Calculating budgeted overhead absorption rates

There are several possible methods for calculating a company's budgeted overhead absorption rates. Les Nightingale takes you though them

Both the current Unit 6 (Recording and Evaluating Costs and Revenues) and the new Costs and Revenues (CRS) unit within the Revised AAT Qualification require candidates to be able to calculate budgeted overhead absorption rates.

There are three steps in this process:

1. Firstly, all relevant overhead costs have to be allocated or apportioned to production and support centres, or departments. Production centres – also referred to as profit centres – are where the production takes place. Support centres are there to support the production centres, and are also referred to as service cost centres. This first step is called the primary apportionment.

2. Next, the support centres have to be reapportioned to the production centres on either the direct or step down method. The direct method is used where there is no reciprocal servicing between the support centres, and the step down method is used where there is. This is called the secondary apportionment.

3. Finally, the budgeted overhead absorption rate (BOAR) is calculated for each production centre by dividing the total budgeted overheads in each by an appropriate basis of absorption, such as budgeted direct labour or machine hours.

Let us now look in detail at the first two steps, using task 1.4 from the CRS sample paper as an example.

Broadsword Ltd's budgeted overheads for the next financial year are:

	£	£
Depreciation of plant and equipment		804,150
Power for production machinery		715,000
Rent and rates		104,500
Light and heat		23,100
Indirect labour costs:		
Maintenance	101,150	
Stores	36,050	
General Administration	240,100	
Total indirect labour cost		377,300

The following information is also available:

Department	Net book value of plant and equipment	Production machinery power usage (KwH)	Floor space (square metres)	Number of employees
Production centres:				
Plastic moulding	5,600,000	2,145,000		14
Plastic extrusion	2,400,000	1,430,000		10

Support cost centres:				
Maintenance			14,000	5
Stores			8,400	2
General administration			5,600	7
Total	8,000,000	3,575,000	28,000	38

Overheads are allocated or apportioned on the most appropriate basis. The total overheads of the support cost centres are then reapportioned to the two production centres using the direct method.

- 76% of the Maintenance cost centre's time is spent maintaining production machinery in the Plastic moulding production centre and the remainder in the Plastic extrusion production centre.
- The Stores cost centre makes 60% of its issues to the Plastic moulding production centre, and 40% to the Plastic extrusion production centre.
- General Administration supports the two production centres equally.
- There is no reciprocal servicing between the three support cost centres.

Step 1

We simply allocate some of the overheads to the department where they are incurred. This is the case with the indirect labour costs. We then share, or apportion, the remaining overheads across the various departments on the most reasonable basis. Rent and rates, for example, are spread based on the floor area of each department.

The primary apportionments are, therefore:

	Basis of apportionment	Plastic moulding £	Plastic extrusion £	Maintenance £	Stores £	General Admin £	Totals £
Depreciation of plant and equipment	NBV of plant and equipment	562,905	241,245				804,150
Power for production machinery	Production machinery power usage (KwH)	429,000	286,000				715,000
Rent and rates	Floor space			52,250	31,350	20,900	104,500
Light and heat	Floor space			11,550	6,930	4,620	23,100
Indirect labour	Allocated			101,150	36,050	240,100	377,300

Totals after primary apportionment		991,905	527,245	164,950	74,330	265,620	2,024,050

Step 2

We now have all the overheads in the five departments. Our next step is to reapportion the overheads in the three support centres into the two production centres. The additional data to the task tells us that 'there is no reciprocal servicing between the three support cost centres', which means we must use the direct method to do this. The information in the notes tells us the bases of reapportionment.

The secondary apportionments are, therefore:

	Basis of apportionment	Plastic moulding £	Plastic extrusion £	Maintenance £	Stores £	General Admin £	Totals £
Totals after primary apportionment		991,905	527,245	164,950	74,330	265,620	2,024,050
Reapportion Maintenance		125,362	39,588	(164,950)			
Reapportion Stores		44,598	29,732		(74,330)		
Reapportion General Admin		132,810	132,810			(265,620)	
Total overheads to production centres		1,294,675	729,375				2,024,050

Suppose now that there *was* reciprocal servicing between the support centres. This would be because, for example, the Maintenance centre maintains the equipment in the Stores and/or General Admin centres; the stores hold parts or inventory for one or both of the other two support centres and the General Admin centre provides administrative services for the other two support centres. In other words, the support centres provide a reciprocal service to each other. In this case, we need to use the step down method instead of the direct method. The task will give us the information needed to do this.

Suppose it had said that the maintenance centre maintains the equipment in the other two support centres, as well as in the two production centres, and that general admin provides services to all four of the other centres.

- 50% of the Maintenance cost centre's time is spent maintaining production machinery in the Plastic moulding production centre; 30% in the Plastic extrusion production centre; 10% in the Stores and 10% in the General Admin centre.

- General Administration supports all four centres equally.

Using the step down method, we always begin by apportioning the support centre that provides services to all departments – including the other support departments. If, however, as in this case, more than one service centre does this then one method often used is to reapportion the centre with the highest cost first (General Admin), then that with the second highest cost (Maintenance), and so on. This is called the specified order of closing method. Use this method unless the task instructs us to do otherwise. With this method, return charges are not made (from Maintenance back to General Admin). This means that the proportions

charged for Maintenance change, because the 10% of the Maintenance department's time spent in the General Admin centre is ignored. (50/90; 30/90 and 10/90 are charged to the remaining three centres).

The revised secondary apportionments become:

	Basis of apportionment	Plastic moulding £	Plastic extrusion £	Maintenance £	Stores £	General Admin £	Totals £
Totals after primary apportionment		991,905	527,245	164,950	74,330	265,620	2,024,050
Reapportion General Admin		66,405	66,405	66,405	66,405	(265,620)	
Reapportion Maintenance		128,531	77,118	(231,355)	25,706		
Reapportion Stores		99,865	66,576		(166,441)		
Total overheads to production centres		1,286,706	737,344				2,024,050

We can see that the choice of secondary apportionment method has changed the total overheads in each of the production centres, which will in turn affect their budgeted overhead absorption rates.

Step 3

The final step is to calculate the budgeted overhead absorption rates themselves. Suppose that in the step down example, above, the overheads were to be recovered on the machine hour basis, and the budgeted machine hours were 25,734 for the Plastic moulding department and 18,434 for the Plastic extrusion department.

The budgeted overhead absorption rates would be:

Plastic moulding: £1,286,706/25,734 = £50 per machine hour

Plastic extrusion: £737,344/18,434 = £40 per machine hour

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