International Entrepreneurship Educator's Programme

Entrepreneurial Learning - Pedagogical Note Series

34. Developing Operations Standards as a basis for Estimating Costs and Controlling Operations

1. What are Operations Standards?

These are standards that might be set formally, or informally estimated, as a basis for controlling operations in all kinds of service or manufacturing operations. There are four key areas that are relevant to all kinds of activity.

Utilisation of space, machinery, other assets and labour
Efficiency with which these physical or human assets are used
Wastage of materials consumed in any process or service, and
Quality control of the service or product

The importance of these four areas to setting of costs in a new venture is best demonstrated by a simple example.

In a motor vehicle repair garage the price of the service to the customer will be a function of:
- the cost of labour in the service
- the cost of the parts/materials used in the service
- recovery of appropriate portion of overheads

Labour charges will need to be based upon estimates of:

Utilisation-- the total hours that will be available to be charged out to customers. This is unlikely to be all the hours that will be paid for by the firm. For example if there are 4 mechanics each working 40 hours then there are a total of 160 hours ostensibly available. But there will be range of foreseeable and unforeseen circumstances that will prevent this. Foreseen circumstances will include toilet breaks refreshment breaks, time spent in cleaning up, time in collecting materials, time in discussion of problems and in briefing for different jobs etc..There will also be unforeseeable time lost, waiting fore the use of a hoist, discussions with a customer on the telephone if problems are found during the service, waiting for a particular part etc. In general therefore the garage can only probably expect to sell out 80 per cent of total time paid for. The utilisation standard hourly cost will therefore be

$$\frac{\text{Total wage bill of the 4 mechanics}}{\text{80\% of 160 hours = 128 chargeable hours}}$$

Efficiency – the degree to which jobs are undertaken in the time allocated as a standard. Most major garages will have standards for all the kinds of jobs likely to be undertaken in terms of labour hours to to be spent (for example standard hours for a certain make of car/mileage service, replacing a clutch etc. These form the basis for estimating costs to the customer. In the major dealerships there will be manuals that indicate the estimated times for all types of jobs. When a mechanic is allocated a job he will also be allocated a standard time. When he completes the job he will put the actual time taken with explanations for any variances. Labour efficiency can therefore be measured at the end of a week by calculating:

$$\frac{\text{Total time allocated to jobs}}{\text{Total time actually taken}}$$

It is unlikely that efficiency will be 100% -many unforeseen problems might occur – so on the basis of experience a standard may be say 95%. Yet the customer may not always be charged for the extra hours so there will need to be some allowance made for cost recovery relating to efficiency standard outcomes. If 5% of hours are lost then a further 8 hours (5% of 160) will need to taken away from the chargeable hours base above.

Wastage – there will always be wastage of materials and components. Some components may be damaged in use and therefore written off, some may disappear as mechanics use them for their won private purposes, some will be faulty etc. Therefore in reality it is unlikely that a garage will 'sell out' 100% of all components booked out from the parts department. On the basis of experience therefore a standard might be set based upon a calculation of:

$$\frac{\text{Cost of materials booked out to customers}}{\text{Cost of materials booked out from the parts department}}$$

The 'profits' made by the parts department will be affected by this and pricing of parts will need to take into account the 'wastage' standard.

Quality – quality can be measured in a number of ways – see below. In the context of the garage it will probably be measured by customer feedback and more importantly by the amount of 'rework' the garage has to do in response to customer dissatisfaction. From a costing perspective therefore a certain standard may need to be set for hours spent on rework (including extra hours not charged to good customers as gestures of goodwill – for example replacing or changing around tires). The number of 'rework' hours (let us say estimated a 3 per week) will therefore need to be deducted form the sold out hours calculation as above.

So in the light of standards set for utilisation, efficiency and quality the hourly cost rater may be calculated as:

$$\frac{\text{Total labour costs of mechanics}}{160 - (32 + 8 + 3) = 117 \text{ sellable hours}}$$

In many small businesses, using absorption costing, the total labour hourly charge actually booked the customer would the result of the above plus an addition for overhead and profit absorptions calculated as follows:

$$\frac{\text{Total overhead costs plus profit estimate}}{117 \text{ hours}}$$

This simple example can be expanded as a framework for all kinds of service and manufacture activities no matter what the scale. Its purpose is. However, to critically demonstrate the importance in any start up situation of properly working out costs and estimating standards as a basis for this. Also there will be need to develop appropriate, often simple, systems, to measure performance against standards. In the case of the garage all of this can be designed into a simple job card.

2. How can exercises be constructed?

1. The importance of the concept can be demonstrated by request to different groups of participants to work out how utilisation, efficiency, wastage and quality might be measured in different operating contexts building from the basic framework in Exhibit 1 below.

Participants might explore how they would measure and use Utilisation etc in:

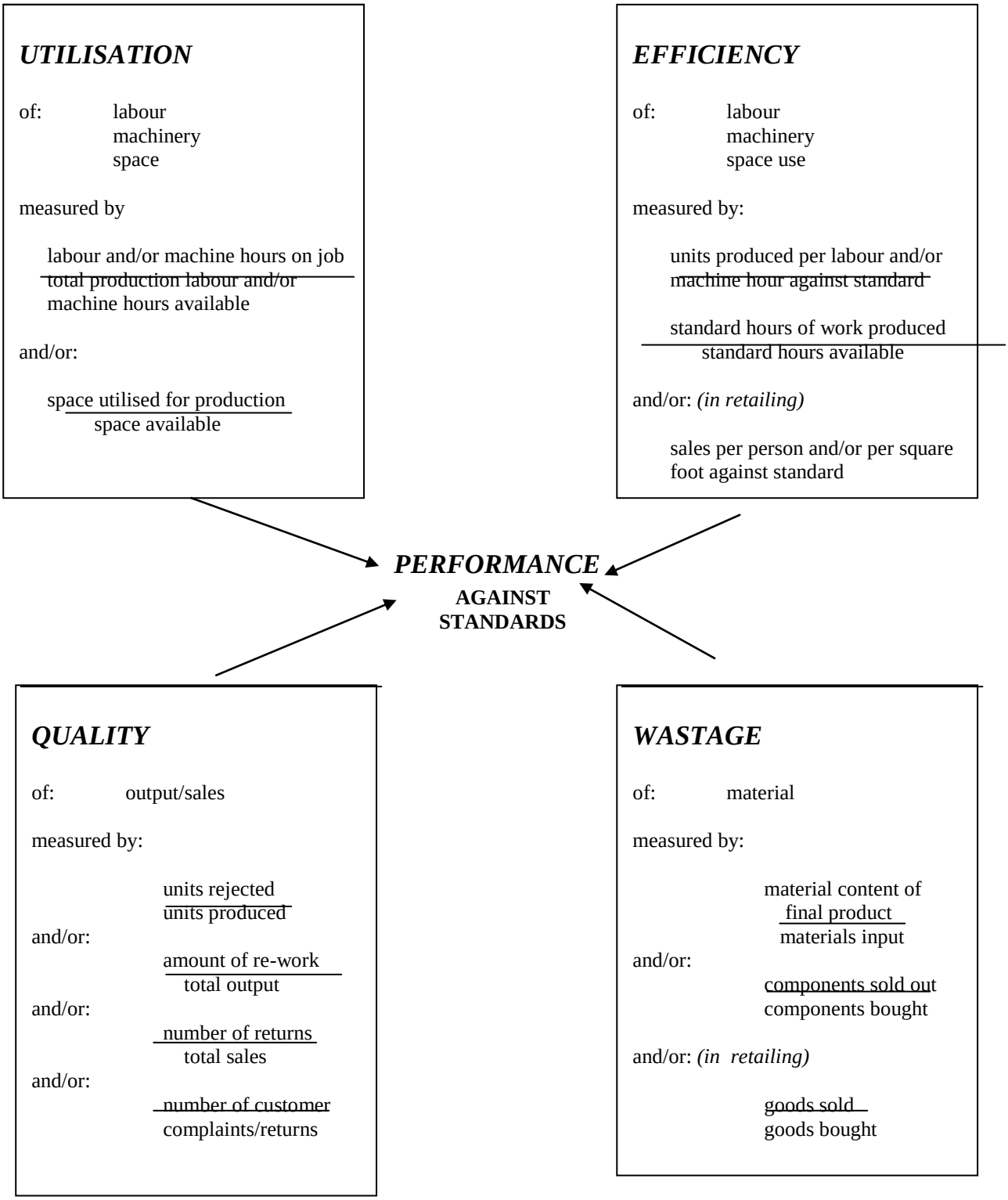
	Utilisation	Efficiency	Wastage	Quality
Hotels				
Restaurants				
Computer services				
Supermarkets				
Furniture manufacture				
A pottery				
Consulting firm				
Cleaning Services				
Plastics Extrusion				

And how they might use it for costing and produce systems for collecting data for management control purposes. A major challenge in this is to discuss the relative importance in different situations of whether to measure physical asset use and efficiency etc or human resource.
use. For example in a hotel utilisation would be measured by bed nights sold available over bed nights available. Efficiency measures might be different as per different parts of the business (for

example rooms cleaned per staff hour over a standard). Wastage might be measured in terms of room materials consumed over room materials available (with an estimate for theft built in). Quality measured by customer complaints or compliments.

Exhibit 1

Basic Operations Measures



2. Entrepreneurs from different types of ventures can be brought in and questioned as to how they build up costs and develop standards.
3. Participants can be asked to brainstorm and/or investigate what might be the sources of problems of deviation from standards of utilisation, efficiency, wastage and quality in different contexts and how these might be measured/controlled by management

3. Relevance to Entrepreneurial Learning

The approach boils costing and standards setting down to its simplest form to allow participants and would-be entrepreneurs to see the 'wood from the trees' of operations management, It focuses upon the core elements of operations management and not sophisticated techniques.

4. Outcome

Participants will be equipped with the basic capacity to cost and develop and maintain standards in operations.