2 Elements of the marketing mix (price): Conceptual and integrated approach to supply chain management

Introduction

This chapter highlights the contribution of the management of the supply chain in determining the appropriate price of a business's products and services. The good collaborative relations that are achieved in the frame of the smooth operation in the supply chain of the involved businesses play a catalytic role, among others, in the perceived offered value to the final customer and the total cost of acquiring this value. Having an understanding of the factors that influence pricing, knowledge of the alternative methods of determining prices and investigation of the available methods of adjusting, and changing and reacting to price changes determine the methodological framework for finding the appropriate price for the mutually beneficial exchange between the final customer and the supply chain, and by extension of the business.

Learning goals

After reading this chapter, you will be able to answer the following questions:

- How does the highest level of cooperation of those involved in a supply chain contribute to determining the appropriate price of the final products?
- How does the smooth operation of the supply chain positively influence the factors determining the optimal selling price of the products?
- What are the alternative methods of calculating the right price?
- What are the methods of adjusting, changing and reacting to changes in prices?

Structure

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2.1 Pricing in the context of the supply chain

Through pricing, companies try to reap the benefits from the value that the customers enjoy from their products, so that a fair and sustainable reward can be secured for all those involved in the production process of the product and its availability, that is, shareholders, employees and strategic partners (suppliers, outsourcing partners and distribution networks) in the supply chain. Determining the correct price of a product and its management over time is a very difficult task for any business. This is due to the fact that it is difficult to estimate the perceived price of a product from the point of view of the end consumer, and also due to the immense challenges involved in the calculation of the price, which shows variation from one customer to another, and is often differentiated in each transaction of the same customer. The choice and implementation of the appropriate method and the (appropriate) strategic pricing is of course a very important activity in the marketing mix, but in essence the pricing decisions are taken at the level of the business, inter-operationally, bearing in mind the priorities and constraints of the remaining operational departments (production, supply chain, accounting department), always in collaboration with the strategic partners of the supply chain.

Supply chain management catalytically influences the selling price of the product, since the synergies between the strategic partners tend to contribute decisively to the offered added value for the final customers. In particular, it is becoming more and more noticeable that the perceived value of the final products, which determines its maximum permitted price, depends on the combined and coordinated actions of the whole set of strategic partners in the supply chain and not their individual production business. Furthermore, through the good management of their supply chain, the stakeholder companies possess in their toolbox tools valuable tools for finding the best practices that will allow them to offer final products of the same or higher perceived value, but at a constantly reduced price. Taking into account the cataclysmic rhythm of the rapid changes in the wider business environment, particularly due to groundbreaking innovations, it is quite clear that businesses, and by extension, their supply chains, they strive on a daily basis to make available to their final customers products with more and more higher added value at tempting prices as much as possible. Finally, for one more time, it is obvious that the time when individual companies were competing against each other has passed irreversibly, and companies are now forced to confront each other through the supply chains that they have created with their strategic partners.

2.2 Introduction to pricing

The price of a product refers to the entire set of sacrifices that the customer is required to make in order to enjoy the benefits deriving from the other three elements of the marketing mix of the business. Thus, the price is the only one of the four elements of the marketing mix that produces revenues, whereas the other three elements combined, which "produce" the value for the customer, imply expenses for the business. Moreover, the decisions related to pricing tend to change quickly, affecting to a great degree the overall marketing mix of the company, while the flexibility and possibility of change in the decisions for the remaining three elements, particularly for the product and its distribution (supply chain), are clearly more limited.

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The decisions for the determination of the appropriate selling price of the product are of utmost importance for the business and the entire supply chain, since revenues, and profitability in particular, depend on them. Small changes in the price often cause disproportionate positive and negative effects on the profitability of the supply chains, and consequently on the partners that make them up.

Therefore, price has always been one of the most basic factors that influence the final buying behaviour of the customers, since all customers try to maximize their total usefulness through their restricted disposable income. The significance of price on the final decision of the customers rises all the more due to the reduced asymmetry of information due to the developments in information technology and communication, and the increase in the oversupply of alternative solutions for the satisfaction of the customers' needs and desires. Access of customers to a huge volume of useful information related to the alternative choices of how to cover their needs and desires make customers more informed and thus more demanding in comparison to the past. Moreover, most competitors have developed to a large extent the ability and the skills of fast effective adoption and evaluation of new production technologies. Therefore, in most markets, the differences between the substitute products are often very small, if only negligible, with the result that the power of the commercial sign – the brand – is constantly shrinking.

Determining the optimal selling price of a product, that is, the price at which a company can potentially maximize its profits, is a particularly difficult or even pointless goal, since it is influenced by many internal and external factors of a business, for which there is always a lack of information, and which are constantly changing. Pricing decisions therefore rest on forecasts and assumptions based on the previous experiences of a business, particularly the constant collection and processing of data and information of all the relevant factors which interact in the determination of the pricing. Therefore, the management of the supply chain plays a significant role in the pricing process, since, among other factors, the companies involved jointly collect, publish and process data so that they can come to some kind of collaborative prediction of the most relevant critical factors involved in pricing.

Due to the difficulty of finding satisfactory algorithms for determining appropriate price levels in order to achieve the many often conflicting goals of the companies, a methodological systematic pricing process is not often followed. Thus, pricing decisions are supported by empirical methods and often, under the pressure of securing a satisfactory level of sales, prices are lowered, which lead in many cases to damaging transactions for the company.

According to the earlier discussion, the heavy significance of the management of the supply chain in the achievement of mutually beneficial transactions between the final customer and those involved in the supply chain is quite clear. It is indicatively mentioned that through the high collaborative relations of the strategic partners of the supply chain, it is continuously possible to offer the final customers products and services of high perceived value, which are equal if not superior to those offered by the competitors. In addition, it is also possible to search for as well as successfully implement the best production and selling practices and for the final products with high perceived value at a constantly reduced cost. Finally, the collaborative scheduling and cooperative forecasting among strategic partners secures particularly precise and trustworthy dynamic predictions in terms of final product demand and the potential effects of the expected changes in the key demand determinants.

2.3 Factors affecting pricing

Determination of the selling price of a product of a business is influenced by many factors, and it is often very difficult, if not impossible, to make a precise reliable evaluation of the effect of each factor and their interaction in the pricing decisions. In each case, however, the maximum price must secure the sale of at least one product unit, while the lowest price must be at least marginally higher than the average total cost, so that the product can contribute toward the profitability of the business. Besides the perceived value of the product from the customer's side, and the average total costs, pricing decisions are also influenced by other internal and external business factors. Internal factors, among others, include the pricing goals of the business that are related to the entire marketing strategy of the business, and the marketing mix of the company. External factors are related to the nature of the market and product demand, prices and competitors' strategies, supply chain variables and legal constraints. Of particular importance is the variable concerning structure and more generally, the strategies and tactical goals of the supply chain that the company is part of.

2.3.1 Customer perceptions about the product value

It has already been emphasized that the management of businesses and their supply chains comprises a very difficult and complex process, particularly due to the fact the often conflicting needs and demands of the relevant stakeholders must be adequately satisfied. The needs and desires of the customers, however, are of utmost importance in the sustainability of the businesses and their supply chains, since customers provide the motive for the establishment and operation of companies, through the revenues that collect from the sales of the products. For this reason, the final customers are thus deemed the most competent to pass judgment on the correct selling price of a product. Levit (1969) stated half a century ago that "people don't buy products, they buy benefits". Therefore, the customers' perceptions concerning the value of a product comprise cornerstone of any pricing decisions.

In many cases, the marketing executives try to estimate the value of their products in relation to their quality characteristics, such as functionality, performance, usefulness, technical characteristics and the status proffered by owning them. But a onesided focus on quality characteristics carries the risk of ignoring the important meaning of service, that is, the availability, support and dedication offered to the customer (Christopher, 2017). The product acquires value only when it reaches the hands of the customer, so the availability of the product comprises a precondition and first priority for the value offer to the customer. Because of this fact, some companies focus their attention mainly on two moments of truth. The first refers to the availability of the product on the shelf of the retail store that the customer visits. If the product is available, we can then talk about the second moment of truth, that is, the evaluation of the product by the customer as soon as s/he uses it.

Lalonde and Zinszer (1976) classified the various elements that comprise customer service: elements occurring before the transactions, elements occurring during the transaction and elements occurring after the transaction. Elements before the transaction involve, for example, the access provided to the customer so that s/he can communicate with the company or its partners in order to be informed about the product offer, as well as the flexibility of adjustment of the system of service based on the special needs of the potential customers. Elements of the transaction include the time needed to complete the order, availability of stock, information about the state of the order, the percentage of orders that are executed without problems (in time, to the right place, correct product, correct documents), among others. Elements after the transaction refer to the availability (correct time and place) of the potential need for spare parts, provision of support services such as maintenance and repair when the customers ask for them, management of customer complaints and claims due to possible defective products, etc.

The aforementioned make the extreme importance of supply chain management quite clear, in terms of the high quality product offer for the customers. No company that trades on an individual basis, regardless of its supply network and its distributors, can meet the needs of its existing and potential customers within a modern utterly competitive environment. In particular, the efficiency and effectiveness, that is, the first moment of truth, depends on the degree which the strategic partners of the supply chain will be active as a team that is fully coordinated and has common goals. As the differences in the quality characteristics among competing products becomes increasingly blurred, it becomes a one-way street for companies to differentiate offers through services in order to secure a sustainable profit margin, for them and their strategic partners in the supply chain.

Estimating the offered value to the customers is very important in the correct pricing of the products of a business, but there does not exist a jointly accepted, objective, reliable, precise, easy way to quantify the value of the perceived benefits from the point of view of the customers. Given the earlier discussion, it is clear that the overall perceived value comprises a component with many variables, each one embodying quite a few variables-parameters of a different weight, and which quite possibly interact with each other. Moreover, the overall perceived value, for example, from one flight, is not the same for all the passengers, whereas it may show significant variation depending on the conditions, even among passengers that take the same flight over a regular period of time.

Despite the objective difficulty in calculating the perceived value of their offers, businesses provide certain useful tools. One way is the direct or indirect estimation of the maximum amount that a customer is willing to pay (WTP) for the offered product, by directly asking the customers themselves. In other cases, businesses resort to trials-experiments, offering their products at different prices in different markets or different periods of time, and then evaluate the customers' reactions. Moreover, businesses can evaluate the plethora of available data about the market and competitors' offers, individually or combined, with the aforementioned practices (Fahy & Jobber, 2014; 2016).

2.3.2 Product cost

Cost determines the bottom value of the selling price of the product. Businesses can sell products in the short term at a price below cost, but that happens in exceptional circumstances. Consequently, depending on the chosen method to determine the selling price of the products, the business should assess as precisely and reliably as possible the production and selling cost (Christopher, 2017; Chopra, 2020; Armstrong & Kotler, 2017; Pride & Ferrell, 2016; Perreault et al., 2012).

There are seven types of costs, which the businesses must estimate (Mankiw, 2014). The first three refer to the total costs:

- **Total fixed cost (TFC)**: This is the sum of the expenses of all the fixed production components, that is, all those variables whose quantity used in the production process remained stable in the short term. Thus, the total fixed cost is independent of the produced quantity of a product. Typical example of fixed production components are the buildings (rents), machinery (deprecation, annual maintenance), executive staff (salaries), etc.
- **Total variable cost (TVC)**: This is the sum of the expenses of all the variable production components, that is, all those whose quantity used in the production process changed according to the produced units of the product. Production components of this sort are, for example, electric (or any other kind of (energy) used in the production area, raw materials, packaging materials, workers on the production line, etc. Although the total variable cost is often regarded to increase linearly in relation to the produced quantity, in practice this does not happen, as can be seen in Figure 2.1. This is due to the law of diminishing returns which describes the relation of the used quantity of the production component variable and the produced quantity of the product.
- **Total (fixed and variable) cost (TC)**: This is the sum of the total fixed and variable costs. As the total fixed cost is stable, the total cost changes depending on the units of manufactured product based on the total variable cost (Figure 2.1).

The next three types of cost are related to average cost:

- Average fixed cost (AFC): This is the fixed cost per product unit and is derived from the ratio of the Total Fixed Cost to Quantity Produced (Q) of the product: AFC = TFC/Q
- Average variable cost (AVC): This is the variable cost per product unit and is derived from the ratio of the Total Variable Cost to the Quantity Produced (Q) of the product: AVC = TVC/Q



Figure 2.1 Curves for total fixed, total variable and total cost.

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- Average total (fixed and variable) cost (ATC): This is the total cost per product unit and is derived from the ratio of the Total Costs to the Quantity Produced (Q) of the product: ATC = TC/Q

Finally, the **marginal cost** is of special interest in product pricing. It is defined as the change in the total cost when the quantity of the produced product is increased by one (1) unit. It is calculated by the ratio of the total cost to the change in the produced quantity of the product, as follows (Figure 2.2):

 $MC = \Delta TC / \Delta Q \eta MC = \Delta TVC / \Delta Q$

Cost is also classified as a direct cost and an indirect cost, depending on its direct or indirect link to the production of a specific product (Garrison & Noreen, 2005; Harrison & Van Hoek, 2012).

• *Direct costs*: This cost is connected directly with the production of a specific product. It is also further classified as direct cost of raw materials, and direct labour cost. The direct materials are those which are incorporated into the product which is produced from them. These materials can be found immediately and easily in a product, for example, the wood in a table, the metal in a machine, the cotton in a thread, the fabric in ready-to-wear garments. They usually comprise the greater part of the total cost of materials used in the production of a product. The direct labour cost is the work offered by labourers occupied directly in the processing of materials, work that is incorporated into the manufactured



Figure 2.2 Curves for average fixed, average variable, average total and marginal cost.

product. This is the cost of the work that can be found directly and easily in a product, for example, the workers in the production line of a factory.

• Indirect costs (or general expenses): This refers to all the expenses of the production operation except those that refer to direct raw materials and direct labour: direct materials, direct labour and various operational expenses related to the production (rents, insurance costs, depreciation, energy, municipality taxes, etc.); in other words, they comprise all those expenses which cannot be feasibly attributed directly to a particular product, because they relate to the general operation of a factory. They comprise fixed and variable costs.

An additional important classification of cost refers to the existence of not of a clear relationship between revenues and expenditures, at measurable and discreet costs (Harrison & van Hoek, 2012):

- *Measurable costs*: There is a clear relationship between revenues and expenditures, that is, a measurable benefit from a particular cost. For example, if two human hours of work are needed for the production of eight units of an item of furniture, then we have a clear benefit in revenues (four units) for the cost of each hour of expenditure (human labour).
- **Discreet costs**: The relation between revenues and expenditures is unclear; in particular, while the revenue cost is clear, the expenditure benefit remains unclear. For example, the cost of cleaning and disinfecting the production spaces or the security costs can feasibly be calculated with precision, but the benefit that flows out of the cleaning and/or security costs for the business spaces cannot be easily quantified, let alone be allocated to the various products manufactured by the business.

For all businesses, a significant challenge is posed by the transformation of the discreet cost to a measurable cost, particularly the **quality cost**, which is classified into four different basic axes (Reid & Sanders, 2016):

- **Prevention costs**: These are related to the design, application and maintenance of a system of Total Quality Management, that is, expenses before the start of production, for example, educational studies and skills acquisition.
- *Appraisal costs*: These refer to the estimation and evaluation of the supplied materials, intermediate products, production processes, end products and supplied services, in order to confirm compliance to defined and specified needs.
- *Internal failure costs*: These relate to the cost of defective end products (scrap), that is, products which do not meet the designed quality prototypes, which are, however, identified before they end up in the customers' hands. These costs relate to the cost of reprocessing the products which can be repaired and loss of the raw materials used.
- *External failure costs*: These refer to the cost of repairing and/or replacing the defective products that reached the hands of the end customers, for example, compensation paid out due to recalls, returns and repairs. The cost of external failures is obviously higher than other categories and more difficult to estimate, since it includes future sales losses of the product, and all the products of the businesses overall due to the negative effects on its status.

The distinctions between direct and indirect costs and measurable and discreet costs greatly contribute to the precise and reliable estimation – as much as is possible – of the production costs and the availability of the final products, and consequently, to the avoidance of damaging mistakes in their pricing decisions.

Activity-based costing (ABC)

The share of the indirect cost comprises a very important challenge for any business, since the indirect cost is often the biggest part of the total cost. Accidentally underestimating the total cost carries the risk of selling the product at a price lower than its cost, which causes financial losses. In the case of overestimation of its actual cost, the business then risks offering the product for a rather high price, with the result that it suffers potential sales losses, and thus, reduction in revenues and profits.

The conventional way to allocate indirect expenses is based on the direct labour used for each product manufactured by the business. But there are lots of cases where the direct costs are multiple, even more than five-fold, in relation to the direct labour. It should also be highlighted that the cost of executing an order obviously includes more than just the sum of the production cost of the partial products that they are comprised of. In particular, the execution costs of the order should also include the processing costs of the order, collection of the products and their final packaging (e.g. palettes), delivery of the order and processing the payment (delayed payments, legal actions, among others). Moreover, the execution costs of the orders also depend to a great extent on the demands of the customers in relation to the time period within which an order must be executed, the variation of different product codes that it includes and the degree of cooperation with the customer (e.g. frequent, regular orders, mutual stock management, communication of information related to demand, etc.).

Hence, the decisions related to pricing must be supported by as much valid information as possible in reference to the actual cost of each product code and the servicing of various customer groups, distribution channels and market segments. Activity Based Costing (ABC) states that the calculation of cost must be supported by the analysis of the main processes – R&D, production, storage and distribution – as well as the further analysis of each process in the shared activities that make it up (Min, 2015; Christopher, 2017; Harrison & van Hoek, 2012).

For each activity that involves costs in the integrated execution of the order, the appropriate cost driver must be identified and determined, which is responsible for the consumption of the respective resources. Then, the units must be calculated for the cost variable which is needed for the specific activity, as well as the as much as possible valid estimation of the cost per unit for the cost variable. In this way the cost of each activity can be estimated with great precision and reliability. Then, summing the cost of all the required activities, form the beginning to the completion of the execution of the order, the total cost of customer service can be calculated with particular clarity. Thus, despite the ABC being a method for cost allocation, it actually utilizes more clearly the most appropriate, adjusted for the special characteristics of each shared/ partial activity, based on the allocation/sharing/partiality of indirect costs.

ABC contributes decisively in the shift of focus in the analytic pricing of the (fully processed) order, instead of simply and only the cost of the individual product. The meaning of the emphasis in the estimation of the total cost of servicing the order of each customer is shown to a great degree if we consider that in agreement with



Figure 2.3 Customer profitability curve.

relevant studies, often, 80% of the total profit of a business comes from about 10% of its customers, while a significant percentage of the total customer set (more than 15%-20%) show a negative contribution, reducing the total profit (Cooper & Kaplan, 1988; Guerreiro et al., 2008) (Figure 2.3).

LEARNING CURVE

The production cost of a product depends also on the effects of the learning curve (Siomkos et al., 2018). The learning curve reflects the relation of the increasing production experience to the increase in productivity and the reduction in production costs. When the total production doubles, the total average time (work hours) needed per product unit is reduced by a stable percentage, for example, 10%.

Learning curves are utilized in many ways by businesses in all sectors of the economy. They influence the consumption of resources not only in the production of products but also in all the other processes of a business, as in repetitive management tasks and the reduction of quality failures. Moreover, it plays a key role in the control and reduction of the production costs of various processes in the frame of cooperation among the strategic partners of a supply chain, for example, execution time of an order by the suppliers and/or the partners in the distribution networks.

The effect of the learning curve is limited in the case where automated processes are used, and also where generally speaking the involvement of the human factor is limited. The same is true in the case where a new product is supported to a great extent by existing products or in general by accessories and component parts that are already being used intensively in other production processes. Moreover, it should be noted that great care is



Figure 2.4 Learning curve.

needed in estimating the influence of the learning curve in forecasting the future of the cost trajectory of a new product. Careful selection and reduction must be made in the future of the historical data used. It should also be highlighted that a significant variation is noted in the reduction rate of the used labour among businesses and among sectors (Figure 2.4).

Supply chain management and cost improvement The maintenance and development of good collaboration relations among the main stakeholders of a supply chain also contributes, among others, to the improvement of the total service costs for the final customers, in both the short and long term, which is in fact the greatest challenge. The coordination of actions of the many strategic partners of a supply chain in decision making aligned to commonly accepted goals presupposes the mutual access and management of a large dynamic volume of information and data.

Collaborative forecasting and scheduling of strategic partners is supported by the search and determination of the potential optimal trade-offs based on which the supply chain is in the position to offer a high level of service to the end customers at the least possible total cost. Thus, the interest shifts from the costs incurred by each individual business to the total costs borne by the supply chain for the servicing of the final customers. Therefore, the management of the supply chain leads to the reorganization of processes all along its length, from mining to retail, as if it refers to the operation of a unified virtual colossal business. The reorganization of the processes has a dynamic nature with the intention of doing away with ineffectual processes, that is, those which offer a disproportionately small added value in relation to the resources and the time that they consume. A consequence of the earlier point is the catalytic role played by the management of the supply chain in the improvement of the operational costs of the business, as this is reflected in its balance sheets (Harrison & Van Hoek, 2012; Christopher, 2015; Min, 2015).

Available cash and accounts receivable

Supply chain management focuses particularly on the management of the execution time of various processes. Its purpose is to investigate realistic solutions that may

simultaneously improve the performance of the supply chain in relation to cost, effectiveness and efficiency. The simultaneous achievement of performance goals relating to cost, efficiency and effectiveness requires trade-offs. With the common tool of stock, cycle and security, the improvement of certain goals such as effectiveness entails worsening of the efficiency of another goal, for example, cost, and vice versa.

Improving the completion time of various processes, such as order execution time (from the moment the order is received by the customer until the moment the order is paid for), customer satisfaction increases; at the same time, it also improves the effectiveness of the use of the committed resources and the liquidity of a business. The execution of an order presupposes that a business have earlier taken various actions that secure the smooth and continuous production flow of a product, as well as payments to suppliers and others, that is, cash outflows. It is impossible to collect money from customers before they receive the order and the correct accompanying documents. So, fast-processing an order makes the maximum contribution to both the available cash of the company and customers' requirements.

Cash flow (collection of payments) is the most neglected of the three flows of a supply chain. Taylor (2003) presents an example of the typical execution time of the three flows, requiring 3 days for the demand (agreement by the customer to place the order with the business), 7 days for the offer (preparation and delivery of the order and receipt by the customer) and a massive 50 days for the payment to be made (collection of money from the customer). The management of the supply chain imposes radical changes in order to speed up the execution of procedures, as in, for example, canceling orders and automatic stock replenishment (e.g. Just in Time, JIT) and immediate payment on receipt of the product. Cash flow delays create problems in the smooth operation of the supply chain, since the main goal of all stakeholders toward this end is maintaining cash flows.

Inventory/Stock

Stock comprises the bulk (often more than 50%) of the current assets of a business. Inventory levels depend on the stock replacement policies followed (raw materials, stock, etc.), a consequence of the fixed cost of placing an order, maintaining it before delivery, and the execution time needed to replenish stocks. Security stock levels are determined by the desired level of customer service (demand coverage rate) and demand insecurity (variations) on the customers' part, and the offer (due to the execution time needed for stock replacement by the supplier).

The high collaborative relations that supply chain management imposes on stakeholder partners lead to significant reductions in the fixed costs involved in the placement of stock replacement orders as well as the respective time needed to execute them. This results in the dramatic loss of the optimal order quantity, and therefore the total cost of placing an order and maintaining stocks. Similarly, collaborative forecasting and scheduling contributes to the clear reduction in the observed fluctuations in demand for intermediary and final products, and in the execution time of orders for stock replacement. This implies a reduction in the required security stock levels, even in the case of an improvement in customer service.

Fixed assets

Fixed assets, such as production, storage and distribution installations, comprise integral elements of the processes that create value for the customers of a business. However, they require the commitment of large amounts of capital to acquire and operate them; consequently, they contribute toward a high fixed cost which does not change according to the production quantity. The high collaborative relations developed within the context of the management of the supply chain play a catalytic role in the conversion of a large share of the fixed operation costs of a business to variable costs, releasing large amounts of capital and providing greater flexibility to the businesses involved.

Nowadays, most businesses focus on the processes which their strategic competitive advantage is based on, such as R&D, product manufacture, Management of customer relations, etc. For the remaining procedures and partial activities, such as storage, distribution and transportation, they apply outsourcing, wherever possible and economically advantageous, to different strategic 3PL partners (3r^d Party Logistics). Similarly, the production of accessories and component parts of manufactured products is also passed on to selected partners. Such parts used to be manufactured in the same business in the past; outsourcing allows the business to focus more on innovation, assembly and quality control of the final products. Outsourcing is also used in other support activities, such as guarding and cleaning the business premises. Another way to minimize fixed costs through the maximization of the variable cost is the acquisition of fixed equipment via funding, for example, the lorries used in transportation the business itself executes, and the cars used by the personal sales staff.

Short-term obligations

The most important part short-term obligations of a business refer to the accounts payable for the supply of raw materials, accessories, component parts, etc. The goals of supply chain management is also the improvement of the time needed to replenish stocks, which begins form the moment that the need to replenish stock is perceived. Placement of the order to the supplier and receipt of the stock follow, completed by the delivery of the payment to the supplier. Reducing the stock replacement functions collectively in the same direction as the reduction in the time needed to execute the order and the reduction in the required cycle and security stocks, drastically improving the financial liquidity of a business. Improving financial flows allows a business to repay its suppliers directly and consequently to limit the number of bills payable.

Traditionally, most businesses regarded the delaying of payments to suppliers for as long as possible as a panacea, in order to maximize the credit they enjoy, and consequently improve the image of their balance sheets. But these cash flow delays thwart the efficiency and effectiveness of the supply chain, which is reflected in the noncompetitive ratio of the offered value to the selling price. At any rate, the credit offered by suppliers is in essence a kid of funding service to its customers. So suppliercreditors will unavoidably embed the funding cost in the total pricing of each order so that they can price it appropriately. Thus, credit is like a loan from the supplier, often at a greater cost in relation to the potential benefits, so that most likely, it is damaging to the profitability of a business.

Foreign/Own capital

Improvements in the aforementioned elements of the balance sheets of a business have significant positive consequences in the foreign/own capital ratio. For example, the conversion of fixed expenses into variable ones reduces the funding needs of high-cost investments, which always goes hand in hand with uncertainly concerning their performance. The lower levels of cycle and security stock similarly save precious capital, which can then be utilized in a more profitable way. Moreover, the more positive financial flows due to an improved image of available funds, demands and short-term obligations contribute even more to the performance of the total and own capital and ultimately to the profitability and viability of the business.

2.3.3 Pricing objectives

Bearing in mind the factors that influence the pricing strategies, the business must set its pricing goals. Pricing targets must be harmonized with the general goals of the business, especially the placement strategy of their product. The clearer the pricing targets are, the easier the application of appropriate methods for the determination of the product price level will be, as well as the choice of adjustment policies of the prices based on market changes.

Pricing goals are classified into economic or target profit related targets, marketing or desirable sales targets, related to the competition that they are up against, product placement and internal production and supply chain (Perreault et al., 2012; Siomkos et al., 2018; Paniyirakis, 1999). The most common economic goal in the pricing of a product is related to its return on investment. Obviously, the management of the business must take care in making the best possible investment of its capital (own and foreign) in order to avoid tempting dividends for its shareholders. The height of the target performance depends on the business risk which accompanies the production and disposal of the product, and its usual performance in the sector it operates. In some cases, however, the main pricing target is the viability of the business itself, especially during periods of extended economic crisis. Non-profit, private or public businesses usually set the coverage of their expenses as a financial pricing target in order to meet the funding needs of their operation. Even though the greater goal of private businesses is the maximization of profit, rarely is a relevant pricing target set because it is difficult to evaluate its effectiveness.

The sales-related pricing targets often refer to the achievement of some minimum level or maximization of sales, in terms of product quantity or value, or market share. In the past, businesses regarded the maximization of sales or market shares as implying the amelioration of profits; hence, such goals were particularly popular. Nowadays, such theories have been debunked to a great extent because in many cases, they have been proven to be damaging to companies. However, the achievement of a minimum sales level or share of the market remains a substantial goal in many cases, because it is related to the performance of the investment, the achievement of economies of scale and acquisition or maintenance of a powerful or, in general, strong position among the competition, among others.

The pricing targets related to the competition often refer to maintaining or upsetting the balance that has been achieved among competing businesses, mainly in monopolies. Monopoly businesses usually avoid a price war between each other, which very often turns out to be very damaging to all of them. In many cases, however, the application of groundbreaking innovations may give rise to a significant cost advantage to some businesses which rush to take advantage of it, making their products available at clearly lower prices compared to regular market prices. Typical examples of this can be found in Japanese automobile manufacturers in the 1970s–1980s, and in the DELL computer company. In both cases, the transformation of the conventional relations of collaboration with suppliers and distribution networks into cooperative relations at the level of supply chain management gave rise to drastic changes in the manner of the operation of the relevant markets.

In the case of DELL, the ordering process is automated on the one hand by a special information system, and collaboratively on the other, because orders for computer system parts are forwarded to collaborating supply businesses. In the case of the Japanese automobile manufacturers, the supplier companies are either within the production lines or adjacent to them. This practice supports the application of the JIT philosophy that achieves a reduction in stock and costs, and waste in general. In this case, suppliers don't send large shipments in regular time periods; instead, they send regular smaller shipments: respectively, from monthly orders to multiple daily deliveries of small shipments with lorries leaving directly from the factory. This practice continues at every link in the chain.

The pricing objectives are sometimes aligned with the placement of the product of high value or status; in such cases, the price must be set at high levels. In industries however, whose main feature is the continuous production process, such as, the production of electric energy, chemicals and petrol products, the product price must be relatively low so as to secure the continuous operation of the production installations on a 24/7 all year round basis.

The pricing targets that contribute to the good management of the strategic partners in the supply chain win more and more ground, since the supply chains are essentially competing among each other as opposed to individual businesses. There are cases where most cooperating business links in a supply chain will not raise the sales cost of their product to the final customer but only one business will do so. In contrast, in another supply chain where most links will possibly add another link, the total cost, however, will be lower than the first and it will be more competitive. In simple terms, a systemic approach exists in the cost in a supply chain. The goal is to reduce the total cost (system cost) and not the individual components (subsystems).

Regardless of the pricing targets that a business sets, in each case, it must prioritize them on the basis of their importance, as primary and secondary priorities. In essence, the business must in practice try to succeed in more than one goal, which often entails trade-offs. Whichever pricing targets a business's adopts, it is necessary to communicate them clearly to all stakeholders, both internally (in different departments) and externally (to the strategic partners in the supply chain).

2.3.4 The overall marketing mix and the product life cycle

The pricing strategy must be harmonized with the complete strategy of the marketing mix. Thus, pricing related decisions must be matched with the choices related to the design of the product, distribution and marketing communication, in order to constitute a prompt effective competitive marketing program.

If the business has set its product to its customers as a high quality/status product, then price determination must take place at a high level in order to emphasize its superiority over potential substitutes. In such a case, special emphasis is placed on the design of the product and its accompanying services, the chosen distribution networks, as well as its promotion. In many cases however, the marketing mix design essentially begins from the establishment of a specific price level which the product must be made available to the final customers, following targeted pricing. According to this technique, the business try to design the best placement strategy once it identifies the perfect retail price based on the perceptions of the final customers, placing particular emphasis on the production cost of the product based on its desirable features.

The life cycle of the product also affects the pricing decisions. In the introduction stage, businesses try to choose between two general strategies: *market pruning pricing* and *market penetration pricing*. But the price level in the introduction stage is generally higher in relation to the next stages in the life cycle of the product, since the average total cost is particularly high and neoterists/innovators, who are the first to try to the product, are of course less sensitive to high prices in relation to the other acceptance groups of a new product. In the development stage, the price usually presents a relative reduction in order to facilitate further acceptance of the product in the market, and for the attractiveness of the value/price ratio to be strengthened as more and more competitors emerge. Reduction of the unit cost due to the large quantity produced and made available on the market also contributes to this end.

In the maturity stage, the product faces intense competition from the plethora of similar substitute products; for this reason, the overarching trend to reduce the price causes the profit margin to shrink. The most well-established businesses, however, tend to make their products available at the same prices as their main competitors, or even at slightly higher prices due to the services offered and customer habits which lead them to be devoted to the products to some extent. At the decline stage, a significant reduction is noticed in the price, with further shrinking of the profit margin, a fact that leads more competitors to leave the market. Pricing decisions at this stage depend to a great extent on the marketing strategy that the business selects, such as repositioning the product at the maturity stage, product harvest/bleeding, among others, while ensuring at the same time that devoted customers do not get disappointed, or that the business brand doesn't suffer from a bad reputation. In general, the two most likely possibilities for a business are the further reduction of the price, so that the business can offer the remaining product stock or a reduction in the production cost, where this is feasible, so that the availability of the product can continue at the adjusted market price (Siomkos, 2004).

Further to the earlier discussion, during the determination of the pricing strategy of a product, the business must carefully study the potential consequences this may have on the other products in its portfolio, particularly in its sales (Siomkos et al., 2018; Paniyirakis, 1999). The greatest danger in such cases is "cannibalism" among the products of a business, where the rise in the sales of one product is due to the respective loss in the sales of the other products of the same business. In this case obviously, the business does not benefit from a potential increase in product sales, since its total revenues essentially do not increase and it may also upset the relations of the managers in charge of the respective products.

2.3.5 Market and demand

Relation of price and demand

The relation of product price and demand is described in the well known law of demand. According to the law of demand, there is a reverse respective relation between the selling price of a good and its required quantity, when the remaining determining demand factors remain stable (ceteris paribus) (Armstrong & Kotler, 2017; Kotler & Armstrong, 2016; Perreault et al., 2012; Pride & Ferrell, 2016; Mankiw, 2014). Quite simply, when the price of a product rises, its required quantity reduces, and vice versa. The remaining determining demand factors of a good include, among others, consumers' preferences, consumers' income, the price of substitute (competitors') and complementary goods, consumers' expectations in relation with the future price evolution and their incomes and the number of consumers (market size).

The demand curve graphically depicts the demand of a good when its price changes and the remaining determining demand factors remain stable. The demand curve differs for each product in each potential market and time period. Given the revers respective relation between price and demand, the demand curve has a negative slope. There are, however, some cases where it is noticed that the slope of the demand curve is rising. This signifies status products (Veblen goods), where the product price comprises a strong indication of its quality, since the determination of its value with other criteria becomes especially difficult. Examples of Veblen goods may be haute couture clothing, luxury cars, watches, jewelry, perfumes, cosmetics, among others. Let's imagine the case where a business creates a new perfume which has bewitched everyone that has tried it in comparative trials of high quality perfumes. Let's also assume that it can be produced and made available on the market at a significantly lower cost from competitors' perfumes currently circulating in the market. One choice would be to introduce the new perfume to the market at a particularly low price, much lower than competitors' perfumes, so that it could achieve a high level of penetration into the consumer public. But the most likely scenario is that the business that was going to follow this pricing strategy will be disappointed by its choice, since consumers would be placing the product on their perceptual map together with other perfumes of a lower quality. Thus, it is probably a one way street for the business that wishes to place its product as a high quality one to choose a particularly high price, comparable at the very least to competitors' products (Figure 2.5).

A very important notion that refers to the relation between price and demand is the elasticity of demand to price. This is implied in the degree of reaction of the consumers in the required quantity of a good when its price changes and is estimated (ceteris paribus) as a percentage change in the demand of the good in terms of the percentage change in its price. The demand elasticity (E_D) to the price has negative values, except in the case of status goods. For reasons of simplicity, however, the absolute prices of demand elasticity to price are often noted. Based on the absolute prices of elasticity, demand is called a unit when $|E_D|$ equals 1, inelastic when it is less than 1 and elastic when it is greater than 1.

Demand elasticity changes with the price level. Generally, there is a point in the demand curve where $|E_D|$ equals 1. For values greater than that level, demand is elastic $(|E_D| > 1)$, while for lower values, demand is inelastic. Thus, for the business, it is especially useful to know if demand for its product is elastic or inelastic at the specific



Figure 2.5 Demand curve for a common good and a prestige good (Veblen).

price level that is being sold at. Specifically, if it is inelastic, the business will raise its revenues by raising the price of the product, since the percentage rise in the price will be in absolute values greater than the percentage decrease in the required amount. In contrast, if the demand is inelastic, then it will most likely be advantageous to reduce the price of the product so that it will increase revenues from its sales. Of course, in practice, estimating the demand elasticity is particularly difficult since it is impossible for the product price to change without any alteration to at least one of the other demand's determining factors. In any case, however, whichever estimation of elasticity is more useful for businesses.

There are various determining factors of demand elasticity concerning the product price. Some of the most important ones are as follows:

- The importance of the good for the consumer. The greater the importance, the less elastic the demand.
- The existence of substitutes. The more substitute (competitors') goods, the more elastic the demand.
- The time period that has passed from the change in its price. In the long term, consumers can adjust better to changing prices; thus, in the long term, demand will be more elastic.
- The height of the price of the good. The lower the price, the less elastic the demand, and vice versa.
- The percentage of income that is spent. The greater this percentage is, the more elastic demand will be, and vice versa.

Market shapelform

Businesses' choices in relation to pricing depend to a great extent on the kind of market that they are active in. Specifically, economists classify markets into four basic types, based on the number of buyers and sellers, differentiation (or not) of the good

and the concentration degree of the sellers (Armstrong & Kotler, 2017; Kotler & Armstrong, 2016; Perreault et al., 2012; Pride & Ferrell, 2016; Mankiw, 2014).

In full/complete (or perfect) competition, many buyers and sellers participate in the market, and the goods offered are homogeneous, that is, they have the same characteristics, or at the very least, the consumers don't distinguish substantial differences between them. Furthermore, there are no (or at the most very few) restrictions at the market entry and exit points of businesses and there is full information (or the information asymmetry is very little) for both the buyers and the sellers. The aforementioned conditions have as a result the actions of one individual buyer or seller having very little influence on the price that is formulated in the market. Indeed, bearing this in mind, buyers and sellers take the formulated market price for granted. From the side of the businesses, this essentially means that they face a completely elastic demand curve. In simple terms, they will not find buyers if they try to charge a higher price than what is going around in the market, and there is no meaning in selling at a price lower than the market, since all their produced quantity may be sold at market price.

Although in practice it is very difficult for all the earlier assumptions to be taking place simultaneously, characteristic examples of markets with full competition are those of wheat and most agricultural products, wood, fabrics, petrol, copper and other mined goods, etc. Moreover, due to the immense changes that have taken place in the last 2–3 decades, especially in the minimization of asymmetric information, most markets are very competitive and tend to acquire more and more features of full competition. Obviously, it is a market type that leaves very little, if any choice margins for businesses, with reference to the followed marketing strategies, especially pricing strategies. Supply chain management, however, provides significant potential for differentiation of manufactured products, especially in accompanying services. Therefore, the goal of modern supply chains is the creation of business networks that can supply added-value services. The choice by the remaining members of a new partner happens with this in mind. Cost savings and opportunities for added value should be discussed with all the interested parties about the resulting benefits in relation to the implementation expenses to determine the relevant priorities.

Monopolistic competition presents significant similarities with full competition, except for one significant difference: the product of each business is differentiated, at the very least, from competitors' products. The differentiation may be in the quality characteristics, style, presentation, accompanying services or a combination of the earlier points. In each case, it is important that buyers think that there are some substantial differences between the competing products. Therefore, the consumers are prepared to pay a different price for those products that offer higher value in relation to their substitutes. Thus, the business does not face a predetermined market price, that is, it is not a price receiver, but the demand curve of its product has a negative slope (downwards). Typical examples of this kind of market are restaurants, hairdressers, legal and accounting services, etc.

In monopolistic competition, the business trues to create a branded demand for its product, shaping the appropriate marketing strategies, especially for the product and communication. Due to the large volume, and simultaneously the small size, of the sellers each business is influenced less by the pricing policies of competitors in comparison to the oligopolistic markets. Each business enjoys significant freedom in its own small market, but obviously not absolute freedom as in a monopoly. Good collaborative relations with selected partners, especially suppliers, allows to maintain and build on the business's competitive advantage. It may lead to the creation of winwin relations for development and improvement. Examples of this are cases of mutual product design, solutions for production issues, among others (Early Supplier Involvement), upgrading of quality systems, information systems, etc.

The oligopolistic market is characterized by the presence of few businesses that offer the same or a similar product; thus, pricing strategies of businesses depend to a great extent on those of their competitors. Markets dominated by a few big businesses are also oligopolistic, but they include a large number of small businesses, for example, the retail food sector. The selling price of a product of a business in the oligopoly is lower than in a monopoly, but higher than in full competition; thus, the total profits of oligopolistic businesses are smaller than in monopolies. Characteristic examples of monopolistic markets of homogeneous products are cement, electric energy, among others, while for differentiated (similar) products for electric (e.g. washing machines) and electronic machines (e.g. computers), dairy products (e.g. yoghurt), etc.

In oligopolistic markets, in practice, for the choice of the most appropriate pricing strategy, various methods are used based on game theory. Additionally, in essence, price wars in an oligopolistic market are damaging for all the businesses involved, so it is something that is generally avoided. Of course, an oligopolistic business is most likely to enter into price reductions when it achieves a real cost reduction in the production and availability of its product. Generally speaking, as the number of sellers in the oligopoly increases, the more the oligopolistic market will resemble a perfect competitive market. The continuous technological developments and the international market in many cases contribute to the increase in the number of oligopolies and competition among them, with the result of the continuous pressure of the profit margins. Supply chain management plays a key role in oligopolistic markets and therefore product pricing. In general terms, in the case of a supply source (one or a few suppliers), there are the following advantages: better prices due to the purchase of larger quantities (reductions), lower delivery cost, hence greater quantities bought with less transportation, creation of strategic and long-term relations.

From the aforementioned discussion, it is clear that businesses which operate in oligopolistic markets have a great motive to jointly act as a monopoly. But collaboration between oligopolies is undesirable in terms of society/community as a whole, because it leads to a low production level and high prices. For this reason, governments all over the world place different legal constraints on this kind of unfair collaboration in order to put pressure on companies to compete with each other. On the other hand, the advantages of switching to many suppliers (procurement from many sources) is related to achieving better prices and conditions for the agreement due to competition, supply risk in the case of delivery problems, increase in interest and technological development of suppliers, strikes, protection services, natural disasters, etc.

The fourth kind of market refers to monopolies where just one businesses services the whole market. Monopolies arise from barriers to the entry of new businesses in a new market, either physical as in the exclusive possession of a natural resource, or legal as in state monopolies (e.g. water and sewage, postal services, electric energy) and patents (e.g. medicines) and creations (e.g. a book). Because, although, the establishment of the aforementioned strong price leads to irreparable losses, that is, to a not at all excellent distribution of productive factors and the loss of social well being, monopolistic businesses usually set lower prices in ordee to avoid the expected state intervention. In general, pricing policies of monopolistic businesses are subject to different legal restrictions and controls.

Competitors' pricing strategies

The business must bear in mind very seriously the following strategies and the formulated pricing strategies of its most important competitors, since it is active in monopolistic competition or in an oligopoly (Armstrong & Kotler 2017; Perreault et al., 2012; Paniyirakis, 1999; Siomkos et al., 2018; Pantouvakis et al., 2015). But information related to competitive offers is a big challenge for the business, because knowledge of their selling price is not simply enough; estimation of the offered perceived value as the relevant costs is also needed. The challenge becomes greater in reference to the identification of the basic categories of competitive products that refer to the product of the company. For example, competitive products of a new photographic camera constitute all the photographic cameras that offer similar quality characteristics, generally all the photographic cameras, as well as smartphones and tablets which have a camera embedded in them for taking photographs and videos.

The business has to locate the directly similar products from the competition and stay informed on a regular basis about their price levels, which is quite easy given contemporary internet tools. At the same time, it must determine as precisely as possible the perceived value from the customer's side of the competitor's and its own product. If a business offer is similar to that of its main competitor, it must prefer a price very close to the competitor's. In the case where customers judge that the product of the business offers them greater value against that of the competitors, then the business is in the position to set a reasonable higher price. In the opposite case, the business must set a lower price in order to offer an attractive value-price ratio to its customers. Indeed, in the last case, quite possibly, the business must search for ways to improve the value proposal and a better placement of the product in the perceptual map of its customers. The assessment of the average total production cost and availability of competitive products is very useful so that the business knows the followed pricing strategies that they follow. In this way, the business will have the possibility to adjust its pricing decisions based on the practices of the competition and it will be able to predict possible changes in prices of competitors' products.

In some cases, the pricing strategy of the business is determined by the ultimate goal of influencing the competition. This is especially true for leader businesses in a market, who run the risk of attracting new competitors if they set high prices because of the expected tempting profit margins. This danger is especially high when entry barriers are relatively low. In such conditions, it would probably be wiser to choose a relatively fair price that will discourage new competitors from entering the market, and it may also encourage the departure of some of those already in the market.

In the case of a monopolistic competitor, where there are possibly already many strong competitors in the market, then it would be preferable for the business to focus on niche markets, differentiating its product/service in order to partly avoid direct competition. In this way, the pricing strategy of the business will not depend to a great extent on the respective pricing strategies of the competitors.

2.3.6 Supply chain factors

Manufacturers of products must give pay special attention to the profit margin that the strategic partners in distribution networks can enjoy (Armstrong & Kotler 2017; Perreault et al., 2012; Siomkos et al., 2018). A penetration pricing policy can bring very small profit margins to both wholesalers and retailers with the result that the distribution networks will not provide the necessary support for the successful introduction to the market of the new product. On the other hand, forecasting very high profit margins to secure the acceptance of a new product may lead to an unattractive relation between value and price for the final customers. In practice, product pricing does not refer just to the business that produces the products; the relevant decisions will have to be taken bearing in mind the priorities and limitations of the strategic partners in the supply chain. In the case where the business cannot completely satisfy the needs of the stakeholders of a distribution channel, it must seek other channels with a better match for its strategic goals, otherwise it must resort to the solution of immediate distribution of its products/services to the final customers.

The dominant trend in the market is the continuous strengthening of the negotiating powers of the retail businesses due to both the geographical spread and the variety of goods offered. Thus, the rising negotiating power of the big retail chains gives them a dominant position against the remaining strategic partners during the structure and operation of the supply chain. This results in the pricing policy of both the producers and the remaining stakeholders in the supply chain (e.g. wholesalers) being influenced to a great degree by the agreements of long term cooperation which they draw up with large retailers. As compensation for the high degree of concentration of the retail trade, producers and some intermediaries resort to high investments in communicating with the final customers for the creation of a branded demand. Branded demand contributes to consumers' dedication to the commercial logos, giving a bargaining power to the manufacturers of the products. Examples of such producers include companies like Barilla, Unilever, Coca-Cola and many others.

Taking the supply chain of the fresh fruit and vegetable sector as an example, price determination is often a part of the agreement of long term cooperation between the main partners of the chain, that is, the producers, the wholesalers (they often take on main-tenance, standardization and packaging of the products) and supermarket chains. Bearing in mind the cost structure of the production and availability/sale of the final product, a lower price is also agreed on for the producers and wholesalers to cover the cost of their activities, plus a minimum margin of survival profit in cases where there is oversupply of the product; as a result, the market prices decline to very disappointing levels.

A maximum price is also foreseen in the case of a lack of product in the market due to bad weather conditions, illnesses, crop diseases, importation difficulties, etc. In this way, the large retail chains can secure their continuous supply in fresh fruit and vegetables within a forecasted price range. There are, however, cases of businesses that have succeeded in creating a branded demand in the market of fresh fruit and vegetables, even though the rule usually regards these goods as a common kind of product. A typical example in Greece is the Agricultural Cooperative of Zagora-Pelio, whose products (mainly apples and pears) bear the «ZAGORIN» logo. Despite the fact that it is competing in a market with full competition, the branded demand that it has created for its products allows it to make them available not simply as common goods, thereby securing higher prices than its competitors.

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The conditions of long term cooperation among large supermarket chains and their strategic partners often include the contribution of wholesalers and producers in "barker" pricing. Specifically, retail sellers on a regular basis offer various products, for which the market has determined some kind of reference, at a very low price, up to marginally higher than the cost, for a certain period of time (3–7 days). It is not their main goal to sell large quantities of these chosen goods, but to attract customers to their shops with the hope that they will also do their remaining weekly shopping there. At any rate, these so-called demand fluctuations in the products comprise a very important test for all the stakeholder businesses in the supply chain and the logistics systems that they use. The contribution of the other partners is also suggested in making these large quantities available at prices with marginally positive profit margins.

An important additional reason which makes it essential to have a good collaboration among the strategic partners in the supply chain in terms of product pricing is bullwhip effect (Taylor, 2006; Min, 2015; Slack et al., 2010; Chopra & Meindl, 2014) (Figure 2.6). The reasons for this problem emerging as as follows:

- Existence of complex supply chains that increases the possibility of errors and delays,
- Sales Promotion through offers,
- Discount on the market price and transportation depending on the volume of products, bulk orders,
- Mistakes in demand forecasting (where the order levels change according to the forcasting, that is, order tend to increase more than what was predicted),
- Large time periods needed to satisfy the order, and
- Large time periods needed to satisfy the order enlarge the phenomenon.

Decisions related to the changes in the retail selling prices of the products could increase even more the usual fluctuations in its demand. However, in cases of limited cooperation and information movement along the length of the supply chain, these further fluctuations further upset the demand signal that is transferred upwards in the supply chain. Thus, pricing must be an agreement signal of the main stakeholders in



Figure 2.6 Bullwhip effect.

the supply chain after negotiations and the search for mutual beneficial trade-offs. If one sale is missed either short term or long term, which is even worse, the problem is mutual for all the stakeholders in the supply chain. Therefore, optimal solutions must be sought at the level of the supply chain and not the business.

Pricing must also take into account the special characteristics of each distribution channel through which the producers make their products available in the market, especially how the different processes and activities between the strategic partners are shared. If, for example, in a distribution channel, the immediate shipment of a specific quantity of product is necessary, which implies, among others, the availability of a high production capacity or high levels of security stock, due to the high service costs, the price will be high. In contrast, in another distribution channel which has the ability to ship an order within a certain period of time (e.g. 5–7 days) and which consequently the customers of a business are prepared to undertake some extra activities (e.g. transportation ot maintenance of security stock), the price will obviously be lower than in the previous situation.

2.3.7 Legal constraints

Businesses operating in oligopolistic or monopolistic markets, in addition to the aforementioned factors, must comply with series of legal constraints when determining the price of their products (Armstrong & Kotler, 2009; Perreault et al., 2012). In such markets, the businesses are always tempted to resort to pricing policies that maximize their profits, which may also lead to irreparable losses. These losses refer to the whole of society (producers and consumers) in order to make it possible to redistribute the benefits from the consumer to the monopoly where there is cooperation among the main oligopolists. Therefore, in order to limit the irreparable losses and redistribution of the consumer surplus to the monopolies and oligopolies, governments often impose various types of legal constraints (Figure 2.7).

The anti-monopolistic policy aims to prevent oligopolistic businesses agreeing to limit competition among themselves, because this leads to a low level of production and high prices for consumers. In cases where it is verified that two or more oligopolistic businesses have created a cartel with the aim of manipulating the prices of products, governments impose high fines often in the range of hundreds of millions of euro. Regulatory interventions for monopolies could, among others, include the nationalization of monopolies, the prevention of non-social beneficial mergers and the separation of existing businesses into smaller ones.

A typical market with intense state intervention is that of pharmaceuticals. Drug companies spend about 20%, even more than that, of their budget on research and innovation and the development of a new drug costs on average about 1.3 billion USD (Woulters et al., 2020). Thus, governments provide motives for pharmaceutical industries to invest in research and development, protecting through patents the exclusive use of the new active substance for a reasonable amount of time. However, due to the high relevant social and ethical impacts, they place various limitations in relation to the final selling price, especially where it concerns the introduction of new drugs in the positive (reimbursed) drugs list, and they also determine the prices of non-reimbursed drugs (Braoudali et al., 2018).



Figure 2.7 Uncompensated loss and redistribution of consumer surplus to monopoly.

2.4 Pricing methods

2.4.1 Pricing methods based on cost

These methods are based on the production cost and availability of the products. In general, they have a simple application, but their greatest challenge is the expensive and reliable determination of their cost, which depends among others on the predicted quantity of the sale of the product. Their disadvantage is that they don't take into account the predicted value of the product by the final customers, or the prices set by competitors. In the case where demand and competition present stability, these methods may turn out to be especially useful.

Cost-plus and/or profit margin pricing

The literature often presents two different methods, but in essence, it is one and the same method, which of often called *cost-plus* when it is used by the manufacturer of the product (based on production cost), and *profit margin* when it is used by intermediaries between the producer and the final customer (based on the purchase/market cost) (Siomkos, 2004; Perreault et al., 2012; Armstrong & Kotler, 2017). The business estimates the average cost of production or acquisition of the product and then adds a

desired profit margin so as to determine the selling price. The profit margin can refer to some specific amount per unit of product, but it is most often determined as a percentage either on the production cost or acquisition, or on the selling price of the product.

This method is especially popular in the intermediary distribution channels, since they trade a huge number of different product lines (often in the range of tens thousands). Furthermore, this method presents the advantages of easy application and competitive harmony which is achieved when all the competitors utilize the same profit margins. For this reason, retailers and wholesalers often use a predetermined profit margin percentage for each large product group that they trade in. An example of this is a supermarket chain which sets different profit margins on fresh fish in relation to washing detergents. A further more basic classification criterion of products is based on the rhythm of their trading pace, setting a low profit margin percentage on quickmoving products and a high one on product lines with a low sales rate (Perreault et al., 2012).

In general, the reaction of the supply chain to cost is important, because:

- Non-performing production processes increase the cost of the product.
- The not-integrated management leads to an increase in cost.
- Inadequate information and design lead to an increase in cost (e.g. the ineffective utilization of company capital, lack of coordination, not profitable/advantageous transportation.
- Lack of standardization leads to increase in cost.
- "Building up" stocks leads to increase in the cost.
- Lack of quality increases the cost.

When this method is adopted by the stakeholders in the different levels of the distribution channels, then the relevant chain of profit margins determines the price structure in the channel, and therefore the final retail price. A significant risk that arises from the application of this method is the determination of the retail price to a higher level than that which the perceived value or the competitors' prices would allow. Another critical point in the application of this method is who first sets the price. Quite simply, is it the producer, wholesaler or retailer that first decides on the base price? In practice, the base price is set by the business with the greater bargaining power in the distribution channel (Perreault et al., 2012). In many cases, however, the remaining stakeholder find that the strongest business tries to enjoy a disproportionately high profit margin percentage in relation to its contribution in the overall effort made in the distribution channel. Moreover, it may be the case that the determination of the base price suits the strategic goals of the business with greater bargaining power, with lkess significance places on the priorities of the other businesses. Thus, it becomes clear that the management of business relations of the distribution channels based on the founding principles of the management of the supply chain is necessary for the effective and sustainable application of this pricing method.

Despite its utility, this method cannot be used alone in price setting. In the case where the real sales are lower than those taken into account in the calculation of the average cost, based on the this method, the price will have to be raised even more, which will lead to a further reduction in demand. Furthermore, the offered price to the final customer and the competition are both not taken into account. What's more, as

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previously discussed, the precise and reliable allocation of the indirect expenses is a difficult task, especially for businesses which produce or trade in a plethora of product lines, making it difficult to correctly calculate the average total cost (Fahy & Jobber, 2014; Perreault et al., 2012; Paniyirakis, 1999).

Despite the aforementioned problems, this method is especially useful, even in the case of determining the final price, because it offers a very good indication of the lowest possible price for the achievement of a satisfying or acceptable profit level for the business.

Deadlock or targeted profit pricing

Targeted profit pricing tries to pinpoint the appropriate selling price of a product so that the business can achieve a predetermined performance level on the investment (Armstrong & Kotler, 2009; Perreault et al., 2012; Fahy & Jobber, 2014). This method has a lot of similarities in its application with the aforementioned method of profit margin. Initially, the business has to determine as precisely and reliably as possible both the total fixed cost and the average variable cost of production and availability of the product. Then, it must calculate the total amount of profit and estimate the selling quantity of the product. The price determination arises form the same mathematical relation used in the analysis of the dead point.

The dead point analysis is used in the calculation of the quantity for which the total revenues equal the total expenses. Selling a larger quantity from that of the dead point means that the business will make a profit, while a smaller quantity of sales will mean revenue losses. The analysis of the dead point presupposes the calculation of the total fixed average variable cost, which is thought to be stable regardless of the produced quantity and the setting of the selling price (Figure 2.8). Following this, the dead point analysis is calculated by the following mathematical formula:

$$Break - even \ po \ int = \frac{Total \ fixed \ \cos t}{Price - Total \ variable \ \cos t}$$

The aforementioned mathematical relation can be used vice versa, that is, to find the selling price of the product in order to achieve zero profit (or loss) for its predicted selling quantity. In this case, taking into account that he total variable cost equals the product of the average variable cost on the projected quantity sold, the price is calculated as follows:

$$Price = \frac{Total \ fixed \ \cos t + Total \ variable \ \cos t}{Sales \ Quantity \ Forecast}$$

Therefore, to determine the appropriate price in order to achieve the predetermined performance level on the investment (targeted profit), the following formula is used:

$$T\mu\eta = \frac{(Total \ Fixed \ Cost + \ Total \ Variable \ Cost) + \ Profit \ Target}{Sales \ Quantity \ Forecast}$$



Figure 2.8 Break-even analysis.

Targeted profit pricing has the same advantages as well as the same inherent weaknesses as discussed in profit margin pricing. Its application also presupposes that the average variable cost is independent of the quantity sold, which is often not valid due to the phenomenon of economies of scale and the learning curve. Therefore, it would probably be risky to use it without taking into account the perceived value of the product and the prices set by the competition. Regardless of the method chosen to set the final price, targeted profit pricing offers valuable information and indications in relation to the future profitability and sustainability of the product. In practical terms, it can be used to evaluate various alternative choices of the business, especially in combination with the estimation of projected demand at various price levels, as discussed later.

The dead point analysis also shows the significance of implementing supply chain management. As has already been highlighted, the stakeholder companies in a supply chain with high collaborative relations can, in many ways (ABC, stock management, speeding up the three flows in the supply chain, etc.), control and lower both the fixed and variable costs of their processes.

2.4.2 Pricing methods based on demand (value)

The reason businesses and their supply chains exist is to cover the needs and desires of the final customers. Thus, the final judge of the effectiveness and efficiency of all the business decisions is the final customer who is not interested at all in the price structure of the businesses and the intermediaries in the distribution networks. Thus, when

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setting prices, the perceptions of the customers on the value offered must always be taken into account. Pricing based on value (demand) presupposes that the price must be set by designing a marketing strategy together with the remaining elements of the marketing mix, and not therefore as an independent decision.

Good value pricing

This method is recommended in price setting based on its precise relation with the quality/value (and accompanying services) of the product (Armstrong & Kotler, 2009). This strategy wins more and more ground due to the increased sensitivity of the final customers to price which is due to their being well informed regarding competitive offers, and also partly on the prolonged economic crisis which has contributed to the marked reduction of their purchasing power. Businesses often introduce versions of their branded products (e.g. Mercedes Benz and BMW cars, Tommy Hilfiger clothes, among others) into the market at lower prices, offering products at more attractive prices in terms of the value-price ratio.

The every day low price (EDLP) is a typical example of good value pricing, where products are sold on a daily basis at a relatively low price, avoiding price reductions. Businesses that adopt this strategy are leaders in their market, but they make a great effort to offer good value in their products/services. This strategy constantly gains ground in contrast to *high-low pricing* according to which products are sold at relatively high prices, but at regular intervals, the same products are sold with promotional reductions.

Added-value pricing

In *added-value pricing*, the business tries to differentiate its position against the competition, enhancing the product with a characteristically high value in order to avoid classifying its product as a common good (Armstrong & Kotler, 2009; 2017). In this way, the business tries to maintain or even increase customer loyalty toward it, which will allow it to assign a higher price and secure a satisfying profit margin.

Marginal economic analysis

According to the *marginal economic analysis*, the business must determine the price at the level which maximizes profits (Perreault et al., 2012; Siomkos, 2004). It recommends the right pricing method according to the economic theory by investigating demand – that is, expected income – and the total cost of production and availability of the product at the same time. Thus, this method is based on the combination of demand and cost. It presupposes as much as possible the most precise and reliable estimation of the demand function on the price of the product, which depends especially on the market type and from which arises the total revenues function on the produced and available quantity of the product. Estimation of the total cost function on the quantity of the product is also required.

Then, from the functions of total revenues and total costs, the functions of marginal revenue and marginal cost on the product quantity is calculated, respectively. The marginal revenue curve has a negative (descending) slope whereas the marginal cost curve has a positive (ascending) curve. The point at which the marginal revenue and



Figure 2.9 Marginal economic analysis.

marginal cost curves meet shows the best combination of price and quantity where the company can maximize its profits. In practice, the optimal production quantity can be calculated by equalizing the functions for marginal revenue and marginal cost; then, based on the demand function, the selling price of the product is estimated, which corresponds to the optimal production quantity (Figure 2.9).

Demand function and total cost estimates can never be precise. But businesses that achieve the most precise reliable projections of these functions gain a valuable competitive advantage. Thus, for one more time, the massive contribution of supply chain management through the development of high collaborative relations between strategic partners is revealed. Supply chain management presupposes collaborative prognosis and scheduling so that it can make a maximum contribution in the reliability of demand predictions and in the calculation and control (reduction) of the total cost of the supply chain. In fact, leader companies in each e.a. ask for and get analytical updates/information about the cost structure, so everyone needs to know about and make improvements on their costs.

A variation of the pricing method based on marginal analysis is *flexible dead point pricing* (Siomkos, 2004). Specifically, for each potential interesting price level, a predicted demand of the product is estimated, and by extension, the predicted revenues. Then, for the respective predicted demand levels, the total production and availability costs (fixed and variable) of the product are calculated. After that, the price that

maximizes the projected revenues is chosen, based on the slope of the expected revenues and expenses for each respective demand level.

Reverse demand or targeted cost pricing

Reverse demand pricing begins with the determination of the price that the final customer is willing to pay for a product, especially for convenience products (e.g. a Thessaloniki bagel, casual clothing, present for a children's party) (Perreault et al., 2012; Siomkos, 2004). After that, from the final retail price, the expected profit margins of the intermediaries in the supply chain are subtracted, so that an estimate of the average revenue (per product unit) is calculated for the business. The business must then find strong production methods for the product so that it covers the production cost and it secures the desired profit margins for itself. An advantage of this method is that in its application, it does not require an estimate of the demand function on the product price; it only requires the final retail price that the specific market sector is willing to pay. Despite all this, the expected quantity demanded at the said retail price must be estimated as precisely and reliably as possible.

Reputation pricing

As discussed earlier, this method is recommended for products with a very high value and status (luxury cars, jewelry, hotels, etc.). Price is a very strong indication of quality for these products, as well as the status that its buyers will enjoy. A reduction in their price may even cause a reduction in demand, since it may be perceived as an indication of lower product quality, since, generally speaking, it is difficult to determine its value based on other discreet characteristics (Perreault et al., 2012).

2.4.3 Pricing methods based on the competition

When the differentiation of a product is very difficult, the business must to a great extent bear in mind the competition's prices when setting its own prices, and less so the cost structure and the value offered.

Pricing based on the market leader's or the main competitors' prices

According to this method, the business prices the product based on the prices of the main competitors, mainly using the price of the leader company in the oligopolistic market (Fahy & Jobber, 2014; Siomkos, 2004; Siomkos et al., 2018). The price is often determined at the same level which the price leader or the main competitors have set, but it could be slightly differentiated either upwards or downwards. The main advantage of this method is avoidance of potential "price wars" which usually turn out to be damaging for all those involved. On the other hand, it does not take into account the many possible differences between competitors' businesses with reference to cost structure. Thus, in the present time, the management of business relations with the main stakeholders in the supply chain, both upwards and downwards, is probably a necessary condition for the successful implantation of this method for a newly established business in the market.

Pricing based on the prevailing price on the market

This may be applied in markets with similar products where a relatively unified price has been set by all the competitors. This set market price is adopted by the business for its own product (Fahy & Jobber, 2014; Siomkos, 2004). In some cases, some of the competitors may somewhat differentiate their price in relation to the market base price, if they wish to target a niche market with special characteristics. This method presents similar advantages and disadvantages with pricing based on the leader company's or main competitors' prices.

Pricing of competitive offers

This method is used mainly for buying supplies in state organizations, and in some industrial markets (Fahy & Jobber, 2014; Paniyirakis, 1999; Siomkos et al., 2018; Perreault et al., 2012). The buyer asks the potential supplier businesses to submit closed (locked) competitive offers with reference to the acquisition of goods based on predetermined specifications. The selection criterion of the supplier company is the best/lowest price among those that fulfill the conditions of the tender. Thus, the businesses taking part in the tender must determine a reasonable trade-off between expected profit from the drawing up of the agreement and the possibility of securing the agreement. The pricing process of a competitive offer also constitutes a great challenge in cases of complex tasks, such as that of construction of buildings. In each case, the submission of a competitive offer demands precious business resources, mainly the very careful work of specialized staff of the business.

2.5 Pricing strategies for new products

Pricing new products constitutes a special challenge for a business, since it does not yet know the reactions of the final customers and the competition from its introduction into the market. There is also uncertainty in relation to the estimation of the collaboration with the remaining stakeholders in the supply chain and its requirements for marginal profit, and also in the final level of the average total cost after the utilization of the potential results of the economies of scale and learning curves. In the introduction stage of the product into the market, the business in essence must be able to choose between pruning pricing and penetration pricing (Armstrong & Kotler, 2009; Fahy & Jobber, 2014; Perreault et al., 2012; Paniyirakis, 1999; Siomkos et al., 2018).

In *market pruning* pricing, the business initially sets an especially high price, aiming to sell the product mainly to neoterists who perceive the value-usefulness of the product as very high, and cant wait to acquire it. After that, the price is reduced gradually, so that the product is bought by more and more market segments who will enjoy fewer benefits from it, and so on and so forth. The gradual reduction of the rpice also carries the risk of the emergence of new directly competitive products; this probably constitutes a necessity when when direct substitutes are introduced by the competitors.

The strategy of pruning pricing can be applied in both monopoly and oligopoly markets, where competition is zero or extremely low, so the demand curve is most likely inelastic. It should also be considered important, in terms of size, the market segment that is relatively indifferent to the high price of a new/innovative product due

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to the perceived usefulness and/or the status it offers. At the same time, due to the relatively small sales size in relation to the overall potential in the market, it is important that the average total production cost and availability of the product must not be forbiddingly too high. Moreover, due to these particular circumstances, product acceptance and support by the chosen distribution channels is vital, making supply chain management a critical factor in the success of the venture. At the same time, the business must secure the reduction of the danger of attracting competitors, and in general, delaying the introduction of substitute products, by placing entry barriers, such as, for example, protecting innovations (patents), etc.

A very important advantage in this strategy is that the business quickly acquires a significant part of the investment that it has put in the new product before the competitors' products are introduced into the market and the expected "price wars" begin. This strategy also probably constitutes the only choice in the case where the chosen placement strategy refers to high/unique value and/or status.

A disadvantage in pruning pricing is the attraction of competitors due to the high expected profit margins. Also, if a business is obliged to reduce the product price at a relatively fast rate, it will provoke feelings of disappointment among neoterists and early adopters who were charged a much higher price. On the other hand, however, if a business takes too long to gradually lower the price, it risks speeding up entry to the market of competitors' products. Especially in the case where a large number of competitors' products have entered the market and the business tries to avoid reducing its prices to the respective levels, it then risks losing a significant market share, and consequently its competitive advantage. Generally speaking, misusing the policy of pruning pricing could destroy the new product and lead to market failure. Implementing pruning pricing may also cause intense social and moral criticism in relation to products that are likely to concretely improve the survival level of large segments of the population, as for example, in the case of drugs for human use or new technologies in agricultural production (Perreault et al., 2012).

Due to the increasingly intense competition among businesses, the relative ease of adopting and utilizing new technologies by competitors and the virtual elimination of asymmetric information levels between buyers and sellers, the final customers tend to be especially sensitive to the price of the product. Moreover, the time period that the business has at its disposal to exclusively offer the new product/technology in the market is shrinking more and more. Thus, the market pruning pricing strategy becomes increasingly precarious and needs a lot of care in its utilization.

The opposite of pruning pricing is *market penetration pricing*, that is, determining a relatively low price in order to speed up the pace during product testing. The ultimate goal is to achieve a relatively high market share, as quickly as possible, in relation to the competition, in order for the business to take advantage of the expected reduction of the unit cost of production and distribution of the product.

This pricing strategy is appropriate when the opposite conditions prevail from those which make pruning pricing look attractive. In particular, a low market penetration price in recommended when the target market is especially sensitive to the product price, that is, demand is found to be elastic. The possibility of a reduction in the average cost due to the achievement of economies of scale and the outcomes of the learning curve also strengthen its choice. Moreover, not adopting a low initial price during the introduction of a product into the market is discouraged and will delay the introduction of substitute products, due to the low expected profit margin and the dominant position in the market which the leader enjoys in the intense penetration in the various target segments. Thus, penetration pricing in the market is perhaps the ideal choice in markets where intense competition is noticed, that is, when the entry barriers of potential substitute products in the market are low. The high collaborative relations with strategic partners of the business now constitute a necessary condition in the successful application of strategic pricing in order to secure a constant supply in the market and, in general, the support of the distribution channels.

A successful long term business relation is characterized by interdependence, trust, information exchange and the creation of high added-value relations. Meeting the agreement terms is not based just on strict fines and sanctions but on the high level of trust between the two parts. This is implemented by the way the profits are shared and the information exchanged by the two parts, information which essentially support the decision making in marketing and supply chain management. The goal therefore. is to develop solutions that will be beneficial for both sides, that is, the success of the "win-win" model. This interdependence leads to the obligation of the administration of both companies to cooperate and invest in the improvement of the offered products and services.

The disadvantages of penetration pricing include the potential disharmony in the chosen placement strategy in the case of a high value/benefit product, as it is likely that a low price will be perceived as an indication of low quality/value. A low initial price also limits of increasing the price level in turn, since customer often do not easily accept a potential price increase. Furthermore, the time period for the repayment of the initial development and the product's introduction to the market is elongated, while the expected performance on the invested capital is lower than the pruning pricing due to the lower profit margin.

The speed with which a business speeds up the pruning or penetration into the market depends to a great degree on the promotion expenses. In other words, high investments in product promotion are expected to contribute significantly to speedy market pruning/penetration, since they react effectively in spreading information and recognition of the product. Similar results are estimated for investments in the products and the strategic intensity of the distribution (Fahy & Jobber, 2014).

An intermediate pricing strategy for new products between the aforementioned two points is introductory price dealing, which refers to temporary reductions for the fast testing and acceptance of a product, followed by a rise in the predetermined levels, as soon as this "promotional" action is completed (Perreault et al., 2012). In this case, the business that determines an initial relative high price or a one that reflects the directly relevant substitute products, which it announces to its final customers; for a limited period of time, however, it offers the product at a clearly lower "get-to-know-me" price, in the form of a discount. In this way, the business takes advantage of the relatively fast penetration into the market without the risk of placing its product as a relatively low quality/status one; the price may then rise over time without disappointing its clientele.

2.6 Pricing strategies for product mix

Determining the final price also depends on the relative product mix that the business offers in the market (Armstrong & Kotler, 2009; Perreault et al., 2012; Paniyirakis, 1999; Fahy & Jobber, 2014). In practical terms, it is very rare for a business to produce

just one product or even a very small number of products. More often, they develop a series of related products (e.g. televisions, smartphones and juices, among others) which aim to satisfy the different needs and desires of various market segments. So the business must set a selling price for a series of products taking into account the production cost, the perceived value and the competition for all relate products. If, for example, it sets a very high price in relation to the perceived value for a product, this may end up defaming all the products in the series. In the same way, setting a low price may be perceived as the whole product series being of low value, even the more expensive items.

Furthermore, in the case where a business accepts intense pricing competition in its main product, instead of entering into a price war, and/or lowering the cost and quality of the product, it may add to its series a new product with similar characteristics, but with a lower price (fighter brand) and achieve satisfying sales in both products. One more critical issue in the pricing of a series of products is the avoidance as much as possible of cannibalism between two products in the series. Therefore, businesses must ignore both the customers' and the competition's perceptions, in order to protect the existing products in a series, especially if this concerns high technology products, because this may lead to a reduction in the business's total sales. Most important of all is achieving the pricing targets of the whole series and not just for each individual product.

Product pricing also depends on the complementary or dependent products as in, for example, shaving tools and blades, or printers and inks. Businesses usually set a relatively low price for the main product, possibly even below cost, and charge high prices for accessory/complementary products, which correspond to the larger part of the overall revenues from this product series. Informing the consumer public well and closer to time in comparison with the past contributes to the most balanced pricing of main and accessory products.

Product pricing must also take into account any chance optional products or services. Typical examples include cars, computers, company services/packages (e.g. for accounting, purposes), etc. Car industries offer different versions of their various models, but they offer a huge range of optional fittings at attractive prices. Sometimes the pricing of the sub-products of a product is of interest, such as, olive pit powder from the grinding of olive fruit. Olive presses are obliged to manage appropriately the produced olive pit powder (sub-product) due to the relevant negative environmental consequences. Thus, selling olive pit powder as a fuel has a double advantage, thereby earning an additional income and removing it from the installations.

An important challenge for a business is pricing a product bundle, such as, a holiday packet which is made up of flight tickets, hotel accommodation and sightseeing trips (museums) or the combined services of a landline, internet and cable television which telecommunications services offer. The final price of the total packet is lower than the partial prices of the products/services and the company's goal is mainly to promote products/services that present relatively low demand but their marginal production cost and availability is rather high.

2.7 Price-adjustment strategies

In many cases, businesses need to make changes to the basic price of their products in order to adjust to the respective changes in the market, as well as the business strategy.

Price adjustment may take many forms; some of the most important are described later.

2.7.1 Discounts and subsidies

Achieving pricing goals often requires, periodically, the use of discounts and/or subsidies in the intermediaries of the distribution channels (Armstrong & Kotler, 2009; Perreault et al., 2012; Paniyirakis, 1999). The motive is often provided to wholesalers or retailers to make prompt payments (e.g. within 30 days) of their orders, with a monetary discount on the amount payable (e.g. 2%). Quantity discounts are also given in the form of a reduced price when industrial clients buy a minimum large quantity. Quantity discounts, while rather common, may cause significant problems in the demand and offer flows in the supply chain. Thus, they must refer to quantities that are bought within some large time period (preferably a year) and not per order.

Seasonal discounts try to smoothen the offer flow (production and availability) of the product for the producer, stimulating the sales at periods when demand is limited, encouraging industrial buyers to acquire the product earlier than needed. In this way, producers compensate, among others, the intermediaries in the distribution channels for the maintenance of stock for a longer time period than usual. With the commercial or operational discounts, the producer via price reductions essentially pays the stakeholders in the distribution channels for executing some operations related to the distribution of the product, such as transportation, stock maintenance and data colleciton.

Subsidies are price reductions where the intermediaries in the distribution networks support the availability of the product or the consumers are encouraged to buy the product. Promotional subsidies are aimed at increasing the advertized amount that the retailer will allocate for the promotion of the product or the purchase of a position on the retailer's shelf for the product. There are also commercial subsidies where the producer provides a discount on the price in exchange for a used product from the customer who buys a new product, for example, in a car purchase.

2.7.2 Pricing based on geographical position

The final price that each customer pays may be different in relaiton to distance (Armstrong & Kotler, 2009; Perreault et al., 2012; Paniyirakis, 1999; Siomkos, 2004). This is true especially in industrial zones, but it also influences consumer markets since price differences between regions or countries are often ascribed to the different transportation costs. A typical example is the prices of many products (e.g. petrol, fruit and vegetables, among others) that the residents of Greek islands pay in relation to those who live in mainland regions.

The businesses can use different choices to cover transportation costs. One way is to sell the product at a stable/fixed price in the storage area of the business so that any transportation costs is incurred by each individual, that is, free on board (FOB) pricing. Customers who are geographically close to the business consider this kind of pricing as fair, sometimes as a result of their conscious choice in the design of their supply chain, but it makes things more difficult in terms of sales to distant customers.

On the other side of the scale is the setting of a single/unified price for all customers, a fact which means that the business essentially charges the same transportation cost

for all customers, regardless of the relevant distance. Customers who geographically far from the business benefit from such a case, while those who are closer to the business incur damages. Thus, the business is at risk of losing a significant share of its competitive advantage, especially if there are strong competitors in the wider region. This kind of pricing also deviates heavily from the foundations of activity-based costing (ABC) pricing that is widely used in supply chain management. It is, however, often used in practice when the unit transportation cost is relatively low and when the business chooses to sell its product everywhere, that is, all geographical regions, especially when it advertises it at a specific price on a national level.

A middle choice is that of zonal pricing. The business divides the market into geographical zones and sets one price for each zone, essentially charging an average transportation cost for all customers living within each zone. An advantage of this method is the simplification of the pricing processes and of course the facilitation of executing other processes. Another choice for the company is to absorb the price of the transportation costs, which is used when a business greatly wishes to secure a transaction with a specific customer or to penetrate a new market segment.

In general, decisions concerning geographical position influence many processes and various sectors (Marketing, Human Resources, Logistics and Finance, etc.). Many factors are influenced by the geographical choice; at the same time, the position of the installations, that is, deciding on the place of one or more new installations in one or more potential positions is one of the most important decisions that a business will take, for the following reasons:

- Decisions concerning geographical position require through careful analysis of a large number of criteria or success factors.
- The geographical position has an impact on fixed and variable costs.
- The decision to choose the geographical position is a strategic one:
 - Therefore, it is a long-term decision.
 - Once a business is bound by a geographical position, any change in this decision will lead to an increase in cost, time and required resources.
- Determining the best geographical position of a business's installations is a good investment.

2.7.3 Dynamic pricing

Traditionally, businesses prefer to maintain a relatively stable price for their products for as long as possible, facilitating the scheduling of the overall operation and the partial activities. But the major changes arising from technological developments in the competitive business environment, especially with the use of computers and the internet, have contributed to the change from fixed to *dynamic pricing*. Dynamic pricing is the constant adjusting of price with the aim of adapt them to current conditions in terms of customer preferences and the situation prevailing among the competition (Armstrong & Kotler, 2009; Fahy & Jobber, 2014).

A typical example of dynamic pricing is electronic auctions and online companies that offer the customer the option of making their purchases by comparing products directly from a number of sellers, for example, bestprice.gr and skroutz.gr.

2.7.4 Yield or revenue management

Yield management (revenue management) is a common pricing method these days which is used in various markets such as airline tickets, hotels, etc. (Talluri & Van Ryzin, 2004; Slack et al., 2010; Chopra & Meindl, 2015). The ultimate goal of yield management is the maximum utilization of the productive dynamics of a business whrn the following conditions are running concurrently:

- The productive potential is relatively stable, that is, change is difficult, and it comes at a very high cost.
- The value of a product varies in different market sectors and it is relatively easy to segment the market based on perceived value.
- The product usually a service cannot be stores for use in the future, so some utilization of the productive ability means the final absolute of the potentially produced units of the product/service that were not sold on time. The same applies in the case where the cost of maintaining stock is especially high.
- The product/service can be sold in advance, that is, before it is to be used by the customer.
- The marginal cost due to the sale of an additional product/service unit is relatively low, that is, the contribution of the average variable cost on the total cost is relatively small.

This method is very common among businesses that use information and communication technologies intensively, so that they can communicate directly at any moment with their (existing or potential) customers. But the main requirement in the application of yield pricing is the development and constant improvement of collaborative relations in the frame of supply chain management, especially in purchases of, for example, electronic goods, where the optimal coordination of the main stakeholders is needed (suppliers, producers, wholesalers and retailers). The management of yield revenues utilizes various techniques, such as:

- Lower prices for those who can wait longer to get their order, and higher prices for those who want to fast-track their order.
- Lower prices for strategic customers, that is, for those who have drawn up longterm agreements and have close collaborations, and higher prices for those customers who choose individual transactions, and hunt a good opportunity to secure a lower price at a specific time period.
- Higher prices during periods of high demand and lower prices when demand is reduced.
- Higher prices for customers that need a higher level of services, as in the case of, for example, business people who may need to plan a last minute flight and want a comfortable seat, and lower prices for customers who need fewer services, like, for example, young students who may wish to plan a trip 2–3 months earlier and are prepared to sit in a less comfortable seat as long as they can buy a cheaper ticket.

2.7.5 Promotion pricing

In some cases, businesses resort to temporary pricing for products at especially low levels, even below the average total cost (Armstrong & Kotler, 2009; Perreault et al.,

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2012). As previously mentioned, "barking" pricing is basically a regular practice in large supermarket chains: some products are sold at very attractive prices with the ultimate aim being to motivate consumers to visit their stores to buy them, at the same time as doing their weekly shopping. These products are periodically changed on a weekly basis.

Similarly, "bait pricing" constitutes a significant reduction in the price of a number of products with the aim of attracting customers to the store. But the business doesn't actually aim to sell those products; when customers come to the shop, the sales assistants try to convince them to buy a similar but more expensive product. Bait pricing has received much criticism; due to consumers being better informed, it tends to be used less frequently.

Pricing in special cases is applied in certain regions to smoothen demand. For example, in the UK, throughout January, pubs offer drinks and meals at very low prices to stimulate demand after a highly intensive sales period before and after the Christmas period. Another commonly used form of pricing is to return money in the form of a coupon for future purchases within a set period of time, for example, purchases of clothing and electronic goods, etc. Some producers, for example, car manufacturers, offer interest rate financing for the purchase of their products or guarantees for a significant period of the product's life (e.g. 7–8 years for mechanical parts). Another form of promotional pricing is coupons offered by producers and retailers which give customers a discount or free packaging of the product. Coupons provided by the producers are redeemed at the retailers' cashiers, while retailers also received an additional monetary advantage, apart from increased sales.

2.8 Price-change strategies

Aside from price adjustments, at some point in products' life cycle, businesses must decide if and when they will take the initiative to change the initial price level of their products, as well as the way they will react to competitors' price changes.

2.8.1 Change in the basic price level

Decisions in the change of the initial price are taken by bearing in mind the potential motives of the business, as well as the potential reactions of the customers and competitors (Armstrong & Kotler, 2009; 2017; Fahy & Jobber, 2014).

There are many reasons that urge a business to increase the basic price of its product. A very important factor is the increase in the production and distribution cost of the product, so the business will try to move part or all of the overall additional cost onto its customers. Another important reason is the realization that the customers of a business perceive a higher value of the product from that which the company had initially estimated. In other cases, the business or the overall sector it is active in faces greater demand than its productive capacity, so a price irse will contribute to balancing supply with demand. In each case, the temptation will always be there to increase the price by a little, since it will lead to a disproportionately high increase in the total revenues if all the other profit parameters do not change. For example, in a business which operates in a market with an average profit of 10%, a price increase of 2% - 3% will lead to an increase in the profit margin by 20% - 30%.

A price increase may be implemented in different ways. One way which will possibly cause the fewest reactions from customers and competitors is the reduction in the regular discounts offered either as a percentage of the basic price or by increasing the order quantity in order to secure the discount. Another way is by dividing the overall product offer into smaller parts. For example, while until recently a car model included different elements from its basic version, a part of those elements that make up the package may be treated as optional, to be sold at additional cost to those customers who would like it to have it. The business also has to decide if it will implement a price increase in on or more stages. Generally speaking, a sudden increase in price may cause greater annoyance among customers, but a gradual increase may also disappoint customers even more, due to the constant adjustments that they will have ot make in their buying behaviour. Regardless of the number of stages that are chosen, it is more important for a business to accompany the price increase with a more careful communication campaign to convince customers with the relative need for this increase.

A business may similarly take the initiative to reduce the price for various reasons. Pursuing the future use of the results of economies of scales and learning curves leads many businesses to price reductions, even at levels near or just a little lower than the existing average cost. At the same time, the businesses hopes to gain a greater market share that will improve or further consolidate its competitive position. In some cases, a price reduction is a necessity when the business realizes it has overestimated the perceived value of its product by customers and it believes that it can improve its position through the remaining elements of the marketing mix. Applying foundation principles in supply chain management with strategic partners can contribute catalytically to reducing the average total cost of production and supply, so the business can choose to share with its final customer's part of the additional added value. Moreover, ra price reduction and the subsequent shrinking of profit margins function as a deterrent in the entry of new competitors into the market.

The business can implement the price it finally decides on at one or more stages. A sudden price reduction may have direct positive results in the increase of sales and market share, but it may also cause profitability to shrink due to the reduction of the profit margin. A sudden price reduction may also cause more direct and dynamic reactions from the competition. A gradual reduction in the price has the advantage of allowing the business to better study the reactions of customers and to gain more knowledge about the demand elasticity in terms of price. But the impact of a price reduction in the achievement of goals will clearly be more limited and possibly provide the chance for competitors to prepare themselves better in how they react to it. The business can also essentially reduce the basic price indirectly through the establishment of permanent greater discounts on the basic price or through the creation of new offer packages which are embedded in accompanying services for the basic product at exclusively low prices.

The final decisions in a price increase or reduction as well as the most appropriate way to implement the change in price all depend to a great extent on the expected reactions of both the customers and the competitors. For example, in some cases, a price reduction could be perceived with skepticism by the final customers. The may think that this reduces the product quality or that the business faces economic difficulties, so there is the danger of not being in the position to support the products it sells today in the future (Kotler, 2000), etc. The price reduction then has the exact opposite results with reference to customers' reactions. In practice, it is also very difficult for the business to foresee the potential reactions of its competitors. This difficulty becomes even greater when the competitors behave in different ways; different analyses will have to be for each important competitor.

2.8.2 Reactions to changes in competitors' prices

At some stage in the life cycle of their products, businesses are faced with the challenge of a price change in some competitive products (Armstrong & Kotler, 2009; 2017; Fahy & Jobber, 2014). The first decision that must be taken is whether they will follow the competitor(s) in changing prices, or if it is better to ignore it. Practically speaking, the reasons that probably force a business to react to competitors' price changes are the opposite of those businesses that are reluctant to reset their prices. If they believe that they must respond with a price change, then they must decide on the most appropriate alternative.

If the main or some important competitor increases the price of their product, the business is obliged to increase its own price when there is a general increase in the production and supply in the market it is active in. An example of this is when electricity prices are readjusted, when workers' salaries are increased or a new tax is imposed, etc. It will also move in the same direction if it tries to place the product as one of high value or an extremely high demand for the product emerges that cannot be covered by the supply, at least in the mid-term, as in the market for new housing. Once the decision is made to keep up with the competition and make price increases, it must then set a new price level, as well as apply the application speed of the new pricing policy. In general terms, reacting quickly has the advantage of a relatively direct harvest of the extra revenue, whereas a more delayed anti-reaction may be perceived by customers as a goodwill move by the business to further strengthen the long term cooperation between them.

The challenges for a business are much greater when competitors reduce their prices. Before a company takes any decision, it must search for the motives that caused their competitor to reduce prices, particularly to estimate whether this move is permanent or temporary. The forecasts it makes in terms of the reactions of its client base play a very important role, in the case where the business does not make any move to change the price; it also needs to consider whether there is a change of starting a price war with the competitor if it responds in a similar way, that is, with a price reduction. Generally speaking, the business must react when the average total cost of the production and supply of a product shows decreasing tendencies, for example, due to the introduction of new technology. Furthermore, if the business considers that its customers are not particularly loyal and the market is generally sensitive to price, perceiving small or elastic differences between substitute products, then the business may not be able to remain unresponsive to the competitor's initiative to make price changes).

If the company decides that it must react to the lower price set by the competitor, the company's choices are limited not just in matching its product price to the new levels that have been shaped by the market. Another choice is to maintain the price at the same levels and simultaneously invest more in marketing communication activities to improve the placement of the product as one of higher quality against its substitutes. This choice will take precedence if they expected profit losses from the reduction of prices is greater than the extra marketing communication expenses. Moreover, the company may utilize the initiative of the competitor to reduce prices in order to increase the quality of its product, even proceeding to price increase. This choice becomes attractive when there emerges an opportunity for significant differentiation in the company's offer, covering a new gap which was created by the movements of competitors' products in the perceptual map of the buyers. Some business successfully faced the challenge of competitors' price reductions by introducing a similar product into the market with a lower cost (fighter brand), maintaining or even increasing the price of the original existing product. In this way, the business aims at two different market sectors: the dedicated customers who believe in the value-quality of the original product, and those who are sensitive to price, thereby increasing the total market share.

2.9 Pricing of logistics services

Pricing is a branch of the science of accounting. Cost is the disposal of or investment in purchasing power for the acquisition of tangible or intangible goods and services, for the purpose of using them to generate sales revenues or meet community needs. The main features of cost are that it is an investment of money in the form of tangible goods or services (e.g. purchase of fixed or raw materials, payment of premiums, interest), and the purpose of cost is to generate revenue.

Pricing is the process followed to determine the cost of a good or an operation. The purpose of knowledge of cost is to set selling prices, and control sales and financial activities. Pricing can also be defined as the set of systematic tasks aimed at collecting, classifying, recording and appropriately allocating costs to determine the cost of producing a product or service.

Real cost categories are as follows:

- Prime cost: This cost is formed from the direct use of materials and labor, which are incorporated into the product or service.
- Initial cost: This cost is often used as a criterion for the allocation of indirect costs, and is core to the formation of the full production cost. This does not include information resulting from a breakdown. If, however, the distribution of expenses is based on direct quantitative measurements, the corresponding cost is considered to be direct and participates in the formation of the initial cost (e.g. monthly staff costs). As a rule, direct materials are the raw and auxiliary materials incorporated into the product. Materials that are used in the product's manufacture but are not incorporated into the actual product are not included in the direct materials.
- Conversion cost. This is the total smooth costs incurred in the process of converting the raw material into a finished product or converting a material into another form. Conversion costs include all production costs, direct and indirect, except for the cost of direct materials.
- Production cost. This is the cost incurred for the production of an intermediate or final product or service in one or more phases or stages of production.
- Administrative operating costs. These expenses are related to the operation of the administrative services of the economic/financial unit.
- Cost of disposal (Sales costs). These are the expenses incurred for the promotion, preparation and realization of the actual sales of the business's products or services (e.g. market research, conferences, travel, salesperson's salary).
- Commercial costs. This is the cost when the indirect costs of the sales function (operation) are added to the production cost.
- Cost of the financial operation.
- Operating costs for research and development.
- Total cost.

Service companies offer services either to other companies or to non-professionals. Apart from direct labor, these services are also related to indirect labor and various expenses. Classification of this kind of business is done in different ways, depending on the type of analysis required each time. Because products are not manufactured in the case of services, such businesses have no raw material costs. The most important costs in such a business are direct labor and indirect costs which are mainly classified as service costs.

Monitoring and controlling supply and distribution activities is often approached in a relatively simple and unplanned way. Control measures are adopted, as problems will have arisen already; this almost constitutes a form of crisis management. Therefore, it is important to adopt a more formal approach. Several systematic approaches have been developed with varying degrees of complexity and detail. These different approaches also have very obvious similarities between them.

Especially in the case of logistics services, the main issue is, on the one hand, the minimization of total costs, in combination with a specific and acceptable level of customer service on the other. The integrated Supply Chain (SC) approach helps in the investigation of the whole system of positive and negative interdependencies between individual processes and business activities, together with the expected benefits of the individual processes and the business as a whole. A series of preliminary market analysis, research and negotiation studies are therefore needed, with the aim of coming to the final agreements.

Malindretos (2015) states the following:

- Logistics pricing is closely linked to the processes of creating value for customers and profitability for the business. This implies linking costs to expected revenues, which are generated by the former. It means that all expenses are recognized, and this is not based on their existing administrative structure: each and every expense must now be justified on the basis of its contribution to the expected profitability of the business.
- A prerequisite for pricing is the analysis of the alternatives of each operation in the SC, for example, in the planning of the transportation problem, if it is in the interests of the business to carry out transportation requirements on its own or by outsourcing.
- Pricing includes estimating the trade-offs between different SC components, for example, a reduction of storage centers that implies a reduction of storage costs, as well as an increase in distribution costs from warehouses to points of sale, and the provision of a lower level of customer service.

The importance of pricing lies in the following:

- Classification of costs. Costing includes the recording and classification of expenses. This classification allows management to control costs and ensure the efficiency of such processes and activities. It also helps in calculating effectiveness.
- Cost control. In a similar fashion, analyzing labor costs can improve their efficiency. Costing also helps to classify overheads as fixed, variable, controllable or uncontrollable, in order to achieve cost control.
- Price determination. Costing makes the basic distinction between fixed and variable costs. This is then used by management to determine product prices,

depending on the cost of the product. It allows the management to find the most ideal price for a product or service, which is not too high and not too low.

• Setting standards. Businesses use standards to calculate future estimates and budgets. They use them as a basis for measuring the actual effectiveness of the process or department.

Balanced scorecard

The Balanced Scorecard system was first introduced by Kaplan and Norton in 1996. It is a broad business approach that translates a company's strategic mission into tangible goals and measures. These can be scaled up and down the business in order to develop realistic and useful key performance indicators (KPIs) to support the business. These should represent a balance between external measures for shareholders and customers, as well as internal measures for critical business procedures, innovation and learning. Budget perspectives concern relationships with shareholders, aiming to improve profits and achieve financial goals. Customer perspectives are designed to strengthen relationships with customers by using better procedures to retain existing customers and attract new ones.

The internal element is the development of new ideas to improve and enhance business competitiveness. Innovation and learning must help generate new ideas and respond to customers' needs and developments. A number of critical success factors are identified and directly related to key business prospects. These are then used as a basis for generating critical cost and performance metrics that should be used regularly to monitor and control business performance in all the key areas identified.

A balanced scorecard is a tool that comes from the principles of the original Malcolm Baldrige Quality Award Criteria, stating that effective leaders take a balanced look at an organization's overall results of a company's performance, instead of relying too heavily on financial measures, which provide a historical view of a company's performance. Therefore, the basis of this tool is that business results are integrated, and management should not view a measure on its own without considering the relationship with regard to other results. A balanced scorecard looks at four different aspects of a business: finances, the customer, internal business procedures and learning and development (Myerson, 2012).

The SCOR model

The Supply Chain Operations Reference (SCOR) model is an important approach that was developed to help monitor cost and performance. It is a hierarchical model consisting of four different levels: competitive advantage, strategy implementation and the definition process, the finer details of the process and its implementation. It is a process-oriented approach, where the initial goal is to compare, review and improve key business processes and then to identify and introduce key measures that track the cost and performance targets that have been set. Finally, a company's important performance characteristics are identified, and the appropriate metrics are developed. SCOR metrics are usually arranged under a series of classifications. There are many different individual measures that fall into different categories, the main ones being:

• Assets (utilization of capacity, availability of equipment).

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- Cost (storage, invoicing).
- Data (projection accuracy, visibility).
- Flexibility (series, returns).
- Stock-taking (availability, depreciation).
- Commands (accuracy of execution, invoice errors).
- Productivity (direct versus indirect labor, sub-contraction of vehicles).
- Time (order cycle time, promptness of delivery).

A comprehensive approach to the supply chain recognizes that a total systems approach for the entire business or supply chain can be adopted, and all performance metrics should be developed on this basis. This is in turn a process-oriented approach that seeks to allow the monitoring of cost and performance, based on a horizontal view of a business rather than the traditional vertical operational structure. This kind of framework can initially be used to help identify the required results to be measured, and then to determine any relevant diagnostic measures. Appropriate and accurate diagnostic measures are necessary to enable the identification and subsequent correction of the problems.

Activity-based costing

The driving force behind Activity-Based Costing (ABC) is that the traditional way of allocating indirect costs by their use in products based on direct labor makes them difficult to manage. Direct labor once played a significant role in the cost of a product, but this is rarely the case today (Harrisson, 2008). The goal of ABC is the most effective control and management of a company's total costs using modern techniques and methodologies. The most rational pricing of products, customers and services becomes possible through the correct control of the monitoring and allocatio of total business costs. The full application of ABC techniques provides the necessary information to the company's management regarding the profitability (profit/loss: P/L) of both products and customers, as well as the individual processes that take place.

ABC methodology dates back to the early 1990s, initially at the research level, and is now considered globally as the most reliable and effective way to estimate costs and manage processes in any business, thereby supporting informed decision-making. The ABC system is recognized as the most state-of-the-art cost control technique, finding application in a wide range of activities and businesses worldwide. The research data can supply a company's new information system with the necessary input data, with the aim of exporting and optimally utilizing the respective results for cost control.

The goal here is to maximize the company's profitability, in both the short and long term. The ABC method is concerned with the calculation and control of the cost of the activities that take place in each company, using them to estimate the allocation of costs in products and customers (cost objects). It relates exclusively to overheads, while direct costs are calculated and assigned using traditional methods.

The systematic and most rational monitoring and control of the various cost elements that the company absorbs during its operation belong to the goals of an ABC task. With the completion of the study, it is possible to provide the required information to the management so that it can take restructuring decisions in order to increase a company's profitability and turn it into a more efficient operation. The advantages of the ABC method are as follows:

- More accurate and more rational calculation of the cost of product in relation to conventional systems.
- Better understanding of the activities related to the business and the function of these costs.
- Better and more efficient control, focusing on reducing overheads by linking them to cost-generating activities.
- Estimation of each activity's cost in order to take the most effective corrective measures (re-engineering) by estimating the expected profit. This makes it easy to calculate the effects, both positive and negative, of a given intervention, thus supporting what-if type analyses, which is desirable for the management when making decisions.
- Comparison of the performance of each activity with the highest corresponding sector performances, through benchmarking.
- Redesigning the entire product-customer cycle.
- Making decisions using evidence regarding the allocation of part of the activities to third parties (outsourcing), in cases where it will bring in profits (e.g. storage needs taken care of by partners).
- Detailed P/L calculation at both the product and customer levels, by analyzing its components (drill down).
- Better pricing, including a discount policy, in order to gain a competitive advantage, as well as parallel knowledge of the respective cost-benefit relationship.
- More efficient collaboration between business departments, as well as the company's accounting department.

For all the aforementioned reasons, implementing an ABC system provides an essential tool for the company's management, to control and reduce costs and also to make sound business decisions.

There are several different kinds of pricing or billing structures that can be adopted. The final choice belongs to the privilege of the customer. These different kinds of pricing or billing structures can be broadly categorized as follows (Rushton, 2010):

- Unit prices or fixed price agreements. An agreed unit price is paid for the services provided. This is generally the sum of all the operating expenses (including overheads, facilities and expenses).
- Services offered. The advantages of this approach are that it is easy to understand, flexible and visible (the price charged varies depending on the volume handled). This is the traditional payment method for third parties and is commonly applied in low-volume businesses.
- Agreements on hybrid unit prices. These are based on unit price, but also include guarantees for a set volume, resource usage, etc. This ensures that seasonal effects or unexpected fluctuations in demand will not penalize the contracted party, which would otherwise result in the inadequacy of the contractor's resources. This approach allows the unit price to be reduced by degrees as traffic increases.
- Cost-benefit agreements. These make provision for the payment of an agreed sum for the facilities used and the services provided. In this way, the customer meets

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the real cost of the operation. For the contracted party, this adds a fixed profit margin, which may be in the form of a lump sum or a percentage of the costs. An important advantage of this approach is that the costs are visible to the client company, thereby facilitating the internal budget.

- A significant criticism in the cost-plus method is that it does not offer any incentive to the contractor to enhance operations through improvements in productivity. Indeed, any cost cut would lead to a reduction in payments to the contracted party if the profit regime was based on a percentage of the costs.
- Open contract/management fee. As it suggests, in an open-book contract, the client company pays for the entire transaction, plus a management fee to the contractor.
- This kind of setting is commonly used in fully dedicated operations. Performance is monitored by a budget agreed between the contractor and the customer. The risk in this kind of setting is that it can synthesize any chance inefficiencies that are incorporated in the original agreement. It is now common to include incentive clauses to reduce costs or performance, so that there is a joint benefit when the contractor identifies improvements.

Benchmarking

Benchmarking is the process of continuously measuring and comparing the business performance of an economic unit with comparable processes in leading organizations to obtain information that will help the organization to identify and implement improvements. There are many steps involved in benchmarking. These start with an organization that recognizes the need to improve its supply chain.

It must then determine the most appropriate performance measures, identify the industry's top competitor and examine its supply chain to see how this superior performance is achieved. Internal benchmarking is the easiest to perform, where one department of a company compares its activities with another department. However, managers should keep an open mind and look for potential improvements whenever and wherever they find the opportunity (Waters, 2003).