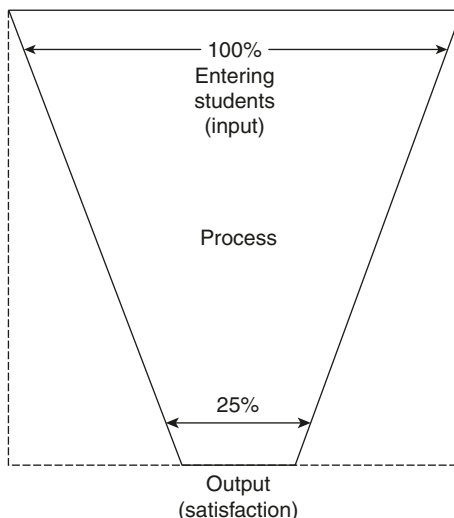


Figure 10.4 The service triangle: percentage satisfied

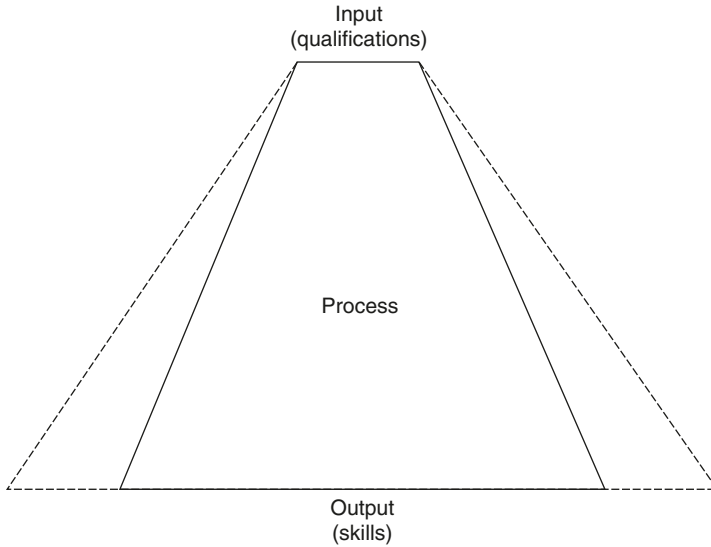


Figure 10.5 The service triangle: value added

Equally, the triangle could be portrayed another way (Figure 10.5). This time the emphasis is on the value added by the process. Students enter with qualifications, e.g. A-levels, and finish with a qualification. But how effective has the process been in developing skills and abilities valuable for entering the world of work? The wider the base (dotted line) the more effective the process has been. Unlike the percentage satisfied measure, the value-added approach is more difficult to determine.

Heaton¹⁹ suggested that the productivity of service organizations could be calculated as the product of four operating functions: input, processing, output or follow-up, and timing and coordination. He applied this to the unusual example of a mental hospital:

Input: 30% of those admitted do not require hospitalization – gross rating then of 70%.

Processing: only 50% of those needing help receive it due to overcrowding, understaffing and a general lack of skills, understanding and care – gross productivity measurement is then 35% ($50\% \times 70\%$).

Output or follow-up: on release, only 20% are offered appropriate follow-up and assistance due to limited outpatient services – gross productivity measurement is now 7% ($50\% \times 70\% \times 20\%$).

Timing and coordination: There is a time and place for everything; too little too late is as wasteful as too much too soon. Of the 7% only 50% were admitted, treated and released at the proper time and helped by the proper agencies – gross productivity measurement is now 3.5% ($70\% \times 50\% \times 20\% \times 50\%$).

Therefore, out of an initial 100 only three or four were effectively helped. It is hardly the mark of an effective service organization.

Analysis similar to Heaton's is a must for service organizations as it focuses on the process and facilitates understanding of the progress from the input to the output

stage. As with the college example mentioned earlier, there will be a number of variables that require investigation. Some of these will be under the control of the service organization and others may be more difficult to control. The nature and deployment of employee skills, materials and equipment are far more controllable than the customers' behaviour and demand levels.

10.7 Customer retention and lifetime value

10.7.1 The retention perspective

The traditional role of marketing has been to win customers. Little attention or effort was devoted to keeping them. This preoccupation with customer acquisition rather than customer retention has been criticized as a 'leaky bucket' approach to business. So long as new customers are acquired to replace those existing customers lost through the hole in the bucket, success in the form of sales is achieved.

It has been estimated that most organizations lose significantly more than 30% of their customers before or at the time of a repurchase decision, mainly through poor service; and the only reason market shares do not drop is because competitors are usually in the same position and are losing customers to their rivals.²⁰ What all this means is that there is a high turnover of dissatisfied customers searching for a company that they can trust and have faith in. As one observer points out:

It has always been incredible to me how insensitive companies can be to their customers. Most of them don't seem to understand that their future business depends on having the same customer come back again and again.²¹

Support for retention over acquisition came in a report²² claiming that a reduction in customer defections by just 5% across a range of service industries generates an increase in profits anywhere from 25 to 85% (for an illustration of the profit impact of customer retention see Appendix 10.1). More recent work has confirmed the earlier finding.²³ Two previously unidentified factors evidently explain such an impact on profits.²⁴ The first factor is the customer volume effect – the bigger the leak of customers from the bucket, the harder a company must work to fill it up and keep it full. Consider two companies, one with a customer retention rate of 95%, the other with a rate of 90%. The leak in the first company's bucket is 5% per year and the second company's leak is twice as large, 10% per year. If both companies acquire new customers at the rate of 10% per year, the first will have a 5% net growth in customers per year, while the other will have none. What this means is that the first company will double in size over 14 years, while the other will have no growth at all (see Appendix 10.2 for calculations). The second factor is the profit per customer effect – this is more difficult to see than the customer volume effect but evidently the effect on profits is even bigger.

10.7.2 Retention rate and average customer lifetime

The measurement of customer loyalty is known as the 'customer retention rate'. As a company's retention rate improves, the average 'life' of a customer increases. For example, if a company can find a way of increasing its average retention from an

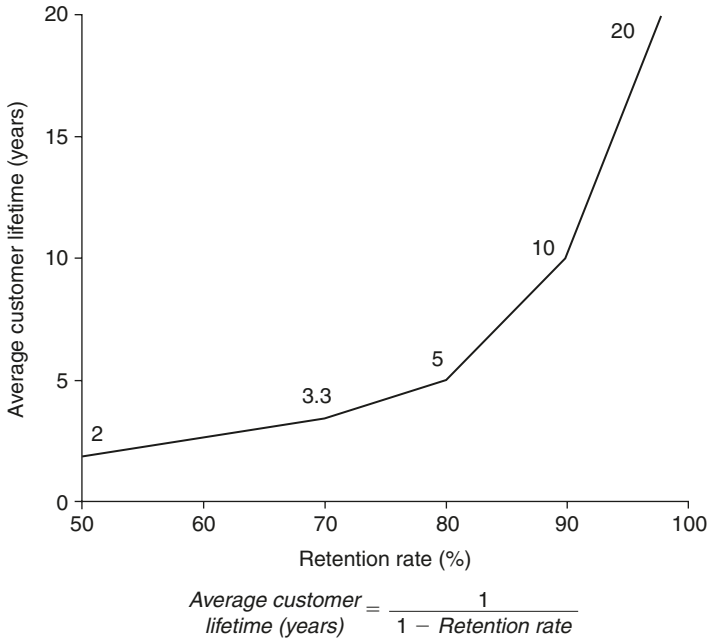


Figure 10.6 Customer-retention model: impact on customer lifetime

Source: Bain & Co.

annual 80% to 90% it will actually double the average customer lifetime from 5 to 10 years (Figure 10.6).

If it retains 80% of its customers it will have had to replace all of them over a 5-year period ($5 \times 20\%$). If it retains 90% it will lose just half of them over the same period ($5 \times 10\% = 50\%$). Increase in retention is one means of increasing profitability.

10.7.3 Why loyal customers are more profitable

According to international management consultants Bain & Co., a number of factors are deemed important for understanding profit enhancement from customer loyalty. The factors cited are:²⁵

- **Acquisition cost:** money has to be invested to bring in new customers, e.g. cost of selling, advertising etc.
- **Base profit:** all customers buy some product or service and the prices they pay are usually higher than the company's costs; the longer you keep a customer, the longer you will earn this base profit
- **Per customer revenue growth:** customer spending tends to accelerate over time
- **Operating costs:** as customers get to know a business and company employees get to know their customers, efficiencies in doing business arise and thereby reduce costs
- **Referrals:** satisfied customers are more likely to introduce new customers to the company through word-of-mouth recommendation
- **Price premium:** satisfied customers are often willing to pay premium prices to a supplier they know and trust.

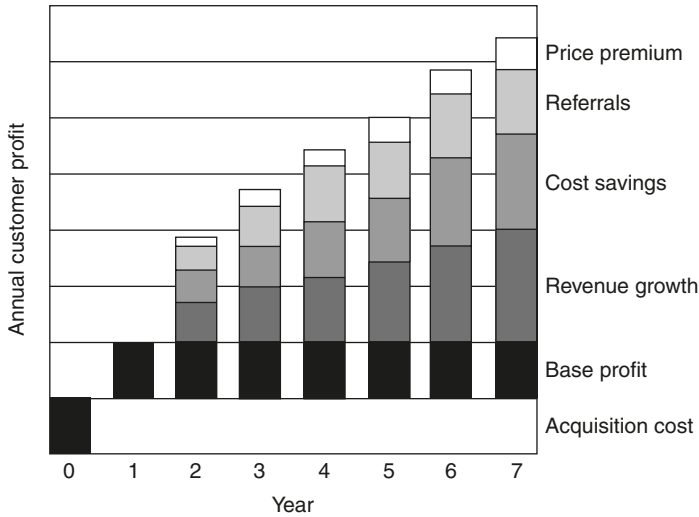


Figure 10.7 Why loyal customers are more profitable

Source: Bain & Co.

Figure 10.7 illustrates the root causes of, and their respective contribution to, increased profitability over time.

A key criticism made of the customer retention concept is that customer longevity does not always result in significant profitability improvement.²⁶ Bain & Co.'s response has been that 'Our position has never been that simply increasing retention rates will magically produce profits. For example, foolish investments to retain hopelessly unprofitable customers would destroy profits. Our point is that substantially higher profits require high retention. Therefore, understanding the link between retention and profits is essential.'²⁷ The argument revolves around the types of customer retained'. One critic (of Bain & Co.'s argument) gave the following example to illustrate the point:²⁸

Three types of retail banking customer:

- A customers: acceptable annual contribution
- B customers: unacceptable but positive annual contribution
- C customers: negative annual contribution

In the first quarter of year 1: 1000 new customers

In the second quarter of year 1: 500 lost money (Type C)
200 made a little but not much (Type B)
300 were strong contributors (Type A)

By the end of year 3: 500 customers left:

Of the 500 initially unprofitable: 150 remain
Of the 200 who made a little: 100 remain
Of the 300 strong contributors: 250 remain

Type A customers now make up to 50% of that total, as against 30% at the beginning.

Table 10.2 Customer retention and profitability: comparison of average annual contributions

	Customer	Number of customers	Profit per customer (£)	Total profit (£)
Year 1, quarter 2	A	300	250	75 000
	B	200	50	10 000
	C	500	(150)	(75 000)
		<u>1000</u>		<u>10 000</u>
		£10 000 ÷ 1000 = £10 per customer		
End of year 3	A	250	250	62 500
	B	100	50	5 000
	C	150	150	(22 500)
		<u>500</u>		<u>45 000</u>
		£45 000 ÷ 500 = £90 per customer		

The resulting improvement in profitability has been caused by the departure of Cs, not by the change of status of Cs to Bs and Bs to As.

If an A customer is worth £250 a year, a B customer is worth £50 per year and a C customer is worth £150 a year, what change has there been in the average annual contribution between early in year 1 and the end of year 3? Table 10.2 tells us that the average annual contribution has gone from £10 to £90 owing to the rise in the proportion of A customers, the most profitable type.

10.7.4 Lifetime value of a customer

To understand the full impact of defections, companies must calculate the lifetime value of a customer. It is defined as the total revenue received from a customer during his or her 'lifetime' with a company, less the costs of servicing and marketing. In effect, the total profit received from having that customer over time. Where there is a difficulty in calculating profit, contribution margin (revenue minus variable cost) or sales revenue can be used.

In general terms, lifetime value of a customer can be calculated as follows:

$$\begin{aligned} \text{Lifetime value} &= \text{Average transaction value} \\ &\quad \times \text{Frequency of purchase} \\ &\quad \times \text{Customer life expectancy} \end{aligned}$$

To take a simple example, just one loyal customer paying an average £100 per week over 10 years for office-cleaning services would be worth £52 000 to the provider.

A relatively simple scenario using contribution margin (CM) as the financial measure of success will demonstrate lifetime value in practice²⁹ (Table 10.3). From an initial acquisition of 1000 new buyers, the lifetime value over a 12-year period is determined.

In year 1 the company acquires 1000 new buyers. The average contribution margin per buyer (CM/buyer) is £1 owing to a large proportion of the contribution margin having been used to cover the cost of new customer acquisition. Therefore, the

Table 10.3 Lifetime value

	Acquisition year											
	1	2	3	4	5	6	7	8	9	10	11	12
Buyers	1000	250	150	105	84	67.20	53.76	43.01	34.41	27.53	22.02	17.62
Retention (%)		25	60	70	80	80	80	80	80	80	80	80
Contribution margin (CM) per buyer	£1	£20	£20.40	£21.01	£21.85	£22.95	£24.09	£25.30	£26.56	£27.89	£29.28	£30.75
CM % increase			2%	3%	4%	5%	5%	5%	5%	5%	5%	5%
Total CM	£1000	£5000	£3060	£2206	£1836	£1542	£1295	£1088	£914	£768	£645	£542

Source: Wang and Splegel (1994)²⁹

total annual contribution for these buyers is £1000. The following year, 250 of the original buyers made repeat purchases from this company. The average contribution per customer increases to £20. The increase in the contribution margin is due to the significant decrease of variable marketing costs by the second year. Over subsequent years we witness an increase in the average contribution per buyer due to the improving quality of repeat customers. From year 6, a contribution margin of 5% is sustained till year 12. The lifetime value of this customer group over the 12 years is £19 896, being the sum of the 12 yearly contribution.

10.7.5 Present value

The problem with Table 10.3 is that we are unable to make direct comparisons between the cash received in year 12 and that received in year 1 in terms of how much each is worth. Clearly £542 received today is worth much more than £542 received in 12 years' time. In fact £542 invested today for 12 years at an annual interest rate of 10% would give a cash amount of £1701 (i.e. $£542 \times 1.10^{12}$). We have in effect converted today's money (£542) into an equivalent amount (£1701) 12 years in the future by using a rate of interest.

A better way of making all the cash flows comparable is to bring all of them back to today's values rather than to project forward. The technique uses the same logic but in reverse: the objective is to find an equivalent present value for any future cash flow. Instead of applying compound interest we apply a negative interest rate to reduce the future value to the present value. This negative interest rate (or discount rate, as it is called) is the annual cost associated with having to wait to receive the cash. The present value (PV) of a future sum as given by the formula:

$$PV = \frac{1}{(1 + R)^n}$$

where R equals the rate of interest per period and n the number of the periods to be discounted. Returning to Table 10.3 and using a standard discount rate of 10%, the £19 896 in cumulative contribution translates to a present value of £13 111 (Table 10.4).

What does this £13 111 mean? It gives some sense of how much this customer group is worth in today's money. Furthermore, it guides the amount that can be spent today on acquiring customers. Spending sums today in excess of £13 111 on acquiring customers would do little for the company's profitability.

The above calculations and frameworks form the basis for what can become a complex, intricate process. What is at issue here is growth and profitability. The task of balancing what is spent on customer acquisition with what is spent on retention will require knowledge of returns from spending in terms of acquisition and retention rates and subsequent present values. In essence all companies face the following questions:

- How does the current rate of acquisition/retention compare with the highest possible number of customers that could be acquired/retained?
- How would the acquisition/retention rate respond to variations in expenditure allocated for acquisition/retention?

Table 10.4 Present value

Year	Total CM £	Discount factor	Present value £
1	1000	$1/1.10^1$	909.1
2	5000	$1/1.10^2$	4132
3	3060	$1/1.10^3$	2298.9
4	2206	$1/1.10^4$	1506.6
5	1836	$1/1.10^5$	1139.9
6	1542	$1/1.10^6$	870.4
7	1295	$1/1.10^7$	664.5
8	1088	$1/1.10^8$	507.5
9	914	$1/1.10^9$	387.6
10	768	$1/1.10^{10}$	296
11	645	$1/1.10^{11}$	226
12	542	$1/1.10^{12}$	172.6
			13 111.1

- Who are our most profitable customers and why? Is it one or a mixture of factors such as customer characteristics, loyalty behaviour, response to marketing stimuli etc.

Summary

Productivity is an issue that has been around for some time. It is concerned with the efficiency of converting inputs into outputs. For service organizations, unlike manufacturing, productivity management is more difficult. This is because the input, process and output are not always susceptible to objective definition and measurement.

A number of steps can be taken to improve productivity but care must be exercised when devising an efficiency programme because effectiveness may diminish as a result.

Consumers play a pivotal role in services. Strategies must therefore be devised for developing consumer participation in the drive for increased productivity. In doing so, recognition must be given to the difficulties involved in obtaining this participation.

Productivity measures have usually been applied to blue-collar employees but white-collar employee performance and the impact of technology are becoming more important in the pursuit of efficiency and effectiveness.

In addition to the quest for increased productivity, organizations are seeking to retain customers in preference to the traditional way of acquiring them. The attractiveness of this approach has accelerated since evidence showed increasing returns from customer retention. However, it has also been recognized that not all long-term customers are profitable. Nevertheless, with the increasing emphasis on database technology and loyalty cards, the opportunity for establishing the economics of loyalty is self-evident.

Appendix 10.1 Customer retention

A service organization has made available the following information:

Starting point – at current levels of retention, cross-sales and referrals

Key data:

Marketing budget, acquisition	£2 325 000
Marketing budget, retention	£0
Total number of customers	50 000
Average acquisition rate	33.75 (weighted average = 31.5)
Total, new customers p.a.	15 750
Average retention rate	71% (weighted average = 70.5)
Total, customer lost p.a.	(14 750)
Growth/decline in customer file	1000
Growth/decline in customer file	2.0%
Average customer lifetime	3.29 years (weighted average = 3.4)
Average profit contribution per cust. p.a.	£300

<i>Segmentation</i>	<i>Segment 1 18 to 29</i>	<i>Segment 2 30 to 39</i>	<i>Segment 3 40 to 49</i>	<i>Segment 4 50 plus</i>
Revenue per customer, p.a.	£400	£500	£650	£750
Servicing costs per customer, p.a.	£250	£320	£400	£480
Acquisition costs per customer	£70	£100	£220	£250
Cross-sales ratio (1 to ...)	1.07	1.22	1.31	1.12
Referral ratio (1 to ...)	1.05	1.13	1.18	1.31
Total customers per segment	5000	20 000	15 000	10 000
Retention rate per segment	60%	70%	75%	70%
Acquisition rate per segment	50%	35%	25%	25%
Lifetime per customer, years	2.50	3.33	4.00	3.33
Customers acquired p.a.	2500	7000	3750	2500
Customers lost p.a.	(2000)	(6000)	(3750)	(3000)
Growth in customer file p.a.	500	1000	0	(500)
% Growth in customer file	10%	5%	0%	-5%

At stage 2: Marketing expenditure switches from 100% acquisition to 75% acquisition and 25% retention. We assume that this will increase retention by 5% in all segments (i.e. one in 20 more customers will be retained)

We also assume that this will encourage

10% more cross-sales to occur and
7.5% more referrals to occur

Key data:

Marketing budget, acquisition	£2 325 000	changing to £1 743 750
Marketing budget, retention	£0	changing to £581 250
Total number of customers	50 000	
Average acquisition rate	25.5	(weighted average = 23.7)
Total, new customers p.a.	11 850	
Average retention rate	73.75%	(weighted average = 75.5)
Total, customers lost p.a.	(12 250)	
Growth/decline in customer file	(400)	
Growth/decline in customer file	(0.8%)	
Average customer lifetime	3.965 years	(weighted average = 4.186)
Profitability per annum	£300	

<i>Segmentation</i>	<i>Segment 1 18 to 29</i>	<i>Segment 2 30 to 39</i>	<i>Segment 3 40 to 49</i>	<i>Segment 4 50 plus</i>
Revenue per customer, p.a.	£400	£500	£650	£750
Servicing costs per customer, p.a.	£250	£320	£400	£480
Acquisition costs per customer	£70	£100	£220	£250
Cross-sales ratio (1 to ...)	1.07	1.22	1.31	1.12
Referral ratio (1 to ...)	1.05	1.13	1.18	1.31
Total customers per segment	5000	20 000	15 000	10 000
Retention rate per segment	65%	75%	80%	75%
Acquisition rate per segment	38%	26%	19%	19%
Lifetime per customer, years	2.86	4.00	5.00	4.00
Customers acquired p.a.	1900	5200	2850	1900
Customers lost p.a.	(1750)	(5000)	(3000)	(2500)
Growth in customer file p.a.	150	200	(150)	(600)
% Growth in customer file	3%	1%	-1%	-6%

Question

Determine the impact on profit from stage 1 to stage 2

Stage I

<i>Customer value</i>	<i>Segment 1 18 to 29</i>	<i>Segment 2 30 to 39</i>	<i>Segment 3 40 to 49</i>	<i>Segment 4 50 plus</i>
Profits in year 1 from core product sales	£80	£80	£30	£20
Profits in subsequent years from product sales	£150	£180	£250	£270
Total net profit per customer from product sales	£305	£500	£780	£650

<i>Customer value</i>	<i>Segment 1 18 to 29</i>	<i>Segment 2 30 to 39</i>	<i>Segment 3 40 to 49</i>	<i>Segment 4 50 plus</i>
Profit from cross-sales over lifetime	£21	£110	£242	£78
Profit from referrals	£15	£65	£140	£202
Total customer value	<u>£341</u>	<u>£675</u>	<u>£1162</u>	<u>£930</u>

Summary

<i>Customer value</i>	<i>Segment 1</i>	<i>Segment 2</i>	<i>Segment 3</i>	<i>Segment 4</i>
Total customer value in segment	£1 705 000	£13 500 000	£17 430 000	£93 00 000
Customer value contributed p.a.	£682 000	£4 050 054	£4 357 500	£2 792 792
Total customer value across all segments				£41 935 000
Total annual customer value across all segments				£11 882 346

Stage II

<i>Customer value</i>	<i>Segment 1 18 to 29</i>	<i>Segment 2 30 to 39</i>	<i>Segment 3 40 to 49</i>	<i>Segment 4 50 plus</i>
Profits in year 1 from core product sales	£80	£80	£30	£20
Profits in subsequent years from product sales	£150	£180	£250	£270
Total net profit per customer from product sales	£359	£620	£1030	£830
Profit from cross-sales over lifetime	£28	£150	£351	£110
Profit from referrals	£19	£87	£199	£277
Total customer value	<u>£406</u>	<u>£857</u>	<u>£1580</u>	<u>£1217</u>

Summary

<i>Customer value</i>	<i>Segment 1</i>	<i>Segment 2</i>	<i>Segment 3</i>	<i>Segment 4</i>
Total customer value in segment	£2 030 000	£17 140 000	£23 700 000	£12 170 000
Customer value contributed p.a.	£707 790	£4 285 000	£4 740 000	£3 042 500
Total customer value across all segments				£55 040 000
Total annual customer value across all segments				£12 775 290
At 100% of marketing budget spent on acquisition				£41 935 000
At 75% spent on acquisition, 25% spent on retention				£55 040 000

The impact on profit is an increase of 31% from stage 1 to stage 2.

Appendix 10.2 The customer volume effect

Growth rate $r\%$ per annum (r expressed in decimal form)

$$\begin{aligned} \text{Initial number of customers} &= A \\ \text{At the end of year 1 the number of customers} &= A + Ar \\ &= A(1 + r) \end{aligned}$$

At the end of year 2 the number of customers = the number of customers at the beginning of year 2 + number acquired during year 2 = $A(1 + r) + A(1 + r)r = A(1 + r)(1 + r) = A(1 + r)^2$

At the end of year 3 the number of customers = the number of customers at the beginning of year 3 + number acquired during year 3 = $A(1 + r)^2 + A(1 + r)^2r = A(1 + r)^2(1 + r) = A(1 + r)^3$

At the end of year n the number of customers = $A(1 + r)^n$

Over what period of time will the firm double in size?

If the initial number of customers is A , we wish to solve

$$A(1 + r)^n = 2A \quad (1 + r)^n = 2A/A \quad (1 + r)^n = 2$$

Taking logs of both sides

$$\begin{aligned} \log(1 + r)^n &= \log 2 \\ n \log(1 + r) &= \log 2 \\ n &= \frac{\log 2}{\log(1 + r)} \end{aligned}$$

A range of net growth customers per year and how long it will take to double in size is considered below:

<i>Net growth (%)</i>	<i>Calculation</i>	<i>Years</i>
2.5	$\frac{\log 2}{\log 1.025}$	28.07
5.0	$\frac{\log 2}{\log 1.05}$	14.20*
10.0	$\frac{\log 2}{\log 1.10}$	7.27
20.0	$\frac{\log 2}{\log 1.20}$	3.80

* Example in text

References

- 1 Ball, S D, Johnson, K and Slattery, P (1986) 'Labour productivity in hotels: an empirical analysis', *International Journal of Hospitality Management*, **5** (3), 141–147.
- 2 Rathmell, J M (1974) *Marketing in the Service Sector*. Winthrop, Cambridge, MA.
- 3 Drucker, P (1973) *Management: Tasks, Responsibilities, Practices*. New York: Harper and Row.
- 4 Butt, H and Palmer, B (1985) *Value for Money in the Public Sector*. Oxford: Blackwell.
- 5 Audit Commission (1989) 'Managing services effectively', *Performance Review*, **5**, December.
- 6 Whynes, D K (1987) 'On assessing efficiency in the provision of local authority services', *Local Government Studies*, Jan.–Feb., 53–68.
- 7 Mersha, T (1989) 'Output and performance measurement in outpatient care', *Omega*, **17** (2), 159–161.
- 8 Heskett, J L, Sasser, W E and Hart, C W L (1990) *Service Breakthroughs*. New York: Free Press.
- 9 Brown, R. (1987) 'Marketing – a function and a philosophy', *Quarterly Review of Marketing*, **12** (3 and 4), 25–30.
- 10 Savas, E S (1978) 'On equity in providing public services', *Management Science*, **24** (8), April, 800–808.
- 11 Goodwin, C (1988) "'I can do it myself": training the service consumer to contribute to service productivity', *Journal of Service Marketing*, **2** (4), 71–78.
- 12 Ruch, W A (1982) 'The measurement of white-collar productivity', *National Productivity Review*, Autumn, 416–426.
- 13 Drucker, P F (1991) 'The new productivity challenge', *Harvard Business Review*, Nov.–Dec., 69–79.
- 14 Cannell, M and Wood, S (1992) *Incentive Pay: Impact and Evolution*. London: National Economic Development Office and Institute of Personnel Management.
- 15 Kessler, I and Purcell, J (1992) 'Performance related pay: objectives and application', *Human Resource Management Journal*, **2** (3), 16–33.
- 16 Bernadin, H J and Beatty, R W (1987) 'Can subordinate appraisals enhance managerial productivity?', *Sloan Management Review*, Summer, 63–73.
- 17 Mount, M K (1984) 'Supervisors, self and subordinate ratings of performance and satisfaction with supervision', *Journal of Management*, **10**, 121–130.
- 18 Livingston, J S (1988) 'Pygmalion in management', *Harvard Business Review*, Sep.–Oct., 121–130.
- 19 Heaton, H (1977) *Productivity in Service Organisations*. New York: McGraw-Hill.
- 20 Smith, S (1994) 'Building loyalty through communications', *Marketing Business*, November.
- 21 Davidow, W H (1986) *Marketing High Technology*. New York: Free Press.
- 22 Reichheld, F F and Sasser Jr, W E (1990) 'Zero defections: quality comes to services', *Harvard Business Review*, Sep.–Oct.
- 23 Reichheld, F F (1994) 'Loyalty and the renaissance of marketing', *Marketing Management*, **15**.
- 24 Reichheld, F F (1996) *The Loyalty Effect*. Cambridge, MA: Harvard Business School Press.
- 25 Ibid.
- 26 Carroll, P (1991/92) 'The fallacy of customer retention', *Journal of Retail Banking*, **xiii**, 4.
- 27 Reichheld, F F (1991/92) 'The truth of customer retention', *Journal of Retail Banking*, **xiii**, 4.
- 28 Carroll, 'Fallacy of customer retention'.
- 29 Wang, P and Splegel, T (1994) 'Database marketing and its measurements of success', *Journal of Direct Marketing*, **8**, 2.