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Learning Material for VM New Challenges for Management Accounting.

Chapter 10: Management Control Systems and Transfer Pricing.

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Chapter 10: Management Control Systems and Transfer Pricing



Learning objectives

1. Describe a management control system
2. Describe the benefits and costs of decentralization
3. Explain transfer prices
4. Calculate transfer prices using three methods
5. Illustrate how market-based transfer prices promote goal congruence in perfectly competitive markets
6. Apply a general guideline for determining a minimum transfer price

Key words

autonomy, decentralization, dual pricing, goal congruence, incongruent decision making, intermediate product, management control system, perfectly competitive market, suboptimal decision making, transfer price



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10.1 Management Control Systems



A **management control system** is a means of gathering and using information to aid and coordinate the process of making planning and control decisions throughout the organisation and to guide employee behaviour. The goal of the system is to improve the collective decisions within an organisation.

Information for management control is gathered and reported at various levels:

1 **Total-organisation level** – for example, stock price, net income, return on investment, cash flow from operations, total employment, pollution control, and contributions to the community.

2 **Customer/market level** – for example, customer satisfaction, time taken to respond to customer requests for products, and cost of competitors' products.

3 **Individual-facility level** – for example, materials costs, labour costs, absenteeism and accidents in various divisions or business functions (such as R&D, manufacturing and distribution).

4 **Individual-activity level** – for example, the time taken and costs incurred for receiving, storing, assembling and dispatching goods in a warehouse; scrap rates, defects and units reworked on a manufacturing line; the number of sales transactions and sales euros per salesperson; and the number of shipments per employee at distribution centres.

As the preceding examples indicate, formal elements of management control systems collect both **financial data** (for example, net income, materials costs and storage costs) and **non-financial data** (for example, the time taken to respond to customer requests for products, absenteeism and accidents). Some of the information is obtained from **within the company** (such as net profit and number of shipments per employee); other information is obtained from **outside the company** (such as stock price and cost of competitors' products). Some companies present financial and non-financial information in a single report called **the balanced scorecard**.

Management control systems have both **formal and informal components**:

The **formal management control system** of an organization includes those explicit rules, procedures, performance measures and incentive plans that guide the behavior of its managers and employees. The **formal control system** itself consists of several systems. The management *accounting system* is a formal accounting system that provides information on costs, revenues and income. Examples of other formal control systems are *human resource systems* (providing information on recruiting, training, absenteeism and accidents) and *quality systems* (providing information on scrap, defects, rework and late deliveries to customers).

The **informal part of the management control system** includes such aspects as shared values, loyalties and mutual commitments among members of the organization and the

unwritten norms about acceptable behavior for promotion that also influence employee behavior.

To be **effective**, management control systems should be closely aligned with the organization's strategies and goals. They should be designed to support the organizational responsibilities of individual managers.

Effective management control systems should also motivate managers and other employees. Motivation is the desire to attain a selected goal (the goal-congruence aspect) combined with the resulting pursuit of that goal (the effort aspect).

- **Goal congruence** exists when individuals and groups work toward achieving the organization's goals—that is, managers working in their own best interest take actions that align with the overall goals of top management.
- **Effort** is the extent to which managers strive or endeavor to achieve a goal. Management control systems motivate employees to exert effort by rewarding them in monetary and nonmonetary ways for the achievement of observable goals.

Until the mid-20th century, many firms were organized in a centralized, hierarchical fashion. **Centralization** is an organizational structure in which power is concentrated at the top and there is relatively little freedom for managers at the lower levels to make decisions. Perhaps the most famous example of a highly centralized structure is the Soviet Union, prior to its collapse in the late 1980s. Today, organizations are far more decentralized and many companies have pushed decision-making authority down to subunit managers.

Decentralization is an organizational structure that gives managers at lower levels the freedom to make decisions.

Autonomy is the degree of freedom to make decisions. The greater the freedom, the greater the autonomy.

Multinational companies are companies that operate in multiple countries and are *often decentralized* because centralized control of a company with subunits around the world is often physically and practically impossible.

- Decentralization enables managers in different countries to make decisions that exploit their knowledge of local business and political conditions and enables them to deal with uncertainties in their individual environments.
- There are certain drawbacks to decentralizing multinational companies and one of the most important is the lack of control and the resulting risks.

To measure the performance of subunits in centralized or decentralized companies, the management control system uses one or a mix of the four types of responsibility centers.

A **responsibility center** is a segment or subunit of the organization whose manager is accountable for a specified set of activities. To measure the performance of sub-units in centralized or decentralized companies, the management control system uses one or a mix of the four types of responsibility centers:

1. **Cost center** – the manager is accountable for costs only.
2. **Revenue center** – the manager is accountable for revenues only.
3. **Profit center** – the manager is accountable for revenues and costs.
4. **Investment center** – the manager is accountable for investments, revenues, and costs.

Centralization or decentralization is not mentioned in the descriptions of these centers because each type of responsibility center can be found in either centralized or decentralized companies. A common misconception is that profit center – and, in some cases, investment center – is a synonym for a decentralized subunit, and cost center is a synonym for a centralized subunit. Profit centers can be coupled with a highly centralized organization, and cost centers can be coupled with a highly decentralized organization. *For example, managers in a division organized as a profit center may have little freedom in making decisions. They may need to obtain approval from corporate headquarters to introduce new products and services or to make expenditures over some preset limit.*

10.2 Transfer Pricing

In decentralized organizations, much of the decision-making power resides in the individual sub-units. Often, the subunits interact by supplying goods or services to one another. In these cases, top management uses **transfer prices** to coordinate the actions of the subunits and to evaluate the performance of their managers.

A **transfer price** is the price one subunit (department or division) charges for a product or service supplied to another subunit of the same organization. *If, for example, a car manufacturer like BMW or Ford has a separate division that manufactures engines, the transfer price is the price the engine division charges when it transfers engines to the car assembly division.*

The transfer price creates **revenues for the selling subunit** (the engine division in our example) and **costs for the buying subunit** (the assembly division in our example), affecting each subunit's operating income. These operating incomes can be used to evaluate subunits' performances and to motivate their managers. The product or service transferred between subunits of an organization is called **an intermediate product**. The receiving subunit (the assembly division in the engine example) may work on the product further or the product may be transferred from production to marketing and sold directly to an external customer.

There are **four criteria used to evaluate transfer prices**:

- The price should promote goal congruence so that division managers acting in their own interest will take actions that are aligned with the objectives of top management.
- They should induce managers to exert a high level of management effort. Subunits selling a product or service should be motivated to hold down their costs; subunits buying the product or service should be motivated to acquire and use inputs efficiently.
- The price should help top management evaluate performance of individual subunits.
- The transfer price should promote a high degree of subunit autonomy, if top management favors a high degree of decentralization. That is, a subunit manager seeking to maximize the operating income of the subunit should have the freedom to transact with other subunits of the company (on the basis of transfer prices) or to transact with external parties.

There are three broad **categories of methods** that top management can use for **determining transfer prices**:

1. **Market-based transfer prices.** Top management may choose to use the price of a similar product or service publicly listed. Also, top management may select, for the internal price, the external price that a subunit charges to outside customers.
2. **Cost-based transfer prices.** Top management may choose a transfer price based on the cost of producing the product in question. Various cost bases, such as variable production cost, variable and fixed production cost, or full cost may be used. The cost used can also be actual cost or budgeted cost. Sometimes, the cost-based transfer price includes a markup or profit margin that represents a return on subunit investment.
3. **Hybrid transfer prices.** Hybrid transfer prices take into account both cost and market information. The most common form of hybrid price arises via negotiation—the subunit managers are asked to negotiate the transfer price between them and to decide whether to transact internally or deal with external parties. Information regarding costs and prices plays a critical role in this bargaining process. Negotiated transfer prices are often employed when market prices are volatile.

10.2.1 Market-Based Transfer Prices

Transferring products or services at **market prices** generally leads to optimal decisions when three conditions are satisfied:

- The market for the intermediate product is perfectly competitive.
- Interdependencies of subunits are minimal.

- There are no additional costs or benefits to the company as a whole from buying or selling in the external market instead of transacting internally.

A **perfectly competitive market** exists when there is a homogeneous product with buying prices equal to selling prices and no individual buyers or sellers can affect those prices by their own actions. By using market-based transfer prices, a company can:

- promote goal congruence,
- motivate management effort,
- evaluate subunit performance.

When supply outstrips demand, market prices may drop well below their historical averages. If the drop in prices is expected to be temporary, these low market prices are sometimes called **distress prices**. In case a distress price prevails, some companies use the distress prices themselves, but others use long-run average prices, or “normal” market prices.

- In the short run, the manager of the selling subunit should supply the product or service at the distress price as long as it exceeds the incremental costs of supplying the product or service. If the distress price is used as the transfer price, the selling division will show a loss because the distress price will not exceed the full cost of the division.
- If the long-run average market price is used, forcing the manager to buy internally at a price above the current market price will hurt the buying division’s short-run operating income. However, the long-run average market price will provide a better measure of the long-run profitability and viability of the supplier division.

If **markets are not perfectly competitive**, selling prices affect the quantity of product sold. Faced with an imperfectly competitive market, the manager of the selling division will choose a price and quantity combination for the intermediate product that maximizes the division’s operating income. If the transfer price is set at this price, the buying division may find that acquiring the product is too costly and results in a loss. The division may decide not to purchase the product. Yet, from the point of view of the company as a whole, it may well be that profits are maximized if the selling division transfers the product to the buying division for further processing and sale. For this reason, when the market for the intermediate good is imperfectly competitive, the transfer price must generally be set below the external market price (but above the selling division’s variable cost) in order to induce efficient transfers.

10.2.2 Cost-Based Transfer Prices

Cost-based transfer prices are helpful when market prices are unavailable, inappropriate, or too costly to obtain. In utilizing this method, managers must determine the appropriate definition of full cost. They also must determine how much, if any, markup should be applied.

There is a risk of suboptimal decisions when transfer prices are based on full cost plus a markup because the buying division manager perceives the cost of each transferred unit to be higher than the true (variable) cost from the firm's standpoint.

Surveys by accounting firms and researchers indicate that managers generally prefer to use full-cost transfer pricing because (1) they represent relevant costs for long-run decisions, (2) they facilitate external pricing based on variable and fixed costs, and (3) they are the least costly to administer.

Full-cost transfer pricing does raise many issues. How are each subunit's indirect costs allocated to products? Have the correct activities, cost pools, and cost-allocation bases been identified? Should the chosen fixed-cost rates be actual or budgeted?

Transferring the product at variable costs promotes goal congruence, but results in an operating loss for the supplying department. One approach to addressing this problem is for the purchasing department to make a fixed payment to the supplying department, in effect paying for using the capacity of the supplying department.

10.2.3 Hybrid Transfer Prices

Next, three different ways in which firms attempt to determine the specific transfer price are introduced.

A. The proration approach is an alternative to full cost and variable cost transfer prices that splits the difference between the two approaches.

It either requires a high degree of trust and information exchange among divisions or includes provisions for objective audits of cost information in order to be successful.

B. Negotiated pricing is the most common hybrid method. Under this method, the eventual transfer price results from a bargaining process between the selling and buying subunits.

- Here, the price negotiated by any two divisions will, in general, have no specific relationship to either costs or market price. But cost and price information is often the starting point in the negotiation process.

- A negotiated transfer price strongly preserves division autonomy. It also has the advantage that each division manager is motivated to put forth effort to increase division operating income.

C. Some companies choose dual pricing, using two separate transfer-pricing methods to price each transfer from one subunit to another. The selling division would get credit for full cost and the buying division pays market price. The difference is recorded into a corporate cost account.

Although dual pricing promotes goal congruence, it is not widely used due to the fact that it creates problems in computing taxable income in subunits located in different taxing jurisdictions.

10.3 Illustration of Transfer Pricing

Stavanger-Oil AS has three divisions. Each operates as a profit centre. The Production Division manages the production of crude oil from a petroleum field near Heimberg. The Transportation Division manages the operation of a pipeline that transports crude oil from the Heimberg area to Nordstad. The Refining Division manages a refinery at Nordstad that processes crude oil into petrol. (For simplicity, assume that petrol is the only saleable product the refinery makes and that it takes two barrels of crude oil to yield one barrel of petrol.)

Variable costs in each division are assumed to be variable with respect to a single cost driver in each division: barrels of crude oil produced by the Production Division, barrels of crude oil transported by the Transportation Division, and barrels of petrol produced by the Refining Division.

The fixed costs per unit are based on the budgeted annual output of crude oil to be produced and transported and the amount of petrol to be produced. Stavanger-Oil reports all costs and revenues of its non-European operations in euros using the prevailing exchange rate.

- The Production Division can sell crude oil to outside parties in the Heimberg area at €13 per barrel.
- The Transportation Division ‘buys’ crude oil from the Production Division, transports it to Nordstad, and then ‘sells’ it to the Refining Division. The pipeline from Heimberg to Nordstad has the capacity to carry 40 000 barrels of crude oil per day.
- The Refining Division has been operating at capacity, 30 000 barrels of crude oil a day, using oil from Stavanger-Oil’s Production Division (an average of 10 000 barrels per day) and oil bought from other producers and delivered to the Nordstad Refinery (an average of 20 000 barrels per day, at €18 per barrel).
- The Refining Division sells the petrol it produces at €52 per barrel.

Figure 10.1 summarises Stavanger-Oil’s variable and fixed costs per unit of the cost driver in each division, the external market prices of buying and selling crude oil, and the external market prices of selling petrol.

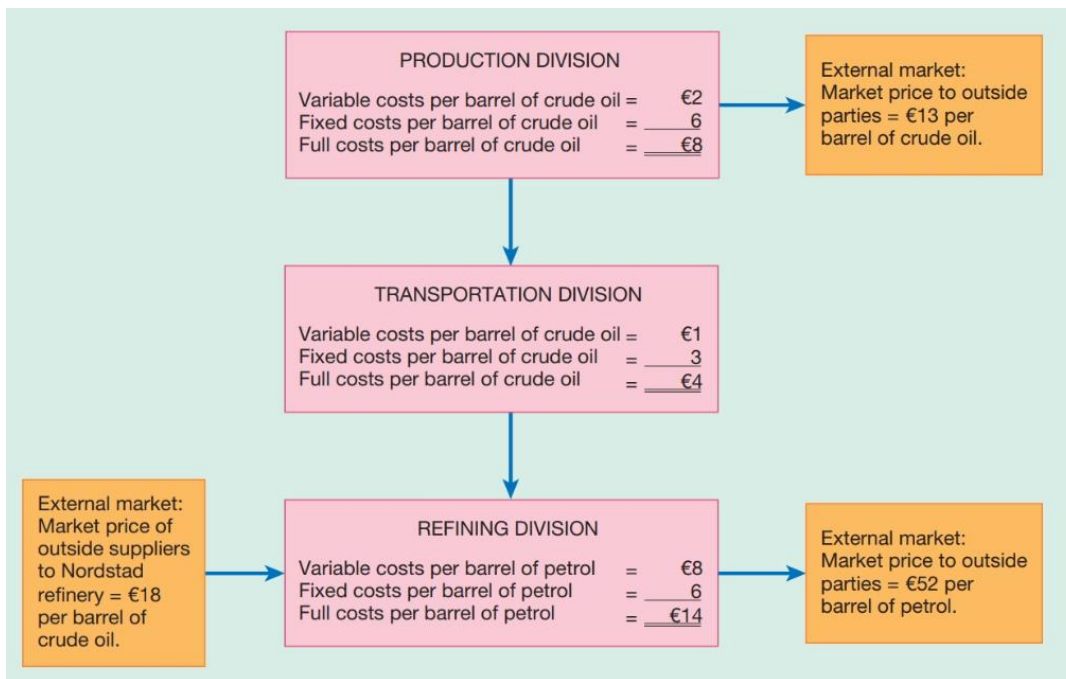


Figure 10.1 Illustration of transfer pricing

Source: DATAR, S. M., RAJAN, M. V. Managerial Accounting, Making Decisions and Motivating Performance

Consider the divisional operating profits resulting from three transfer-pricing methods applied to a series of transactions involving 100 barrels of crude oil produced by Stavanger-Oil's Production Division. The transfer prices per barrel of crude oil under each method are as follows. The transferred-in cost component in method B is denoted by an asterisk (*).

Method A: Market-based transfer prices.

- From Production Division to Transportation Division = €13
- From Transportation Division to Refining Division = €18

Method B: Cost-based transfer prices at 110% of full costs, where full costs are the cost of the transferred-in product plus the division's own variable and fixed costs.

- From Production Division to Transportation Division = $1.10 * 1€2 + €62 = €8.80$
- From Transportation Division to Refining Division = $1.10 * (€8.80 + €1 + €3) = €14.08 *$

Method C: Negotiated transfer prices. Transfer prices are negotiated by divisions to be between market-based and cost-based transfer prices:

- From Production Division to Transportation Division = €10

- From Transportation Division to Refining Division = €16.75

	Method A: Internal transfers at market prices	Method B: Internal transfers at 110% of full costs	Method C: Internal transfers at negotiated prices
1 Production Division			
Revenues:			
€13, €8.80, €10, × 100 barrels crude oil	€1300	€880	€1000
Less:			
Division variable costs, €2 × 100 barrels crude oil	200	200	200
Division fixed costs, €6 × 100 barrels crude oil	600	600	600
Division operating profit	€500	€80	€200
2 Transportation Division			
Revenues:			
€18, €14.08, €16.75, × 100 barrels crude oil	€1800	€1408	€1675
Less:			
Transferred-in costs, €13, €8.80, €10, × 100 barrels crude oil	1300	880	1000
Division variable costs, €1 × 100 barrels crude oil	100	100	100
Division fixed costs, €3 × 100 barrels crude oil	300	300	300
Division operating profit	€100	€128	€275
3 Refining Division			
Revenues:			
€52 × 50 barrels petrol	€2600	€2600	€2600
Less:			
Transferred-in costs, €18, €14.08, €16.75, × 100 barrels crude oil	1800	1408	1675
Division variable costs, €8 × 50 barrels petrol	400	400	400
Division fixed costs, €6 × 50 barrels petrol	300	300	300
Division operating profit	€100	€492	€225

Figure 10.2 Divisional operating profit under alternative transfer-pricing methods

Source: DATAR, S. M., RAJAN, M. V. Managerial Accounting, Making Decisions and Motivating Performance

Figure 10.2 presents divisional operating profits per 100 barrels of crude oil reported under each transfer-pricing method. Transfer prices create income for the ‘selling’ division and corresponding costs for the ‘buying’ division that cancel out when divisional results are consolidated.

The figure assumes that the different transfer-pricing methods have no effect on the decisions and actions taken by the Production, Transportation and Refining Division managers. Stavanger-Oil’s total operating profit from producing, transporting and refining the 100 barrels of crude oil is therefore the same, €700 (revenues of €2600 minus costs of €800 in production, €400 in transportation and €700 in refining), regardless of internal transfer prices used.

Keeping total operating profit the same focuses attention on the effects of different transfer-pricing methods on divisional operating profits. These profits differ under the three methods. The operating profit amounts span a €420 range (€80 to €500) in the Production Division, a €175 range (€100 to €275) in the Transportation Division, and a €392 range (€100 to €492) in the Refining Division. Note that each division would choose a different transfer-pricing method if its sole criterion were to maximise its own

divisional operating profit: the Production Division would choose market prices, the Transportation Division would favour negotiated prices, and the Refining Division would choose 110% of full costs. Little wonder that divisional managers take considerable interest in the setting of transfer prices, especially those managers whose compensation or promotion directly depends on their division's operating profit.

10.4 A General Guideline for Transfer-Pricing Situations

In **setting transfer prices**, managers frequently find that there is no transfer-pricing method which meets all criteria. They must simultaneously consider (1) market conditions, (2) the goal of the transfer-pricing system, and (3) the criteria of promoting goal congruence, motivating management effort, evaluating subunit performance, and preserving subunit autonomy. The transfer price a company will eventually choose depends on the economic circumstances and the decision at hand.

Criteria	Market-Based	Cost-Based	Negotiated
Achieves goal congruence	Yes, when markets are competitive	Often, but not always	Yes
Motivates management effort	Yes	Yes, when based on budgeted costs; less incentive to control costs if transfers are based on actual costs	Yes
Useful for evaluating subunit performance	Yes, when markets are competitive	Difficult unless transfer price exceeds full cost and even then is somewhat arbitrary	Yes, but transfer prices are affected by bargaining strengths of the buying and selling divisions
Preserves subunit autonomy	Yes, when markets are competitive	No, because it is rule-based	Yes, because it is based on negotiations between subunits
Other factors	Market may not exist, or markets may be imperfect or in distress	Useful for determining full cost of products and services; easy to implement	Bargaining and negotiations take time and may need to be reviewed repeatedly as conditions change

Figure 10.3 Comparison of different transfer-pricing methods
 Source: DATAR, S. M., RAJAN, M. V. Managerial Accounting, Making Decisions and Motivating Performance

Figure 10.3 shows a comparison of different transfer-pricing methods.

The **minimum transfer price** represents the selling unit's cost of transferring the product. The minimum transfer price should be:

Minimum transfer price

$$= \text{Incremental cost per unit incurred up to the point of transfer} \\ + \text{Opportunity cost per unit to the selling subunit}$$

- **Incremental cost** in this context means the additional cost of producing and transferring the product or service.
- **Opportunity cost** here is the maximum contribution margin forgone by the selling subunit if the product or service is transferred internally.

Different situations call for **variations** in the application of this general rule:

- With a perfectly competitive market and no unused capacity by the selling division, the transfer price should be the external market price, as the selling division has no incentive to sell it at a lower price.
- When there is an intermediate market that is not perfectly competitive and there is unused capacity, capacity utilization can be increased only by decreasing prices. In this case, the incremental cost per unit would be an appropriate transfer price.
- When there is no external market for the product, any price between the incremental cost and the external price for purchase would fulfil goal congruence.

In **multinational settings**, top management must choose transfer prices carefully to balance tax minimization considerations (income taxes, tariffs, and duties), currency repatriation issues, and the evaluation of divisional managerial performance.

Summary

A management control system is a means of gathering and using information to aid and coordinate the process of making planning and control decisions throughout the organisation, and to guide employee behaviour.

Effective management control systems are closely aligned to the organization's strategy, fit the organization's structure, and motivate managers and employees to give effort to achieve the organization's goals.

The benefits of decentralization include (a) greater responsiveness to local needs, (b) gains from quicker decision making, (c) increased motivation of subunit managers, (d) greater management development and learning, and (e) sharper management focus. The costs of decentralization include (a) dysfunctional decision making (control loss), (b) duplication of activities, (c) decreased loyalty towards the organization, and (d) increased costs of information gathering.

Transfer prices can be (a) market-based, (b) cost-based, or (c) negotiated. Different transfer-pricing methods produce different revenues and costs for individual subunits, and hence different operating profits for them.



In competitive markets, it is efficient to set the transfer prices equal to the market price of the intermediate goods. Under imperfect competition, the transfer price should be set at a suitable discount to the external price in order to induce the manager of the buying division to seek internal transfers.

In perfectly competitive markets, there is no idle capacity, and division managers can buy and sell as much as they want at the market price. Setting the transfer price at the market price motivates division managers to deal internally and to take exactly the same actions as they would if they were dealing in the external market.

A transfer price based on full cost plus a mark-up may lead to suboptimal decisions because it leads the 'buying' division to regard the fixed costs and the mark-up of the selling division as variable costs.

When there is excess capacity, the transfer price range for negotiations generally lies between the minimum price at which the selling division is willing to sell (its variable costs) and the maximum price the buying division is willing to pay (the price at which the product is available from outside suppliers).

The general guideline for transfer pricing states that the minimum transfer price equals the incremental costs per unit incurred up to the point of transfer plus the opportunity costs per unit to the supplying division resulting from transferring products or services internally.

Transfer prices can reduce income tax payments by recognizing higher profits in low-tax-rate countries and lower profits in high-tax-rate countries

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