The two-stage allocation process

The two-stage allocation process can be used as a framework to summarize the different approaches we have looked at for Arcadia to assign overhead costs to products. The process applies to assigning costs to other cost objects, besides products, and is applicable to all organizations that assign indirect costs to cost objects. The framework applies to both traditional and ABC systems.

The framework is illustrated in Figure 3.3. You can see that in the first stage overheads are assigned to cost centres. In the second stage the costs accumulated in the cost centres are allocated to cost objects using selected allocation bases (you should remember from our discussion earlier that allocation bases are also called cost drivers). Traditional costing systems tend to use a small number of second stage allocation bases, typically direct labour hours or machine hours. In other words, traditional systems assume that direct labour or machine hours have a significant influence in the long term on the level of overhead expenditure. Other allocation bases used to a lesser extent by traditional systems are direct labour cost, direct materials cost and units of output. These methods are described and illustrated in Appendix 3.2 at the end of this chapter. Exhibit 3.1 (Section C) shows details of the extent to which different second stage allocation bases are used in different countries. You will see that direct labour and machine hours are the dominant methods.

Within the two-stage allocation process ABC systems differ from traditional systems by having a greater number of cost centres in the first stage and a greater number, and variety, of cost drivers or allocation bases in the second stage. Both systems will be described in more detail later in the chapter.

You will have noted from our discussion in the previous sections relating to Arcadia that increasing the number of cost centres resulted in a more accurate assignment of overheads to products. We started with a blanket overhead rate and omitted the first stage of the two-stage allocation process and noted that this process resulted in an inaccurate assignment of costs. Next we adopted the two-stage allocation process by establishing separate cost centre overhead rates (based on departments). This change resulted in a more accurate assignment of overheads to products. Finally, we noted that further improvements in the accuracy of cost assignments could be obtained by increasing the number of cost centres by establishing separate cost centres within a department.

How many cost centres should a firm establish? If only a small number of cost centres are established it is likely that activities within a cost centre will not be homogeneous and, if the consumption of the activities by products/services within the cost centres varies, activity resource consumption will not be accurately measured. Therefore, in most situations, increasing the number of cost centres increases the accuracy of measuring the indirect costs consumed by cost objects. The choice of the number of cost centres should be based on cost–benefit criteria using the principles described on pages 48–9. Exhibit 3.1 (Section A) shows the number of cost centres and second stage cost allocation bases reported by Drury *et al.* in a survey of 187 UK organizations. It can be seen that 35% of the organizations used less than 11 cost centres whereas 23% used more than 30 cost centres. In terms of the number of different second stage cost drivers/allocation bases 69% of the responding organizations used less than four.

FIGURE 3.3 *An illustration of the two-stage allocation process for traditional and activity-based costing systems.*

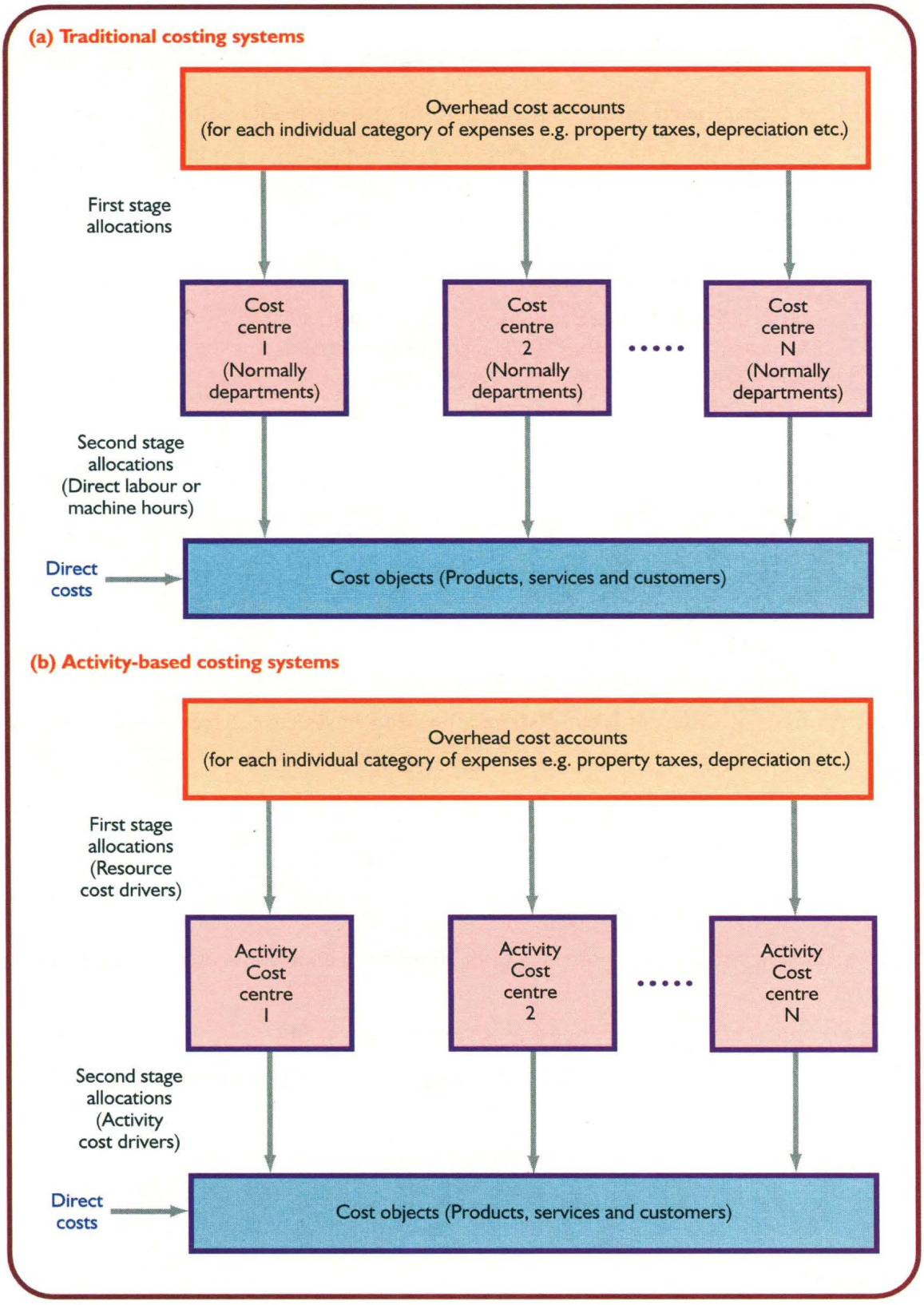


EXHIBIT 3.1

Surveys of practice

(a) Cost centres used in the first stage of the two-stage allocation process

- A survey of Australian organizations by Joye and Blayney (1990):
  36% of the responding organizations used a single plant-wide rate
  24% used overhead rates for groups of work centres
  31% used overhead rates for each work centre
  9% used overhead rates for each machine
- A survey of Swedish organizations by Ask and Ax (1992)[a]:
  70% indicated that cost centres consisted of departments
  32% consisted of work cells
  22% consisted of groups of machines
  15% consisted of single machines
- A Norwegian study by Bjornenak (1997b) reported an average of 38.3 cost centres used by the respondents
- A survey of UK organizations by Drury and Tayles (2000):
  14% used less than 6 cost centres
  21% used 6–10 cost centres
  29% used 11–20 cost centres
  36% used more than 20 cost centres

(b) Number of different second stage allocation bases/cost drivers used

- A survey of UK organizations by Drury and Tayles (2000):
  34% used 1 cost driver
  25% used 2 drivers
  10% used 3 drivers
  21% used 3–10 drivers
  10% used more than 10 drivers
- A Norwegian study by Bjornenak (1997a) reported an average usage of 1.79 cost drivers

(c) Second stage cost allocation bases/cost drivers used[a]

	Norway[b]	Holland[c]	Ireland[d]	Australia[e]	Japan[e]	UK[f]	UK[f]
Direct labour hours/cost	65%	20%	52%	57%	57%	68%	73%
Machine hours	29	9	19	19	12	49	26
Direct materials costs	26	6	10	12	11	30	19
Units of output	40	30	28	20	16	42	31
Prime cost				1	21		
Other	23	35	9				
ABC cost drivers						9	7

A survey of Finnish companies by Lukka and Granlund (1996) reported that direct labour costs, direct labour hours, machine hours, materials use and production quantity were the most widely used allocation bases. Usage rates were not reported.

Notes

[a] The reported percentages exceed 100% because many companies used more than one type of cost centre or allocation base.
[b] Bjornenak (1997b).
[c] Boons *et al.* (1994).
[d] Clarke (1995).
[e] Blayney and Yokoyama (1991).
[f] Drury *et al.* (1993) – The first column relates to the responses for automated and the second to non-automated production centres.