

# 1 Introduction to Costs

## 1.1 Introduction

*Cost theory* The term “theory” is a Greek derivative and means: “seen from above.” That is to say that a theory is an overall discussion of a subject, taken out of the concrete decision-making situations, while focusing on the general aspects, and not the specifics.

But in order to understand the general aspects, you have to understand the specifics, and the theory cannot be so general that it does not apply to the specific decision-making situation.

The defining of a cost theory, focusing on separating different decision-making occasions, and thereby allowing for the understanding and description of the differences these factors present in cost-theory, is a problem we hope to solve with this text.

*Decisions* Some of the conditions that require the individualizing of cost decisions include:

*have to be*

*indivi-dualized*

- Different time perspectives
  - Short-term, including planning of tomorrow’s assignments and decisions
  - Long-term, including planning of future assignments and production
- Different products
  - Perishability, e.g. Legos vs. fresh vegetables; Legos maintain their value in a warehouse, whereas fresh vegetables quickly lose value.
  - Alternate values, e.g. milk not sold at supermarkets could be used in the production of milk-powder. A hotel room vacant for the night, on the other hand, has no value the following day.
- Different forms of production
  - Automated production, e.g. production of Legos; i.e. if there are economies of scale or diseconomies of scale.
  - Manual production, e.g. food in a restaurant.
  - Service production, where knowledge is a decisive factor for production.
- Different levels of competition intensity in a market
  - Low levels of competition allow for long-term planning.
  - High levels of competition require short-term planning.

- Different future expectations
  - Is an increase in production temporary or permanent?
  - Is a decrease in production temporary or permanent?
  
- Different dependencies on external conditions, such as market conditions.
  - Dependence on consumer confidence indexes, which influence long lasting consumer goods such as cars, as well as both small and large kitchen appliances.
  - Dependence on business confidence indexes, which influence investments, production lines, automating initiatives, expansion/reduction in warehouse capabilities, the “Bull whip”/Forrester effect, i.e. when changes in consumption-level is multiplied up through the supply chain.
  
- Different seasonal dependencies
  - Some businesses are influenced by high and low seasons, e.g. camping sites have high season in vacations, and clubs have high season during weekends.
  - Some businesses, on the other hand, are not affected by seasonal deviations, e.g. cigarettes, milk, furniture etc. are sold independently of season.
  
- Random factors
  - Weather-based production (agriculture)
  - Affects of war/terror/disease (travel agencies)

*Achieving the lowest possible costs*

For firm’s long-term success, it is essential to produce a certain amount of goods or services at the lowest possible cost. Producing at the lowest possible cost is a holistic management job, contingent on the following points:

- **The optimal production design:** The production design is a combination of machines, technology, employees, IT, etc., together comprising the production machinery.
- **The optimal production design:** The production design is a combination of machines, technology, employees, IT, etc., comprising the production machinery of the firm.
  - At the Harboe breweries the production machinery consists of fermentation containers, bottling machinery, bottle cleaning machinery, malting machinery, grain reception, IT systems, production leaders, employees, etc.

- **The optimal combination of production factors:** The production factors are all the factors applied when producing a good or a service. Production factors include:
  - Natural resources, e.g. the sites of Harboe's factories
  - Workforce, i.e. the knowledge and skills of e.g. master brewers, metal workers, bottling staff, etc.
  - Physical capital, i.e. bottling machinery and storage tanks.
  - Liquid physical capital, e.g. power for machinery, hops, and malt, at Harboe.
- **Optimal technology:** The firm can continuously renew the production machinery because of the technological development. However, technological improvements have to be assessed on the basis of cost-benefit analyses. Investments are to be made if the increased value exceeds the costs.
- **Good, motivated employees:** It is the competencies and motivation of the employees that determine whether or not the firm can produce at the lowest possible cost. In other words, it is futile to make the production machinery more effective if the benefits are neutralized by demoralized employees.

I joined MITAS because  
I wanted **real responsibility**

The Graduate Programme  
for Engineers and Geoscientists  
[www.discovermitas.com](http://www.discovermitas.com)



**Month 16**

I was a construction supervisor in the North Sea advising and helping foremen solve problems

Real work  
International opportunities  
Three work placements







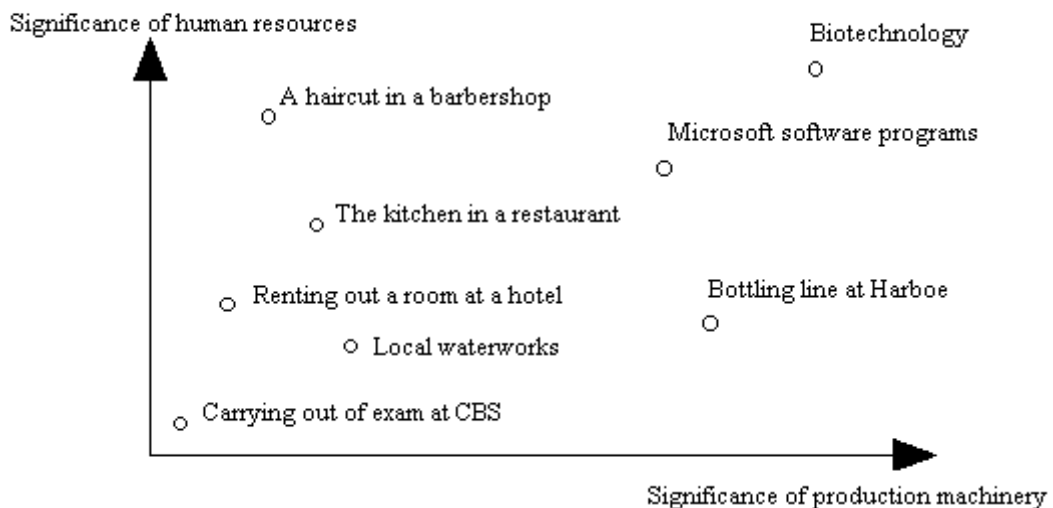
- **Optimal outsourcing:** The managers have to compare the production costs of the firm with the costs of buying from a supplier. In case the firm cannot produce the good at the lowest costs, the firm should outsource the production – and apply the effort elsewhere. Furthermore outsourcing has the advantage that part of the risk of the firm is transferred to the supplier. E.g. if the demand is lower than expected, some of the costs of a surplus production are assumed by the supplier.
- **Optimal internationalization:** The firm’s degree of internationalization influences, among other things, the possibilities for outsourcing production to low-wage countries. The size of the production is also influenced by the degree of internationalization, which is important in terms of relation discounts, economies of scale, etc.

The significance of the above factors is dependent on the business sector, as well as distinctive features of the firm. For example, the production design, the combination of the factors of production and the technology are central management issues at the Harboe breweries. On the other hand, in an architect firm, a central issue will be attracting good employees – and making sure that they are constantly being motivated

*Production type significance*

The factors described above comprise different values in conjunction with different production forms. Some forms of production are mostly dependent on production design, i.e. machinery, employees, technology, IT, etc., while other production forms are more dependent on competencies and employee motivation. See figure 5.1.

Figure 5.1 Human resources versus the production machinery



*Decisions and costs* The basis for the future existence of almost any firm, is the ability to make the right decisions at the right time.

The most important cost-related decisions include:

- To produce a good at the lowest possible cost, i.e. to understand the origin of costs in a firm and to understand and manage the process, which leads to the lowest possible costs.
- To expand the product portfolio to include new products – or to reduce it.
- To invest in production facilities
- Whether to have in-house production or to outsource to a supplier
- To relate to and participate in the competition in the market place.

The decision outcome is dependent on multiple factors, such as costs. E.g. the decision of whether to produce or outsource will depend on the costs of in-house production compared to the costs of outsourcing. The time horizon of the specific decision can be quite decisive. Also, the costs of re-establishing production could also be a relevant consideration.

Even though it may be difficult to comprehend that the costs of producing a specific good can differ based on the decision-making occasion, this reality is at the core of a dynamic cost theory. Which is also the motivation for this book.

*Case 1a:*

When Avis car rental planned the purchase of new cars for 2001, they of course had to assess the total costs of owning a rental car for the planned time horizon, presumably two years. Including interest, and depreciation costs, also included in the rental. For a medium class car the result was that the total costs at a 12,000 km rental was 2.68 DKK per kilometer. When September 11th drastically changed the way many perceived the world, travel-activity diminished dramatically, prices on used cars fell unexpectedly, etc. AVIS and the other car rental companies ended up with huge, idle car fleets, only capable of making money in one way: by being leased. But in this new and more short-term oriented competition, the short-term costs were only 1.24 DKK per kilometer when leased. This new situation meant that AVIS had to understand the changes created by dramatic and unexpected external causes.

*Registration and decision-making* This paper/book is concentrating on cost theory from a decision-making perspective. There are other perspectives, such as the registration oriented perspective, known from presentation of accounts, periodic accounts, annual accounts etc.

The fundamental difference here, is that while registration provides a picture of the historic activities of the firm (ex post), decisions are centered on the future of the firm (ex ante), which can still be influenced. Of course the historic experience will mostly provide a solid database for setting up future costs, but still there are a number of fundamental differences, shown in table 1.1.

	Registration	Decision-making
Purpose	The purpose is to give a true and fair presentation of the financial position of the firm, which can for example provide for external stakeholders' reaching an accurate financial evaluation of the firm.	Oriented towards decision-making so that the firm can make the most efficient use of its means of production. <i>i.e. the expectation of a more rational production is composed here.</i>
Aspect of time	Historic perspective – ex post	Future perspective – ex ante
Target group	The accounts provide information for external as well as internal stakeholders.	Mainly internally in the firm providing basis for decision-making.
Legal obligations	The companies are obliged to present annual accounts bound by legal criteria regarding how the costs are specified and presented.	It is up to the specific firm whether to apply economic theory in managing the firm.
Scope	The accounts, in most cases, cover the entire firm.	Economic analyses are often carried out for single investments and single problems.
Frequency	Accounts are mostly presented monthly, biannually, or annually.	Carried out on an ad-hoc basis, when the situation demands it.
Cost definition	Costs of consumption/usage, which are the costs that sooner or later will be financially realized. In other words, costs that are to be paid or realized through losses in value.	Both costs of consumption/usage and opportunity costs (treated later), which are loss in income that emerge in case the factors of production have a possible alternative usage, which cannot be realized as a consequence of the activities.

**Table 1.1:** Fundamental differences between registration and decision-making

## 1.2 Different Cost Definitions

*Cost case based on the costs of driving a car.* Different cost related problems are treated later in this chapter in relation to a simple car case (My Uncle's Car, case 1.6). Why the description of cost functions, cost types, and other costs are relevant to decision-making is based on the determination of the costs of owning and driving a car.

The case is simple but contains many of the issues that appear in when determining the costs of a specific activity.

*Expenses,  
payment, and  
costs*

When determining costs, one has to differentiate between the following terms:

- *Expenses, which are implicit in the making of a deal, purchasing factors, and production.*
- *Payments, which are the cash flow resulting from expenses.*
- *Costs, which appear when the specific factors of production are utilized in relation to a given activity.*

Based on the car case:

- Fuelling up is an expense
- If cash is the method of payment, then the expense generation and payment occurs simultaneously. Whereas when a creditcard/membership card is the means payment, then the actual payment experiences a time delay, i.e. when the debt to the creditcard or membership card is cleared.
- The cost of a given trip appears as the fuel is consumed.

Generally speaking:

- An expense and a payment are separated when buying on credit.
- Costs usually have to be spread over many usage periods, i.e. if the factor of production endures in many years: e.g. the buying of the car (the depreciation is spread over several years).

**ie** business school

#1 EUROPEAN BUSINESS SCHOOL  
FINANCIAL TIMES 2013

#gobeyond

**MASTER IN MANAGEMENT**

**Because achieving your dreams is your greatest challenge.** IE Business School's Master in Management taught in English, Spanish or bilingually, trains young high performance professionals at the beginning of their career through an innovative and stimulating program that will help them reach their full potential.

- Choose your area of specialization.
- Customize your master through the different options offered.
- Global Immersion Weeks in locations such as London, Silicon Valley or Shanghai.

*Because you change, we change with you.*

www.ie.edu/master-management | mim.admissions@ie.edu | f t in YouTube



In certain circumstances:

- The opportunity costs can exist even though there is no matching expense or payment, which is the case when your own factors of production are used; e.g. a farmer who himself is working on the farm, or a grocer who has tied his own money up in the inventory. When using own factors of production the opportunity costs are of great significance (see below).
- An expense can exist without any payment, which is the case if the supplier accidentally does not send the bill, or if the firm goes bankrupt and is not able to pay the bill.
- An expense can exist without a matching cost; i.e. if the expense does not concern the specific activity; e.g. the purchase of inoperative software or the hiring of a person that does not show up at work.

*Different cost definitions*

It is important to understand there are many differences and similarities concerning costs, which is why different definitions and examples of cost types are listed below.

*Costs of consumption/usage*

In terms of the consumption/usage definition, costs are defined as: *“The, in money, assessed consumption/usage of production assets, included in the completion of a given product and sales procedure.”*<sup>24</sup>

In other words, it is about costs that are paid or realized through loss in value.

Based on car case 1.6 the costs of consumption/usage are the, in money, assessed consumption/usage of factors of production concerning the owning and driving of a car. Examples of costs of consumption/usage are:

- Fuel, tires, maintenance, wear and tear etc. All of which are consumed/used during the driving of the car, i.e. mileage-dependent costs.
- Insurance, vehicle excise duty, interest etc. All of which are consumed/used by letting the car stand still, i.e. time dependent costs.
- And then some costs that are difficult to manage: e.g. the risk of damaging the car while driving (damage typically results in the payment of own risk and in some cases a higher premium), or a flat tire, an act of vandalism on the car, a deficiency in the alarm system etc.

Depending on what the decision-making situation demands, consumption/usage costs can be stated in terms of mileage, trip, period of time, driver, or as situation-dependent.



*Opportunity costs*      *Opportunity costs are defined as the indirect loss in income, occurring if the factors of production have alternative uses that are excluded by the activity.*

In this situation, we see an expansion of the consumption perspective as the use of own factors of production, such as workforce and equity, are embraced. Here the exclusion of alternative activity is also embraced.

If carrying out activity X inhibits the possibility of carrying out activity Y, then the value of carrying out activity Y is the opportunity cost of activity X. Opportunity costs are also called implicit costs.

To an owner of a car the opportunity costs are equal to the value of the best alternative, in the case that having the car rules out other activities. Some examples:

- Alternate rate of return possibilities on the capital that is tied up in the car. This example is determined by the fact that if the car were sold or not bought in the first place, yield could be obtained by buying stocks or bonds.
- Alternate leasing of the car, which means that if driving in the car excludes the possibility of leasing it, the lost income is an opportunity cost.

*Grocer case 1.2:*

A minor grocery store is owned by a 35 year-old man and has an annual turnover of 2,100,000 DKK and annual costs of 1,750,000 DKK which, without taking opportunity costs into consideration, makes a profit of 350,000 DKK a year. He has tied up 500,000 DKK in the inventory and he has, if he is willing to sell, been offered 500,000 DKK in goodwill for the business, money that could produce a 4% yield on the bond market. Moreover he has been offered a job at a major retailer offering a yearly salary of 320,000 DKK -and possibly better working conditions.

The profit of the grocer is presented with and without opportunity costs in table 1.2:

Profit excluding opportunity costs:	Profit including opportunity costs:
Turnover 2,100,000 kr. – Costs of usage 1,750,000 kr.	Turnover 2,100,000 kr. - Costs of usage 1,750,000 kr. - Opportunity costs (yield) 40,000 kr. - Opportunity costs (alternative salary) 320,000 kr.
Profit 350,000 kr.	Profit - 10,000 kr.

**Table 1.2:** The profit of the grocer, excluding and including opportunity costs.

According to table 1.2 the grocer achieves a profit of 350,000 DKK but it excludes other alternative activities (yield and salary if employed), which results in a direct loss of income of 360,000 DKK. According to this, the grocer would achieve an additional income of 10,000 DKK a year by closing down business, taking the job at the retailer, and investing the released capital from the inventory in bonds.

### 1.3 Fixed Costs vs. Variable Costs

*Fixed costs*      *Fixed cost are defined as those which do not vary with the level of output.*<sup>5</sup>

Fixed costs are the costs that do not increase and decrease with the size of the production.

The fixed costs are the costs of having a given production capacity. In the car case, these are examples of fixed costs

- insurance
- vehicle excise duty
- value loss of car because of age

Insurance and vehicle excise duty are fixed costs because they do not vary with the mileage.



"I studied English for 16 years but...  
...I finally learned to speak it in just six lessons"  
Jane, Chinese architect

ENGLISH OUT THERE

Click to hear me talking before and after my unique course download



*Variable costs*      *Variable costs changes as the level of output changes.*<sup>6</sup>

Variable costs are the costs that increase and decrease with the production. In the car case these are examples of variable costs:

- Fuel
- Maintenance
- Value lost on the car because of mileage

Fuel and maintenance are variable costs as they vary with the mileage

But there are also some problems. If the product is “one driven kilometer,” then its obvious that the use of fuel is not the same if you drive economically or fast, in the city or on a highway, or are stuck in traffic during rush-hour. With a midsize class car it may mean a difference between a car driving 15 km/liter or driving 4 km/liter. The wear and tear on brakes, clutch etc. is also very different.

If a cab driver in northern Jutland is to sell his cab, based on the above stated reasoning, then he will promote it as a country-cab; i.e. a “northern-Jutland-Mercedes-cab” despite it having driven the same amount of miles as a “Copenhagen-city-Mercedes-cab,” it has experienced significantly less wear and tear. Once again, it is not that simple to present an unambiguous coherence between product and costs.

*The problematic classic treatment of variable costs*

The problem of the classic cost-theory is that variable costs are treated exclusively, as variables compared to the determined unit, e.g. size of production, mileage, etc.

Other factors can equally influence the variable costs:

- Motivation for work among the employees, i.e. efficiency.
- Employee treatment of materials, machinery, equipment etc. i.e. use of resources.
- Organization of the work, i.e. the management solution.
- The more complex the production is the greater the role played by education, communication, understanding of the firm’s culture etc. which is why these factors have to be optimized as well.

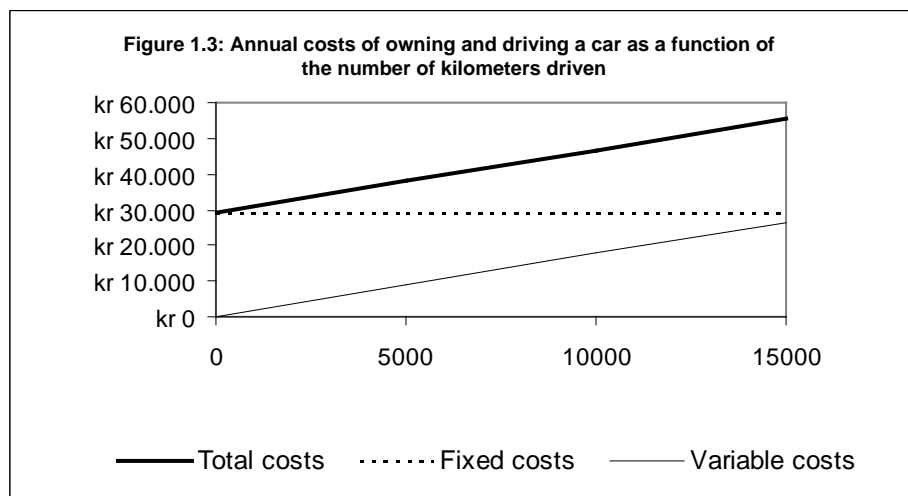
Only by focusing on all the influencing factors is the achievement of the lowest possible cost assured.

*Costs of owning and driving a car* In the following section, fixed and variable costs are explained on the basis of the costs of owning and driving a car. The annual costs of owning and driving a car are, for the sake of simplicity, illustrated in figure 1.3, where the mileage ( $Q = \text{quantity}$ ) is depicted along the horizontal x-axis and the costs measured in DKK are shown along the vertical y-axis.

The costs are communicated as variable, fixed, and total cost functions. As seen in figure 1.3 the variable costs increase with mileage, while the fixed costs remain at the same level, independently of the mileage. Furthermore, it is clear that the total costs are the sum of the fixed and variable costs.

Some Implicit assumptions are made:

- Time horizon is a one year.
- Getting rid of the car during this year is not an option.
- Driving needs are stable, and the manner of driving remains unchanged (the mix of city and countryside, aggressive and careful driving) etc.
- Accidental costs are said to be estimable and calculable; e.g. repairs, tires etc.



*Determining unit of activity* Based on the car case, there are no obvious difficulties connected to defining the car's activity level as the kilometers driven. This unit seems to be both a natural and operational calculation unit. Concerning truck driving, bus driving and other machine-based services, "hours" are frequently the unit of measure, no matter if the machine works more or less. In each situation both measures can be more or less right or wrong. The costs vary in proportion to both variables, hours or kilometers, depending on the activity. But this variation is not identical in different situations.

For production firms, the number of units produced, denoted as  $Q$  for quantity, is most often the unit of determination. But for other industries such as restaurants, architectural firms, and law firms, there are no comparable measurement units. In these cases the number of hours, turnover, or even amount of costs, can be the product; as assignments differ greatly, this may be the only common denominator.

This variability means that the decision maker has exert themselves to find suitable measurement units See examples below:

- Concerning restaurants, the number of customers or the turnover typically will work as a measurement unit for the level of activity. The problem with the number of guests being used as the measurement unit is that there is a great difference in activity level, from guests who only order one course and a glass of wine, to those that order the full 5-course dinner with the accompanying wine menu. Turnover is also problematic, as the measurement of the activity level is affected by the price level, the earnings on the different products (drinks versus food), as well as price promotions. So, turnover is not without problems when applied as measurement unit

Excellent Economics and Business programmes at:



university of  
 groningen




**“The perfect start  
 of a successful,  
 international career.”**

**CLICK HERE**  
 to discover why both socially  
 and academically the University  
 of Groningen is one of the best  
 places for a student to be

[www.rug.nl/feb/education](http://www.rug.nl/feb/education)



- In regards to architectural firms and law firms, the number of working hours is a natural unit of measurement for level of activity. However, when applied as measurement unit, the number of working hours involves a great deal of uncertainty. Both concerning time and finances, there is a great difference between hours worked by a newly educated (working slowly at a low wage) individual as compared to a more experienced (working fast at a high wage) architect/lawyer. Furthermore, more hours are not necessarily equal to a better job done. The total work load may also affect both work speed and work effort. Both professions tend to let the number of hours decide the magnitude of a given assignment.

## 1.4 Separation of Fixed and Variable Costs

*Time horizon*      The time horizon is decisive when separating costs into fixed and variable costs. Costs vary in conjunction with the time horizon. This fact is suitably explained by the costs of materials, workforce, machines, and rent employed in a production firm:

- In the extreme short-term, the materials employed in the production may be the only variable costs, as this employment increases and decreases with the slightest change in production. Worker salaries, depreciation of machinery, and rent are, in the span of a few days, fixed costs, as they do not adapt to the size of production. Even workers in production companies have a few weeks notice, although day laborers do exist. The short-term production planning is also dependent on whether the goods used are storable.
- In the medium-short-term the materials employed and the production-workers' salaries are both variable costs, as long as the workers can be hired or laid off with relative ease. Depreciation of machines and rent are fixed costs. These are for the most components of the minimum costs that have to be covered by the sales price – unless the product has no value if it is not sold. A product that has no value if it is not sold, has a cost of 0 DKK when it is to be sold. The late owner of the travel agency Spies said: “Even if we only get 1 DKK for the last seat to Mallorca, it's better than an empty seat.”
- In the medium-term, materials employed, production-workers' salaries, some administrative workers' salaries, and depreciation are considered variable. This is the case, as long as the machines can be sold at the depreciated value. Rent is a fixed cost.
- In the long-term all production factors are variable, e.g. interest is variable to the extent that the rent can be adapted to the size of production by simply moving the production to either larger or smaller facilities, depending on the production level. Fixed costs turn into opportunity costs, i.e. the cost of alternatively employing production factors, such as rent and equity.

The time horizons listed above are dependent on the firm and the business sector; thus they are relative.

E.g. companies can change all factors of production in conjunction with different time horizons. This flexibility means that the long-term is relative:

- For a window cleaning firm, possibly under one year
- For a taxi firm, possibly 1–2 years
- For a bus haulage contractor, possibly 2–3 years
- For pizza shop, possibly 3–4 years
- For a food product firm, possibly 8–10 years
- For a sugar factory, possibly within 15 years
- For a car manufacturer, possibly within 15 years

The other time horizons: extremely short-term, medium-short term, and medium-term, will then adapt to the long-term definition.

As will be apparent from cost theory later on, costs are traditionally and fundamentally, without regard to the decision issue to be solved, divided into short-term and long-term, which are defined as follows:

- *Short term, where at least one factor of production is considered a fixed cost.*  
This could be rent or office employees' (white collar) salaries, that cannot be changed within the time horizon because of giving notice requirements.
- *Long-term, where all factors of production (workforce, capital etc.) are variable, which means that they can be phased out within the time horizon.*

One of the motivations for text is the facilitation of understanding that such a separation always has to be seen in relation to the relevant decision-making situation. No matter how crystal clear this separation is, the reasons for decision-making must be analyzed before this distinction can be realized.

There exists a group of theories which are only applicable to the short-term, and another set of theories that only apply in the long-term. Of course there are a number of terms and techniques that apply in both long-term and short-term cases. Consequently, the time horizon is a decisive determinant for the specific decision-making occasion and it is fundamental that the time horizon is applied consistently.

Furthermore, it is important to be aware that mostly firms decide on the short-term and long-term simultaneously; e.g. if the management in a minor retail chain plans the pricing strategy for the next year, while simultaneously a reaction to the competitors' "birthday-promotion" has to be laid out for the following week.

Regarding the time horizon, the main point is that it is necessary to remain focused and constantly attentive to the applicable time horizon.

**Different time horizons and decision-making situations result in different costs for the same production. No wonder costs theory is difficult.**

*Permanent vs. temporary changes in production*

Costs will typically react differently under production increases, production decreases, permanent changes, and temporary variations. Costs are also product dependent.

## LIGS University

### based in Hawaii, USA

is currently enrolling in the  
Interactive Online **BBA, MBA, MSc,**  
**DBA and PhD** programs:

- ▶ enroll **by October 31st, 2014** and
- ▶ **save up to 11%** on the tuition!
- ▶ pay in 10 installments / 2 years
- ▶ Interactive **Online** education
- ▶ visit [www.ligsuniversity.com](http://www.ligsuniversity.com) to find out more!

**Note: LIGS University is not accredited by any nationally recognized accrediting agency listed by the US Secretary of Education. More info [here](#).**







*Case 1.4:*

Rank Xerox has a number of issues worth contemplation concerning the number of service mechanics involved in different situations:

- a) Under a permanent change in number of copiers
  - If the number increases, training of new service mechanics will be initiated, so that they after 6–9 months the level will be appropriately adjusted to what is equally as efficient as the current level of mechanics.
  - If the number decreases, the least efficient surplus mechanics will be laid off, which can take 3–6 months.
  
- b) A temporary change in the number of copiers
  - If the number increases, the most likely outcome is the use of overtime for a period, combined with the anticipation of hiring new people. There might be re-deployment within the organization of people who can easily be trained for the job.
  - If the number decreases, there will be no laying off of workers, because of the time it takes to re-educate workers and the insecurity involved in rehiring the same level of qualified workers. These workers will typically be employed elsewhere during this period. As laying off workers is quite costly, the solution will most often be an attempt to sell more copiers. This argumentation seemingly applies to all copier-manufacturers, and a tactical progress will have to be analyzed.  
i.e. the difficulties of re-establishing an important knowledge capacity or production is crucial in the adaptation flexibility.

*Discussion of  
fixed and variable  
costs*

The classification of fixed and variable costs makes room for difficult discussions, especially between decision makers (managerial economics) and accountants (financial control/management accounting), as the decision-making occasion in a control-situation is not as variable as in a decision-situation.

The basis of the discussions is the fact that they work with ex post registrations (historic) and ex ante decision-making occasions (“what-if”). Also, decision makers can be presented with many decision-making occasions for which it is unreasonable to expect that the accounting system can deliver data. Finally, decision makers are, because of the mentioned management assignments, often distinguish between fixed and variable costs, while accountants distinguish between capacity costs and unit costs, which are defined below:

- *”Capacity costs are the costs that result from capacity. Average variable costs are costs that result from a specific transaction of goods.”<sup>7</sup>*

This basic difference in definition of cost is rooted in the purpose of the costs.

The decision makers' distinction between fixed and variable costs is applied in calculating tasks concerning e.g. optimization of price or quantity, often with different time horizons, long-term price lists, short-term price competitions, frequent adaptations in capacity, both increases and decreases, different worker capacity for knowledge storing, and different products.

On the other hand, accountants' distinction between overhead fixed costs and average variable costs is applied in relation to external financial reporting, internal analyses, and internal control, e.g. predicting calculations and result-documenting calculations. Naturally, there are limits for the number of perspectives that can be applied in a single accounting and registration system; if these limits are not clearly delineated, then a massive information overload results.

The following is a simplified example of this discussion:

It is a common notion among decision makers that fixed costs, depending on decision situation and time horizon, can be spread on the costs-bearing products and thus be regarded as variable. This understanding relates to Robert Kaplan<sup>8</sup>: *"I'd say that, for most purposes, all costs should be considered variable."* Accountants on the other hand, regard the spreading of fixed costs (capacity costs) on the products as a mortal sin. The argument is that the spreading of fixed costs results in the closure of products, which within the financial period creates a positive contribution margin. Products that create a positive contribution margin should not be closed down, considering that any contribution margin that covers fixed costs is better than no contribution margin. Michael Andersen and Carsten Rohde<sup>9</sup> have appropriate input at this juncture: *"The difference between sales income and variable costs can be expressed by means of the contribution margin... in this way it becomes a central result-term in controlling the profitability of the firms different activities."*

Another essential argument for not adding the fixed costs in optimization analyses is that the optimization theory (marginal costs = marginal revenue) shows that this results in solutions that are not optimal. The snake in this paradise is that MC is difficult to understand, as the time horizon can be uncertain.

This discussion between the micro theorists and those adhering to Activity Based Costing by Robert Kaplan, is not yet concluded. There are many arguments and case-studies from both sides. It is not the objective of this paper to solve this discussion. As everybody has such a hard time agreeing, I have to accept that: “It depends on the decision situation and horizon.”

## 1.5 Other Costs Distinctions Relevant for Decision-Making

**Direct costs** *Direct costs are the costs that result from a single activity, production, production facility, or cost bearer, and a direct cost can exist at different levels, such as the unit, the product line, the activity, the process or the department. Direct costs are separated into fixed and variable costs.*

In a production firm, the direct costs in medium-short term are:

- **Direct variable** costs are materials employed, power consumed directly in production, calculated waste, salaries to production workers, etc.
- **Direct fixed** costs are operation of relevant buildings, technical facilities, yield of the capital tied up (opportunity cost principle), control etc.

.....Alcatel-Lucent 

[www.alcatel-lucent.com/careers](http://www.alcatel-lucent.com/careers)

What if you could build your future and create the future?

One generation's transformation is the next's status quo. In the near future, people may soon think it's strange that devices ever had to be "plugged in." To obtain that status, there needs to be "The Shift".



With regards to the car case, direct fixed costs are insurance and vehicle excise duty. The direct variable costs are fuel consumption, as the fuel consumption varies with the mileage, while it is also directly attributed to the covered kilometer.

*Indirect costs*      *Indirect costs are the costs that cannot be attributed to the specific action, production, production facility or cost bearer. Indirect costs are separated into fixed and variable costs.*

In a production firm the indirect costs in the medium-short term are:

- **Indirect variable** costs are repair and maintenance, cleaning, quality control, management of production/cleaning/service as well as parts of the administration.
- **Indirect fixed** costs are senior level management, directors, accountants, legal and strategic advisors, general types of insurance, operation of non attributable offices (directors offices, in-firm fitness facilities etc.), parts of the sales and administrative departments, IT-backbone etc.

Examples of indirect variable costs from the car case are: maintenance costs, as these costs vary with the mileage but cannot be attributed directly to specific covered kilometer. These costs appear abruptly and concern repairs that cannot be planned. Other examples of indirect costs are: a broken external rear-view mirror, repair of the wipers etc. An example of indirect fixed costs is depreciation of the car's value as it becomes an older model.

*Reversible costs*      *Reversible costs are the costs that appear as a result of a production increase and disappear with a production decrease.*

A high degree of reversible costs enhance the firm's capability to disengage from costs and thus change production level. Costs can also be partly reversible, which means that they increase more under a production increase than they decrease in conjunction with a production decrease, in which case it is only partially possible to disengage from the costs by lowering production.

In the car case, the vehicle excise duty and insurance are examples of reversible costs, as these disappear if the car is sold. Both the vehicle excise duty and the insurance premium is returned proportionally when cancelled.

A partly reversible cost is when a firm buys a car, and later wishes to sell it. In this case the car dealer's profit is lost. In most cases a car bought at a dealer's for 130,000 DKK and sold back after a short period of time, will only bring in 100,000 DKK. This partly reversible cost results in a loss of 30,000 DKK.

*Irreversible costs*    *Irreversible costs are costs that are not annulled upon a decrease in production.*

A high degree of irreversible cost deteriorates the firm's possibilities of disengaging from costs by changing production level.

With regards to the car case the subscription to companies such as AAA, FDM, or other driving-support companies, are a short-term horizon irreversible costs, because these memberships do not stop when the car is sold.

*Coming costs*        *Coming costs are the costs that appear when new products, activities and actions are launched.*

If a car owner chooses to replace the car with a new and bigger/better version, incurring additional expenses, such as an increased insurance premium, these additional expenses are defined as coming costs. To purchase a new car is a coming cost, and to have special features installed is also a coming cost.

*Going costs*         *Going costs are defined as cost savings connected to closing down products, sections, etc.*

If a car owner chooses to sell the car, all the cost savings are going costs. Reversibility is essential to the going costs. Education of employees or installation of facilities on premises for specific production (e.g. ventilation), are typical coming costs but not going costs.

*Sunk costs*         *Sunk costs are costs that are already paid/invested, and cannot wholly or partially be recovered. Sunk costs cannot be affected or neutralized by a new decision.*

With regards to the car case, the re-registration fee is an example of a sunk cost, as this cost was paid when the car was bought and cannot under any circumstances be recovered. For this reason the cost is not to be integrated in any future decision processes.

Other typical examples of sunk costs are ad campaigns, distribution of leaflets, research costs, education of employees etc.

*Grocer case 1.5:*

A grocer has decided on an advertising initiative involving distribution of a brochure to the local households. The printing will be carried out by a local printing house for 20,000 DKK and the distribution will be taken care of by the local boy scouts, who promised to distribute the brochures for 5,000 DKK. Furthermore the grocer expects an increase in earnings of 30,000 DKK as a result of the advertising campaign.

Unfortunately, as the brochures are ready, the boy scouts report that they cannot carry out the distribution. If the grocer wants the brochure distributed, the post office has to do it, which costs 15,000 DKK. Should the grocer have the brochures distributed or cancel the marketing initiative? Of course the answer depends on the profits of completing the initiative.

**Join the best at the Maastricht University School of Business and Economics!**

**Top master's programmes**

- 33<sup>rd</sup> place Financial Times worldwide ranking: MSc International Business
- 1<sup>st</sup> place: MSc International Business
- 1<sup>st</sup> place: MSc Financial Economics
- 2<sup>nd</sup> place: MSc Management of Learning
- 2<sup>nd</sup> place: MSc Economics
- 2<sup>nd</sup> place: MSc Econometrics and Operations Research
- 2<sup>nd</sup> place: MSc Global Supply Chain Management and Change

Sources: Keuzegids Master ranking 2013; Elsevier 'Beste Studies' ranking 2012; Financial Times Global Masters in Management ranking 2012

**Visit us and find out why we are the best!**  
**Master's Open Day: 22 February 2014**

**Maastricht University is the best specialist university in the Netherlands**  
(Elsevier)

[www.mastersopenday.nl](http://www.mastersopenday.nl)



In table 1.5 the profit of the initiative is calculated, both with and without the sunk costs

Profit, without sunk costs		Profit, with sunk costs	
Increase in earnings	30.000 kr.	Increase in earning	30.000 kr.
- Printing	20.000 kr.	- Distribution	15.000 kr.
- Distribution	15.000 kr.		
Profit	-5.000 kr.	Profit	15.000 kr.

**Table 1.5:** Profits of carrying out the initiative, with or without the sunk costs.

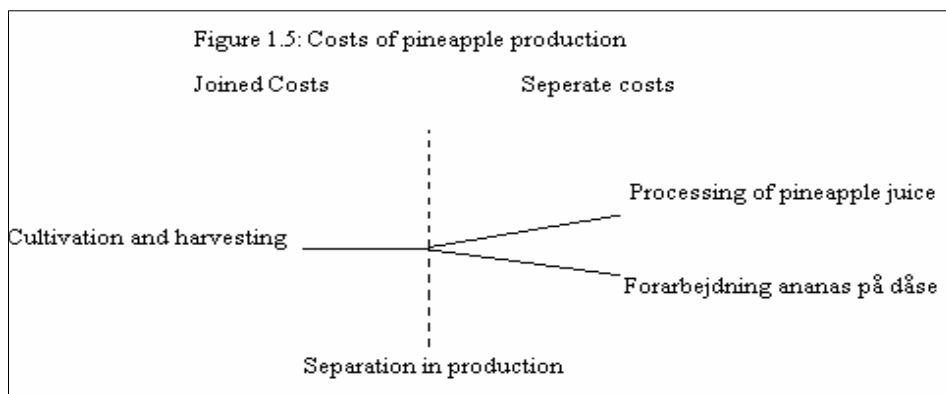
As is obvious from table 1.5 the printing costs are sunk costs, which means that the costs, at the decision-making moment, have been defrayed and cannot be recovered. Furthermore, it is clear that if sunk costs are considered, i.e. if they are not integrated into the decision making process, carrying out the advertising initiative result in a profit of 15,000 DKK. This profit has to be considered on the basis that the only other alternative is not to complete the initiative but still pay the 20,000 DKK for the printing. For this reason, the grocer should continue with the advertising initiative.

*Joined costs*      *Joined costs are the costs that apply to different products in combined production before they are separated in the final production.*

An example: the costs of growing and harvesting pineapples that at the factory are separated into pineapple juice and canned pineapples.

*Separate costs*      *Separate costs are costs that apply after products of joined production are separated in the production.*

An example of this is the costs of sieving the pineapple juice and the costs of cutting the canned pineapples, which despite the fact that the costs up to that point have been joined, must be treated separately. Joined and separate costs are illustrated in figure 1.5:



*Marginal costs*      *Marginal costs are the increase in total costs when producing one additional unit.*

Marginal costs are often applied in regards to pricing. In the car case the marginal costs are applied in order to find the costs of driving an additional kilometer, or an additional trip, depending on the decision-making situation. Marginal costs are calculated as  $\Delta \text{ costs} / \Delta \text{ units}$  (in the car case kilometers replaces units), where  $\Delta$  symbolizes the amount of change incurred by one unit. Marginal costs (MC) is the most used theoretical term in optimization assignments. The weakness of MC is that the entire discussion of fixed and variable costs reappears. The longer time perspective in the decision-making horizon, the more costs become variable, and thus MC increases.

*Difference costs*      More problems arise in this category. Sneaking costs (“Can it..”), capacity pressure as well as optimism and pessimism.

Case 1.6: The Car Case “My Uncle’s Car”

*The car case*      Wishing to provide a basic understanding of how costs should be treated, as well as  
*”My uncle’s car”*      an understanding of the obligation to treat costs differently in different situations, the car case “My Uncle’s Car” is introduced. A car example has been described in earlier examples, but below the case is described more thoroughly:



As I, Søren Hansen am an HA-student, I cannot afford my own car, which is why I now and then borrow my uncle's car. He owns a five-year-old VW Golf worth about 100,000 DKK, which I can borrow if I cover all his costs. As he is an economist and wishes to train my economic understanding, he asked me to analyze what "all costs" include. The deal is apparently crystal clear – but there is room for interpretation which can result in room for disagreement, as we will see later.

The deal was: "all costs" my uncle incurred by lending me his car. In order to clarify this term, I would like to start by drawing up my uncle's costs of owning and driving the car. The costs<sup>10</sup> below are calculated on basis of a yearly mileage of 15,000 km, an average fuel consumption of 10 km/liter and a fuel price of 8 DKK/liter.

*My uncle's costs*      *Fixed costs, independent of mileage (in DKK/year):*

- Insurance (liability, comprehensive, fire, accident, etc.) 12,565  
The premium depends on level at to which the car is insured, this entry will probably will change over time, based on "good customer" status or the length of time my uncle has been insured, as well as the number of accidents reported.  
My uncle is elite class driver.



**> Apply now**

**REDEFINE YOUR FUTURE  
AXA GLOBAL GRADUATE  
PROGRAM 2015**

redefining / standards 

agence.cdg © Photonistop



• Vehicle excise duty	2,260
• FDM and Danish Auto Help	775
• Carwash, parking etc.	2,164
• Interest	5,022
Interest is calculated as follows: ((opening value 100,000 + closing value 90,500) / 2) multiplied by the interest rate 5,27%	
• Loss of value over time	6,000
• Inspection	200
The car is inspected every second year for 400 kr. which is 200 each year. It is assumed that the costs of repair in connection with the inspection is included in the maintenance costs.	
• Total	29,077
• DKK per kilometer at 15,000 km pr year	1.94
<i>Variable costs, increase and decrease with mileage (in DKK/year)</i>	
• Fuel	12,000
• Tires	1,940
It is assumed that my uncle changes tires after 30,000 km and that the total costs of these is 3,880 DKK, i.e. 1,940 kr./year (at 15,000 km.)	
• Service check-up	2,400
It is assumed that a service check-up is carried out for after 7,500 km and that the costs are 1,200 each time.	
• Maintenance (wear and tear repairs)	6,749
• Loss of value due to mileage, at 15,000 km. 23.3 øre/km.	3,500
• Total	26,589
DKK per kilometer at 15,000 km.	1.77

*Relevant factors*

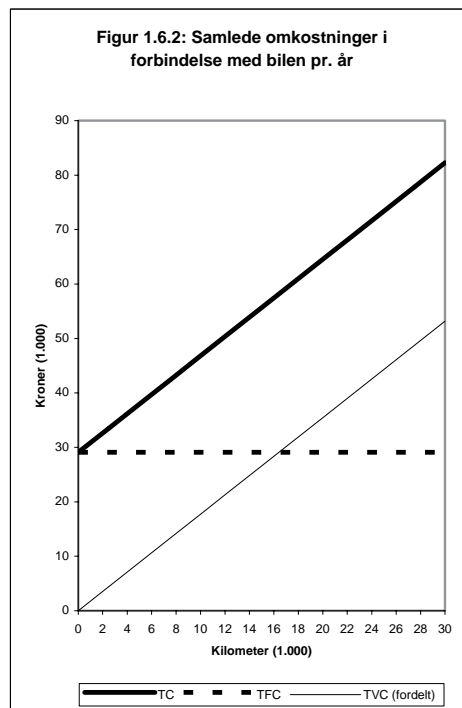
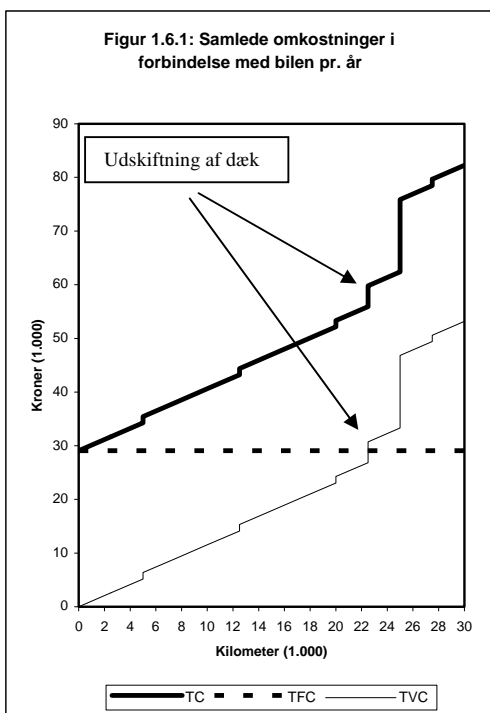
With regards to the question about how much it should cost me to borrow my uncle’s car, several factors must be considered, including the following:

- The time horizon, owing to the fact that there is a decisive concerning fixed costs, whether I borrow the car for two hours or three months, regardless of driving.
- The mileage is of course very important as it is this factor upon which the variable costs are highly dependent.
- My uncle’s situation concerning the car, as the costs are to be treated differently whether he would be using the car himself, or if he is on vacation, or can rent it out to a friend.
- “Coming costs,” which are the extra costs taken on by my uncle as a consequence of my borrowing his car; e.g. a possible change in the insurance policy if I borrow the car frequently, depending on his current policy.
- Risk supplement, owing to the fact that if I borrow the car there may be greater risk of the car getting damaged than when it is in garage.
- Situations where my uncle wants the car no matter what, based on his own needs it.

*Costs functions*

In order to give a survey of the costs, cost functions are made for the following cost types, as shown in figure 1.6.1 and 1.6.2

- *Total variable costs (TVC), which expresses the joined variable costs.*
- *Total fixed costs (TFC), which expresses the joined fixed costs*
- *Total costs (TC), which expresses the joined fixed and variable costs*



The figures above illustrate my uncle's total costs concerning the car, as a function of the mileage. Figure 1.6.1 shows the costs concerning the loss of value due to mileage and the costs of fuel consumption as well as the costs of changing the tires, service check-ups, and maintenance. Owing to these factors, the curve "jumps," and thus illustrates the costs. Figure 1.6.2 on the other hand shows the costs after spreading the variable costs over each driven kilometer. This means that the curve is flattened, which owes to the fact that the costs of service check-up, change of tires and maintenance are treated as a cost of each driven kilometer.

The cost functions mentioned above provides a highly simplified picture of reality, as it is often necessary to make a number of more or less reasonable assumptions, before such functions can be defined.



**BI**

Business  
Strategic Marketing Management  
International Business  
Leadership & Organisational Psychology  
Shipping Management  
Financial Economics

**BI NORWEGIAN BUSINESS SCHOOL**

EFMD  
**EQUIS**  
ACCREDITED

## Empowering People. Improving Business.

BI Norwegian Business School is one of Europe's largest business schools welcoming more than 20,000 students. Our programmes provide a stimulating and multi-cultural learning environment with an international outlook ultimately providing students with professional skills to meet the increasing needs of businesses.

BI offers four different two-year, full-time Master of Science (MSc) programmes that are taught entirely in English and have been designed to provide professional skills to meet the increasing need of businesses. The MSc programmes provide a stimulating and multi-cultural learning environment to give you the best platform to launch into your career.

- MSc in Business
- MSc in Financial Economics
- MSc in Strategic Marketing Management
- MSc in Leadership and Organisational Psychology

[www.bi.edu/master](http://www.bi.edu/master)



*Explanations and assumptions* Explanations and assumptions regarding the above figures:

- *The TVC curve with “jumps” (figure 1.6.1):*
  - The even rise of the curve owes to the fact that each kilometer causes costs of 80 øre for fuel (12,000 DKK / 15,000 km) all the while the car loses 23 øre (3,500 DKK / 15,000 km.) of value per driven kilometer.
  - Service check-ups, it is assumed as mentioned earlier that these are being carried out each 7,500 kilometers and cost 1,200 DKK. Furthermore it is assumed that the last check-up was carried out 2,500 kilometers ago, which is why the curve makes a 1,200 DKK “jump” at 5,000, 12,500, 20,000 and 27,500 kilometers.
  - It is assumed that the tires were last changed 7,500 km. ago, which means that the curve makes a 3,880 DKK “jump” at 22,500 kilometers.
  - Furthermore it is assumed that all the maintenance costs are realized at one time at an expanded 10,000 km service check-up, including the necessary repairs, which is why the curve makes a 13,498 DKK “jump” at 25,000 km.
  
- *The TVC curve without “jumps” (figures 1.6.2):*
  - Figure 2 is a development of figure 1, and the variable costs have simply been calculated as total variable costs for 30,000 km. and then divided with 30,000 km., which yields 1.77 kr./kilometer. This method is reasonable as the indirect variable costs are spread over the cost bearing kilometers. E.g. it is reasonable to distribute the costs of changing tires on the kilometers that wore them down.
  
- *The TFC curve both with and without “jumps” (figures 1.6.1 and 1.6.2):*
  - As mentioned earlier, the fixed costs are not affected by the mileage, and thus they are 29,077 DKK, regardless of the quantity of kilometers driven.
  
- *The TC curve both with and without “jumps” (figures 1.6.1 and 1.6.2):*
  - The TC curve shows the joined costs, which is why the curve is a vertical addition of the TFC and the TVC curves. Resultingly, the curve starts at 29,077 DKK and matches the tendencies of the TVC curve afterwards.

Moreover, the cost model has been simplified such that no considerations are made for the greater value loss incurred by the initial kilometers. Likewise no considerations have been made regarding the fact that the maintenance costs are increasing during the period, due to the fact that the risk of damages and wear and tear are less per 10,000 km between 70,000 and 80,000 km, than 10,000 km between 80,000 and 90,000 km.

So, what do I tell my uncle? Still an open question.

*Situation  
dependency of  
the cost function*

There are a number of issues other than the stated assumptions, which influence the costs, and result in the cost function being less than completely accurate; e.g. maintenance costs, tire and fuel are highly dependent on the manner in which the car is driven. Driving at 130 km/h results in higher fuel consumption than driving at 80 km/h. Driving in cities causes relatively more wear and tear on brakes than driving on a country road. Driving on salted roads during the winter in Denmark, causes higher value loss than driving on dry roads in summer.

*The product “a  
driven kilometer”*

Cost functions with the number of kilometers as measurement unit  $Q$  is problematic for the car case, as the purpose of owning and driving a car is not just the generating of mileage. The purpose, on the other hand, is to be able to drive wherever you want, whenever you want to. As a result, the product I borrow from my uncle depends on the circumstances; e.g. the product “one driven kilometer” in a city differs from a long trip on the highway, one kilometer at high speed is quite different from a kilometer driven safely, a kilometer by an unskilled driver is different from the same distance driven by a skilled driver. Moreover, the value of having a car is dependent on the condition of the public roads. The costs vary based on all these circumstances.

*Decisions  
and costs*

In connection with defining my uncle’s costs of letting me borrow the car the specific decision-making situation is of great importance (= opportunity costs). In order to give an insight into this line of thought, a number of decision-making situations are presented, where the costs are to be treated differently:

- I am at a Christmas lunch at my uncle’s, and all the family except me has had too much to drink. Suddenly my girlfriend calls and asks me to pick her up. In this case, my uncle’s costs of letting me borrow his car can be regarded as the variable costs of the trip as the time horizon is quite short and he is not able to drive anyway because of his drinking.

How much should I pay?

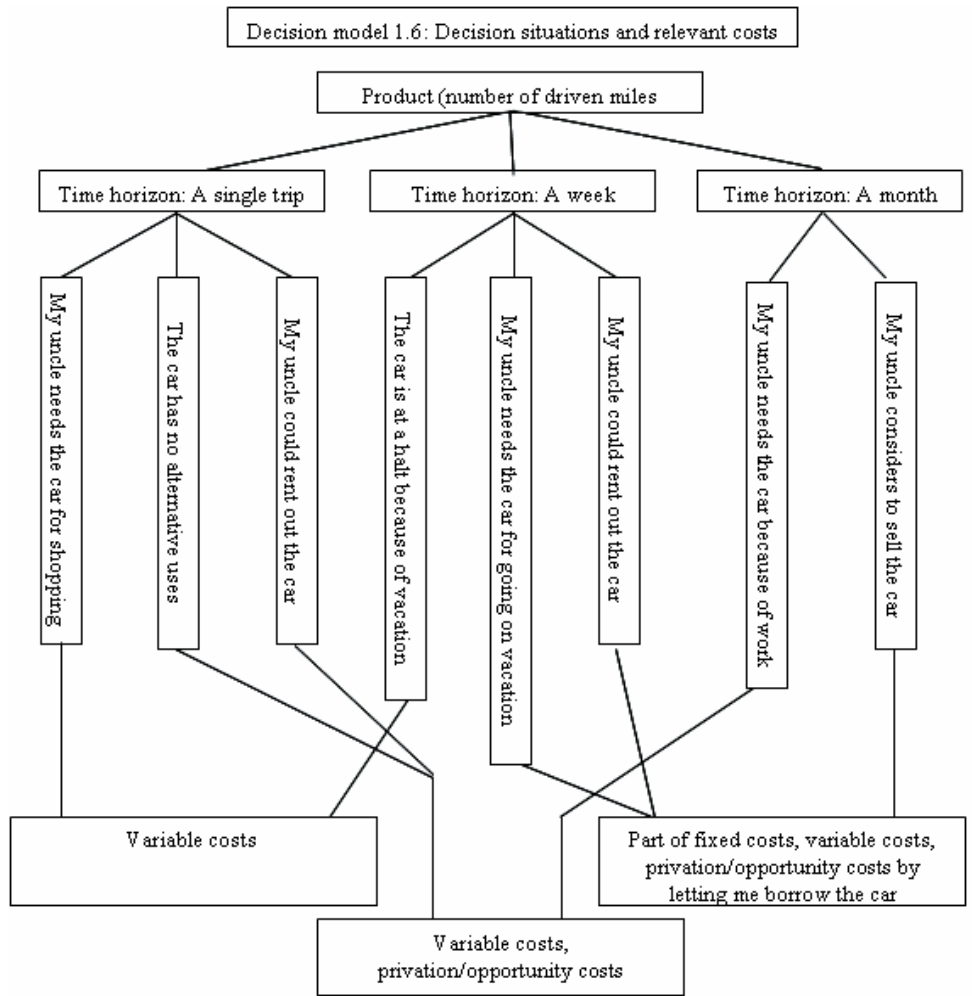
- I have just been offered a four week job, with relevant for my education, requiring me to spend every afternoon on a location outside Ringsted, where it is impossible to go with public transportation (I live in Copenhagen). My uncle tells me that I can borrow his car, despite the fact that he himself would have liked to use it in the same period. As a consequence of this, my uncle's costs of letting me use his car are regarded as the variable costs as well as a part of the fixed costs, e.g. the fixed costs divided into 365 days and multiplied by 28. Furthermore it would be appropriate for me to pay my uncle for "owning" his car during this period.

How much should I pay?

- If the situation above is changed so that my uncle is on vacation and has no use of the car, the costs of letting me borrow the car are changed as well. Then the costs would be regarded as being the variable costs plus potential opportunity costs, in case my uncle could have rented the car out to a friend.

How much should I pay?

The decision-making model 1.6 is generated in order to structure the above thoughts into a more general way, so that the model is applicable in different decision-making situations.



### 1.7 The Management Job

*Control levels*

To produce at the lowest costs possible requires attention being paid to all control levels – including the management levels. The control levels can be described as follows<sup>11</sup>:

**The strategic control level:** The management decides on the long-term goals of the firm and strategies are delineated in order to reach these goals. Furthermore the setting is as follows (not exhaustive):

- Core competencies, areas of activity, and growing demands
- Degree of internationalization
- Product design
- Product development
- Essential investments, including new technology
- Profit policy



The time horizon is dependent upon the business sector, company size, entry/exit barriers, production machinery, etc., but is typically 2-10 years. Given the long-term horizon great uncertainties are often connected to decisions made on this level.

- For Harboe, the time horizon would be considerably longer than for an architectural firm. Among other factors, this reality is due to the fact that Harboe breweries have a significant market position, are heavily invested, and that the beer and soft drink industry is relatively stable. An architectural firm on the other hand is less heavily invested, and is at the same time highly influenced by market conditions.

**The tactical control level:** The management of this level works within the frames defined by the strategic level. The work consists primarily of planning and coordinating the activities of the firm, including:

- Adjustment of technology and production machinery
- Prepare budgets
- Plan production
- Prepare and adjust marketing plans
- Take charge of the human resource administration of key employees.

## Need help with your dissertation?

Get in-depth feedback & advice from experts in your topic area. Find out what you can do to improve the quality of your dissertation!

Get Help Now



Go to [www.helpmyassignment.co.uk](http://www.helpmyassignment.co.uk) for more info



Helpmyassignment



This writer does not compare key employees with “white collar workers,” due to the fact that “blue collar workers” can be irreplaceable as maintaining production often is dependent on them.

The time horizon depends on the business sector, company size, entry/exit barriers, production machinery etc., but is typically 1–2 years.

**The operational control level:** The management job on this level is purely operational. The management has to provide a detailed planning and execution of production, administration, marketing, and sales in the short-term. The following factors must be included:

- Human resource administration
- Carrying out of different types of control, including quality control
- Prepare costs calculations for concrete orders

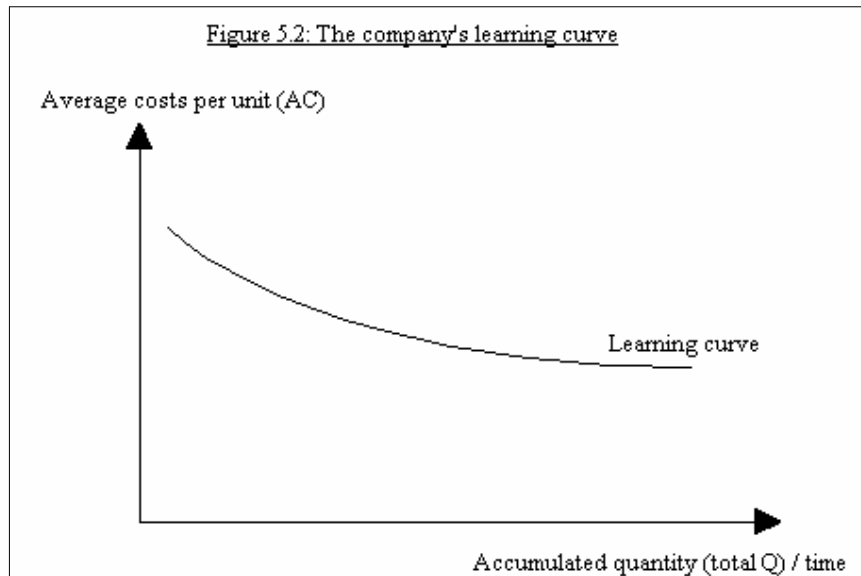
An example may be the master brewer’s decision regarding the summer’s production of beer at Harboe.

*The  
learning  
curve*

In order to produce the good at the lowest possible cost, management has to exploit “the company’s learning,” i.e. exploiting that managers as well as employees learn how jobs are solved in the best possible way. This is due to the fact that “company learning” causes increases in efficiency which combined with a proper management effort produces lower costs.

- At Harboe the management wants to build a better environmental network down through the organization, improving working efficiency. Moreover the production workers will achieve a routine experience while also getting better at repairing the machines during production standstills, which increases efficiency.
- In the architecture firm, the management wants to learn the best way to hire new architects, including what characterizes good architects. Furthermore the management wants to learn how to motivate the employees so that they constantly do their best. Both factors will increase the firm’s efficiency.

The effects of “company learning” are shown by the company’s learning *curve*<sup>12</sup>.



*The learning curve and the short and long-term*

The learning curve in figure 5.2 shows that the average costs per unit decreases with the greater the quantity produced, i.e. the longer the period of time the firm has produced the good or service. The time horizon has great influence on the learning curve, as more effects of the learning curve can be exploited the greater the time horizon. The time horizon could actually constitute a third, independent axis in figure 5.2. In the short-term, the firm will only benefit from the effects of improvement seen through leaders and employees. As the time horizon expands experience with production design can be exploited, as this can be changed in the long-term. However, the learning curve only expresses the effect of company learning. The average costs per unit do not inherently decrease as the number of produced units increases. This owes to that the fact that the average cost per unit are also influenced by capacity limits, discounts, availability of qualified work force, etc.

## 1.8 Assignments for Chapter 1

*Mini case 1.1: "Innocence"*

Innocence is a French fashion house established in the 1980s. First the fashion house exclusively produced exclusive lingerie for women. Later on, the fashion house expanded the assortment to include exclusive women's wear as a whole. Now the fashion house wishes to include perfumes in their assortment. Innocence has neither the facilities for development or production of perfumes, which is why this job is outsourced to an Italian perfumery. Suddenly, Innocence begins to have doubts as to whether the perfume project is economically viable. They want an analysis of the costs connected to the project from their own perspective. It should be mentioned here that the perfumes are neither wholly produced nor marketed.

A list of the different activities connected to the project:

- The hours used by the French fashion designer and the management on the perfume project has an estimated value of 1.7 million €.
- The development of the designs of the perfume bottles, which are developed by Innocence's own designers.
- The hiring of a new internal head of marketing. The head of marketing is to be responsible for the promotion of the perfumes, including segmentation of markets, choice of marketing strategy etc.
- The marketing campaign for the perfumes, which is prepared by Innocence's head of marketing and an external marketing agency.
- The administrative work concerning the project, including the cooperation with the Italian perfumery.
- The Italian perfumery's future work on the production of the perfumes, i.e. the total production costs of the outsourcing.

*Case assignment 1.1:*

List three other relevant cost areas.



**Brain power**

By 2020, wind could provide one-tenth of our planet's electricity needs. Already today, SKF's innovative know-how is crucial to running a large proportion of the world's wind turbines.

Up to 25 % of the generating costs relate to maintenance. These can be reduced dramatically thanks to our systems for on-line condition monitoring and automatic lubrication. We help make it more economical to create cleaner, cheaper energy out of thin air.

By sharing our experience, expertise, and creativity, industries can boost performance beyond expectations. Therefore we need the best employees who can meet this challenge!

The Power of Knowledge Engineering

Plug into The Power of Knowledge Engineering.  
Visit us at [www.skf.com/knowledge](http://www.skf.com/knowledge)

**SKF**



*Case assignment 1.2:*

As part of the efforts of creating a survey of the costs, you are asked to list the activities after cost type, including fixed vs. variable costs, reversible vs. irreversible costs, and decision relevant vs. non decision relevant costs.

*Case assignment 1.3:*

How would you alter your decision structure if the perfumes had already been produced and marketed?

*Question 1.1* A professor in economy tells you that short-term decisions regarding cost considerations do not have to incorporate fixed costs, as these do not vary with the output.

1. Is he right?
2. Is your reply situation dependent?
3. Give an example of a cost that sometimes is fixed and other times variable.

*Question 1.2* The foreman in a production company wonders why the hourly salaries in production as well as the prices of raw materials have increased, while the average costs have decreased. What is a possible explanation?

*Question 1.3* List three frequent decision situations that require a thorough knowledge of the firm's costs.

*Question 1.4* A farmer, age 58, owns a farm in northern Jutland where he operates a 100 hectares of agricultural land. He has long been thinking about whether he would be better off selling the farm and possibly get another job. To help make this decision he has compiled the following information:

- Land and building total worth: DKK 12 million.
- Machine worth: DKK 2 million, and their worth in sales decreases by 0.3 million annually. If the machines were sold, a tax of DKK 0.5 million would be imposed.
- The farmer has loans totalling DKK 6.0 million, at 5% annually.
- The profit after tax and interest last year was DKK 400,000. This profit includes free housing provided by the farmhouse. He expects an equivalent profit next year.
- He can rent out the land at DKK 5,000 per hectare.
- For the time being he does not rent out the outhouses, but these could be rented out as storage room to a local master carpenter for DKK 50,000 a year.
- He has just been offered a part time consulting job in the local cooperative society with a yearly salary of DKK 150,000.

- If he sells the land including the buildings, a tax of DKK 3 million is imposed.
- The farmer could invest surplus capital at 6% yield per year.
- The rent in an alternative satisfying residence would be DKK 50,000 a year.
- The farmer has an income and interest tax of 50%.

What would you advise him to do, and which other economic considerations would you include?

*Question 1.5*

The Danish Competition Authority continuously supervises mergers. This awareness is used to balance the extreme influence on market pricing, possible higher prices to customers, gained when merging into larger entities. Based on the cost perspective, you are to argue that merging companies can cause both consumer price increases and decreases.



"I studied English for 16 years but...  
...I finally learned to speak it in just six lessons"  
Jane, Chinese architect

ENGLISH OUT THERE

Click to hear me talking before and after my unique course download

