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Introduction

Management Issue

Budgets and budget control has been known since the early 19th century[1]. However the use of budget control was until the beginning of the 1920ies in US primarily related to governmental units and states and to a minor extent to business units in practice. At that time James McKinsey describes budgetary control as involving the following[2]:

1. The statement of the plans of all the departments of the business for a certain period of time in the form of estimates
2. The coordination of these estimates into a well-balanced program for the business as a whole.
3. The preparation of reports showing a comparison between the actual and the estimated performance, and the revision of the original plans when these reports show that such a revision is necessary.

As can be seen from the statement budgetary control includes at the same time a planning and coordination mechanism for actions and performance ex ante as well as a control mechanism ex post through a comparison between estimated and actual plans and performance.

In Europe the development and use of budgeting in practice came even later as it really started after the 2nd world war. Almost at the same time budgeting and its agents became the centre of attention in the international academic research community as there seem to be different challenges with the use of budgetary control in practice. It has therefore been analysed and discussed from economic as well as psychological and sociological perspectives[3]. In recent years, the debate and criticism of budgeting as a planning and control mechanism seen from practitioners point of view has also increased. This has given rise to a number of ideas on how firms alternatively can build their management control system. Some of these ideas are grouped under the titles "Activity Based Budgeting (ABB)" and "Beyond Budgeting (BB)"[4].

The subsequent treatment starts out with a brief description of the development of budgeting research as weel as some of the criticism of budgeting in practice. This as a basis for setting discussions about design and use of budgeting, Activity Based Budgeting and Beyond Budgeting in a historical theoretical context as well as a practical context. The chapter will seek to answer the following questions:

- *Why* do companies need Budgeting, Activity Based Budgeting and Beyond Budgeting and what are the purposes of each of these concepts

[1] See Cazaux De L. F. G. (1825). Eléments D`Économis Privée Publique. Reprinted and translated in Cazaux De L. F. G. (1965). On the Budget. *Journal of Accounting Research*, 3(2), pp. 264- 265.
[2] See McKinsey.J.O. (1923). Budgetary Control. The Ronald Press Company, New York.
[3] See Covaleski et al, 2006 for a comprehensive treatment of the development of budgeting research.
[4] See Bogsnæs 2009; Hansen et al, 2003; Hope & Fraser 2003a, 2003b; Kaplan & Cooper, 1998;Wallander, 1999

- *What* components of the planning and control system do Budgeting, Activity Based Budgeting and Beyond Budgeting especially focus on and what different design choices do each of the concepts suggest
- *How* is the planning and control process be organized according to the three concepts

The treatment of the concepts in the chapter is carried out in a sequential order starting with Budgeting followed by Activity Based Budgeting and Beyond Budgeting. The three concepts will be confronted with some of the criticism of budgeting in theory and practice.

Early developments in budgeting research

Research on budgeting was based in a concern about the practical use of budgeting. This research was initiated by the studies done by Argyris in the early 1950 on how budget variables affect the individual mind and behaviour. Starting from a psychological perspective he examined both the impact of budget participation and goal difficulty in reaching improved performance. The research was based on the assumption that persons behave according to their bounded rationality due to the difficulty of overlooking all the possible alternative actions and their consequences. An alternative can there be chosen, even though it is not the optimal choice, only because it fulfils the expectations at a given level. Furthermore, the research builds on an assumption that individuals seek to obtain a state of cognitive consistency which mean that the individual's mental states fit together harmoniously. However, having to reach certain budget targets can cause cognitive inconsistency in the form of stress, conflicts and distrust that in the end can lead to dysfunctional behaviour such as gaming, reduced effort and poor communication. One way to avoid this is, according to Agyris, to use *participative budgeting* where the subordinate is involved in the goal setting for specific tasks and activities.

Other central contributions to the early budgeting research was March and Simon's work within the sociologically based research[5]. The focus was initially on the problems inherent in the decision making and coordination in large, complex organizations, operating under uncertainty. When assumed that bounded rational individuals were not capable of creating optimal organisational practices in these areas, budgeting was assigned the role of simplifying and adapting organizational decision making to the conditions the companies worked under. Subsequent work in the sociologically based literature has also focused on the individual and the conflicts of interests and power relations that can arise between individuals in organizations.

Inspired by, among others, Argyris, Demski & Feltham started a research stream in the late 1970s of economics-based studies on budgeting that focused on the connection between cost and benefits of different types of budgeting practices[6]. In contrast to the assumption of individuals bounded rationality that is found in psychologically and sociologically based research, economics-based research assumes that individuals are fully rational. Focus is thus on how to create an optimal budgeting system that maximizes the overall benefit for owners and managers under the given circumstances. The themes focused on in this research is, for example, budget targets, compensation and participative budgeting as well as how choices of budgeting practices affects organizational performance and creates budget slack.

Criticism of budgeting in practice

[5] See March & Simon, 1958
[6] See Demski & Feltham,1978; Baiman & Evans, 1983

Although researchers such as Hopwood (1976) and Birnberg et. al (1983) early on criticized budgeting for, under given circumstances, to cause inappropriate behaviour and sub-optimization, it was perhaps particularly the director of Svenska Handelsbanken Jan Wallander (1999)[7], that that in the mid 90ies gave new energy to the critical debate on budgeting. The premise for this criticism came from Wallander's background as an economist where he during a period worked with preparing long-term forecasts for different types of consumer goods based on historical data. He acknowledges that under stable conditions, forecasts can be useful. But at the same time he remains sceptical towards the relevance of preparing these forecasts within companies that work under changing conditions and uncertainty. According to Wallander since budgeting is both a forecast and a plan, it has the consequence that budgeting will suffer from these two tasks at the same time.

The main problem is, in Wallander´s opinion, that forecasts despite forecast errors have a tendency to determine organizational behaviour due to herd mentality. The individual agent does not want to break with the herd and take on the inherent risk and this creates a barrier for adaptation of the behaviour within the organization to the behaviour of the outside world and the market conditions applicable at any given time. In an article that is primarily based on practical literature Neely et al. summarizes the criticism regarding the use of budgeting in practice in the 12 points listed below:

Example

Neely,A., M.R. Sutcliff, and H.R. Heyns. 2001. *Driving Value Through Strategic Planning and Budgeting.* New York, NY: Accenture.

1. Budgets are time consuming to put together
2. Budgets add little value, especially given the time required to prepare them¨
3. Budgets are developed and updated too infrequently usually annually
4. Budgets are based on unsupported assumptions and guesswork
5. Budgets constrain responsiveness and are often a barrier to change
6. Budgets are rarely strategically focused and often contradictory
7. Budgets concentrate on cost reduction and not value creation
8. Budgets strengthen vertical command and control
9. Budgets encourage gaming and perverse behaviors
10. Budgets do not reflect the emerging network structures that organizations are adopting
11. Budgets reinforce departmental barriers rather than encourage knowledge sharing;
12. Budgets make people feel underevaluated

From the list it can be seen that there are at least 3 sets of arguments against traditional budgeting. The first argument encompasses claim 1-4 and is related to a critique of budgeting being a time consuming process that doesn´t add much value to the organization. In addition budgets seems to be updated too infrequently which has the effect that the process and its output becomes static and out of pace with environmental changes. And especially in dynamic and changing environments the budgets also seems to be based on unsupported assumptions and guesswork and therefore not a good forecast of the consequences of the future plans and actions. The second argument encompasses the claims 5-9. The main critique is that that the budget introduces a vertical command and control culture that hinders responsiveness and is a barrier to changes. Instead of using budgeting as a mean to implement strategy the focus seems primarily to be on cost reduction. A consequence of that is that it affects people behaviour and encourages them to play games. The third main argument which encompasses claim 10-12 is that budget reinforces departmental barriers. This has the consequence that the focus

[7] See Wallander, 1999 Budgeting - an unnecessary evil". The article is based on the book from1995,"Budgettering ett onödigt ont."

is on responsibility centre budgetary control which also according to Jeremy Hope & Robin Fraser[8] is incompatible with modern organizations forms and knowledge sharing.

In an effort to tackle the problems associated with budgeting there was through the Consortium for Advanced Manufacturing International (CAM-I) created a group based in the USA and one based in Europe dealing with the area. Where the American group was focused on improving the budgeting through Activity Based Budgeting[9] the European group takes a more radical approach and suggest the abolition of budgeting as it was practiced[10]. In the end of the chapter the main elements of the two approaches will be contrasted to traditional budgeting.

Budgeting for Planning and Control

The purpose of budgeting in planning and control

Despite the recent criticism, research shows that throughout time budgeting has been seen as one of the most important management control mechanisms in public as well as private companies[11]. This argument is also supported in publications within the management control literature (see also chapter 2). However it doesn´t mean that the criticism shouldn´t be taken into account when companies design, adapt budgeting in practice. To be able to address the criticism properly the different purposes of budgeting as well as the different design possibilities must be uncovered and presented as a basis for evaluating if or how these obstacles can be overcome.

Examples
From Otley, D. (1999). Performance management: A framework for management control systems research. *Management Accounting Research, 10, pp. 363-382.*

Budgeting has traditionally been a central plank of most organizations´ control mechanisms, as it is one of the few techniques capable of integrating the whole gamut of organizational activity into a single coherent summary. Performance is defined essentially as profitability; in a profit centre, the overall measure of performance combines an output measure (revenue) with an input measure (cost) and the budgeting process seeks to keep the two elements in balance.

The virtue of budgetary control process is that it provides an encompassing framework by means of which all aspects of an organization´s activity are encapsulated into a single set of financial statements against which actual outcomes can be monitored. However, the downside of the narrowness of the budgetary process has been linked to driving a motor car solely by looking through the rear view mirror (and a mirror that provides only an imperfect reflection, at that).

Let's start out clarifying what the purposes of budgets and budgeting are. A **budget** is a periodic quantitative and financial expression of future plans of action. **Budgeting** is the process by which the plans of action are chosen, coordinated, communicated and evaluated in the organization. This means that budgeting consists of both a

[8] See Hope & Fraser, 2003 a, 2003 b
[9] See also Hansen.S.C. and R Torok 2003 for a treatment of Activity Based Budgeting
[10] See also Bogsnæs, B., 2009z
[11] See Ekholm & Wallin, 2000; Libby & Lindsey, 2009; Umpathy, 1987

planning and decision making ex ante as well as monitoring and performance measurement ex post. It must likewise be noticed that budgeting is characterized by being periodic economic management that has to be coordinated with the strategic objectives and decisions like choice of placement, technology, markets, customers etc. on the one hand and the operational day to day decisions on the other. There are several factors that make budgeting important for decision making (first addressed in Chapter 1) and management control (first addressed in Chapter 2).

Firstly, budgeting plays a crucial role in the *goal setting (target setting)* procedure in many organizations as it sets the standard for the performance in the coming period. As mentioned earlier research from different theoretical standpoints has over time paid a lot of attention to the effects budget participation in target setting has on organizational performance. Likewise the relationship between budget target achievability (budget difficulty) and performance has gained interest as a research object. While there are an agreement in the literature on that easy achievable targets leads to poor performance there may still exists differences in the perception of how stretched the targets should be to optimize the performance. While many argue that the probability to achieve budget targets less than 50 percent a classical study carried out by Merchant & Manzoni (1989) find that targets can be challenging for organizations even if they are likely to be achieved.

Secondly, budgeting opens up for the possibility to efficiently organize the *decision making and planning process* in the company. The circumstance that the company becomes able to separate the decision points from the time of execution of actions leads to a reduction of the time pressure on the organization. That happens when the company in its budget document its planned actions, including date of execution and which persons and organizational units that will participate. If the company plans a sales campaign, sales material is first designed and produced to ensure that brochures, TV-commercials etc. are ready when the sales season starts. But it also happens when the decisions requires a significantly amount of analytical work. That is typical for strategic decisions like market development, product development or implementation of new technology. These types of decisions requires a conscious management of the analytical and idea generating work that precede the choice of a new strategy. In that connection the strength of budgeting is, that the company for each budget period can decide, which development tasks that shall be carried out, who shall be involved and when the tasks shall be carried out.

Thirdly, budgeting opens up to a higher degree of *decentralization* in certain phases of the decision making process. It is, thus, possible to let different persons in the decision making process than the ones that will have to execute the decision. This can be persons with knowledge within market analysis, advertising, planning a sales promotion, after which this is primarily carried out by the company's sales people. Another example could be to include accountants and product engineers in preparation of the company sales plan with the purpose of controlling sales with focus of profitability and the utilization of scarce production capacity.

Fourthly, control of a company's economy assumes that the company's *resources* can, as far as possible, be adjusted to the expected level of activity. The opportunity for acquiring and disposing of resources is naturally controlled by the opportunity to adjust resources to activity which is conditioned by resources variability and reversibility. Resource adjustment also applies in situations where the company is at either full capacity or at capacity deficiency and where the capacity is therefore acting as a capacity constraint. In such situations periodic planning with budgeting is one way of ensuring that the scarce capacity is used in the best economic way possible.

Fifthly, budgeting gives the opportunity to ensure *coordination* of activity creation across business functions. By coordination is in this context understood as *the coordination of decisions* in several instances. The need for coordination arises when more functions or organizational departments together have to participate in the business activity. In trading companies it could be purchasing and sale, in manufacturing companies this also

includes production and in service companies it can be the different specialist functions that work together. But the need for coordination also may exist when it comes to the company's other functions such as HR, finance and research and development. A number of the tasks performed by a HR department like hiring and firing of employees, employee training and the development of employee policies are largely controlled by the "demand" from the other departments of the company. This requires coordination and concerning the periodic financial control, the budget acts as a central coordination tool.

The need for coordination is especially large when the involved organizational units can mutually limit each other in the work towards fulfilling the corporate objectives. The reality applicable for most companies is that someone purchases, another one produces and yet another one sells. This is the background for coordination being and important factor in the economic management of the activity. It is however, also important to pay attention to the fact that the degree of detail with which the coordination should be organized varies based on the special characteristics from one company to another. The fact that not all businesses have the same need for coordination can also be explained by the fact that coordination principally can be done in two ways, which is either in form of order of coordination or simultaneous coordination. In *order of coordination,* the involved organizational departments make their decisions in a predetermined order. Every decision is, thus, adapted to all previous decisions in the order. This form of coordination is suitable when the completion of the activity is especially controlled by the decisions made in the first instance. This could for example be a printer where sales and the customer first agrees on sale and delivery. Afterwards, the order is submitted in the production plan and the need for materials is then stated. Purchasing finally purchases paper etc. for delivery according to the production plan. It generally points to order of coordination when the company has the following characteristics:

- Even sales
- Production in small batches with small batch related costs
- Short production time
- Production of uncomplicated products with total throughput
- Sufficient capacity
- Short delivery time on materials, components and intermediates from suppliers.

In *simultaneous coordination* the involved organisational departments makes their decisions simultaneous and with a mutually decided content. This form of coordination is suitable in situations where the creation of activity in the company is equally sensitive towards decisions made on several stages in the completion of the goods transaction. This is, for example, the case in situations where the purchases of materials and intermediates have to be made before the sale takes place. Hereby, the company cuts itself off from selling anything that it has not already purchases the materials for. Therefore, the sale must already before the actual purchase is made, decide what it expects to be able to sell. But it might not be possible to buy materials in the quantity sales would like to sell. Sales will, therefore, have to prioritize its choices from the purchasing possibilities. And purchasing must similarly be made from the sales forecast that was the result of the mutual agreement on possibilities and restrictions in purchasing and sales. Simultaneous coordination is normally relevant when the company has some of the following characteristics:

- Seasons in selling
- Productions in large batches with large batch related costs
- Long production time
- Production of complicated product with separate throughputs
- High capacity utilization with periodic bottle necks
- Season production at the suppliers, maybe with limited delivery options
- Long delivery times from suppliers

Sixthly budgeting serves as an element in the *performance evaluation*. This happens through *Budgetary control* where the approved budget is confronted with the actual events as possible Budget deviations can be communicated between the people involved. This makes it possible to assess the Management problems which deviations might express so that the organization may formulate new and better solutions to similar problems in subsequent periods. Some organizations also uses budgeting as a rewarding system in the organization. A topic that has gained a lot of attention in the budgeting literature and lately discussed in the Beyond Budgeting literature (see the Beyond Budgeting section later in this chapter).

Different planning and control levels

Companies are characterized by being different in terms of type, size and sector. Furthermore, they operate under different market conditions and have different resource structure in terms of human, material and financial resources. The need for planning and monitoring will therefore often differ, why the structure of budget and management accounting systems have to be adapted to the special characteristics and needs of individual businesses may have. Figure 4.1 shows a general model that encompasses the elements that the companies have to take into consideration when designing planning and performance measurement systems.

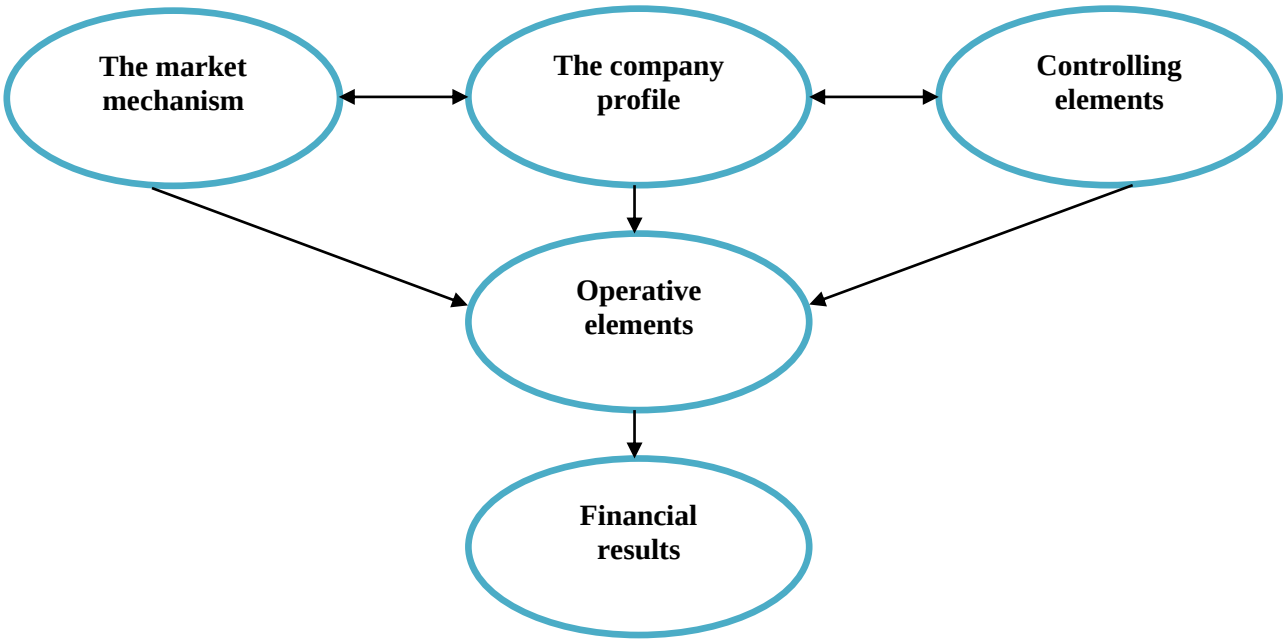

Figure 4.1 Elements in the operational and financial control of the company

The *market mechanism* relates to a number of externalities that the company cannot directly control. However, they will in different ways affect the results of the company. The elements of the market mechanism are customers, competitors and industry practices, suppliers, employees, owners and debt holders as well as public laws and regulations. Although the company cannot directly control the market mechanism it can in other ways

try to affect the development. For example, customer behaviour can be changed through advertising, legislation can be affected through lobbyism and employee- and supplier relationships can be affected through trade unions that negotiate the general framework regarding the purchasing of these resources.

The *Company profile* relates to the resource constraints that are the consequence of earlier decisions about the material-, human and financial resources. On top of these are the strategies for the future development regarding for example the geographic placement of the company, existing and possible markets and customer segments, production technology, employee competences and the source of finance available to the company. The conditions that the strategic framework place upon the tactical management must be documented in the budget. When the budgeting system is to be designed and adapted to the market conditions and the company profile management have different *design choices* on how much emphasis should be put on specification of what in the model is called the controlling elements, operative elements and financial results.

The *financial results* represent expected revenue and costs in financial amounts. They are composed of the product of the used resource quantity and the price of the individual resource units. This is an independent level of management that is called the company's *operative elements*. Operative elements are the *quantitative data* that controls the size of revenues and costs of the company.

Figure 4.2 shows examples of the operative elements that affect earnings and their effect on the size of Revenue, Cost of Goods Sold (COGS) and Selling, General & Administrative Costs (SG&A). Earnings records are furthermore affected by the different departments in the company that through their actions affect the result. In manufacturing companies both the procurement-, production- and sales functions affects the contribution margin. In procurement it is the ability to utilize resources consumption in an effective way by, for example, minimize waste, scrap, production down-time etc. For sales it is the way that price and choice of parameters is composed towards the market as well as how the sales execution is planned. Actions in the company organisation are therefore an independent level of control. These are the *controlling elements.* Controlling elements are those actions in the company's organization that affect the size of the operative elements and thus the company's profitability. It is through the planning of actions and action programs that the management of the company is taking place, hence the term controlling elements. It is through the action programs that the qualitative content of the organizations actions are determined. Examples of controlling elements are also shown in figure 4.2.

It is the effect of the actions of the organization, taking into account the market conditions and the company profile that is reflected in the operative elements and financial results. It is thus not least through the controlling elements that an understanding is created about how the organization's actions affect the size of the quantitative data in the form of operative elements and income statement items. A high degree of control in the budget can therefore be obtained by careful planning of the controlling elements. This also applies even though there is not the same depth of planning regarding the content of the operating elements.

Financial results	**Operative elements**	**Controlling elements**

Revenue	Number of units sold per product, per customer and per market. Sales price per product, per customer and per market.	Type, form, quantity, timing and quality of the sales contribution Distribution density Delivery terms Service policy. Credit Terms
Cost of Goods Sold (COGS)	The number units sold per product The number of material units per type of material per product unit. Price per material unit The number of labour hours per product unit per wage category Wage per hour per wage category.	Everything above that controls sales quantity Inventory readiness Purchasing behaviour Production technology Quality control Production planning
Contribution margin	Everything above	Everything above
Selling, General & Administrative Costs (SG&A)	The number of employees per wage category Wage per month per wage category The number of days travelling per category Price per day of travelling per category The number of office equipment per category Price per office equipments per category	Everything above that can affect sales quantity and can be adaptet to entire units of capacity Travel guideline Car pool arrangements Work environment Organisation form
EBIT, Earnings before interest and taxes	Everything above	Everything above

Figure 4.2 Examples of operative and controlling elements that affect net earnings

Action plans

The depth of the budgeting on the controlling elements may be deciding for the degree of detail with which the behaviour of the organizational behaviour is translated into plans and instructions for the budgeting period. The company is here faced with a choice. A high degree of *action control* will cause the controlling elements to take shape of an actual *action plan*. This means that a large part of the organizational behaviour in the company is determined before the budget period and showed in instructions and plans. This type of action control also constrain or direct employees decisions and action choices which makes the part of control characterized as operational control a relatively smaller part (see also chapter 2).

Conversely, a low degree of control will lead to only a few actions will be decided before the budgeting period. This could be a consequence of decentralization of decision rights to the employees which gives them more freedom to improvise and adapt their decisions to the changes in the market. In addition the majority of management will happen as operative decisions where planning either only covers very short periods or where management will take place alongside the execution in the budgeting period.

There are at least two reasons why managers of a company want to have control over the controlling elements. Firstly, the income statement items are composites that are affected by many organizational units within the

company. Seen from a managerial point of view, the different income statement items are often a very aggregated mean to evaluate the quality and effort of the involved organizational units. The budget, therefore, becomes a tool where the organization's behaviour through the controlling elements can be tied to the revenue, costs and performance drivers. Secondly, there are often differences in time between action and effect on the result. The result of a given period in the form of revenue, cost and profit can thus be explained by actions in both previous and current budget periods. There exist in principle four different types of actions plans that have different purposes and strengths.

Firstly, it might be the case that action plans have the shape of *action descriptions* and in words and possible graphics describes the timely execution as well as who in the organization will be involved in connection with the execution of the action. This form of plans can be used, for example, in cases where there are special and unique relationships. This could be experiments regarding new production technology, new kinds of sales promotions, and participations in bigger industry fairs.

Secondly, action plans can be focused on *rules of procedure.* This form or action plans is especially useful within areas characterized by a high degree of repetitive behaviour. This applies in many areas within procurement, production, sales and administration. Examples could be rules of procedure about the choice of supplier, instructions for the execution of processing operations, compliant rules in sales as well as debt collection procedures. But also the budget procedure as well as quality procedures like ISO 9000 are an example of rules of procedure. In general rules of procedure have their strength in situations where actions is required to be performed consistently and with the same quality every time.

Thirdly, action plans can take the form of *management of the action's quantity.* With this type of action plans the company formulates objectives and targets for the quantity of actions within a given area. This type of action plans put a lot of weight on performing action control. This can, for example, be the number of price enquiries with suppliers when purchasing raw materials, the number of client visits per sales man/account manager per district, and the number of sample tests per period in the quality control. An assumption for the use of this form of action plans is that the tasks can be limited and described fairly precise.

Fourthly, action plans can be designed with the intention of *management of the effect of the actions.* This is about defining the requirements to the measurable effect of a given type of actions. The focus is, thus, changed from target setting of the action itself in the form of action control and towards a target setting of the effect of the action in the form of *result control*. This is especially relevant in areas where it is important that there are possibilities for improvisation for the employees when performing a certain task. An example could be company sales and customer contact where the goal instead of the number of customer visits per period is about the turnover and contribution margin, percentage of sale purchase by first-time buyers as well as the number of enquiries from potential new customers.

The practical organization of budgeting

An important question in companies is how the periodic operational and financial planning and control system should be organized. According to the criticism in practice on budgeting exemplified above by Neely et al (2001) companies need to carefully discuss how to tackle the mentioned possible obstacles in the budgeting. When designing and implementing budgeting systems companies at least need to consider and address the following questions:

1. *What* purposes of the budgeting system are critical for the success of the company (see also the section above on the purposes of budgeting in planning and control)?

2. *How* do the company ensure that the budgeting process is an organized and involving process (budget procedure)?
3. *Who* should participate in the different phases of the budget procedure and what are their tasks and responsibilities (budget participation)?
4. *What* planning and control cycles should the company choose (fixed period, rolling budgeting)
5. *What* level of sophistication and planning depth should the budgeting system have and what technical design choices are available (aggregate or detailed segmentation; trade of between financial, quantitative and qualitative data)?

This section will focus on point 2-4 four. The first question is addressed in the prior section while the last question is addressed in the next section.

Budget procedure and budget participation

One important point of criticism of budgeting in practice is that it is often a time consuming process that doesn´t add much value to the organization. One of the challenging questions that need to be addressed is therefore how the company achieve that the budgeting process is an organized and involving process that safeguards commitment and performance among the employees. One possible solution may be to split the budget process into as passive phase and an active phase. The purpose of the passive phase is to create a forecast for the budget period that describes the expected economic consequences for the company assuming the organization have the same level of operations, resources and technology compared to earlier. The idea is, thus, to describe how the performance will be assuming an unchanged action plan. The passive phase is therefore characterized by primarily being an accounting forecast where the company corrects for the expected changes in the market conditions and strategic framework accordingly. The passive forecast is the foundation for the active phase of budgeting. The active phase is then to decide in which direction management wishes to take the company as well as which initiatives must be carried out to achieve the desired situation. If that idea is pursued the total budget procedure can be divided into four different phases.

- The *passive phase of budgeting* (what are the financial consequences if we do the same as usual?)
- The *active phase of budgeting* (what can and will we do differently?)
- *Budget control* (what is the outcome of our efforts compared to the expectations?)
- *Budget revision* (do we need to update or change sub-budgets?)

The passive phase of budgeting

The passive phase starts with a *situation analysis* ex post. The basis of the situation analysis is a clarification about the degree of *goal achievement* that the company has been capable of achieving. This requires that the company has formulated some well-defined targets per period, for example a goal for the size of revenue, gross profit and net earnings, resource usage, market share per sub-market, growth, efficiency in purchasing and production as well as targets for the aspects concerning the capital structure of equity financing of the company.

The next step is the *main analysis* of the company's profitability pattern, its development direction and speed. This should be compared with the strategic plans that the company aims at in the long-term. The analysis would normally contain more than one period (3-5 years). The analysis is built so that it describes a development process where the budget is the next stage.

The main analysis starting point is normally sales and its composition. It is through the sale that the link to the company costs must be analyzed. The revenue therefore has to be segmented, for example, per product group, per customer group, per sales channel and per market. An important purpose with the main analysis is to derive relative linkages regarding profitability development. This can be done by supporting the analysis with ratios such as:

- Ratio with the activity as the basis of calculations. This is vertical ratios that focuses on the relative connections between revenue, cost and cost data, for example, contribution ratio.
- Ratio with a base period as the basis of calculations. This can, for example, be index numbers that describes the development in revenue and cost over time.
- Ratio with a previous period as basis of calculation. Here the development is concentrated on the last two periods where, among others, the percentage change is a central ratio.
- Ratio with a sum as basis for calculation. This is often concerned with the more aggregated linkages such as profit ratio, asset turnover, Return on Investment etc.

The market conditions are characterized by the company cannot directly control them. However it is important to be aware that these factors that can be defining for the economic development of the company. To ensure the necessary quality in the economic management the company has to clarify and establish the assumptions regarding factors in the market conditions that it is especially economically sensitive towards.

Among others, the assumptions concern:

- The general development in the markets
- The customers expected behaviour and purchasing power per market segment.
- The number of competitors, strategies and market behaviour
- Inflation
- Exchange rates
- Changes in legislation and politics on the most important markets
- Technological development within the production and manufacturing technology
- Conditions on the labour market, including expected wage development.
- Supplier relationship and competitive development, including the expected price developments on raw materials, intermediates and other goods and services that the company purchases.
- An evaluation of the potential scarce resources likes for example raw materials, supplier capacity and man power.
- Social and environmental factors.

Since the expectations toward the market conditions it is a crucial foundation for budgeting these will have to be forecasted early on in the budget process. They could be the basis for the choice and execution of the action plans that the company base the budget on. Normally, it is case of forecasting so they describe the development in comparison to earlier. Hereby it becomes possible to create an immediate reference to the situation analysis.

The strategic framework concerns the resource linkages between the material, human, and financial resources. It is mostly concerning resources that cost-wise show a low degree of variability and/or reversibility. As a result, the resources will, to the extent that the company is working close to its capacity constraints, be able to act as key capacities in the economic management. In the budget the capacity limits will have to be specified as capacity available per period while considering the following:

- Changes in capacity limits according to investments
- Planned loss in connection with vacations and holidays.
- Capacity loss as a result of scheduled repairs and maintenance of plant and equipment.
- Training of employees
- Expected labour efficiency under the given technological and environmental conditions.
-

The passive phase is, in summary, a forecast that describes the expected economic situation in form of result and liquidity development according to the level of specification that the company has chosen to control from.

The active phase of budgeting

As the first step in this phase the passive forecast has to be evaluated against the goals that have been derived and presented in the company's strategic plans. Hereby, it is possible to analyse the linkage between the formulated objectives and targets on the one side and the expected performance on the other. It should, thus, become clear whether or not there is consistency between objectives and expected performance or if a gap exists between these. Managers needs carefully to analyse the underlying assumptions that the situation analysis and the passive forecast is based on as gaming on goal setting and budgeting is a well-known phenomenon in organizations. Especially in cases where past performance is used more or less mechanically to set the budget targets for the coming period. This, which is called the *ratchet effect*, normally leads to an upward adjustment of the budget targets. In these situations research has shown that the agents in the organization try to adjust their performance by reducing their efforts in an attempt to get lower targets for the coming year[12]. The reason for doing that it then becomes easier to achieve the targets in the budget period.

Management directives and assumption concerns its evaluation of the economic situation according to the passive phase. It is the task of the management to decide the requirements regarding the surrounding work conditions and strategic objectives that will be communicated to the company organization. In the passive phase management has usually not been involved. The work of specifying internal and external work conditions is normally done by persons in the accounting or sales function, possibly with support from production and procurement.

It is in the active phase that the discussion on the *budget goals* for the organization really starts (see also box 1 in figure 4.3). A common question is to what extent and how the organization as such should be involved in the goal formulation and goal setting process as well as in the budgeting process as such. In cases where the subordinates are involved in this process we have a situation of *participative budgeting*[13] where they have impact on the setting of goals they are held responsible for achieving. There seems to be at least two arguments in the literature by using participative budgeting. Firstly the involvement in itself enhances the motivation among the participants as they are taken seriously. Secondly there should be advantages by using local knowledge about markets, production, procurement etc. in cases where that knowledge are superior to the general knowledge and therefore can enhance the quality of the budgeting process. It may especially in the more imaginative phase of budgeting which is concerned with the decentralized action programming and coordination that the organisational units should be involved and voice their ideas and inputs to action alternatives that can lead to a higher degree of goal achievement than what the passive forecast suggests.

[12] See Bouwens & Kroos (2011) for a recent example on goal ratcheting.
[13] See also Covaleski et all (2006) for the research done on and effects of participative Budgeting.

Budgeting includes in principle all departments and functions of the firm. However the components that should be budgeted as well as the budgeting depth may differ between different companies. In figure 4.3 the components of a master budget system are illustrated **f**or a typical manufacturing company. However some of the elements are also valid for trading and service companies. The master budget typically consist of two elements named operating budgets and financial budgets.

According to figure 4.3 the operating budget normally consist of:

1. The sales budget (box 2) that identifies the expected number of units of goods/services sold at different prices.
2. The pre-calculation of costs of goods sold (box 3) as an element in maximizing the contribution margin for the sales mix of products/services to customers.
3. The production budget (box 4) schedules the expected production of goods in the period
4. The procurement budget (box 5) that identifies the need for materials, intermediates and finished goods (box 7).
5. The labour hiring budget (box 8) identifies the need for people in the organization given the expected activity level.
6. The factory overhead budget that identifies the need for resources in the production related activities of the company (box 9).
7. The sales, general and administrative costs budget (SG&A) then identifies the need for research & development, selling and administration as well as different discretionary expenses in the form of rent, advertising, insurances etc. (box 10).
8. The capital spending budget (box 11) that specifies the expected long term investments in the form of buildings, machinery and equipment.

The starting point would be target setting and budgeting of the sales, cost of goods sold and contribution margin of the different products to the different customers. This has to be coordinated with production and procurement plans in the company which has effect on the procurement of materials, the direct labour hiring plan as well as the factory overhead. That coordination will at the same time have an effect on the size of inventory of materials, work in progress and finished goods.

Factory overhead are all manufacturing costs that are related to a cost object (work in progress finished goods) but cannot be traced directly to the objects. Indirect materials such as lubricants, indirect manufacturing people such as cleaning and maintenance labor as well as salary to planning people and plant managers are examples of manufacturing overhead costs. But also plant rent, insurance, depreciation and taxes are examples of factory overhead costs. For these costs, that are also called indirect production (manufacturing) costs, it should be decided if they should be allocated to the products to pursue a full manufacturing cost principle (absorption costing). Alternatively they could be kept out of the product calculation to pursue a contribution margin concept.

The selling, general and administrative expenses (SG&A) are a broad expense category that encompasses costs related to selling and administration. The challenge for companies in managing these costs is therefore to align these as possible in relation to its expected activity of the company. Some service companies as well as companies within the public sector e.g. universities are characterised by having their primary focus on these costs and how they are related to the output in form of education, research and other services they provide to the community.

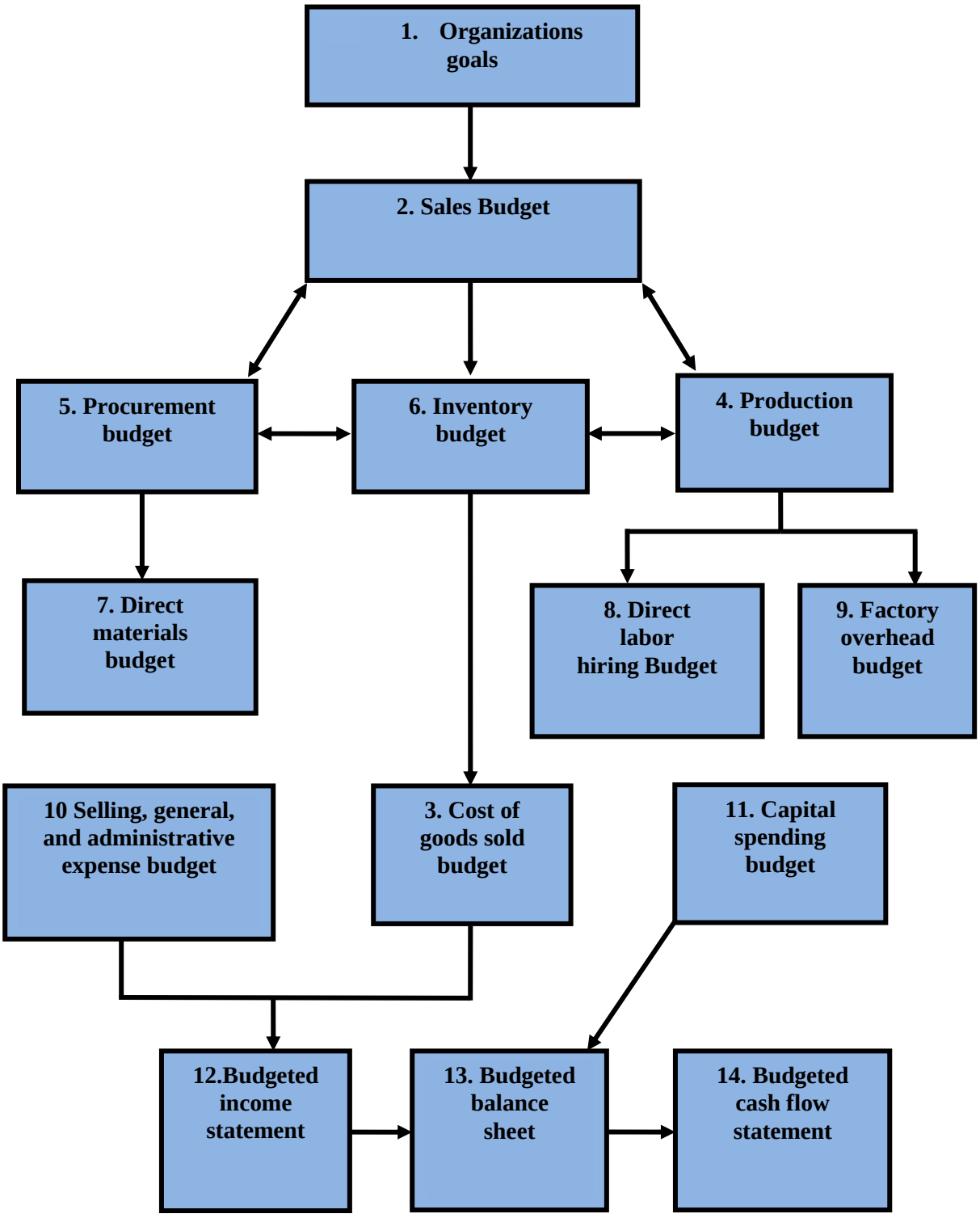

Figure 4.3 The components that constitute the budgeting system of the company.

In the section on operating budgets we will look closer on how the company type as well as other contingency factors that may affect the planning depth and the need for coordination within:

- Budgeting of sales, cost of goods sold and contribution margin as well as production, procurement and inventory
- Budgeting of factory overheads as well as selling, general and administrative expenses (SG&A)

The methodology on capital budgeting and investment analysis is treated in chapter 7 while the cash flow budgeting as well as well as other assets and liabilities than inventory will be omitted in this book. The consequences of the operating budgets are collapsed in a budgeted income statement, a budgeted balance sheet and a budgeted cash flow statement.

Budget control

Management in the form of budgeting includes a follow-up on the goals and plans documented in the budget according to figure 4.3. This phase is called *budget control.* First of all in many companies it is important element in the evaluation of the performance and rewarding of the organization and individuals. But at the same time it creates a foundation for a learning process that the organizational units can work with when budget deviations have to be interpreted. This acts as a starting point for initiating new ideas and better alternatives in the future. One important question here is how often budget deviations should be communicated within the organization. The company therefore must decide:

• what period length, the budget shall cover?
• How often the company through budgetary control needs to follow up on whether it stays on track?

Choice of period length in principle concerns whether one should work with a fixed period length, for example, a year may be subdivided into shorter periods, in terms of quarters, months or weeks. Or you should choose rolling budgeting that is working with a schedule that is characterized by a chain of budget control and budget revisions. With predefined intervals the budgets must be revised. It means that you have brought a procedure in which managers and employees must decide whether their previous budgets should be changed. This is linked to a budgetary control for the latest budget period. Another characteristic of rolling budgeting are obviously the budget roll. It assumes that each possible budget revision is considered as a re-budgeting, that each time must be done with a given fixed time frame. This fixed time horizon is called *rolling period*. The *revision period* covers the period to go before the budget control and budget revision is made. If the roll period is established for a year and the revision period is established for a quarter, it means that every quarter is budgeted a total of 4 times. After 1. quarter a budgetary control of the past period as well a budget revision of the next 3 quarters is made. But in addition a new fourth quarter is budgeted. An argument for using rolling budgets is that new knowledge can be incorporated. Another common characteristic of the approach is that it works with a constant planning horizons. Rolling budgeting is in addition a participatory planning process with emphasis on the need for changes in the operative elements as well as action plans. Frequent budgeting in a great depth burden the employees involved while it requires fast data processing. In cases where it takes long time to get the financial and budgetary control ready, the company will be well on the way down the next quarter when the budget control is ready. Thus, part of the next quarter has gone before managers and employees can discuss changing the budget for this quarter. They could therefore easily be tempted to adjust the budget to the reality that the company is starting to realize, which not the purpose of budgeting. The idea of budgeting should just be to provide a different and better reality. Another point of criticism raised against rolling budgeting in practice is

that there can be a tendency to that budgeting only really serious happens in the nearest term, while the periods which lie farther away are made more superficial, as they still must be revised an budgeted again.

Budget Revision

Budget revision means a change in an already prepared and accepted budget. Normally a company should only change an approved budget if there are strong arguments for doing so. The reason is, among others, that changes in the budget reflect changes in action plans. This requires re-budgeting in all the organizational units affected by the budget revision. However, there can be situations where a revision of the budget can be relevant.

Firstly, there can be situation where the company splits up its annual budget into sub-budgets. Only for the closest period a detailed action plan is created. For the other periods the company only does an overall estimation of the economic development. Examples of this way of budgeting exist within the fashion industry. Within this industry both assortments and sales planes for every six month period can be managed with significant freedom. It is therefore natural to only create detailed action plans for the activity for six month periods. The consequence is that the second six month period must be re-budgeted. Therefore, the year as an overall budget period can still be a meaningful period seen from the control of certain cost budgets as well as for investment budgets and liquidity planning.

Secondly, it can be the case that the original budget is scrapped and replaced by a new one. However, this should be the exception since it requires the whole budgeting process to be repeated. Naturally, there can be situations where considerable unforeseen changes in the market conditions make a total rejection and re-budgeting necessary.

Thirdly, sometimes one or more sub-budgets are rejected. The same comments as above are applicable regarding when such a situation is necessary. However, re-budgeting of one sub-budget must be done without affecting the other sub-budgets in the company. An example of this could be a change in the company's investment plans which do not have to affect the other sub-budgets for the period. Similarly, sudden sales opportunities in a given market will only require a revision of this particular budget while the other market budgets remain untouched.

Budget additions can be made necessary by changes in the time of the execution of the action plan or redistribution of action plans between the periods of the budget period. Additionally, budget additions can be characterized by pure sum changes of the result and liquidity forecast for the budget period. This form of sum correction does normally not affect the action plans.

Operating budgets

Operating budgets are characterized by being a planning system that can be used for periodic economic management of the company. To be able to work this way there are a number of requirements regarding the content and construction that must be fulfilled. First of all operating budgets have to be adapted to the special characteristics of the individual company. For example, the budget format will differ with regards to content and structure in a trading company, a stock producing company, a contract manufacturing company and a service company because the resources, processes, products and organizational division are different. Secondly Operating budget has to be adapted to the company's chosen form of government. One could look at it as a Chinese box system where it is the strategic decisions that set the frame for the tactical decisions that again set the frame for the operational decisions. A clarification of the role of the budget as a mean to implement the strategy is an important task for managers to solve even if that link seems to be missing in some organizations[14].

[14] See also Kaplan, R.S & Norton, D.P. (2001) Transforming the Balanced Scorecard from Performance Measurement to

Likewise the choice of budgeting depth on the operative and controlling elements will affect the operational decisions (see also figure 4.1 and 4.2). A deep planning and specification of the operative and controlling elements in Budgets may reduce the employee's autonomy to make operational decisions and vice versa. As an example if the sales budget is specified as a number of items per product number per period this may force he salesmen to try to achieve that requirement even in cases where freedom to make operational decisions may lead to other combinations of products with higher total profitability. Thirdly operating budget must be adapted to the financial structure of the company. The choice budgeting specification and depth is also affected by how important different revenue and cost drivers are for the generation of value. The higher importance the more attention managers will have on these in the periodic planning.

Budgeting of sales, cost of goods sold and contribution margin

According to figure 4.3 budgeting of sales, cost of goods sold and contribution margin/gross profit budget is the starting point in many companies. In addition and depending on company type as well as choice of budgeting method the production-, procurement- and inventory planning is more or less an integrated part of that system.

There are in principle 4 different budgeting methods that are characterized by having a different degree of specification regarding the operative elements. This forms an independent level of management and is therefore a crucial factor in the construction of the budget's quantitative part. This is concerned with finding the necessary and sufficient degree of specification. The four different methods are named:

- Direct budgeting of the activity
- Modified direct budgeting of the activity
- Indirect budgeting using the number of capacity units as the goal for activity volume
- Indirect budgeting from sales goals in amounts

Figure 4.4 – 4-7 summarizes the content of the four methods. It can be seen from the figures that direct budgeting of the activity is the method that has the highest degree of specification on the operative elements and depth of control. Modified direct budgeting as well as indirect budgeting using the number of capacity units has some specification on the operative elements while Indirect budgeting from sales targets in amounts has no specification on the operative elements. The different budgeting methods also give rise to different possibilities with regard to the degree of coordination which is a function of management depth on the operative elements. Direct budgeting can, thus, give the possibility for a complete budget control of purchases and production based on sales volume. Conversely, indirect budgeting from the sale in amounts does not give the possibility for budget control of purchases and production from the sale. The following section will describe the content of each method as well as some recommendations of when and how to use each of them.

Direct budgeting of the sales activity

Figure 4.4 shows a model for direct budgeting of the activity's contribution margin in a manufacturing company. The method is based on product sales and its expected composition. The operative elements are budgeted separately in quantity and prices. The variable costs are budgeted in a similar way. But besides from being based in sales it also takes into account the production and purchasing characteristics. The income statement items are calculated on the basis of the operational elements as aggregated amounts that show the company's expected sales revenues, Cost of Goods Sold and Contribution margin.

Financial Resuls	Operative elements		
Direct Bidetang			
Revenue	No. of units per product number	x	Price per unit per product number
Cost of Goods Sold	No. of units per product number	x	Variable Costs per unit per product number
Contribution margin	No. of units per product number	x	Contribution Margin per unit per product number
Pre-calculation per product number			
Materials	No. of material units per material number	x	Price per unit per product number
Salary	No. of salary hours per process	x	Variable Costs per unit per product number
Other Variable Costs	Statistical supplement for waste, discarding, time loss, sick leave etc.		

Figure 4.4 Direct Budgeting of activity

In its pure form the method implies that the company specifies a sales forecast per product number.
At the same time the method requires a *pre-calculation* per item as shown in figure 4.4. The pre-calculation consists of the physical specifications such as receipts and bills of materials and operations lists for manufacturing pay in the cases where this can also be classified as variable costs. In these the number of units of material is specified per material item as well as norms for processing time per process for each unit of finished goods. In cases where the company can express the operative elements in the pre-calculations according to the principles in figure 4.4 the use of this method makes it possible to manage the profitability of each product number very deeply as well as the planning of product and customer mix for the budget period. At the same time it allows thorough planning of the physical control of purchasing, production and sales. It will then be possible to break up the sales forecast into both a detailed plan for production of finished and intermediate goods and a plan for procurement of materials and intermediates. By this the company has, through the operative elements, established a foundation for management *coordination* between purchasing-, production and sales functions. What is left is only to decide whether or not the company really needs that level of control.

A prerequisite for the use of direct budgeting is that the method assumes a high degree of forecast certainty. This applies for the first sales forecast that must be based on the different markets and customer segments and for each of these is able to map the customer buying behavior med a sufficient high degree of precision. But it also applies for the forecast data that has to be estimated for the variable costs. The calculations have to reflect a good

forecast of costs. This means that the company has to be able to forecast material and time consumption, prices of materials and wage as well as waste and rejection percentages. These data has to be updated with regards to the production that is expected to apply for the budgeting period. This requires detailed knowledge about often complex purchasing and production patterns that mutually must be adjusted to create a high degree of forecast certainty. In summary, direct budgeting requires the following forecast data:

- A sales forecast per market and per customer segment, specified per item
- A forecast of sales prices per item per market and per customer segment
- Updated pre-calculations per item containing:
    - Forecast of material price per material item
    - Forecast of wage rates per wage type
    - Forecast of material efficiency per process
    - Forecast of hourly efficiency for the use of labour hours per process
    - Forecast of hourly efficiency for capacity requirements per process
    - Forecast of capacity and capacity constraints per process or capacity type at normal labour hours
    - Forecast of extraordinary costs if capacity constraints are exceeded, by for example overtime pay and buying instead of producing

The major advantages by using direct budgeting is the management depth that the model allows where the above mentioned prerequisites are fulfilled. It forces the salespeople to really think through what they will be able to sell in the coming period as this is the starting point for a profitable use of the capacity. At the same time the method safeguard deep operational planning and coordination between sales, production and procurement as the sales plan through the pre-calculation can be translated to a production and procurement plan which also affects the size of the inventories positively. This is applicable for companies that produce and sell standard goods. But it is also valid for the part of the orders in contract manufacturing companies that is already signed and accepted as they normally would have a clear content specification.

In cases where the market knowledge isn´t sufficient enough to create a valid forecast per product number the method may in some cases force the sales organization to base the prognosis on guess work to fulfil the requirements of Direct Budgeting. Under these circumstances the sales forecast simply express a degree of control that the sales organizations cannot effectively meet. This can be problematic in situations where the production and purchasing departments plan and execute their production and procurement based on the detailed sales forecast. A consequence of that could be a build-up of inventory that is not possible for the company to sell on normal supply conditions. Another point of criticism could be that the detail of model makes it time consuming and therefore expensive to use. Therefore it is important to notice that the organization should only use the direct budgeting when there is a need for detailed planning and coordination of the activity. In the appendix to the chapter a numerical example shows how the direct budgeting method works.

Modified direct budgeting of the sales activity

In many companies it is either not possible or of less importance to use each item as the basis for profitability control of that activity. This can be due to the fact that the number of items is so high and customer orders so large that the company does not start production until the order has been submitted. The last example is applicable in the steel industry. It can also be the case that the different items more or less are substitutes from the customer's point of view. This is, for example, the case with wood planks or paper in different variants. But it could also be the case for products like clothes, toys, and electronically devices like pocket cameras where models are shifting quickly over time. The individual item can here within certain limits be used for the same

purpose. It is primarily the taste of the customers that decides their possibly more or less random choice. In these cases it will be difficult to achieve a satisfying forecast certainty for the sale of the individual item.

The company may in these situations be better off from a managerial perspective, by not including a sales forecast per item. An estimated total volume common for many items will often, due to the law of large numbers be a fairly reliable measure for sales volume. It could, for example, be calculating the sale of steel and paper in kilo or ton or the sale of wood and timber in cubic meter. Sales price, variable cost and contribution margin is hereafter budgeted by the average per common volume unit. These examples show cases where *modified direct budgeting* as seen in figure 4.5 can be the most relevant method for budgeting of the contribution margin of the activity. A critical assumption about the use of modified direct budgeting is that the *common volume unit* can be used as an unambiguous link between the sales volume of the activity and the related capacity usage in the production. This linkage is crucial for the profitability with regards to the economical marginal benefit. If the assumption is not fulfilled it will not be possible to calculate the capacity usage of the activity. It is thus not possible to implement a profitability controlled prioritization of the sale in case of full capacity usage and exceeded capacity.

Financial Resuls	**Operative elements**		
Modified Direct Budgeting			
Revenue	No. of common volume units per sales group	x	Average price per common volume unit per sales group
Cost of Goods Sold	No. of common volume units per sales group	x	Average variable costs per common volume unit per sales group
Contribution margin	No. of common volume units per sales group	x	Average contribution margin per common volume unit per sales group

Figure 4.5 Modified direct budgeting

Selling price, variable cost and contribution margin are described as ratios per common volume unit. The ratios have to be calculated from the company's contribution margin account as average numbers and afterwards corrected for the expected change in sales price and cost data.

In summary, the modified direct budgeting requires the following forecast data:

- A sales forecast per market and customer segment for a sum of items and expressed as the common volume unit and with sales prices calculated as the average per common volume unit.
- Forecast of changes in material prices either totally or per group of material med the same change in price index
- Forecast of changes in wage rates
- Forecast of material efficiency per process
- Forecast of hourly efficiency for the consumption of labour per process
- Forecast of capacity and capacity constraints, calculated in the common volume unit per capacity type at normal labour hours
- Forecast of extra cost imposed by exceeding the capacity limits by, for example, pay over time or extra costs of buying instead of producing

According to the criticism of budgeting in practice this method is much simpler to use compared to direct budgeting of sales activity and therefore less expensive and time consuming. The sales forecast in this model as well as the pre-calculation only needs to be carried out at an aggregate level in common volume units. However one should be aware that the model doesn´t allow for the same depth of coordination between sale, production and procurement and therefore not the same depth of coordination between the operational planning and the financial planning as the direct budgeting does. In the appendix to the chapter a numerical example shows how the modified direct budgeting method works.

Indirect budgeting of the sales activity using the number of capacity units as the goal for activity volume

A number of companies cannot use the direct methods for activity budgeting. This is typically true for service companies as well as the companies that produce according to orders and customer specifications. These companies have at the time of budget preparation only limited knowledge about which specific services and products to sell. The primary common denominator in these kinds of companies is that they offer a special competence. This can, for example, be technical competence in the consulting engineering company or a competence regarding offset printing in a printing company. For this purpose a special capacity device has been established that makes it possible to translate the special competence into the products and services requested by the customers. Often the only relevant common volume unit for the volume of the activity and its capacity usage will be *the number of capacity units.* Capacity usage is used as an indirect expression for the volume of the activity, hence the name *indirect budgeting of sales from the number of capacity units.* The model for indirect budgeting in figure 4.6 has, however, several similarities with modified direct budgeting. The most significant difference is that the activity is budgeted as the number of capacity units. In the consulting firm they, thus, prepare budgets with the budgeted amount of consulting hours and in the printing company with the budgeted number of hours of printing capacity. However, the requirements for the forecast data is in many ways also identical to what is described under modified direct budgeting.

Financial results	Operative elements		
Indirect Budgeting out of capacity use			
Revenue	No. of capacity units per sales group	x	Average price per capacity unit per sales group
Cost of Goods Sold	No. of capacity units per sales group	x	Average variable costs per capacity unit per sales group
Contribution margin	No. of capacity units per sales group	x	Average contribution margin per capacity unit per sales group

Figure 4.6 Indirect budgeting out of capacity use

The difference between the two methods is the primarily due to the type of company. However, the more the product unit can be used as common denominator for more goods with a certain degree of identical characteristics with regards to material use and production process, the more relevant is modified direct budgeting as a method. Conversely, the less the product unit can be used as common denominator for the activity, the more is in favour of using indirect budgeting from capacity usage as a method. In the appendix to the chapter a numerical example shows how the *indirect budgeting using the number of capacity units* direct works.

Indirect budgeting from sales goals in amounts

The method *indirect budgeting from sales targets in amounts* is characterised by no management of the operative elements. This is pure sum-budgeting where volume and sales prices alone appear with their sum in the income statement items.

Figure 4.7 illustrates the basic model for indirect budgeting from the sales sum in amount. The starting point is sales, maybe divided into sales groups. This assumes that changes in sales volume and sales prices with a starting point in the current level weighed against the expected change in sales in amounts for the budget period. The profitability is, hereafter, budgeted from the expected *contribution ratio.* The size of the contribution margin is determined from an assessment of whether the competition or the sales strategy gives rise to adjustments with regards to the level the company so far has achieved. The variable cost resulting from the contribution margin's complementary number. It is, however, also in this method possible to specify the variable cost per type with indicating specific forecast data.

Financial results	Operative elements		
Indirect Budgeting from sales sum in amounts			
Revenue	Sales targets in amounts per sales group		
Cost of Goods Sold	Sales targets in amounts per sales group	x	(1 – contribution ratio)
Contribution margin	Sales targets in amounts per sales group	x	contribution ratio

Figure 4.7 Indirect budgeting from sales targets in amounts

The advantage of the method is in general that it is very easy to use and therefore meets the criticism that budgeting is time consuming. The pronounced weakness of the method is that it does not give the possibility of creating a link between the activity volume and the capacity usage. In companies with a wide and deep range of goods and no capacity constraints this form of budgeting can be used.

The method is obvious to use in trading companies. A lot of trading companies are characterised by both a broad and wide selection of goods that are calculated in incomparable volume units. At the same time there is often no need for a forecast of the number of items per product number or per common volume units as there are a lot of substitution among products that can lead to a certain revenue and profitability. Deep coordination of operational and financial plans will therefore often be of less or no importance to the trading company's profitability.

However, one should be careful by using this method in manufacturing and service companies. This is first and foremost due to the lack of linkage between the demands of the activity on the capacity. In addition, the complete lack of management of the operative elements cannot easily be omitted as coordination tool between purchasing, production and sales departments. In the appendix to the chapter a numerical example shows how the *indirect budgeting from sales targets in amounts* works.

Criteria for choice of method

The characteristics of the product or service
Companies, characterised by producing for inventory with a defined assortment, normally fulfils the criteria for using direct budgeting as a form of management. For example, this could be the case for manufacturing and sale

of furniture, office equipment and household appliances such as washing machines and stoves. These companies fulfil the most important requirement, that is, that they know the items that will be produced and sold ahead of the budget period. They can therefore be specified in their physical content based on receipts and bills on materials and intermediate goods. In a similar way can operating lists describe the manufacturing processes the products must go through. By further forecasting prices of material and labour the budgeting becomes linked with the physical control.

Contract manufacturing companies whose production happens according to customer specification only have the possibility to use direct budgeting for the part of the activity that at time of budgeting is already in the order backlog. This is the only part of the activity that the company knows the physical specifications of. This is often the case for contract manufacturing companies with a short production time, for example, book printing as well as component producing companies within timber, metal and plastics, that the order backlog is only a limited part of the expected activity of budget period. For the expected new orders it is only possible to use the modified direct budgeting or indirect budgeting from capacity usage methods. For companies that have contract manufacturing with long production times there is a special variant since the activity budget will have to be divided into three parts. The first part deals with a budget for sales, variable cost and contribution margin for the orders for the orders that is expected to be completed and booked during the period. The second part deals with a gross budget for the expected new orders during the period. The third part deals with a plan for the sales actions that should lead to new orders in the subsequent periods. Examples of companies that will have to budget this way is shipyards, heavy engineering and construction companies.

Companies within the fashion or shoe industry as well as certain types of IT-producers are examples of companies with goods in a periodically defined assortment. I these industries you typically work with multiple product collections over the budget period. This could for fashion wear be a spring and autumn collection. It is here normally possible within the year of budgeting to use direct budgeting for the first six months and indirect budgeting for the next six months. This is due to the fact that the company only knows the physical specifications of the goods in the closest period. For companies, that choose this model, it has the consequence that they have to work with two methods of budgeting and by the end of the first six months will have to re-budget the next six months according to the direct method.

Finally, companies working with a continuously changing assortment should be mentioned. This is, for example, groceries, hardware and home furnishings. In this case, direct budgeting does not make sense due to the rapid change in items. Instead, indirect budgeting from sales goals in amounts is often the most relevant budgeting form. This is due to the fact that the physical content of the product assortment is often less relevant in the economic management of the activity. What is important in this context is that the products carried by the company makes it possible to reach the sales targets and contribution margin. The focus is therefore more on the product group's profitability in amount.

Budgeting of factory overhead and SG&A expenses

This section focuses on the management of the resources that is not in every situation controlled by the volume and the composition of the sales activity in the market. This apply for resources in procurement, production and sales functions. But it is also valid in support functions as research & development, HR, IT, Accounting etc. It is, in principle, the activity in the form of sales, production procurement of the company that creates a need for resources. It is therefore of critical importance to be able to describe the elements that is part of this connection.

In figure 4.8 a model of the levels of correlation between the activity in the market and the costs in amount. The figure describes that the forecast of the sales activity in the market creates a need for performance in the functions directly involved in the activity creation, typically sale, production, purchase and inventory. This creates a need for resources that again leads to costs. But at the same time the capacity usage in the functions directly related to the activity also creates a need for performance and resources in a number of supporting functions such as accounting, IT and HR. The model is suitable for illustrating the different methods and degree of control on the operative elements by budgeting of these cost types.

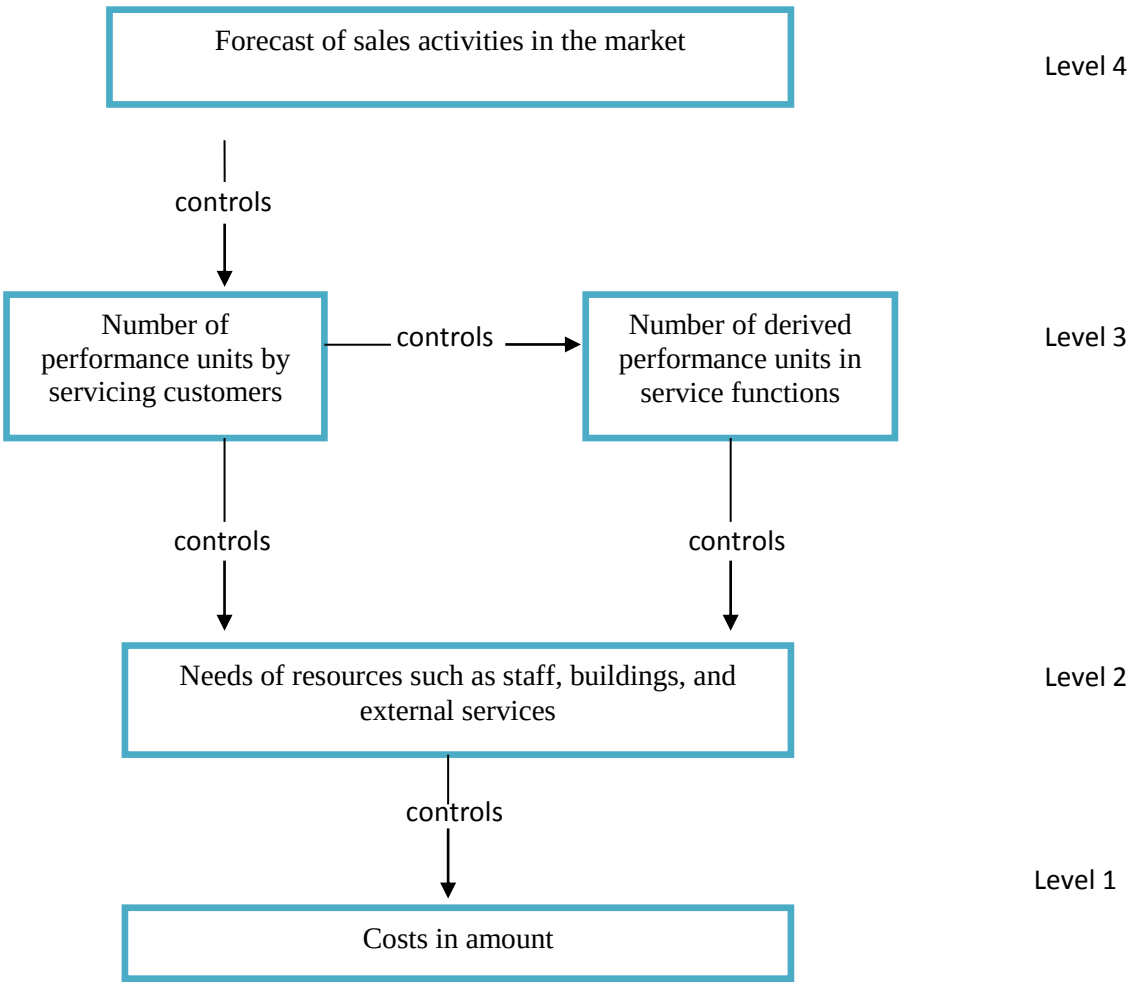

Figure 4.8 Model of the interplay between activity, resources and costs

The greatest depth of management in controlling these costs is achieved using the method where the need for resources are derived from and adapted to the expected activity level in the market. Through this a measurable linkage between the need for performance in the market, use of resources, cost units and costs in amounts is created. According to figure 4.10 the connection is created from level 4 through level 3 and 2 to level 1.

Activity related budgeting methods
One of the contributions improving resource planning using all four levels in figure 4.8 is the concept known as Activity Based Budgeting (ABB). Activity Based Budgeting has its ideological basis of the work on Activity Based Costing as Robin Cooper and Robert S. Kaplan started developing in the mid-1980s. But in contrast to Activity Based Costing, that via resource drivers traces resources to activities and hence via activity cost drivers traces the consumption of activities to products, customers and others, and then the process is reversed in Activity Based Budgeting. I figure 4.9 a model of Activity Based Budgeting is shown.

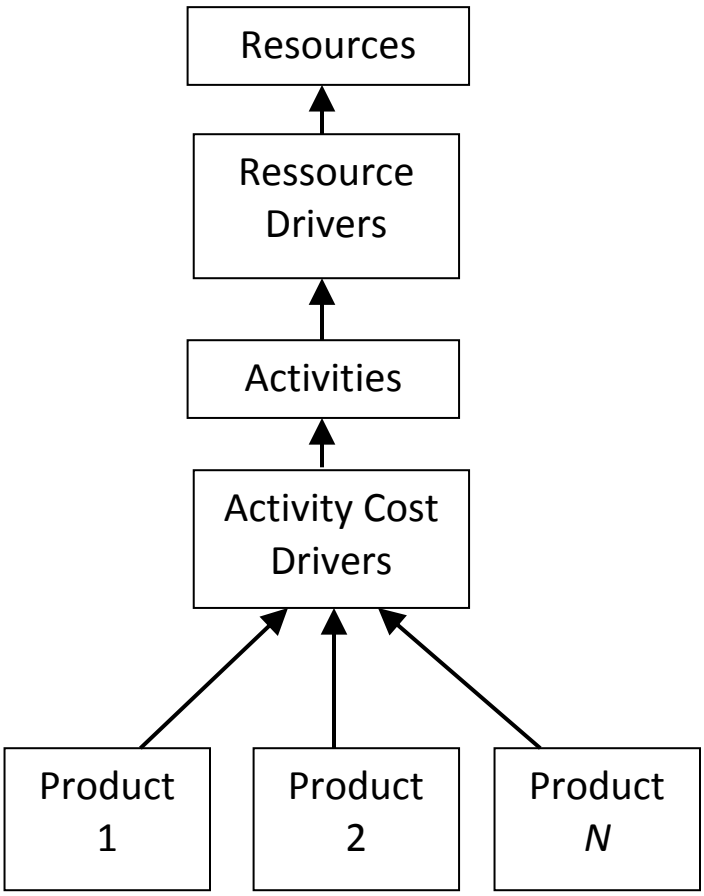

Figure 4.8 A model of Activity Based Budgeting

According to Kaplan & Cooper (1998) Activity Based Budgeting consists of the following 5 sequences:

1. Estimate next period´s expected production and sales volumes by the individual products and customers
2. Forecast the demand for organizational activities
3. Calculate the resource demands to perform the organizational activities
4. Determine the actual resource supply to meet the demands

5. Determine the activity capacity

The starting point for budgeting is a sales forecast of sales volume and mix of products to customers per period. This forms the basis for a calculation of production, stocks, purchases of materials and capacity requirements and capacity usage equivalent to how it would be done within traditional budgeting. But the specificity of Activity Based Budgeting is that the sales forecast at the same time is used to estimate the need for indirect and support activities. This can be activities in the form of, for example ordering, receiving and handling materials, scheduling and setting up production runs, and pack and ship orders. But it can, in principle be all activities that is shown in the activity catalog of the company. The link between product sales forecast and the need for activities will be done through selection of appropriate activity-cost drivers, and knowledge of how many activity-cost driver units a given quantity of products or customers demand.

The next step in this process is to translate the demand for activities to a resource demand. This means that it must be determined how many units of activity a resource unit can perform. Activities can in principle be estimated in number of activity units (transactions) or time (duration). The choice between the 2 types of drivers are guided by the homogeneity in the activities. By homogeneous activities, characterized by a very uniform time per activity, the number of units of activity relatively easily and unambiguously are translated into a use on resources in time. Alternatively, activities can be measured in time. To translate the number of expected activities into a need for resources the company must define the capacity per resource unit. There are four capacity concepts that are important to be aware of:

1. Theoretical capacity
2. Practical capacity
3. Normal capacity utilization
4. Used capacity

Theoretical capacity expressed the maximum capacity available for a given resource. An employee, hired for 40 hours per week and who is paid for 52 weeks a year has a maximum theoretical capacity of 2080 hours. From this processes like vacation, sick leave, breaks and education is subtracted so the real time at disposal to task performing for the company might only be 1600 hours. This is *the practical capacity* that expresses the time an employee has at disposal for doing the jobs he or she is intended to do in the company. Finally work planning or missing tasks can mean that you might only be able to use the employee 80% of the time at disposal. The real *used capacity* is thus only 1280 hours. In some instances there is a need for defining the *normal capacity utilization* which is the average level of utilization of the capacity over a period of time, typically 2-3 years.

When capacity is calculated, the starting point would be the practical capacity since it expresses the reel capacity available for task performing in the company. But the difference between the theoretical capacity and the practical capacity depends on a number of conditions that is determined and agreed upon in the individual company such as length of breaks, extent of training etc. It is thus a management issue to agree upon the expectations between the company and the employees regarding which conditions there should be between theoretical and practical capacity. Similarly, it is important to plan work in such a way that the practical capacity is used since a large difference between practical and used capacity indicates inefficient resource utilization. At the same time, the above means that the chosen level of service and quality is defining for how many resources is needed to perform a given number of tasks.

Product	Number of Products	Activity	Activity Cost Driver	No. of products/driver unit
Product A	100.000	Ordering materials	2000 orders	50
Product B¨	200.000	Ordering materials	2000 orders	100
Product C	300.000	Ordering materials	3000 orders	100
Product A	100.000	Set up Machines	100 set-ups	1000
Product B	200.000	Set up Machines	100 set ups	2000
Product C	300.000	Set Up Machines	150 set ups	2000
Product A	100.000	Pack and ship	1000 shipments	100
Product B	200.000	Pack and ship	1000 shipments	200
Product C	300.000	Pack and ship	1000 shipments	300

Figure 4.9 Estimation of the number of activities

In figure 4.9 a simplified example is shown on how Activity Based Budgeting works. The starting point is how many of each of the three products A, B and C that the company expects to sell in the budget period and then translate it to the number of ordering materials, set-up machines and pack and ship. As an example the 100.000 A products requires 2000 orders as it is expected to order materials for 50 products per order. For product B and C the expectation is a bit different as it is expected that there will be ordered materials for 100 products each time an order is executed. In total there is an expectation of 7000 orders in the budget period which have to be translated to a need for employees in the procurement function that can carry out the ordering activity. If it is expected that an employee in procurement can perform 700 orders per year the resource demand would be 10 employees. Similar if an order takes e.g. 2 hours in average the requirements of employee hours would be 14.000. At a practical capacity per employee of e.g. 1400 hours per year the requirement of resources would be 10 full time employees. If the supply of resources in that function is 12 employees there is excess capacity of 2 employees or 2.800 hours, that could either be considered as a capacity that are expected to be used in the future. Alternatively the company should try to get rid of that excess capacity. The final step is to calculate the monetary value of the resource supply.

In some cases the resources are characterized by being fungible to several activities. Let´s assume that a certain group of employees that set-up machines as well as pack and ship. The total demand of activities in the period is 350 set-ups and 3000 shipments. In that case it is the sum of the activities that create the resource demand in the same way as described above. Activity Based Budgeting will, in cases where the five steps in the model individually and together can be estimated with a high degree of certainty make it possible to achieve a good fit between the company's activity in the market through sales of products / services to customers and the related resources. The approach will ensure that unplanned excess capacity being identified and possibly eliminated if needed. In return, consideration should be given to which parts of the company's activities and resources of this kind of budgeting is relevant respective can be implemented. As regards relevance, it will probably hold true for the budgeting of the activities that are characterized by changes in these may trigger adjustments in the amount of the underlying resources, ie resources which are characterized by a high degree of variability. At the same time it presupposes that the correlation between sales of products/services and the various activities can be estimated. In cases where there is a more constant relationship between sales volumes and the volume of activity it would seem more appropriate than in cases where the relationship can vary more.

While Activity Based Budgeting in its most extended version has a starting point in the sales and production volumes that had to be translated to a need for different activities and finally a need for resources the estimation of resources can also be carried out through the all four levels in figure 4.8 in cases where the there is a more direct linkage between the cost object the need for resources.The following example from a sales department can illustrate this situation:

> The number of potential customers in the market → the number of customer visits per period → the expected amount of visits per seller per period by a chosen level of efficiency and service → a need for a number of "whole" sellers → wage expenses in amounts

If the company has 200 clients that must be visited twice a month it corresponds to 400 client visits. If calculations indicate that one seller can maximum visit 40 clients per month the company needs ten sellers. With a wage of 50.000 EUR per year, the yearly budgeted wage expense adds up to 500.000 EUR. For a stock and shipping function a similar example of this budgeting method could be:

> Customer purchases per period → number of lines of invoice per period → number of lines of invoice per agent at a chosen level of efficiency and service → number of "whole" agents → wage expenses in amounts.

But also in the cases where the need for a functional capacity is determined from the demand for performance in other functions, the budgeting of these costs still happens indirectly. This can be the case for a number of company service functions, see figure 4.8. The example could be an internal cleaning and maintenance function in a larger company:

> The need for cleaning in the receiving function per period → number of m^2 of cleaning per period at a chosen level of efficiency and service → number of "whole" cleaners → wage expenses in amounts.

The method requires a starting point in a precise forecast of the expected need for the activity. In the cleaning example, the need for cleaning and the planned number of m^2 of cleaning per period. It also requires a clear attitude towards performance volume per resource unit. This has to be determined taking into account the planned level of quality and service in the organization. In the cleaning example the number of m^2 of cleaning per employee per period at a given level of work efficiency and at a minimum level of quality, will have to be estimated.

The use of the method assumes that performance as well as resources both can be measured as the number of times the performance is carried out. This furthermore assumes that the performance can be determined fairly unambiguously. In the example with determining the seller capacity in the sales function it is assumed that the sales visit and the time spent is similar from time to time. If, for example, client visits vary from two to four hours, it is not possible to estimate capacity usage in the form of hours or determine the need for capacity. This is why you should use the following procedure where both time consumption per client visit as well as time available for task performance per seller, is determined:

> Number of potential customers in the market → number of customer visits per period → expected time consumption per customer visit at the chosen level of efficiency and service → total time used on customer visits → capacity in time per seller → need for "whole" sellers → wage expenses in amounts.

If it is determined that one client visit takes three hours in average it means that the company needs 1200 hours for client visits per month. If a seller has 120 hours at his disposal for client visits per month it means that there is a need for 10 sellers. With a wage of 50.000 EUR per year the budgeted wage expense is 500.000 EUR. But

here another aspect enters since the maximum capacity per period must be determined. In the example it is assumed that one seller has 120 hours at his disposal for sales per month.

Other budgeting methods

A number of costs are not directly affected by the activity in the market respective in another department why planning of resources in relation to these do not appear to be relevant. Control of these costs is therefore solely a management depth, corresponding to levels 1, 2 and 3 or in figure 4.8. Here we work with a total of six different methods; four methods are only focused on financial data according to level 1 in figure 4.8*:*

a) The number of cost units x price per cost unit
b) The number of load units x average price per burden unit
c) Budgeting according to contracts and agreements
d) Line item budgeting
e) Line item budgeting for large, one-time acquisitions
f) Calculated depreciation as an expression for depreciation per period

Ad a):

The number of cost units x price per cost unit is characterized by high management depth on the operative elements through a separate evaluation and forecast of quantities and prices. In figure 4.8 it can be illustrated as a combination of management level 1 and 2. The method is especially useful for the budgeting of wages in cases where the staffing level is decided independently from the demand of activity in the market or other functions in the company. The need for staff in the form of either hours or the number of staff and the price per staff unit per staff category must be determined. The method can likewise be used by the budgeting of consultancy services, external workers etc. It requires that the volume unit as well as the price per unit has a somewhat clear content. If this is not the case it should be considered to use the next method: The number of burden units x the average price per burden unit.

Ad b):

The number of load units x the average price per burden unit is characterized by being a more aggregate method. It basically builds on the same idea about calculating the total cost by multiplying a volume and a price. The method combines level 1 and level 3 in figure 4.8 and uses each where the costs per load unit can vary slightly. Examples of this method could be the number training days x the average price per training day or the number of days travelling x the average price per day of travelling. This, obviously, requires that the statistical spread regarding the average price is no too large since the method will hereby become too imprecise as a forecast foundation. In these case there has to be a reduction of the statistical spread regarding the average price per burden unit.

Ad c):

Budgeting according to contracts, agreements and laws is characterized by being a method that is built on a concrete foundation. Property tax, weight tariff, leasing and rent, insurance premium, subscriptions and quotas are examples of costs that can be budgeted using this method. But it is also often used for salaries to sports stars and employees at the top management level. The method typically has a very high degree of forecast certainty since the contractual basis specifies the economic conditions of the contract. However, this requires that both the contractual basis as wells as tariff regulations are known at the budgeting time.

Ad d):

Line item budgeting is characterized by being a summary budgeting method that is easy to use. This is especially due to the method's lack of demand regarding more precise analytical justification for the size of the costs. The method does not require any requirements regarding connection to neither volume data, actions nor performance. The company simply decides which amount it will allocate to a given purpose in the budget period. The method is characterized by being restrictive since exceeding the amount requires special approval. In return, the method expresses a freedom of dispositions within the allocated amount. The method is especially useful for budgeting for expense accounts, added together by a number of smaller expense accounts. This is the case for expense accounts such as office running cost, staff cost, phone, postage, minor repairs etc. But the method is also useful in the cases where the knowledge about an expense account from previous years is alone based on the account's total amount.

Ad e):

Allocated amount for large, one-time acquisitions, in principle, have the same characteristics as the above mentioned allocated amount. The reason for treating it separately is to avoid a possible confusion between accounts that systematically repeats themselves from year to year and larger accounts that are decided upon in the specific year. This kind of larger, one time acquisitions could be renovation, rebuilding, trade fair participation, anniversaries, larger planned trips etc. Confusion between these costs and the other more general cost accounts can lead to the allocated amount is raised without reason for all future periods. At the same time, it will have the consequence that larger one-time acquisitions should be budgeted on separate cost accounts.

Ad f):

Depreciation expresses the economic consumption during the period of the company's investments in the form of property, plant and equipment etc. The calculation of the depreciation in the budget period is based on the sum of the value of the existing assets as well as the expected investments during the budgeting period. The size of the total depreciation per period is partly dependent on the chosen depreciation method and partly on the time horizon over which the asset is expected to be depreciated.

The *declining balance method* uses a fixed percentage for depreciation of the asset during the period. If the company purchases a car for 30.000 EUR and uses a depreciation rate of 30%, depreciation charge for the first year will be 9.000 EUR while the residual value is 21.000 EUR. The following year depreciation charge is 6.300 EUR and the residual value is 14.700 EUR. By using this method, the depreciation charge will be highest in the

beginning and thereafter becomes smaller and smaller. It is a characteristic of the method that the residual value will never be zero.

The company can alternatively use the *linear depreciation method,* where the depreciation charge is the same in each period. If the life time of the car is assumed to be 10 years, it means that the depreciation per year will by 10% of the purchasing amount, in this example equal to 3.000 EUR per year.

The choice of method as wells as depreciation rate and life time, thus, determines how quickly the asset is depreciated. Seen from a business management perspective the choice of depreciation method and rate should as far as possible reflect the value impairment the asset is exposed to in connection with use. The residual value should, in principle, reflect the market value of the asset. Depreciation is an important element in the calculation of the total profit of a company. But it is especially decisions regarding acquisitions, utilization and elimination of capacity that should make up the managerial focus in the company.

The six methods mentioned above all represent budgeting methods where costs are determined by the individual organizational unit and independently from the demand for performance from the market. For the first two the costs are calculated as number of units x times the price per unit. Using one of these methods will allow the organization to separate the number of units and prices in planning as well as in the budget control. The last four budgeting methods are characterized by a limited degree of management depth as the only focuses on financial amounts.

Criteria for choice of method and management depth

The choice between the different budgeting methods, expresses in itself different management depths and level of knowledge in the company. The activity related budgeting methods represents a large management depth. This is due to the fact that the link between the activity, performance, capacity usage and resources by using these methods assumes a determined number of tasks per resource unit taking into account the chosen level of service. However the management depth by using one of the other methods in an organizational unit can be increased dramatically. This can happen if the methods are linked to the unit measure for capacity use. This should happen through determining relevant demands for service, quality and efficiency.

The four pure financial methods are characterized by not including volume data such as number, capacity usage or tasks. However, it may make sense to discuss task volume and capacity usage when either one of the methods cost unit x price per cost unit and number of load units x average price per load unit is used. This is due to the fact that these approaches require an explicit position on the number of performance units and or resource units which creates a natural link in a number of cases. For all budgeting methods the management depth can be increased if linked with *action plans.* Action plans specify of structure resource utilization with regards to achieving a given goal. This goes for determining the type of action, its content, volume, and time distribution. However, the company must try not to make the action plans so restrictive that it becomes an obstacle for creativity and dynamics that could lead to a better total goal achievement for the company. Each company, with its special market related and organizational characteristics, will have to choose the method and action plans that fit its work conditions and uniqueness. Companies should be aware that there is a high degree of substitution in choice of method for a given planning and management depth. A company that uses a simple budgeting in amount will, thus, be able to achieve a high management depth in its budgeting insofar that the methods are supported by a complete action plan. Conversely, the un-reflected use of a very deep budgeting where service and level of quality has not been discussed or is taken for granted, will cause a low management depth in budget control.

Beyond Budgeting

As mentioned in the beginning of this chapter it was not at least the director of Svenska Handelsbanken who was initiator of the debate, that especially was carried out in Europe under the title Beyond Budgeting and that basically gives the recommendation that the budget should be abolished.

Example
From Wallander, J. 1999. Budgeting – an unnecessary evil. Scandinavian Journal of Management, vol.15, pp. 405-421.

p. 411There is no point in making a budget if you do not believe in it. And if you believe in it you will have a strong tendency to look upon deviations from your budget curves as accidental occurrences. There is thus a risk that the budget will not help you to adjust to new circumstances but will rather retard this adjustments. A budget will thus either prove roughly right, and then it will be trite, or it will be disastrously wrong, in which it is dangerous. My conclusion is thus: Scrap it!

Also, Jeremy Hope and Robin Fraser have been significant in the debate on budgets missing relevance as a management control mechanism (Hope & Fraser 2003 a, 2003 b). Their arguments and recommendations take the starting point in the work they have done in connection with Beyond Budgeting Round Table (BBRT)[15], and that is based on observations and experience from companies which have left budgeting as a management tool. A primary reason for this is the desire to break out of this yearly fixed performance contract and instead focus on long-term value creation. Hope & Fraser have through their work identified a number of alternative elements for controlling the performance of companies that includes:

- Continuous planning
- Relative targets and benchmarking
- Rewards based on relative performance

One of the main pillars in Beyond Budgeting is a vision of safeguarding continuous planning and adaptation to changing market conditions. An important mean to accomplish this is to use of *rolling forecasts*. Unlike traditional yearly budgeting, working with a fixed time horizon of one year, rolling forecasting works with a planning horizon beyond the year. In cases where the planning horizon for example is the next 8 quarters, then at the end of the first quarter and update of the next 7 quarters as well as a forecast for a new 8 quarter are made. This means in principle that a quarterly update is made total 8 times. An advantage of this approach is that changes in the surrounding market conditions continuously are incorporated in the forecasts and thus rendered more credible. Further, the approach may lead to a limited interest among employees for manipulating the economic data, as there is no fixed performance targets to be achieved and therefore has no consequences in terms of rewards or penalties. As the focus of the periodic updates are on relatively few key variables such as, new orders, revenue, expenses and capital expenditures, it means that updates can be quickly and easily without a large use of resources in the organization. It should be noted that rolling forecasting sometimes is compared to rolling budgeting that is also characterized by working with a constant planning horizons. However there are differences between the two approaches. While rolling forecasting is concentrated on updating the financial prognosis taking into account the changing market conditions rolling budgeting are in addition a participatory

[15] See also www.bbrt.org

planning process with emphasis on the need for changes in the operative elements as well as action plans. Frequent budgeting in a great depth burden the employees involved while it requires fast data processing. In cases where it takes long time to get the financial and budgetary control ready, the company will be well on the way down the next quarter when the budget control is ready. Thus, part of the next quarter has gone before managers and employees can discuss changing the budget for this quarter. They could therefore easily be tempted to adjust the budget to the reality that the company is starting to realize, which not the purpose of budgeting. The idea of budgeting should just be to provide a different and better reality. Another point of criticism raised against budgeting in practice is that there can be a tendency to that budgeting only really serious happens in the nearest term, while the periods which lie farther away are made more superficial, as they still must be revised an budgeted again.

Another of the main points of criticism against the traditional budget is that it leads to a *fixed yearly performance contract* that is based on internally selected financial targets without a credible reference to an outside source. Instead it is recommended that the performance of the company is based on relative targets and benchmarking of performance against peers as well as world class benchmarks. The idea is based on an expectation among employees about commitment and ability to deliver results in return to get the responsibility and opportunity for personal development. One way to achieve this is to evaluate and reward performance by how good it is compared to either internal or external benchmarks you are agreed to match up against. In addition it is recommended to reward the employees based on subjective performance evaluations. The intention is to safeguard that the employees work in the best interest of the company and pursue unforeseen opportunities that would not normally be evaluated in an output oriented performance measurement system.

Final comments and summary

While goals setting in combination with participative budgeting has been one of the major research objects within budgeting in academia in a pursue to manage and improve performance in organizations, practice literature has more radically questioned to what extent budgeting still is a valid instrument to manage performance in modern organizations with rapidly changing environments. There is little doubt that the critique of budgeting in practice in several situations may be valid and therefore needs to be taken seriously in companies. Despite that fact new research show that problems with budgeting seems to be less prevalent in practice than one could expect. In a survey on budgeting practices carried out by Libby & Lindsey 2009[16] in North America it is argued that the Beyond Budgeting has been a valuable contribution to the discipline. However according to the conclusion the empirical evidence from the study show that some of the statements put forward by Hope & Fraser may be over generalized.

Example
From Libby, T., Lindsey, R.M.2009. Beyond budgeting or budgeting reconsidered? A survey of North-American budgeting practice. *Management Accounting Research*, Vol. 21, pp. 56-75.

p. 67
Use of fixed performance contract is *much* less prevalent than what is suggested by the BBRT or the Reliance on Accounting Performance Measures (RAPM) literature. In fact, our data suggest that it is only used in a very small percentage of firms (5 and 9% of firms in Canada and the US, respectively).

[16] See Libby & Lindsey, 2009

Subjective considerations or allowances for non-controllable events are frequently observed in firma using the budget to evaluate performance. Superiors would appear to be more sophisticated than what is acknowledged in textbooks and some prior academic work.

Time spent on budgeting in the average sampled North-American firm is considerably less than critics suggest and does not appear excessive.

The majority of sample firms do not operate in unpredictable environments to the point where budget become quickly outdated, although a number of firms do face unpredictable environments. However many firms utilize adaptive processes to mitigate this concern (e.g., fast track processes to obtain new resources). As well, budgets are revised much more often than expected. This may explain the result that such a small percentage of firms sampled in this study rigidly evaluate a manager´s performance against a fixed budget.

In the majority of firms surveyed, the budget process is explicitly linked to strategy implementation. In fact, budgeting is reported by respondents to be an important means for implementing strategy and the majority of respondents report that it plays a useful role in doing so.

Finally, budgetary gaming behaviors are a problem in our sample firms in both countries, although it appears more pronounced in the sampled US firms.

Evidence seems to underpin that budgeting in practice in general seems to be better adapted to the environment and strategy than the critics argue. In addition budgeting seems to be less time consuming than expected. This may indicate that companies in general are better to adapt the budgeting processes and methodologies to environmental, organizational and technological conditions they face than expected.

A way forward for companies in practice that face problems with budgeting may be to evaluate at what points the criticism of budgeting in practice is valid in the specific company. The chapter has drawn attention to how to adapt budgeting to the contingency factors of the company. Especially there has been focus on different methods of budgeting of the sales and cost of goods sold as well as the methods of budgeting factory overhead and sales, general and administration costs. The different methods are characterized by different management depth but also characterized by different complexity in use. For companies that are characterized by an unpredictable environment and therefore need to adapt fast to the changing reality it may be an idea to substitute a more complex budgeting method with a simpler method and instead put more focus on making plans of action. At least the different possibilities needs to be analyzed carefully before the more drastic step where budgeting is abolished is taken.

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Index terms

Activity Based Budgeting is a budgeting method where the sales forecast is translated to a need for activities and resources.

Active phase of budgeting is to decide in which direction management wishes to take the company as well as which initiatives must be carried out to achieve the desired situation.

Beyond Budgeting is a set of alternative ideas to traditional budgeting that includes rolling forecasting,

B**udget**, a periodic quantitative and financial expression of future plans of action.

Budgeting is the process by which the plans of action are chosen, coordinated and communicated in the organization.

Budgeting is the periodic choice of action program accompanied by a periodic economic forecast.

Budget control is a follow-up on the targets and plans documented in the budget.

Budget instructions are to organize budget tasks including who in the organization will participate and solve the problems regarding the preparation of the budget.

Budget revision means a change in an already prepared and accepted budget.

Controlling elements express the of behaviour and routines in the company

Direct budgeting of the activity is the method that has the highest degree of specification and depth of control on the operative elements.

Indirect budgeting from the number of capacity units is characterised by expressing the volume of the activity and its capacity usage through the number of capacity units. Capacity usage is used as an indirect expression for the volume of the activity, hence the name.

Indirect budgeting from sales targets in amounts is characterised by no management of the operative elements. This is pure sum-budgeting where volume and sales prices alone appear with their sum in the income statement items.

Financial results express income and costs in financial amounts.

Modified direct budgeting of the activity calculates sales per item in a common measure for volume. An estimated total volume common for many items will often, due to the law of large numbers be a fairly reliable measure for sales volume.

Operative elements express quantity as well as price per unit of quantity

Order of coordination, the involved organizational departments make their decisions in a predetermined order. Every decision is, thus, adapted to all previous decisions in the order.

Participative budgeting, the subordinates are involved in the goal setting.

Passive phase of budgeting is a forecast for the budget period that describes the expected economic consequences for the company assuming the organizational behaviour is unchanged compared to earlier.

Practical capacity is the real time at disposal to task performing for the company when processes like vacation, sick leave, breaks and education is subtracted from the theoretical capacity.

Pre-calculation is a cost calculation of products ex-ante that consists of the physical specifications such as receipts and bills of materials and operations lists for manufacturing pay.

Simultaneous coordination, the involved organisational departments makes their decisions simultaneous and with mutually decided content.

Theoretical capacity expresses the maximum capacity available for a given resource.

Used capacity is the capacity actual used

Appendix

Illustrations of different budgeting methods for sales activity

Direct budgeting of the activity

The following example has the purpose of illustrating the principles for how the activity budget is prepared using direct Budgeting of activity. It is furthermore the idea to point out how the financial management can be connected to the operational control by using this method. The contribution margin account for the year 2011 for a company that produces standard goods like mobile phones is shown in Table 4.1. The report has been constructed to show the sale of goods in units per item and per customer group. The contribution margin is only segmented according to the two customer groups. Wholesale customers receive a 5% discount compared to retail customers. Notice, that the deviation in variable cost of 177.000 is the difference between the pre-calculated and actual variable costs in the period.

Table 4.1 Contribution Income Statement 2011

	Retail customers	Wholesale customers	Total sales in units	Gross price per unit	Total sales
Sale in units:					
Product A	3.000	1.500	4.500	350	1.575.000
Product B	7.000	2.500	9.500	250	2.375.000
	2.800.000	1.150.000			3.950.000
Price deviations	0	-57.500			-57.500
Sale of goods, net	2.800.000	1.092.500			3.892.500
Variable costs	1.260.000	510.000	*Deviation*	177.000	1.947.000
Contribution margin	1.540.000	582.500			1.945.500

Table 4.2 show receipts and bill of materials as well as nominated operating times in production translated into a calculation of materials and wages for each of the two products A and B. In both cases it is about the nominated level of costs at flawless production. This means that extra costs such as rejection, waste, loss of time etc. is not included in the calculation. This is simultaneously registered by the company throughout the period. For year 2011 the actual expenditure increase is in figure 4.3. are recalculated as type frequencies.

Table 4.2 Calculation of Materials and wages per product in 2011

	Product A			Product B		
	Units	Price per unit	Amounts	Units	Price per unit	Amounts
Department 1						
Raw materials:						
X 1	1,0	10,0	10,0	1,0	10,0	10,0
X 2	2,0	15,0	30,0	2,0	15,0	30,0
Total X-receipts			40,0			40,0
Department 2						
Purchased components:						
Y 1	2,0	10,0	20,0	1,0	10,0	10,0
Y 2	2,0	10,0	20,0	1,0	10,0	10,0
Total Y-receipts			40,0			20,0
Wages	**Product A**			**Product B**		
	Rated operating time	Price per hour	Amounts	Hours	Price per hour	Amounts
Department 1						
	2,0	20,0	40,0	1,0	20,0	20,0
Total wage per unit in department 1			40,0			20,0
Department 2						
	1,0	20,0	20,0	2,0	20,0	40,0
Total wage per unit in department 2			20,0			40,0
Total variable costs			140,0			120,0

Table 4.3 Type frequencies for skrinkage, scrap, time loss etc. in 2011

	Department 1	Department 2
Loss of materials:		
Loss of scrap	1,0%	1,0%
Shrinkage, errors etc..	2,0%	2,0%
Loss of materials, total:	3,0%	3,0%
Loss of time and wage:		
Loss of scrap	2,0%	1,0%
Time lost	2,0%	2,0%
Compensated absence	2,0%	3,0%
Loss of time and wage, total:	6,0%	6,0%

For table 4.2 applies that receipts and bills have been divided into two groups, X and Y respectively. Each group has 2 material items for which it applies that they generally have the same price developments over time. Based on accounting data, the company's strategic framework and the market conditions, the company has formulated the expectations for the budget year 2012. This has resulted in the following forecast data for the development from 2011 to 2012 for product sales and the variable cost.

Product sales

- Product A retail customers
  +10% price increase
  +5% quantity increase
- Product A whole sale customers
  +10% price increase
  0% quantity increase
- Product B retail customers
  + 5% price increase
  + 10% quantity increase
- Product B whole sale customers:
  + 5% price increase
  + 5% quantity increase

Variable costs

- Material prices price group X: Price increase + 3%
- Material prices price group Y: Price increase +3%
- Wage, department 1: + 5%
- Wage, department 2: + 5%
- Material- and hourly efficiency: Unchanged

- Capacity limits:
  Department 1: 21.000 hours
  Department 2: 27.000 hours

The preparation of the budget for 2012 contains hereafter the following steps:

1. Updating the sales quantity and sales prices
2. Preparation of pre-calculation of product A and B
3. Translate the sales budget to a production and inventory budget and match the capacity use of production with the company's capacity constraints
4. Prepare a procurement budget based on a production budget
5. Preparation of the gross budget for 2011

Table 4.4 shows a prognosis of goods sold by the company in 2012 (step 1). The assumptions about price and quantity change are included so that the budgeted product sale is in units and gross prices.

Table 4.4 Budgeted sales quantity, selling prices per unit and sale of goods for 2012

	Retail customers	Wholesale customers	Total sales in units	Gross price per unit	Total sales at gross price
Product A, 2011	3.000	1.500	4.500	350	1.575.000,0
	5%	0%		10%	
Product A, 2012	3.150	1.500	4.650	385	1.790.250,0
Product B, 2011	7.000	2.500	9.500	250	2.375.000,0
	10%	5%		5%	
Product B, 2012	7.700	2.625	10.325	263	2.715.475,0
Sale of goods, total 2011					4.505.725,0

Table 4.5 shows the pre-calculations for 2012 (step 2). It is based on the tables 4.2 and 4.3 as well as the budget assumptions for 2012. The pre-calculations are prepared so they include norms for time and material loss. It has the advantage that the calculations hereby express the expected consumption of variable cost when taking into account the normal work conditions in the production. This furthermore implies that it is possible to track the part of the expected cost consumption that is caused by time and material loss for product as well as customers in the contribution margin. Ceteris paribus, this reduces the before mentioned deviance in table 4.1 This can be important for the profitability assessment of the different alternatives the company can choose from.

Table 4.5 Pre-calculations inclusive material and time loss for 2011

		Product A			Product B		
		Units	Price per unit	Amounts	Units	Price per unit	Amounts
Department 1							
Raw materials:							
X 1		1,00	10,30	10,30	1,00	10,30	10,30
X 2		2,00	15,45	30,90	2,00	15,45	30,90
Total X-receipts				41,20			41,20
Loss og materials	3%			1,24			1,24
Total raw materials				42,44			42,44
Department 2							
Purchased components:							
Y 1		2,00	10,30	20,60	1,00	10,30	10,30
Y 2		2,00	10,30	20,60	1,00	10,30	10,30
Total Y-receipts	3%			41,20			20,60
Loss og materials				1,24			0,62
Total components				42,44			21,22
Wages		**Product A**			**Product B**		
		Rated operating time	Price per hour	Amounts	Rated operating time	Price per hour	Amounts
Department 1							
		2,00	21,00	42,00	1,00	21,00	21,00
Time lost	6%			0,12			0,06
Total wage per unit in				44,23			21,06
Department 2							
		1,00	21,00	21,00	2,00	21,00	42,00
Time lost	6%			0,06			0,12
Total wage per unit in				21,06			42,12
Total variable costs				150,17			126,84

The next step (step 3) is the budgeting of the number of products to be produced as well as matching the capacity use of the production with the company's capacity constraints. It is therefore necessary to translate the sales plan to a plan for production taking into account the starting and closing inventory of finished products as shown in table 4.6. This is again translated to a capacity requirement plan as shown in table 4.7. Capacity usage in department 1 and 2 is, respectively, 20803 hours and 26.818 hours. Usage is calculated from the nominated time consumption inclusive time loss in the pre-calculations as shown in table 4.5 multiplied with the budgeted amount produced, as shown in table 4.4. The budgeted amount of activity can thus be carried through within the current capacity limits in the two divisions. If this had not been the case it would be necessary to recalculate profitability of the sale for the contribution margin per hour measured on the division where the capacity limit is exceeded. Something similar would be the case in the assessment of whether or not it could be profitable to work over time, multiple shifts etc. Based on the production plan a material procurement budget of materials can be made as shown in table 4.8. Finally the finished contribution budget for 2012 based on the tables 4.4 and 4.5 is shown in table 4.9.

Table 4.6 Budgeting of production and end inventory of finished products

	Product	
	A	**B**
Inventory:		
Sales (units)	4.650	10.325
+ Target closing finished goods inventory	1.000	1.000
Total requirements	5.650	11.325
- Opening finished goods inventory	1.000	1.000
Number of units to be produced	4.650	10.325

Table 4.7 Budgeting of capacity requirement in the form of labour

		Product		Total requirement of labour hours
		A	**B**	
Department 1				
Operating time according to operation list		9.300	10.325	19.625
Time lost	6%	558	620	1.178
Total operating time		9.858	10.945	20.803
Department 2				
Operating time according to operation list		4.650	20.650	25.300
Time lost	6%	279	1.239	1.518
Total operating time		4.929	21.889	26.818

Table 4.8 Budgeting of procurement of materials

		Product		Total material requirement
		A	B	
Materials:				
X1:				
According to partslist		4.650	10.325	14.975
Loss of materials	3%	140	310	450
Total material requirement		4.790	10.635	15.425
Materials in opening inventory				1000
Materials in the closing inventory				1500
Materials to be purchased				15.925
X2:				
According to partslist		9.300	20.650	29.950
Loss of materials	3%	279	620	899
Total material requirement		9.579	21.270	30.849
Materials in opening inventory				1000
Materials in the closing inventory				1500
Materials to be purchased				31.349
Components:				
Y1:				
According to partslist		9.300	10.325	19.625
Loss of materials	3%	279	310	589
Total material requirement		9.579	10.635	20.214
Materials in opening inventory				1000
Materials in the closing inventory				1500
Materials to be purchased				20.714
Y2:				
According to partslist		9.300	10.325	19.625
Loss of materials	3%	279	310	589
Total material requirement		9.579	10.635	20.214
Materials in opening inventory				1000
Materials in the closing inventory				1000
Materials to be purchased				20.214

Table 4.9 Pro-forma contribution income statement (budget) for 2012

	Retail customers	Wholesale customers	Total sales in units	Gross price per unit	Total sales
Sale in units:					
Product A	3.150	1.500	4.650	385	1.790.250
Product B	7.700	2.625	10.325	263	2.715.475
Sale of goods, gross	3.237.850	1.267.875			4.505.725
Price deviation	0	-63.394			-63.394
Sale of goods, net	3.237.850	1.204.481			4.442.331
Variable costs	1.449.704	558.210	*Deviation* 0		2.007.914
Contribution margin	1.788.146	646.271			2.434.417

Examples of modified direct budgeting of the activity

The following example aims at illustrating the principles of modified direct budgeting. The example is based on a company that produces precast plastic elements according to customer specifications. As the common volume unit the weight in ton of finished goods is used. Tonnage expresses the basic raw material that is the main part of the finished product. Table 4.10 shows the gross account for 2011. The product sales is registered in financial numbers and in the number of ton in the two sales groups home market and for export. As a result of the fact that sales are only segmented according to markets and not according to product groups the variable costs are only calculated as the total. The average variable cost per ton is therefore calculated for both markets as one.

Table 4.10 Contribution income statement for 2011

	Amount (ton)	Amounts	Average (per ton)
Sale of goods:			
Home market	700	2.000.000	2.857
Export market	200	1.000.000	5.000
Sale of goods, total:	900	3.000.000	3.333
Variable costs:			
Raw materials for elements		1.000.000	1.111
Purchased components		500.000	556
Wage in department 1		500.000	556
Wage in department 2		300.000	333
Variable costs, total	900	2.300.000	2.556
Contribution margin	900	700.000	778

The company has formulated the following expectations for the development from 2010 to the budget year 2011 as follows:

Product sales:

- Home market
  + 5% price increase
  + 5% volume increase
- Export
  + 10% price increase
  + 5% volume increase

Variable cost:

- Material price, raw materials: + 2%
- Material price, komponents: + 4%
- Wage, department 1: + 5%
- Wage, department 2: + 5%
- Material efficiency: Unchanged
- Hourly efficiency: + 1%
- Capacity limit: 1.000 ton

The preparation of the budget for 2012, hereafter, includes the following steps:

1. Update of the sales volume and average sales price per ton
2. Update the hourly efficiency as well as the average prices of material and wage per ton
3. Match the capacity usage of the sales with the capacity constraints of the company
4. Prepare gross budget for 2011

Step 1, 2 and 4 are seen together in table 4.12. By furthermore comparing the capacity usage of the sales forecast with the capacity limit of 1.000 ton, it is clear that the budget is within the limits of what is possible to produce with regards to volume in the budget period.

Table 4.11 Pro–forma contribution income statement (budget) for 2012

	Changes 2011-2012				
	Amounts	Ton	Amounts (ton)	Average (per ton)	Amount
Sale of goods:					
Home market	5,0%	5,0%	735	3.000	2.205.000
Export market	10,0%	5,0%	210	5.500	1.155.000
Sale of goods, total:			945	3.556	3.360.000
Variable costs:					
Raw materials for elements	2,0%			1.133	1.070.685
Purchased components	4,0%			578	546.210
Wage in department 1	5,0%	-1,0%		578	546.210
Wage in department 2	5,0%	-1,0%		346	326.970
Variable costs, total			945	2.635	2.490.075
Contribution margin			945	921	869.925

There are especially two factors that are important for the understanding of modified direct budgeting. One is the common volume unit that creates the linkage between sales volume and the resulting capacity usage. The conversion is important because this is the key to profitability management, taking into account the capacity situation. The other factor is also concerned with the common volume unit but uses the common volume unit to connect sales targets with the quantity of the common basic raw material that is needed to fulfil the sales forecast. This allows for the break-up of the sales forecast from the common volume unit into a purchasing plan for the basic raw material.

The break-down of sales groups will similarly often be necessary to be able to calculate the average number for product sales and variable cost. Sales groups can be groups of goods that in utility and technology are so similar that they despite their differences can be managed sufficiently accurate from their average. Similarly, the sales groups can be markets or customer segments where competitors or product conditions are so homogenous that it for the individual market or customer group is possible to control the sales price and variable cost from their average.

Examples of indirect budgeting of the activity from the number of units of capacity usage.

The company could, for example, be a printer that produces according to orders and customer specifications. It is the capacity of the printer in the production that is the key capacity of the company. Modified direct budgeting cannot be used since the common volume unit in the form of tons of paper does not fulfil the criteria of proportionality between the sales volume and capacity usage in the printer. Indirect budgeting from the number of hours of capacity usage is therefore the method the company will have to use in this context.

The example is built on the same assumptions as in the example of modified direct budgeting. The only modification is that the capacity limit is calculated as hours in department 1 that represents the department where the actual printing process actual takes place. The capacity limit is calculated as 10.000 labour hours. This limit is the sum of the direct processing hours in department 1 at full capacity utilization in the printer.

The contribution income statement is shown in table 4.12. The account is divided by function on one home market and one export market. The deviation in the variable cost expresses the difference between the previously calculated cost and the actual cost during the period.

Table 4.12 Contribution income statement for 2011

	Home market	Export market	Total
Hours sold in department 1 (hours)	7.000	2.000	9.000
Sale of goods	2.000.000	1.000.000	3.000.000
Variable costs:			
Raw materials	500.000	200.000	700.000
Components	200.000	50.000	250.000
Wage in department 1	400.000	150.000	550.000
Wage in department 2	300.000	100.000	400.000
Variable costs, total	1.400.000	500.000	1.900.000
Contribution margin per market	600.000	500.000	1.100.000
Deviations in variable costs			-400.000
Realized contribution margin			700.000

The preparation of the budget for 2011 includes the following steps:
1. Update of the sales volume in hours and the average sales prices per hour.
2. Update of the hourly efficiency as well as average prices per hour of materials and wage
3. Match of capacity usage of sales with the company capacity limits
4. Preparation of the gross budgets for 2011

Point 1-3 has been calculated and illustrated in table 4.13.

Table 4.13 Calculation of sales volume (in hours) in department 1 and selling prices, variable costs and contribution margin for 2012

	Home market		Export market		Total
Hours sold 2010, department 1 (hours)	7.000		2.000		
Development in volume 2011	Sale	5,0%	Sale	5,0%	
	Effectiveness	-1,0%	Effectiveness	-1,0%	
Forecasted hours 2011	7.280		2.080		9.360
Selling price per hour 2010	400		500		900
Development in selling price per hour 2011	Selling prices	5,0%	Selling prices	10,0%	
	Effectiveness	1,0%	Effectiveness	1,0%	
Selling price per hour 2011	424		555		453
Var. costs per hour, department 1 in 2010					
Raw materials	100		100		
Components	50		50		
Wage in department 1	100		100		
Wage in department 2	100		100		
Var. costs per hour, department 1 in 2011					
Raw materials	Prices	2,0%	Prices	2,0%	
	Effectiveness	1,0%	Effectiveness	1,0%	
Components	Prices	4,0%	Prices	4,0%	
	Effectiveness	1,0%	Effectiveness	1,0%	
Wage in department 1	Hourly wage	5,0%	Hourly wage	5,0%	
Wage in department 2	Hourly wage	5,0%	Hourly wage	5,0%	
Var. costs per hour, department 1 in 2011					
Raw materials	103		103		
Components	53		53		
Wage in department 1	105		105		
Wage in department 2	105		105		
Variable costs per hour, total in 2011	366		366		366
Contribution margin per hour in 2011	58		189		87

It appears that the sales forecast shows a total sale of 9.360 hours. The activity can thus be kept within the limits of 10.000 hours. The volume in the sales forecast is besides the updated expected development in volume also corrected for the expected improvements in efficiency in the production. This causes a 1% reduction in the capacity usage of the sales volume compared to 2011. The same is true, but opposite in sign, in relation to the

update of sales prices per hour and the variable cost per hour. Based on table 3.13, the pro-forma contribution income statement for 2012 is calculated in table 3.14.

Table 4.14 Pro-forma contribution income statement (budget) for 2011

	Home market	Export market	Total
Sale of goods	3.086.720	1.154.400	4.241.120
Variable costs:			
Raw materials	749.840	214.240	964.080
Components	385.840	110.240	496.080
Wage in department 1	764.400	218.400	982.800
Wage in department 2	764.400	218.400	982.800
Variable costs, total	2.664.480	761.280	3.425.760
Contribution margin			815.360

Example of indirect budgeting of the activity from sales targets in amount

This example could be a case of a retail company with a broad and deep assortment. The company purchases goods in large packages which are the repackaged and resold in smaller batches. Besides the purchasing price of the goods costs related to package and wage for repackaging is therefore also considered as variable costs. The company's gross account is shown in table 4.15.

Table 4.15 Contribution income statement for 2011

	Ordinary customers	Large customers	Total (gross)	%
Sale of goods:				*Contribution*
Product line A	964.800	798.666	1.763.466	32,0%
Product line B	1.929.600	399.334	2.328.934	48,0%
Sale of goods, total (gross)	2.894.400	1.198.000	4.092.400	100,0%
Price deviations		-119.800	-119.800	-2,9%
Sale of goods, total (net)	2.894.400	1.078.200	3.972.600	97,1%
Variable costs:				
Cost of sales, product line A	575.963	482.428		
Cost of sales, product line B	880.885	184.459		
Packaging	57.888	23.960		
Wage	144.720	59.900		
Variable costs, total	1.659.456	750.747	2.410.203	58,9%
Contribution margin	1.234.944	327.453	1.562.397	
Contribution ratio	42,7%	27,3%		38,2%

The forecast data for the development from 2010 to the budget year 2012 is as follows:

Product sales:

- Normal customers
  Unchanged prices for both product groups
  + 5% volume increase for both product groups
- Large customers
  Unchanged sales volume for both product groups
  1% discount on listed prices (normal customer)

Variable cost:

Product group A: + 2% (weighted average for all types of cost)
Product group B: + 4% (weighted average for all types of cost)

The preparation of the budget for 2012 hereafter includes the following steps:

1. Update contribution ratios for product group A and B
2. Calculate sales in amount per customer group
3. Calculate variable cost in amount per customer group
4. Update of price deviations for large customers
5. Preparation of gross budget for 2012

Table 4.16 shows the calculations for updating the contribution ratios. It should be noted that contribution ratios use listed prices for normal customers as a starting point.

Table 4.16 Update of contribution ratios for product line A and B for 2011

	Contribution ratio 2010		Contribution ratio 2011
Product line A	32,0%	100-((100-32)*1,02) =	30,6%
Product line B	48,0%	100-((100-48)*1,04) =	50,0%

Step 2-5 is shown in table 4.17 in the form of the gross budget for 2012. It is the updated contribution ratios that links sales targets to variable costs and gross profit. A variant of this linkage exists where the companies work with relatively constant contribution ratios over time and where changes in sales prices are primarily a consequence of changes in the size of variable cost. In these cases the forecast update will be based on the variable cost. Sales are afterwards calculated indirectly from the size of the variable cost and the calculated contribution ratio.

Table 4.17 Contribution income statement (budget) for 2011

	Ordinary customers	Large customers	Total	%
Sale of goods:				*Contribution ratio*
Product line A	1.013.040	798.666	1.811.706	30,6%
Product line B	2.026.080	399.334	2.425.414	50,0%
Sale of goods, total (gross)	3.039.120	1.198.000	4.237.120	100,0%
Price deviations		-11.980	-11.980	-0,3%
Sale of goods, total (net)	3.039.120	1.186.020	4.225.140	99,7%
Variable costs:				
Product line A, total	703.050	554.274		
Product line B, total	1.096.109	216.040		
Variable costs, total	1.799.159	770.314	2.569.473	60,6%
Contribution margin	1.239.961	415.706	1.655.667	
Contribution ratio	40,8%	34,7%		39,1%

Exercises

4-1

Quality Printing Ltd. is a medium sized printing house. The company's main market segments are:

a) Printing of inexpensive books for publishers.
b) Printing of illustrated books in several colors for publishers.
c) Printing of advertising material for corporate market functions.
d) Printing of forms and form systems for corporate administrative functions.
e) Printing of association magazines, staff magazines, journals, etc. in accordance to annual contracts.

The company is equipped with modern pressure presses in both letterpress as well as offset technique that can print in one, two respectively, 4 colors each per print in different formats. The presses can significantly substitute each other in production, but the choice of printing press can sometimes have serious consequences, especially for the time spent on printing.

For all materials, such as paper, film, pressure plates, color, etc. it is applicable that they can be delivered with a day's notice. There may be cost benefits to be gained in terms discounts for quantity and qualitative assortments for larger purchases at a time.

Required:
What method of budgeting for the activity will be most obvious for Quality Printing Ltd. and in what specification of depth of the operational elements?

4-2

Processed Vegetables Ltd. is a vegetable canning factory, which manufactures and sells cooked vegetables or vegetable mixtures either boiled in canned, frozen or pickled vegetables in glass. The products are sold around the year as branded products to the consumer market through retailing trade. Retail businesses and retail chains represent the company's direct customers.

The ingredients are potatoes, peas, beans, carrots, corn, beets, cucumbers, gherkins, pumpkins, etc. Commodity acquisition is primarily done through contract growing with farmers. Contracts for the land to be added or sown with different crops are completed during winter, and latest in February seed potatoes and seed are supplied by Processed Vegetables Ltd. From the beginning of August to mid October, depending on the type of crop, the vegetables are harvested and delivered to the factory. They are weighed over weighbridges for later settlement with the farmers according to the contracts. For some commodities it is possible to import at other times, but it is considerably more expensive because of both purchase form and the long journey, which also provides quality problems.

Production takes three forms, depending on the commodity type and the product it must be processed to:

a) The raw product is processed and preserved immediately to finished product portioned and wrapped in the final packaging.
b) The raw product is processed immediately into finished product bulk storage, while portioning and final packing is done during the year, as the products are sold.
c) The raw product are pretreated and freeze, then the final processing, portioning and packing takes place successively during the year, as the products are sold.

The production, which takes place immediately upon harvesting, takes form of seasonal campaign production. All production is by the way on the particular aggregate production lines for each product. Besides commodities in form of vegetables there are purchased following materials:

- *Salt, sugar, vinegar, spices, etc.*, which can be delivered overnight from stock leading vendors.
- *Printed cans* purchased by annual framework agreements per. can size. They be delivered with the requested printed with three weeks for delivery of waiver. The cans be delivered in protective cartons, recycled as supply packaging for finished products.
- *Glass and screw cap* are purchased by annual framework agreements per. glass size and shape. Approximately 75% is however standard glass by waiving available from stock at the suppliers within a few days. The remaining approximately 25% special glasses to ordered 6 weeks before they requested delivered.
- *Printed labels, cartons*, etc. must be ordered 4 weeks before they are to be delivered from suppliers.
- *Plastic film* for packaging machinery can in limited quantities be delivered at short notice from the storage. But there are significant cost advantages by purchasing in larger parties.

The products are sold around the year as Consumer-branded products. Processed Vegetables Ltd.'s direct customers are retailers, including retail chains.

Required:

1. Characterize the need for coordination in its various forms in Processed Vegetables Ltd.
2. What activity budgeting method would you recommend to Processed Vegetables Ltd. Explain how deep you think the specification of the operative elements should be?

4-3

Smart Generators Ltd. produces fresh water generators that are marketed globally. Originally the generators are designed to generate fresh water from salt water to ships, but today it sells just as many land-based installations.

The company has developed 7 base models. These can then be somewhat mitigated by the customer's needs, and secondly they can be connected to larger systems when needed.

The generators variable costs in recent years have been composed as follows:

a) 22% to wages to assembly and testing.
b) 10% purchased standard components.
c) 33% materials for own production of special components.
d) 20% wages for their own production of special components
e) 10% to purchase of specialized components that require mastery of specialized technology from suppliers.
f) 5% to the purchase of specialized components cf. c and d above, which was not enough capacity to produce themselves.

Production takes place at 4 levels of caching. Raw materials include both Level 1 and 2, and purchased components are included at all levels 2-4. Modifications are made at level 4, final assembly, which is therefore mainly based on the actual orders. However, it has usually a few standard generators stocked of all 7 models.

Required:

1. What criteria's must be met in order to recommend *direct budgeting of activity* with full specification of the operative elements of the form of a procurement plan respectively a production plan for the budget period?
2. Under what circumstances would you recommend the company to use the *modified direct budgeting* by activity budget preparation?
3. In addition to fresh water the generators are producing and selling spare parts (about 100 product numbers) for the repair and maintenance of the already-installed generators. How does this affect activity budgeting methodological, in terms of budgeting depth of the operational elements?

4-4

How can the procurement function in **Smart Generators Ltd.** presented in exercise 4-3, affect the company's sales and contribution margin?

Which forms of action programming on the controlling elements can therefore enhance management depth by budgetary management of the procurement function in Smart Generators Ltd.?

3-5

Finish Paper Ltd. is a paper wholesaler who represents a number of paper mills in the Finish market. The primary customers consist of printers spread across the country. The company's basic policy is to meet customer demand for paper 100%, regardless of quantity, quality, color and weight. 50% must be provided with fair notice anywhere in the country from the three geographically dispersed expedition stocks and 80% must be supplied with a maximum of 3 days notice.

The customers are offered factory discount for deliveries of at least 3 pallets of the same quality from the factory within 3 weeks. Moreover, the factory provides bulk discounts on paper in whole pallets of the same quality. Furthermore the factory offers the customers a system of discounts differentiated by the financial amount of each purchase order.

Required:

Which forms of action programming on the *controlling elements* could help to enhance management depth in the management of activities in Finish Paper Ltd. by budgetary management of:

1. Procurement function?
2. The three storage and expedition functions?
3. The three driving functions associated with the three expedition stocks?

3-6

In chapter ? exercise 3-? there was a presentation of a chart of account for the two metal product factories **Small Business Ltd.** and **Big Business Ltd.** Based on the information about the two companies in that exercise you are kindly asked to solve the following tasks.

Required:

1. Discuss and explain the possible differences in requirements for budgeting depth, one could imagine between small business Ltd. and big business Ltd.
2. Discuss and explain the basis of the contents of the ten accounts from the old chart of accounts using the six methods of budgeting of capacity costs in amounts, respectively small business Ltd. and big business Ltd. Discuss the choice of amount approach to budgeting of capacity costs in the two companies, should give rise to change in the established account plans.
3. For what of the items in those ten accounts from the previous chart of accounts and in the functions and / or what jobs will find it relevant to activity related budgeting respectively in small business Ltd. and big business Ltd., and why?
4. How would you propose the integration of service levels and efficiency in the budgeting in Small Business Ltd. respectively Big Business Ltd.?

4-7

Hope & Glory Ltd. is a manufacturing company of household appliances that are marketed through retailers. As a basis for the activity budget preparation of 2011 the following material of 2010 are available. As a exercise technical simplification the budgeting closes the 31st December between 2010 and 2011:

Table 1

Hope & Glory Ltd. Financial statement including sales, contribution margin and marketing contribution for 2010 (DKK 1000)

	Home market		*Exports*				
	Ordinary customers	Large customers	Market 1	Market 2	Total unit sales	Gross price (DKK per unit)	Total sales (DKK)
Sales (units):							
Product A	6.213	2.816	1.787	1.764	12.580	2.415	30.381
Product B	13.621	5.327	1.267	2.040	22.255	2.700	60.089
Product C	19.062	6.118	5.012	3.923	34.115	1.670	56.972
Product D	6.839	2.096	2.314	4.566	15.815	3.560	56.301
Gross sales (DKK)	107.961	38.862	24.344	32.574			203.743
Price deviation (DKK)	0	-3.886	1.753	-4.854			-6.987
Net sales (DKK)	107.961	34.976	26.097	27.720			196.756
Variable costs (DKK)	70.630	25.156	16.727	21.602	*Deviation:*	-537	133.578
Contribution margin	37.331	9.820	9.370	6.118	*Deviation:*	539	63.178
Sales effort (DKK)							
Product A	756						
Product B	2.412						
Product C	558						
Product D	1.188						
Shared	948						
Sales effort, Total	5.862		1.278	714			7.854
Marketing contribution (DKK)	41.290		8.092	5.405	*Deviation:*	537,00	55.324
Price deviation (%)	0,0%	-10,0%	7,2%	-14,9%			-3,4%

Table 2

Hope & Glory Ltd. Receipts and partslists converted to a calculation on materials per product.

Material number	Base price	Product		Product		Product		Product	
		Units	DKK	Units	DKK	Units	DKK	Units	DKK
Raw materials:									
X 1	6,5	1,5	9,75	4,1	26,65	1	6,50	12,4	80,60
X 2	25,68	6	154,08	2	51,36	2	51,36	2	51,36
X 3	2,7	1,5	4,05	0	0,00	3	8,10	2,1	5,67
X 4	97,8	3	293,40	1	97,80	0	0,00	0	0,00
X 5	3,48	2	6,96	6	20,88	3	10,44	6	20,88
Total unit list of			468,24		196,69		76,40		158,51
Price index X 2010		157		157		157		157	
Calculation for mat. X per product 2010		735		309		120		249	
Purchased Components:									
Material number Y	Base price	Product A		Product B		Product C		Product D	
		Units	DKK	Units	DKK	Units	DKK	Units	DKK
Y 1	0,24	2	0,48	2	0,48	3	0,72	4	0,96
Y 2	1,08	2	2,16	4	4,32	0	0,00	7	7,56
Y 3	5,25	0	0,00	6	31,50	1	5,25	4	21,00
Y 4	3,3	1	3,30	3	9,90	1	3,30	6	19,80
Y 5	24,75	3	74,25	1	24,75	3	74,25	1	24,75
Y 6	11,25	0	0,00	3	33,75	4	45,00	2	22,50
Y 7	37,5	1	37,50	0	0,00	4	150,00	1	37,50
Y 8	18,45	0	0,00	1	18,45	2	36,90	3	55,35
Y 9	2.52	0	0.00	2	5.04	0	0.00	8	20.16
Y 10	15,3	6	91,80	2	30,60	0	0,00	0	0,00
Total unit list of Y per product			209,49		158,79		315,42		209,58
Price index Y 20x0		136		136		136		136	
Calculation for mat. Y per product 2010		285		216		429		285	

Table 3

Rated operating time without loss of scrap and time loss from each department, converted to a wage calculation per product for 2010

	Product			
	A	B	C	D
Department 1:				
Rated operating time in hours	4,5	5,0	1,5	6,0
Hourly wage in department 1 (DKK)	82,5	82,5	82,5	82,5
Total wage per unit in department 1	371,25	412,5	123,75	495,0
Department 2:				
Rated operating time in hours	1,2	3,2	4,8	9,6
Hourly wage in department 2 (DKK)	105	105	105	105
Total wage per unit in department 2	126	336	504	1008
Rated operating time, total	497,25	748,50	627,75	1.503,00

Table 4

Type frequencies for shrinkage, loss of scrap, time loss, etc. Derived from cost accounting for 2010

	Department 1	Department 2
Loss of materials:		
Loss of scrap	1,3%	0,9%
Shrinkage, errors	3,5%	3,5%
Loss of time and		
Loss of scrap	1,3%	0,9%
Time lost	6,6%	8,1%
Compensated	5,5%	10,1%

Table 5

Forecast of development in sales from 2010-2011:

	Product			
	A	B	C	D
Home market:				
Ordinary cutomers	12,0%	0,0%	2,5%	5,0%
Large Customers	12,0%	2,5%	2,5%	5,0%
Exports:				
Market 1	2,0%	2,0%	2,0%	2,0%
Market 2	4,0%	4,0%	4,0%	4,0%
Forecast of changes in materals from 2010-2011				
Price group X, raw materials: Prices are expected to increase approximately			10,0%	
Price group Y, purchased components: Prices are expected to decrease approximately			5,00%	
Material efficiency is expected to increase	1% because of less wastage, etc.			
Forecast of changes in time and wages from 2010-2011				
All wage rates are expected to increase approximately			8%	
Time efficiency is expected to increase approx	2% through less time loss			
Work overtime can be established in a limited way for an additional wage of			33%	
Forecast on calendar capacity:				
Maximum capacity in 2011 expressed in hours:				
Department 1 (hours)				375.000
Department 2 (hours)				625.000
Forecast of advertising effort in prices from 2010-2011				
Price on advertising, etc. is expected to increase approximately				15%

Table 6

Proposals for alternative courses of action for 2011:

	Product			
	A	B	C	D
Home market, ordinary customers:				
Sales effort increases with (DKK)	360.000	660.000	300.000	600.000
Sold volume increases with	12%	5%	8%	11%
Homemarket, large customers:				
Sales effort increases with (DKK)	150.000	360.000	90.000	150.000
Sold volume increases with	12%	5%	8%	11%
Export market 1:				
Sales effort increases with (DKK)	360.000			
Sold volume of all products increases with	6%			
Export market 2:				
Sales effort increases with (DKK)	360.000			
Sold volume of all products increases with	10%			

Required:

1. Prepare activity budget of Hope & Glory Ltd. for 2011, the passive phase and justify each step in the approach.
2. Then prepare the activity budget of Hope & Glory Ltd. for 2011, the active phase, in compliance with procedural rules.

4-8

Cope & Hurry Ltd is a manufacturing company specializing in production and sale of "difficult" profiles of plastic components for the industry. Cope & Hurry Ltd. works as subcontractor for specialized components according to customer specification.

Production first takes place in department 1, where the profiles are produced by plastic, nylon, etc. Then there is a subsequent treatment of profiles in department 2, where there is some additional shaping by drilling, milling, polishing, etc., and how they are fitted with circuit membranes contact poles, etc. in the form of purchased components.

Since they manufacture by order according to customer specification, there will be a sizeable number of different products. Although there seem to be repetitive orders, these orders appear with relatively long intervals. And even in these cases the customers often have changes for their specifications after a few deliveries. However, there are a number of firmer large customers, to which Cope & Hurry Ltd. acts as a sort of authorized supplier of the same components for a long period of time and according to annual sales contracts.

Cope & Hurry Ltd. has also generated some exports. This applies to the Scandinavian market where competition is less tough, and the German market, where competition from German rivals is outspoken.
In all three markets, the sale primarily is generated through personal selling by the company salesmen.
As a basis for the activity budget preparation of 2011 for Cope & Hurry Ltd. the following material for 2010 is available. As an exercise technical simplification the budgeting closes the 31st December between 2010 and 2011:

Table 1: Accounts of sales, variable costs and contribution margin for 2010.
Table 2: Forecasted changes in the data base from 2010 to 2011.
Table 3: Proposed changes in the sales effort in 2011.

Table 1

Contribution income statement for 2010 (ton)

	Ton	DKK (1000)	Average per kilo
Sales revenue			
Home market			
Ordinay customers	589	107.962	183,30
Large Customers	210	34.976	166,55
Exports			
Scandinavia	138	26.097	189,11
Germany	189	27.721	146,67
Total Sales	1.126	196.756	174,74
Variable costs			
Raw materials		25.280	
Other materials		28.459	
Wage, department 1		29.648	
Wage, department 2		50.191	
Variable costs, total	1.126	133.578	118,63
Contribution margin	1.126	63.178	56,11

Table 2

Budget assumptions for 2011:

Forecast of changes in sales quantity from 2010-2011:	
- Ordinary customers	4%
- Home market, large customers	5%
- Exports, Scandinavia	2%
- Exports, Germany	4%
Forecast of changes in material prices and wages:	
- Raw materials	10%
- Other materials	-5%
- Wages	8%
Forecast of changes in productivity:	
- Material productivity	1%
- Productivity per hour	2%
Forecast of Calendar capacity:	
Calendar capacity is unchanged	
- Department 1 have in 2010 used (of capacity)	97%
- Department 2 have in 2010 used (of capacity)	75%
No possibility for working overtime or shifts	

Table 3

Considerations about sales effort 2011

Home market, ordinary customers		
By increasing the salesteam with 2 and increase travel activities for all the salesmen, is expected to increase in sales by (approx. 8-9%):	50	ton
Additional costs for this are estimated at:	1.900.000	DKK
Home market, large customers		
By increasing the salesteam with 1 salesman and increase the activity on canvassing, is expected to increase in sales by (approx. 9-10%):	20	ton
Additional costs for this are estimated at:	750.000	DKK
Export market, Scandinavia:		
By increasing the export department's travel activity, is expected to increase in sales by (6-8%):	10	ton
Additional costs for this are estimated at:	180.000	DKK
Export market, Germany:		
By increasing the export department's travel activity, is expected to increase in sales by (approx. 10%):	20	ton
Additional costs for this are estimated at:	300.000	DKK

Table 4

Contribution income statement for 2010

	Home market		Exports		
	Ordinary customers	**Large customers**	**Scandinavia**	**Germany**	**Total**
Hours sold, department 1	191.543	70.554	41.390	59.615	363.102
Total sales (1.000 DKK)	107.962	34.976	26.097	27.721	196.756
Var. costs (1.000 DKK)	70.630	25.156	16.727	21.602	134.115
Contribution margin	37.332	9.820	9.370	6.119	62.641
Deviations in variable costs					537
Contribution margin according to income statement					63.178

Required:

1. Characterize Cope & Hurry Ltd. compared to Hope & Glory Ltd. based on the company description above and the data shown in figures 1-3.
2. Characterize the manner the variable costs have been made for contribution margin accounts.
3. Characterize the approach (procedure) of *modified direct budgeting* of the activity and then make an activity budget for Cope & Hurry Ltd. for 2011.

4. Cope & Hurry Ltd. has now changed their method of preparation of contribution margin accounts, cf. table 4. Characterize this change in relation to the procedure for drawing up the activity budget and draw then an activity budget for 2011 based on tables 2-4.

4-9

Car & Lorry Ltd. is a wholesaler with their own import of a wide and deep range of automotive accessories.

With respect to the calculations, the products are divided into four The gross margin categories. The price list is based on CIF prices for imported products, plus a fixed markup percent contribution margin class. The spread in gross margin percentages for the four classes is ranging from 20.4% to approx. 48.5%.

All products are sold through similar distribution channels. The largest customer group has been auto dealers and mechanics, which account for around 50% of revenue. Furthermore there have been some sales directly for so-called fleet owners (drivers, bus companies, etc.) that gets 10% discount on the price list prices. In a special retail department the company trades also directly with private car owners. Retail sales charge around. 7% retail profit on top of price list prices. Finally, some sales by other merchants who get 15% reseller discount on the price list prices.

Table 1

Gross profit statement for 2010 and info about advertising effort per product line (in 1.000 DKK)

Product lines	Gross profit on price lists (%)	Auto dealers and mechanics	Fleet owners	Retail sales	Wholesalers	Total sales	Advertising
A	32,0%	15.004	6.121	4.626	3.626	29.377	1.254
B	48,5%	36.777	12.945	3.667	4.687	58.076	2.910
C	20,4%	31.834	9.195	8.973	5.575	55.577	1.056
D	34,9%	24.347	6.715	8.831	13.833	53.726	1.686
Total sales		107.962	34.976	26.097	27.721	196.756	
- Cost of sales		70.347	25.055	16.660	21.516	133.578	
Gross profit		37.615	9.921	9.437	6.205	63.178	
Gross profit (%)		34,8%	28,4%	36,2%	22,4%	32,1%	

Table 2

Budget assumptions for 2011:

Forecast of changes in sales quantity from 2010 – 2011:	
- Auto dealers and mechanics	4%
- Fleet owners	5%
- Retail sales	2%
- Wholesalers	4%
Forecast of changes in purchase prices from 2010 – 2011:	
- Product line A	6%
- Product line B	3%
- Product line C	5%
- Product line D	3%
- Advertising ressources	15%
Considerations about sales effort 2011	
Product line A	
A sales campaign is planned to increase sales with approximately	10%
The campaign will cost	650.000 DKK
Product line B	
A sales campaign is planned to increase sales with approximately	6%
The campaign will cost	1.100.000 DKK
Product line C (two possibilities)	
Opportunity 1	
A sales campaign is planned to increase sales with approximately	8%
The campaign will cost	160.000 DKK
Opportunity 2	
An expanded sales campaign is planned to increase sales with	12%
The expanded campaign will cost	960.000 DKK
Product line D	
A sales campaign is planned to increase sales with approximately	10%
The campaign will cost	900.000 DKK

Required:

1. Characterize Car & Lorry Ltd. compared to Hope & Glory Ltd. and to Cope & Hurry Ltd. above, reflecting the description and the data shown in tables 1-2.
2. Characterize contribution margin income statements for 2010 in Car & Lorry Ltd. regarding to the selected registration form, and its suitability as a basis for the activity budgeting from the assumptions in tables 1-2. What changes will possibly propose in future registration form?
3. Characterize the approach for indirect budgeting of the activity from the sales in amounts and contribution ratio as a competitive margin and then compile an activity budget for Car & Lorry Ltd. according for the stipulated procedure.

4-10

Frame Ltd. was started by two college buddies, Peter and Jens whilst still studying engineering. Inspired by their teaching of material science and production management, they came upon the idea to start a small business with the objective of producing bicycles.

Due to limited time and limited financial resources, the business idea was from the start to focus on niche production. They therefore decided in the beginning, only to produce and sell a single bike type, called a "city bike" that could be delivered in a gentleman and a lady model. A bike which in terms of design and price could compete in the Danish market with similar products from other national and international bicycle manufacturers.

The expectations of competitiveness was due to that they had decided to produce the bicycle frames themselves, while the parts in the form of saddle, seat post, gears, brakes, rims, tires, cranks, chain, handlebar, stem, etc. were purchased from leading suppliers in Europe, USA and Japan. The manufacture of bicycles was conceived as an organizational split into two departments. Department 1 had the frames manufactured, while assembly of the bikes should be conducted in Department 2.

After Peter and Jens had finished their studies, the company development went fast. This meant that the rented premises, they had started the company in, quickly became too small. They therefore chose 3 years after its start, to move it to new and larger premises in North Zealand.

The company, which has now existed for 5 years, has been characterized by positive developments in several areas. These include the range of bike models which currently offers 3 models; a city bike, a mountain bike and a racing bike. Similarly, the company now works with two customer groups: independent bicycle dealers and bicycle chain stores.

The company has as a consequence of this development, needed to recruit more people in purchasing, production, sales and administration, while there has been a general increase in capacity costs. Peter and Jim are very pleased to see the company grow and develop in the haste with which it has occurred. Conversely, they are not so pleased with the company's earnings for the latest year 2010. They have therefore called you as a specialist in order to help improve the company's management accounting. Initially, they asked you to solve the following 2 tasks:

Required:

In order to use the financial statements as a source of inspiration in the financial management for Frame Ltd., describe the weaknesses and limitations in the company's internal accounting model as it appears in Table 1.

1. Based on the identified weaknesses and limitations, you are asked to set one or more internal accounts, with a starting-point in Appendix 1, (Table 1 and the related notes 1, 2 and 3) , that can give Peter and Jens inspiration for better management accounting of Frame.
2. Comment on the results of your analysis in sub-question 2 and give proposals for action, which Peter and Jens immediately should consider taking to improve profitability.
3. Based on the information contained in, please make the passive budget for Frame Ltd.
4. Based on your answer from sub-question 1, among other things, please draw the company's active budget, as you only have to evaluate the consequences of implementing activity 1 and 2.
5. Based on your responses to sub-question 2 in particular, please draw the company's active budget, but this time while assuming that activity 3 also could be considered completed.

List of appendices:

Appendix 1: Extract from Frame Ltd. internal accounting (Table 1) for 2010 and its additional information in note form
Appendix 2: Budget Assumptions for 2011

Appendix 1

Table 1: Excerpt of the Profit and Loss acount and related supplementary informations (in DKK 1000).

Excerpt of the Profit and Loss account and related supplementary information			
(Amount in DKK 1,000)			**Total**
Revenue (Note 1)			20.220
Storage of materials, opening	110		
+ Purchase	10.946		
- Storage of materials, closing	220		
Consumption of materials	10.836		
Wages	5.698		
Consumption of materials and wages	16.534		
+ Storage of finished bicycles, beginning	269		
- Storage of finished bicycles, ending	698		
Cost of goods sold (Note 2)		16.105	
Wages		1.800	
Advertising etc.		250	
Administration cost		30	
Travels and representation		170	
Rent		300	
Audit fee		200	
Vehicle expenses (Note 3)		205	
Other costs		310	
Interest		130	
Depreciations		320	19.820
Total Result			**400**

Note 1:

Sales breakdown (in pieces per bicycle model and per customer in 2010).

	Independent bicycle dealers	Chain of bicycle dealers
City bike:	2.000	3.000
Mountain bike:	900	800
Racing bike:	700	400

Gross Sales Price (in DKK, bicycle model and per customer in 2010).

	Independent bicycle dealers	Chain of bicycle dealers
City bike:	2.500	2.500
Mountain bike:	4000	4000
Racing bike:	6000	6000

Discount (in percentage per bicycle model and per customer in 2010).

	Independent bicycle dealers	Chain of bicycle dealers
City bike:	20%	30%
Mountain bike:	15%	15%
Racing bike:	25%	15%

Note 2:

Opening inventory, production, closing inventory and sales of finished bicycles (in pieces in 2010).

	City bike	Mountain bike	Racing bike
Opening inventory	100	50	0
+ Production	5.000	1.700	1.200
Available in the period	5.100	1.750	1.200
- Closing inventory	100	50	100
Sales in the period	5.000	1.700	1.100

NB! Opening inventory and closing inventory of finished bicycles are in the profit and loss account in table 1, calculated as cost estimations for 2010.

Cost estimations for each of the three bicycle models, as it where in 2010. (DKK)

	City bike	Mountain bike	Racing bike
Pipes, paint, etc. the manufacture of frames according to parts list:	200	400	700
Material wastage (10%)	20	40	70
Material consumption total in dep. 1	220	440	770
Bicycle parts and equipment according to Parts list:	600	1.200	2.200
Shrinkage (5 %)	30	60	110
Material consumption total in dep. 2	630	1.260	2.310
Wages for flawless processing according to operation list in department 1:	300	400	600
Time lost (10 %)	30	40	60
Time spent total in dep. 1	330	440	660
Wages for flawless processing according to operation list in department 2:	200	400	500
Time lost (10 %)	20	40	50
Time spent total in dep. 2	220	440	550
Materials and wages total	1.400	2.580	4.290

Note 3:

Specification of costs for auto operations in 2010. (DKK)

Gasoline	75.000
Repair and maintenance	30.000
Depreciations	100.000
Total	**205.000**

Appendix 2

Budget Assumptions for 2011

Expectations of market conditions in the forecasting of sales

Peter and Jens have with a starting-point in the overall results for the company in 2010 and the sale of units on each bike model per customer group in 2010, tried to evaluate which adjustments in prices and discounts, you could include in the 2011 budget. They concluded that the gross price can be increased by the following rates, assuming unchanged sales of the individual bike models, and with an unchanged discount to individual customer groups compared to the year 2010:

City bike:	10% price increase in gross prices
Mountain bike:	5% price increase in gross prices
Racing bike:	10% price increase in gross prices

Assumptions for cost estimations for 2011

Compared to 2010, Peter and Jens expect unchanged cost estimations for 2011. So they expect smaller increases in hourly wages to be compensated fully by an increase in productivity, such that labor costs per produced unit of output is unchanged from 2010 to 2011. The material prices are expected to be roughly unchanged for 2011 which is justified by expectations of particular exchange rate movements in 2011 in the markets Frame Ltd. trade with.

Proposed active action initiatives in 2011

In addition, Peter and Jens suggested following 2 activities, which they expect may result in increased sales. These should however only be implemented if they are profitable.

Activity 1:
By creating a special advertising campaign for mountain bikes in local newspapers in collaboration with the two customer groups expect Peter and Joe that sales of these bikes can be increased by 10% in 2003. The campaign expected to cost DKK 100,000

Activity 2:
Peter and Jens consider sponsoring 5 professional cyclists, each with DKK 100,000 in year 2011, in return benefit from the publicity value of "Frames" name on bicycles and clothes etc. Sales of racing bikes are expected to increase by 20% compared to the planned sales for 2011 in both customer groups.

A third active initiative has been on the table, since a consulting company has approached the 2 owners and suggested following activity:

Activity 3:
The consulting company has proposed a review of production in the 2 departments, and a subsequent training program to employees at a total cost of the consultancy fee of DKK 250,000. The consulting company expects that the activity will affect the company's cost estimations already from 2011. It is therefore expected that material wastage in department 1 will be cut in half as well as time loss in department 1 and 2 will be reduced by 50 %. On the other hand, the wastage of 5 % in department 2 is not expected to be reduced.

Other assumptions for budget 2011
The forecast assumes unchanged stocks of finished bikes from late 2010 to late 2011.

The company currently has a huge production capacity, which is why Peter and Jens do not expect to reach the capacity limit even if all the proposed activities are implemented.

The company's promotional costs and capacity costs, exclusive interest and depreciation, is expected to increase by 3% from 2010 to 2011.

Interests are expected to remain unchanged at DKK 130,000 in 2011.
Depreciations are expected unchanged from 2010 to 2011.