

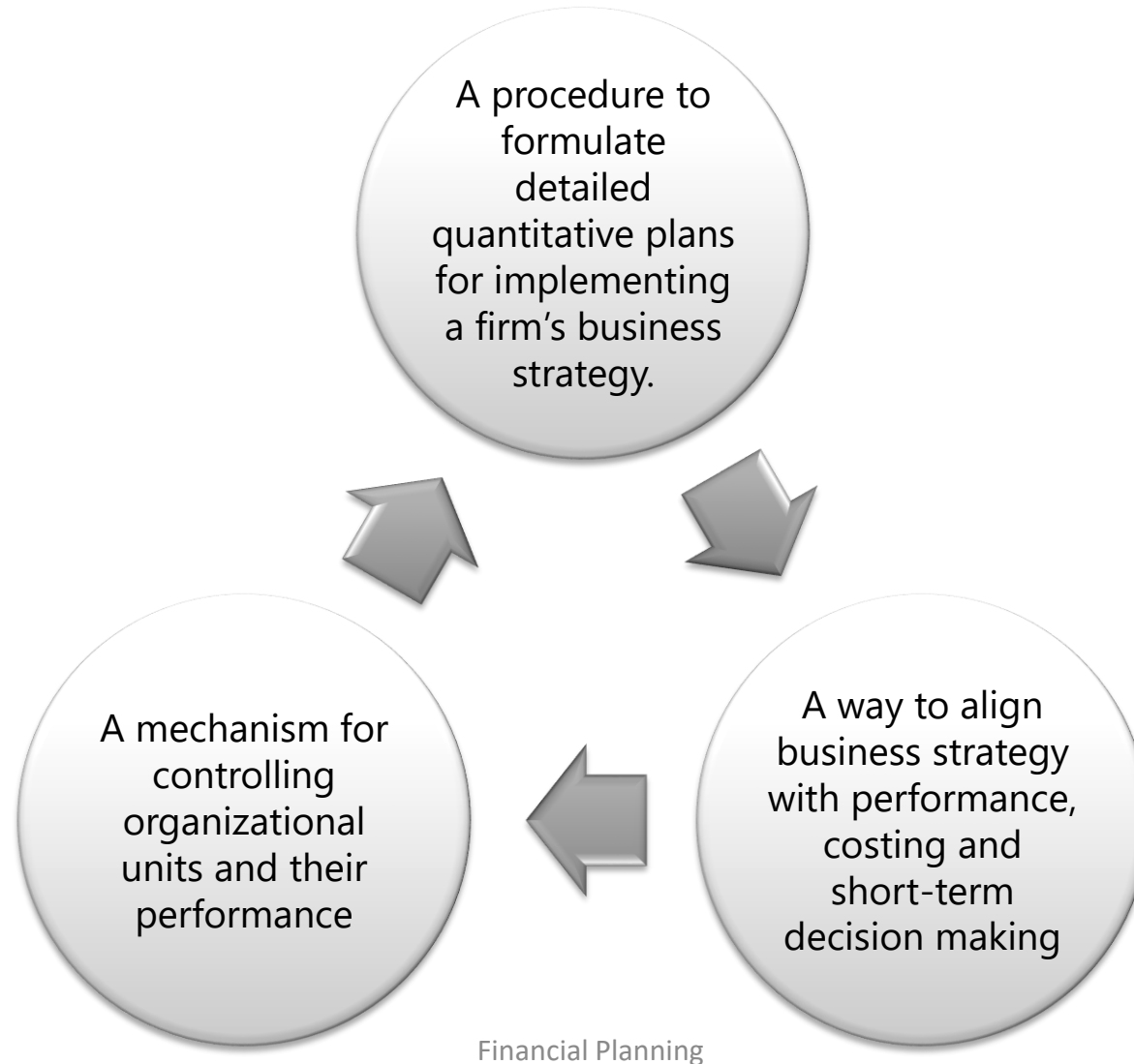
FINANCIAL PLANNING

Orestes Vlismas, Ph.D

Learning Objectives

- The course aims on introducing students to current trends in financial planning, short-term decision-making, transfer pricing, and control systems for performance evaluation.
- By the time they complete the course, students should be able to:
 - Understand the processes through which firms prepare budgets and utilize them for controlling operating activities.
 - Familiar with transfer pricing, short term decision making and performance evaluation.
 - Understand the practical usefulness of strategic management accounting.
 - Use management accounting techniques, tools and methods in practice,
 - Select the most suitable management accounting method, tool or technique to extract and process accounting information for decision making.

Different perspectives of financial planning



Course Outline

Lecture	Topic(s)	Context	Chapter(s)
1	Financial planning and business plans	Overview of business plans, business plans and financial planning, the role of accounting information and accountant.	1
2	Financial planning and budgeting	Financial planning and budgeting, major features and roles of budgets, behavioral issues of budgets, budgeting and responsibility accounting, responsibility and controllability, budgeting preparation procedures.	14
3	Flexible budgets, variance analysis and management control	Static and flexible budgets, static-budget variances, flexible-budget variances and sales-volume variances, production volume variances, measuring yield, mix and quantity effects, revenue and sales variances, variance analysis for multiple products.	15,16, 17

Financial planning as ... a procedure to formulate detailed quantitative plans for implementing a firm's business strategy.

Course Outline

Lecture	Topic(s)	Context	Chapter(s)
4	Strategic management accounting	Strategy and management accounting, balanced scorecard, cost of quality, life cycle costing, target costing and customer profitability analysis	12, 20
5	Accounting information for short-term planning	Cost-volume-profit analysis, understanding cost behaviour and decision making, information for short term decision making (make-or-buy, customer profitability analysis, product-mix decisions).	8, 9, 10
6	Accounting information for capital investment	Gathering information for capital investment appraisal, stages of capital budgeting, non-financial and qualitative factors in capital budgeting	13

Financial planning as ... a way to align business strategy with performance, costing and short-term decision making.

Course Outline

Lecture	Topic(s)	Context	Chapter(s)
7	Control and planning systems for transfer pricing	Organizational structure and decentralization, transfer pricing, market-based transfer prices, cost-based transfer prices, negotiated prices and dual prices.	18
8	Control and planning systems for performance measurement	Financial and non-financial performance measures, residual income, EVA, alternative definitions of investment, alternative definitions of performance measurement.	19

Financial planning as ... a mechanism for controlling organizational units and their performance.


Textbook and Marking Scheme

- The basic textbook for this course is:
 Horngren, C.T., Bhimani, A., Datar, S.M. and Foster, G. (2012). Management and cost accounting. Prentice Hall, 5th eds. (or newer edition).
- Besides the above textbook, the educational material of the course includes power point presentations, exercises and any other educational material distributed within the class or via e-class.
- At the end of the semester students will sit an exam.
 Evaluation: 100% final exam
- They, also, can prepare an essay in a relevant topic (adds up to 1 extra point on their final grade), such as:
 - Budgeting and beyond budgeting
 - Balance scorecard
 - Transfer pricing
 - Life cycle costing
 - Cost of quality
 - Nonfinancial and financial measures of performance
 - Capital budgeting
 - e.t.c.

Communication

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Financial Planning Business Plans and Budgeting

Strategy and Plans

- Strategy can be viewed as describing how an organization matches its own capabilities with the opportunities in the marketplace to accomplish its overall objectives. It includes consideration of such questions as:
 - What are the overall objectives of the organisation?
 - Are the markets for its product local, regional, national or global? What trends will affect its markets? How is the organization affected by the economy, its industry and its competitors?
 - What forms of organisational and financial structures serve the organisation best?
 - What are the risks of alternative strategies, and what are the organisation's contingency plans if its preferred plan fails?

Strategy and Plans

- The origins of the term strategy go back to ancient Greece whereby strategos signified the role of a general in command of an army. By 450 BC, the term was associated with skills in administration, leadership and oration.
- Mintzberg (1985) distinguishes between the notion that strategy can be deliberate and formally espoused and strategy as being emergent, sometimes by accident, and often arising from some level of bottom-up input from the lower reaches of the enterprise.
- Some management theorists view strategy in terms of how it is supposed to be according to them (the prescriptive or normative approach) while others prefer to explore how strategies arise in organisations (the descriptive approach).
- While the prescriptive approach has tended to dominate writings on the design of strategic management accounting systems and techniques, the descriptive perspective has been useful in explaining the process by which such techniques emerge and are operationalised.

Strategy and Plans

- Porter (1985) suggests that a firm has a choice of three generic strategies in order to achieve sustainable competitive advantage:
 - **Cost leadership:** an enterprise aims to be the lowest-cost producer within the industry thus enabling it to compete on the basis of lower selling prices rather than providing unique products or services. This competitive advantage may arise from factors such as economies of scale, access to favourable raw materials prices and superior technology.
 - **Differentiation:** whereby the enterprise seeks to offer products or services that are considered by its customers to be superior and unique relative to its competitors.
 - **A focusing strategy:** which involves seeking competitive advantage by focusing on a narrow segment of the market that has special needs that are poorly served by other competitors in the industry. A focusing strategy recognizes that differences can exist within segments (e.g., customers and geographical regions) of the same market. Competitive advantage is based on adopting either a cost leadership or product differentiation strategy within the chosen segment.

Business Plan

- A business plan is an important document aimed at a company's external and internal audiences:
 - It defines in detail a firm's objectives and how it plans to achieve its goals.
 - It lays out a written road map for the firm from marketing, financial, and operational standpoints. Both startups and established companies use business plans.
 - It can serve to keep a company's executive team on the same page about strategic action items and on target for meeting established goals.
- Structure of a business plan:
 - Executive summary
 - Business structure
 - Market analysis
 - Management and organization
 - List of products and services
 - Customer segmentation
 - Definition of a marketing plan
 - Logistics and operations plan
 - Financial planning

Executive summary

- A good executive summary is one of the most crucial sections of a business plan—it's also the last section of the business plan that one should write. It highlights the key points of the business plan:
 - Business concept. What does your business do?
 - Business goals and vision. What does your business want to do?
 - Product description and differentiation. What do you sell, and why is it different?
 - Target market. Who do you sell to?
 - Marketing strategy. How do you plan on reaching your customers?
 - Current financial state. What do you currently earn in revenue?
 - Projected financial state. What do you foresee earning in revenue?
 - The ask. How much money are you asking for?
 - The team. Who's involved in the business?
 - Description of the company.

Business structure

- An overview of business structures that aim to answer two fundamental questions: who are people of the firm, and what do the firm plan to do?
- Here are some of the components you should be included:
 - Business model.
 - Industry.
 - Business's vision, mission, and value proposition.
 - Background information on your business or its history.
 - Business objectives, both short and long term.
 - Business team, including key personnel and their salaries.

Market analysis

- At least, a market analysis includes the following:
 - Definition of the ideal customer profile.
 - Research relevant industry trends and trajectory.
 - Make informed guesses.
 - SWOT analysis: an analysis that looks at your strengths, weaknesses, opportunities, and threats.
 - Example:

Strengths <ul style="list-style-type: none"> • Previous experience scaling ecommerce business • Strong ad management experience • Patented product • Exclusive deal with manufacturing company 	Weaknesses <ul style="list-style-type: none"> • No team management experience • Breakable product, making shipping more expensive
Opportunities <ul style="list-style-type: none"> • Strong growth in product category sales • No market leader in category; many smaller firms 	Threats <ul style="list-style-type: none"> • Regulation pending for product category in international markets

- Competitive analysis (Cost leadership/Differentiation/Segmentation).

Management and organization / List of products and services

- Management and organization:
 - The management and organization section of the business plan should tell readers about who's running the company.
 - Detail the legal structure of the business.
 - An organizational chart to show the firm's internal structure, including the roles, responsibilities, and relationships between people in your chart.

- List of products and services:
 - A firm's products or services will feature prominently in most areas of its business plan, but it is important to provide a section that outlines key details about them for interested readers.

Customer segmentation

- The ideal customer, also known as target market, is the foundation of the marketing plan.
- To give a holistic overview of the ideal customer, a description of general and specific demographic characteristics (of the potential costumers) are required:
 - Where they live.
 - Their age range.
 - Their level of education.
 - Some common behavior patterns.
 - How they spend their free time.
 - Where they work.
 - What technology they use
 - How much they earn.
 - Where they're commonly employed.
 - Their values, beliefs, or opinions.

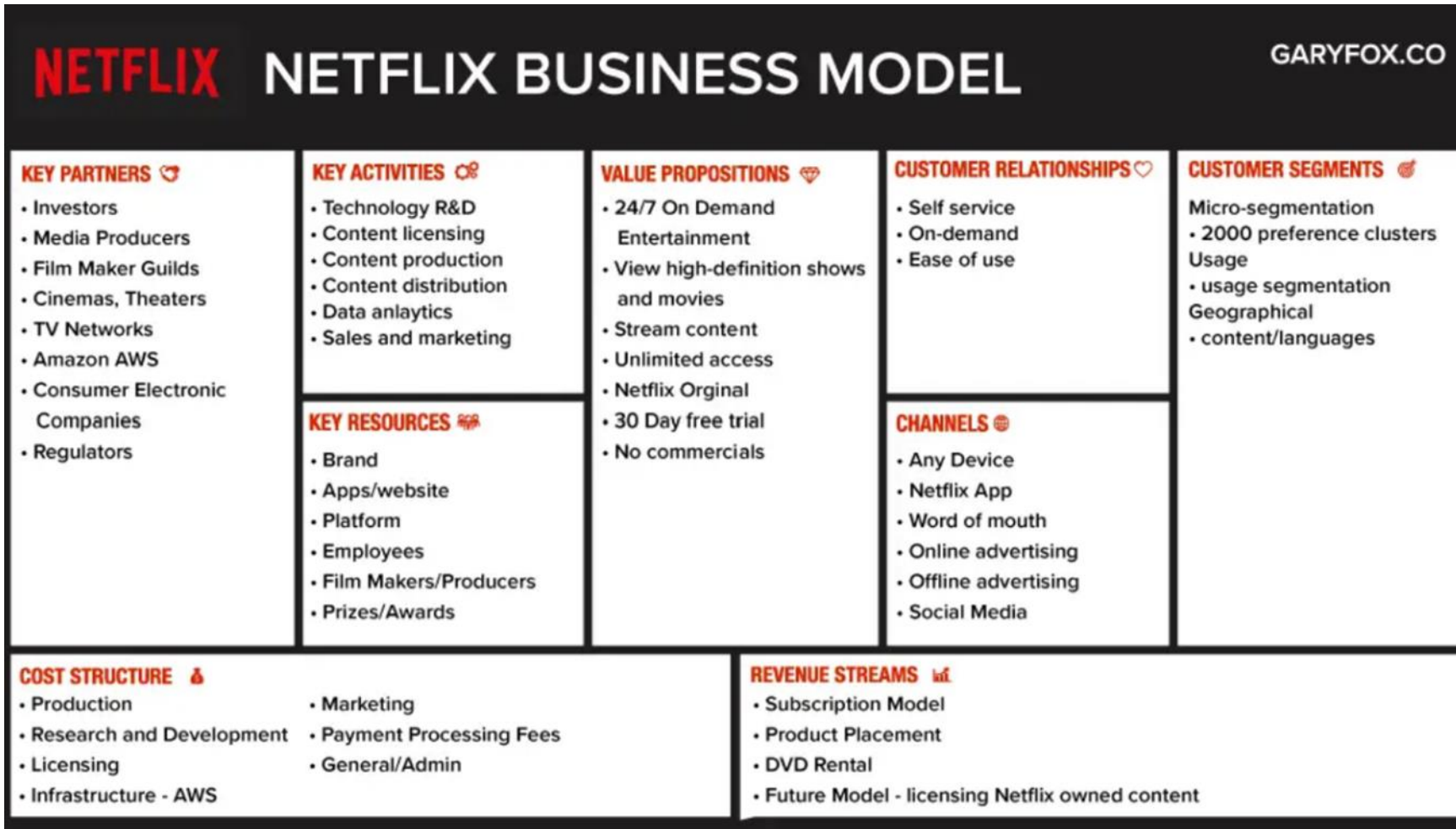
Definition of a marketing plan

- A marketing plan should outline current decisions and future strategy, with a focus on how your ideas are a fit for that ideal customer.
- Most marketing plans include information on four key subjects (4P analysis):
 - Price. How much do your products cost, and why have you made that decision?
 - Product. What are you selling and how do you differentiate it in the market?
 - Promotion. How will you get your products in front of your ideal customer?
 - Place. Where will you sell your products?

Logistics and operations plan

- Logistics and operations are the workflows that a firm implements to make ideas reality. If you're writing a business plan for your own planning purposes, this is still an important section to consider, even though you might not need to include the same level of detail as if you were seeking investment.
- Cover all parts of your planned operations, including:
 - Suppliers. Where do the firm get the raw materials needed for production, or where are the products produced?
 - Production. Will the firm make, manufacture, wholesale, or dropship your products? How long does it take the firm to produce products? How will the firm will handle a busy season or an unexpected spike in demand?
 - Facilities. Where will employees work? Does the firm plan to have a physical retail space? If yes, where?
 - Equipment. What tools and technology are required? This includes everything from computers to lightbulbs and everything in between.
 - Shipping and fulfilment. Will the firm be handling all the fulfilment tasks in-house, or will use a third-party fulfilment partner?
 - Inventory. How much will the firm keep on hand, and where will it be stored? How will the firm ship it to partners if required, and how will the firm approach inventory management?

Visualizing Business Plans: Business Model Canvas



Financial planning - Budget

- A budget is a quantitative expression of the proposed business plan of action for a future time period and it is an aid to the coordination and implementation of the plan.
- It can cover both financial and non-financial aspects of these plans and acts as a blue-print for the company to follow the forthcoming period.
- Budgets are a major feature of management control systems in general:
- They:
 - compel strategic planning including the implementation of plans,
 - provide performance criteria,
 - promote communication and coordination within the organization, and
 - affect motivating and wider organizational processes.

Roles of Budgets

- A framework for judging performance: budgeted performance measures can overcome two key limitations of using past performance as a basis for judging actual results.
 - One limitation is that past results incorporate past miscues and substandard performance.
 - Consider the case that the past performance in previous year incorporates the efforts of many departed salespeople who left because they did not have an understanding of the marketplace. Using the sales record of those departed employees would set the performance benchmark for new salespeople too low.
 - A second limitation of past performance is that the future may be expected to be very different from the past.
 - Consider the case that an organization experienced a sales increase of 10%. For the next year, it is expected that the average industry growth will be 5%. The expected industry average of 5% sales growth increase is a more appropriate benchmark than the 10% prior year's sales growth.

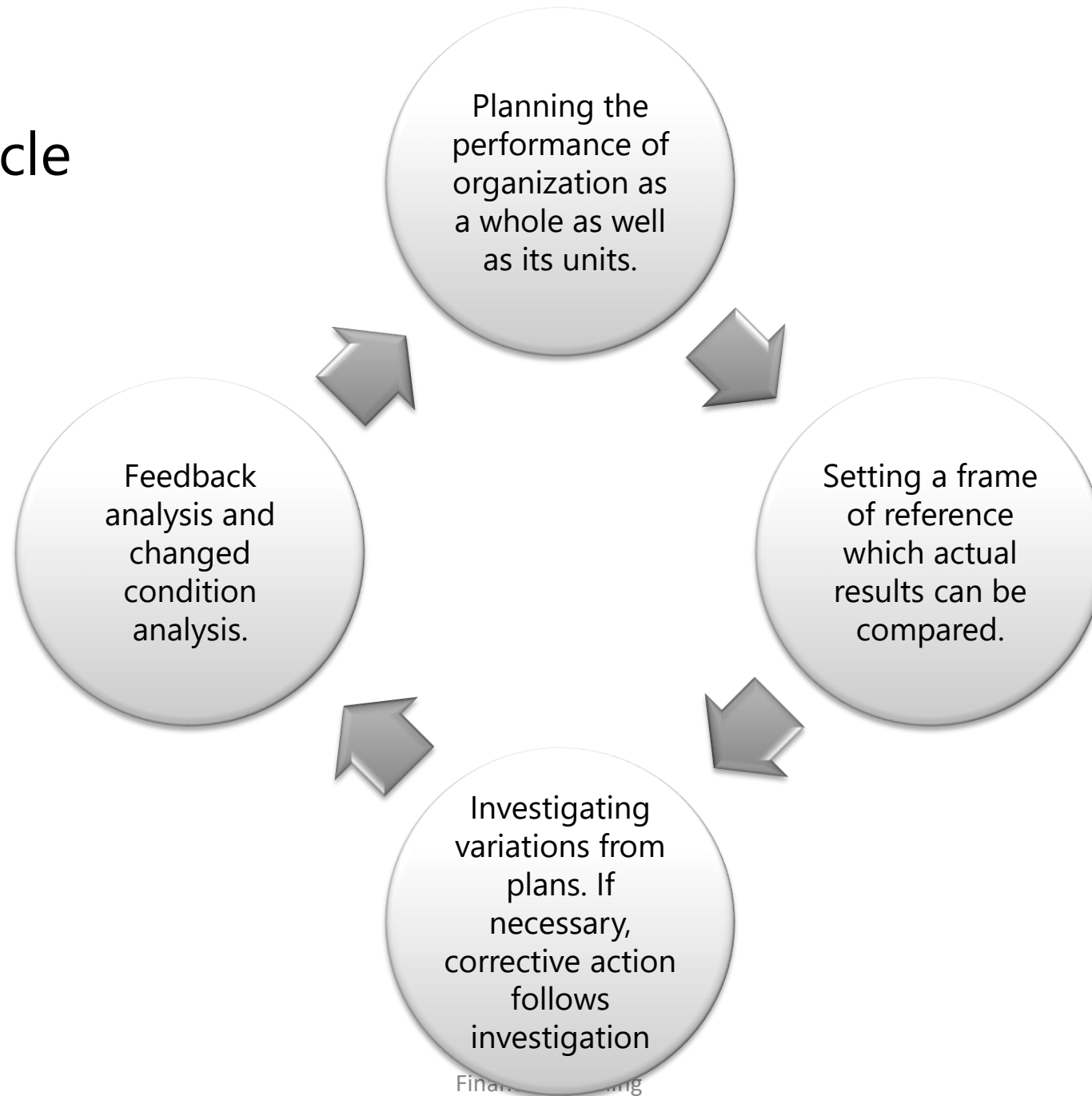
Roles of Budgets

- Coordination and communication:
 - Coordination is the meshing and balancing of all factors of production or service and of all the departments and business functions so that the company can meet its objectives.
 - Coordination forces executives to think of relationships among individual operations, departments, the company as a whole and across companies. For instance, purchasing officers make material purchase plans based on production requirements.
 - Communication is getting those objectives understood and accepted by all departments and functions.
- Motivation and wider organisational processes: Budgets help managers, but budgets need help.
 - Top management has the ultimate responsibility for the budgets of the organisation they manage.
 - Management at all levels, however, should understand and support the budget and all aspects of the management control system.

Time and Budgets

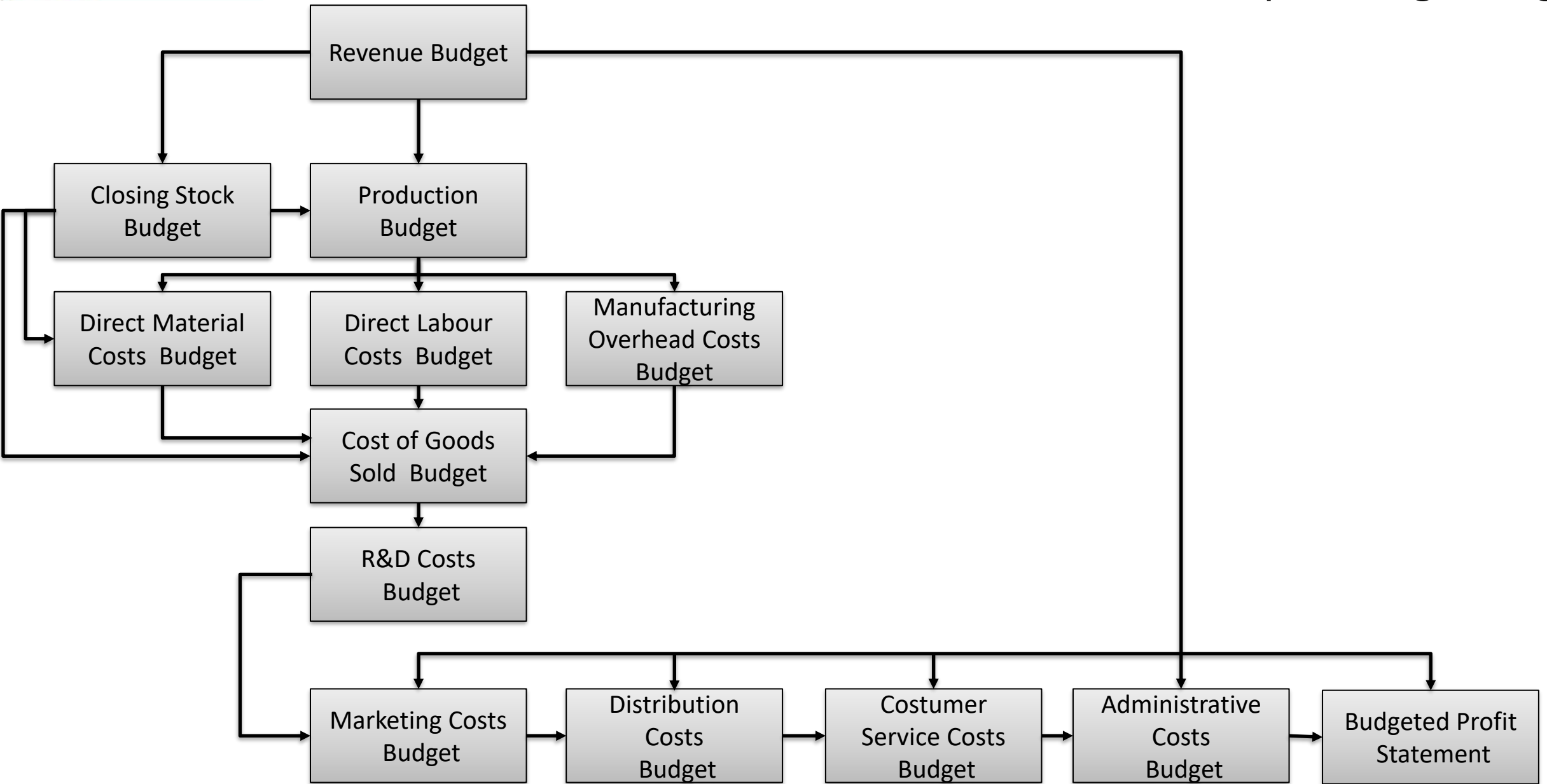
- The purpose(s) for budgeting should guide the time period chosen for the budget.
- The most frequently used budget period is one year.
- If the purpose is to budget for the total profitability, a five-year period (or more) may be appropriate (covering design, manufacture, sales and after-sales support).
- A rolling budget is a budget or plan that is always available for a specified future period by adding a month, quarter or year in the future as the month, quarter or year just ended is dropped.
- Thus, a 12-month rolling budget for March 2005 to February 2006 period becomes a 12-month rolling budget for the April 2005 to March 2006 period the next month, and so on. There is always a 12-month budget in place. Rolling budgets constantly force management to think concretely about the forthcoming 12 months, regardless of the month at hand.

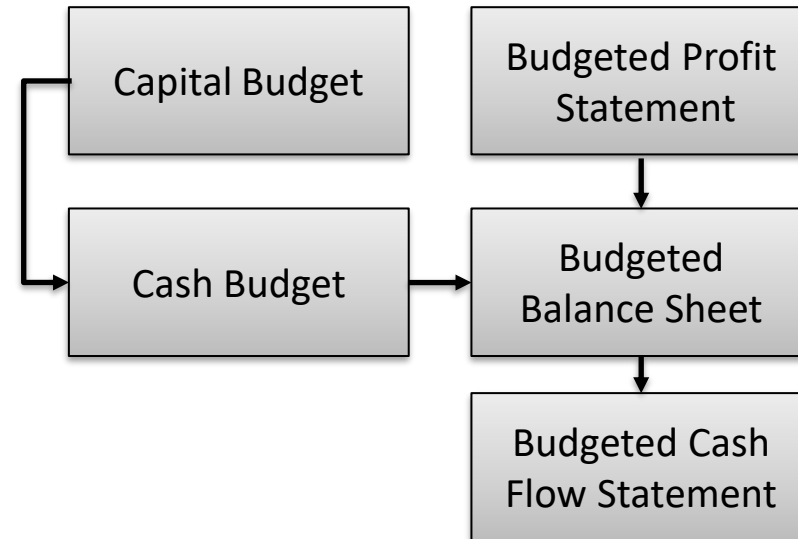
Budgeting Cycle



The Master Budget as a Planning Tool

- After organization goals, strategies and long-range plans have been developed, work begins on the master budget.
- The master budget (a) is a detailed budget for the coming fiscal year, and (b) it coordinates all the financial projections in the organization's individual budgets in a single organization-wide set of budget for a given time period.
- It embraces the impact of both operating and financial decisions:
 - Operating decisions: decisions concerning the acquisition of scarce resources.
 - Financial decisions: decisions concerning the acquisition of funds to acquire resources.





Master Budget: An Illustration

- **Basic data and requirements:**

- Wessex Engineering is a machine shop that uses skilled labour and metal alloys to manufacture two types of aircraft replacement parts: Regular and Heavy-Duty, Wessex managers are ready to prepare a master budget for the year 2006.
- Assume the following:
 - The only source of revenues is sales of the two parts. Non-sales-related revenue, such as interest income, is assumed to be zero.
 - Work-in-progress stock is negligible and is ignored.
 - Direct materials stock and finished goods stock are costed using the first-in, first-out (FIFO) method.
 - Unit costs of direct materials purchased and finished goods sold remain unchanged throughout the budget year (2006).
 - Variable production costs are variable with respect to direct manufacturing labour-hours. Variable non-production costs are variable with respect to revenues. Both assumptions are simplifying ones made to keep our example relatively straightforward.
 - For computing inventoriable costs, all manufacturing costs (fixed and variable) are allocated using a single allocation base – direct manufacturing labour-hours.

Master Budget: An Illustration

- **Basic data and requirements:**

- After carefully examining all relevant factors, the executives of Wessex Engineering forecast the following figures for 2006:

Direct materials		
Material 111 alloy	€7 per kilogram	
Material 112 alloy	€10 per kilogram	
Direct manufacturing labour	€20 per hour	
	Product	
Content of each product unit	Regular aircraft part	Heavy-Duty aircraft part
Direct materials 111 alloy	12 Kilograms	12 kilograms
Direct materials 112 alloy	6 kilograms	8 kilograms
Direct manufacturing labour	4 hours	6 hours

Master Budget: An Illustration

- **Basic data and requirements:**

- All direct manufacturing costs are variable with respect to the units of output produced. Additional information regarding the year 2006 is as follows:

	Product	
	Regular	Heavy-Duty
Expected sales in units	5 000	1 000
Selling price per unit	€ 600	€ 800
Target closing stock in units*	1 100	50
Opening stock in units	100	50
Opening stock in euros	€ 38 400	€ 26 200
	Direct materials	
	111 Alloy	112 Alloy
Opening stock in kilograms	7 000	6 000
Target closing stock in kilograms*	8 000	2 000
* Target stocks depend on expected sales, expected variation in demand for products, and management philosophies such as just-in-time stock management.		

Master Budget: An Illustration

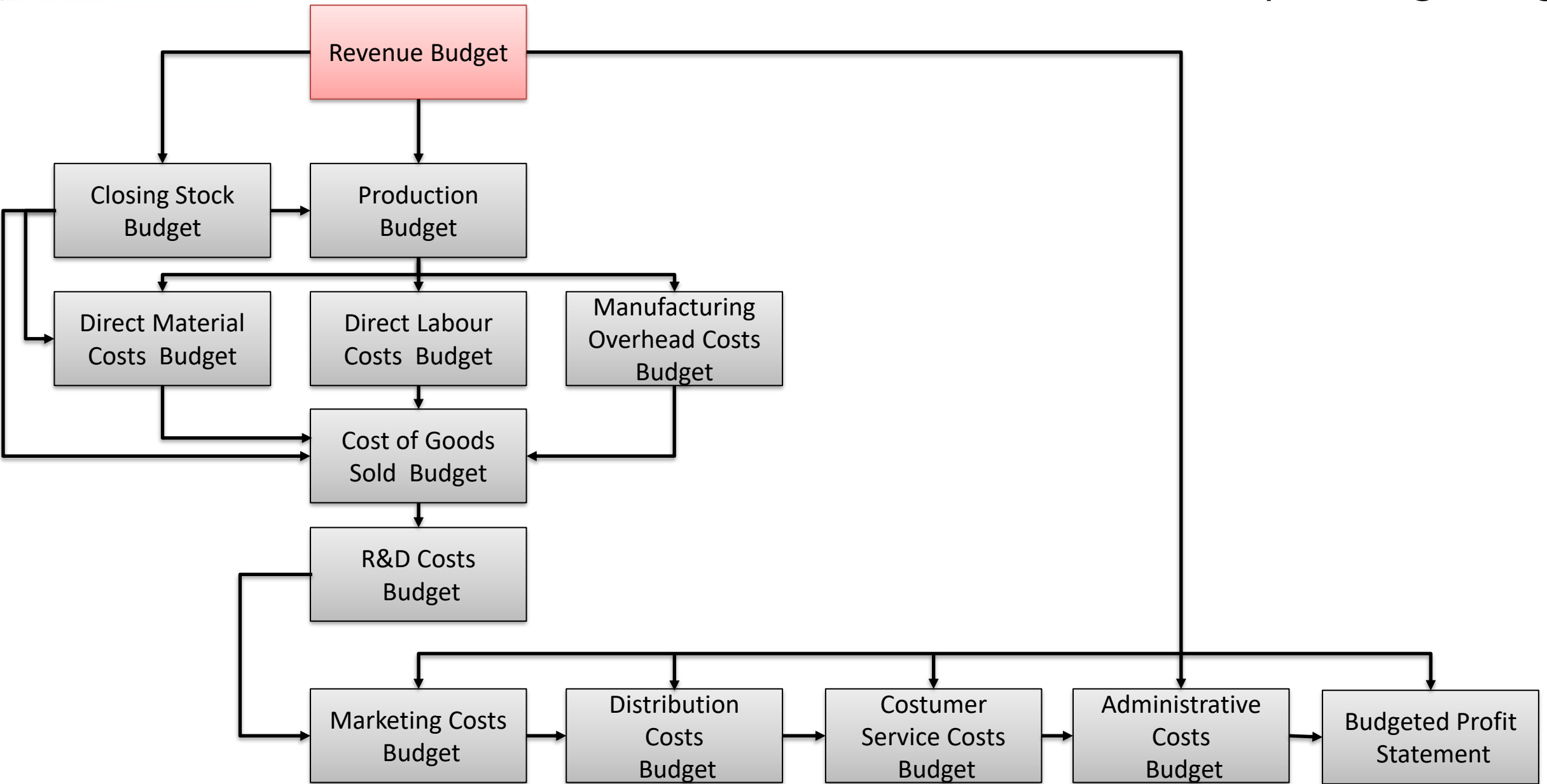
- **Basic data and requirements:**

- At the anticipated output levels for the Regular and Heavy-Duty aircraft parts, management believes the following manufacturing overhead costs will be incurred:
 - Variable: €26 per direct manufacturing labour-hour
 - Fixed: €420 000 manufacturing overhead cost for production within relevant range
- Other (non-production) costs expected to be incurred:

Variable:	R&D/product design	€ 76 000	
	Marketing	133 000	
	Distribution	66 500	
	Customer service	47 500	
	Administrative	<u>152 000</u>	€ 475 000
Fixed:	R&D/produce design	60 000	
	Marketing	67 000	
	Distribution	33 500	
	Customer service	12 500	
	Administrative	<u>222 000</u>	<u>395 000</u>
Total			<u>€870 000</u>

Master Budget: An Illustration

- The following supporting budget schedules will be prepared:
 - Revenue budget
 - Production budget (in units)
 - Direct materials usage budget and direct materials purchases budget
 - Direct manufacturing labour budget
 - Manufacturing overhead budget
 - Closing stock budget
 - Cost of goods sold budget
 - Other (non-production) costs budget



Master Budget: An Illustration

- **Step 1: Revenue budget**
- The revenue budget (schedule 1) is the usual starting point for budgeting. Why? Because production (and hence costs) and stock levels generally depend on the forecast level of revenue.

Schedule 1: Revenue budget for the year ending 31 December 2006			
	Units	Selling price	Total revenues
Regular	5 000	€ 600	€ 3 000 000
Heavy-Duty	1 000	800	<u>800 000</u>
Total			<u>€ 3 800 000</u>

- Pressures can exist for budgeted revenues to be either over- or underestimates of the expected amounts.
- Budgetary slack: the practice of underestimating budgeted revenues (or overestimating budgeted costs) in order to make budgeted targets more easily achievable. Introducing budgetary slack makes it more likely that actual revenues will exceed budgeted amounts.

Master Budget: An Illustration

- **Step 2: Production budget (in units).**
- After revenues are budgeted, the production budget (schedule 2) can be prepared. The total finished goods units to be produced depends on planned sales and expected changes in stock levels:

Budgeted production (units)	=	Budgeted sales (units)	+	Target closing finished goods stock (units)	-	Opening finished goods stock (units)
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Schedule 2: Production budget (in units) for the year ending 31 December 2006		
	Product	
	Regular	Heavy-Duty
Budgeted sales (schedule 1)	5000	1000
Add target closing finished goods stock	<u>1100</u>	<u>50</u>
Total requirements	6100	1050
Deduct opening finished goods stock	<u>100</u>	<u>50</u>
Units to be produced	<u>6000</u>	<u>1000</u>

Master Budget: An Illustration

- **Step 3: Direct materials usage budget and direct materials purchases budget.**
- The decision on the number of units to be produced (schedule 2) is the key to computing the usage of direct materials in quantities and in euros.

Schedule 3A: Direct materials usage budget in kilograms and euros for the year ending 31 December 2006

	Material		Total
	111 Alloy	112 Alloy	
Direct materials to be used in production of Regular parts (6000 units x 12 and 6 kg – see schedule 2)	72 000	36 000	
Direct materials to be used in production of Heavy-Duty parts (1000 units x 12 and 8 kg – see schedule 2)	12 000	8 000	
Total direct materials to be used (kg)	84 000	44 000	
Direct materials to be used from opening stock (under a FIFO cost-flow assumption)	7000	6000	
Multiply by cost per kilogram of opening stock	€ 7	€ 10	
Cost of direct materials to be used from opening stock: (a)	€ 49 000	€60 000	€109 000
Direct materials to be used from purchases (84 000 – 7000; 44 000 - 6000)	77 000	38 000	
Multiply by cost per kilogram of purchased materials	€ 7	€ 10	
Cost of direct materials to be used from purchases: (b)	€ 539 000	€ 380 000	€ 919 000
Total costs of direct materials to be used: (a) + (b)	€ 588 000	€ 440 000	€ 1 028 000

Master Budget: An Illustration

- **Step 3: Direct materials usage budget and direct materials purchases budget.**
- Schedule 3b calculates the budget for the direct materials purchases, which depends on the budgeted direct materials to be used, the opening stock of direct materials, and the target closing stock of direct materials:

Purchases of direct materials	=	Usage of direct materials	+	Target closing stock of direct materials	-	Opening stock of direct materials
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Schedule 3B: Direct materials purchases budget for the year ending 31 December 2006			
	Material		Total
	111 Alloy	112 Alloy	
Direct materials to be used in production from schedule 3A (kg)	84 000	44 000	
Add target closing direct materials stock (kg)	<u>8 000</u>	<u>2 000</u>	
Total requirements (kg)	92 000	46 000	
Deduct opening direct materials stock (kg)	<u>7 000</u>	<u>6 000</u>	
Direct materials to be purchased (kg)	<u>85 000</u>	<u>40 000</u>	
Multiply by cost per kilogram of purchased materials	<u>€7</u>	<u>€ 10</u>	
Total direct materials purchase costs	<u>€595 000</u>	<u>€ 400 000</u>	<u>€ 995 000</u>

Master Budget: An Illustration

- **Step 4: Direct manufacturing labour budget.**
- These costs depend on wage rates, production methods and hiring plans.

Schedule 4: Direct manufacturing labour budget for the year ending 31 December 2006					
	Output units produced (schedule 2)	Direct manufacturing labour-hours per unit	Total hours	Hourly wage rate	Total
Regular	6 000	4	24000	€20	€480000
Heavy-Duty	1 000	6	<u>6 000</u>	20	<u>120 000</u>
Total			<u>30 000</u>		<u>€ 600 000</u>

Master Budget: An Illustration

- **Step 5: Manufacturing overhead budget.**
- The total of these costs depends on how individual overhead costs vary with the assumed cost driver, direct manufacturing labour-hours

Schedule 5: Manufacturing overhead budget for the year ending 31 December 2006		
At budgeted level of 30 000 direct manufacturing labour-hours		
Variable manufacturing overhead costs		
Supplies	€ 90 000	
Indirect manufacturing labour	210 000	
Direct and indirect manufacturing labour fringe costs	300 000	
Power	120 000	
Maintenance	60 000	€ 780 000
Fixed manufacturing overhead costs		
Depreciation	220 000	
Property taxes	50 000	
Property insurance	10 000	
Supervision	100 000	
Power	22 000	
Maintenance	18 000	420 000
Total manufacturing overhead costs		€1 200 000

Master Budget: An Illustration

- **Step 6: Closing stock budget.**
- Schedule 6A shows the computation of unit costs for the two products. These unit costs are used to calculate the costs of target closing stocks of direct materials and finished goods in schedule 6B.

Schedule 6A: Computation of unit costs of manufacturing finished goods in 2006					
	Cost per unit of input*	Product			
		Regular		Heavy-Duty	
		Inputs*	Amount	Inputs*	Amount
Material 111 alloy	€7	12	€84	12	€84
Material 112 alloy	10	6	60	8	80
Direct manufacturing labour	20†	4	80	6	120
Manufacturing overhead	40‡	4	<u>160</u>	<u>6</u>	<u>240</u>
Total			<u>€ 384</u>		<u>€524</u>

*In kilograms or hours.

†Data are from slide 32.

‡Direct manufacturing labour-hours are the sole allocation base for manufacturing overhead (both variable and fixed). The budgeted manufacturing overhead rate per direct manufacturing labour-hour of €40 was calculated in step 5.

Master Budget: An Illustration

- **Step 6: Closing stock budget.**
- Schedule 6A shows the computation of unit costs for the two products. These unit costs are used to calculate the costs of target closing stocks of direct materials and finished goods in schedule 6B.

Schedule 6B: Closing stock budget as at 31 December 2006				
	Kilograms		Cost per kilogram	Total
Direct materials				
111 alloy	8 000*	€7	€56 000	
112 alloy	2 000*	10	<u>20 000</u>	€ 76 000
	Units		Cost per unit	
Finished goods				
Regular	1 100†	€ 384‡	€422 400	
Heavy-Duty	50†	524‡	<u>26 200</u>	<u>448 600</u>
Total closing stock				<u>€524 600</u>
*Data are from slide 33.				
†Data are from slide 33.				
‡From schedule 6A, this is based on 2006 costs of manufacturing finished goods because under the FIFO costing method, the units in finished goods closing stock consist of units that are produced during 2006				

Master Budget: An Illustration

- **Step 7: Cost of goods sold budget.**
- The information from schedules 3 to 6 lead to schedule.
- Note that the following holds:

Cost of goods sold	=	Opening finished goods stock	+	Cost of goods manufactured	-	Closing finished goods stock
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Schedule 7: Cost of goods sold budget for the year ending 31 December 2006		
	From schedule	Total
Opening finished goods stock, 1 January 2006	Given*	€64 600
Direct materials used	3A	€ 1 028 000
Direct manufacturing labour	4	600 000
Manufacturing overhead	5	<u>1 200 000</u>
Cost of goods manufactured		<u>2 828 000</u>
Cost of goods available for sale		2 892 600
Deduct closing finished goods stock, 31 December 2006	6B	<u>448 600</u>
Cost of goods sold		<u>€ 2 444 000</u>

*Given in the description of basic data and requirements (Regular €38400, Heavy-Duty €26200)

Exercise 14.12: Sales and production budget.

Lux-Ernster expects 2011 sales of 100 000 units of serving trays. Lux-Ernster's opening stock for 2011 is 7000 trays; target closing stock, 11 000 trays.

Required:

Calculate the number of trays budgeted for production in 2011.

Suggested Solution:

Budgeted sales in units	100 000
Add target closing finished goods stock	<u>11 000</u>
Total requirements	111 000
Deduct opening finished goods stock	<u>7 000</u>
Units to be produced	<u><u>104 000</u></u>

Exercise 14.13: Sales and production budget.

Sarandrea Sri had a target closing stock of 70000 four-litre bottles of burgundy wine. Sarandrea's opening stock was 60000 bottles, and its budgeted production was 900000 bottles.

Required:

Calculate the budgeted sales in number of bottles.

Suggested Solution:

Budgeted sales (units)				S		
Add target closing finished goods stock				70,000		
Total requirements				N		
Deduct opening finished goods stock				60,000		
Units to be produced				900,000		
	N	=	900,000	+	60,000	= 960,000
	S	=	960,000	-	70,000	= 890,000

Exercise 14.14: Direct materials purchases budget.

Europa-Dyonisos SA produces wine. The company expects to produce 1.5 million two-litre bottles of Chablis in 2011. Europa-Dyonisos purchases empty glass bottles from an outside supplier. Its target closing stock of such bottles is 50000; its opening stock is 20000. For simplicity, ignore breakage.

Required:

Calculate the number of bottles to be purchased in 2011.

Suggested Solution:

Direct materials to be used in production (bottles)	1,500,000
Add target closing direct materials stock (bottles)	<u>50,000</u>
Total requirements (bottles)	1,550,000
Deduct opening direct materials stock (bottles)	<u>20,000</u>
Direct materials to be purchased (bottles)	1,530,000

Exercise 14.15: Budgeting material purchases.

Tiilikainen Oy has prepared a sales budget of 42000 finished units for a three-month period. The company has a stock of 22000 units of finished goods on hand at 31 December and has a target finished goods stock of 24000 units at the end of the succeeding quarter.

It takes 3 litres of direct materials to make 1 unit of finished product. The company has a stock of 90000 litres of direct materials at 31 December and has a target closing stock of 110000 litres.

Required:

How many litres of direct materials should be purchased during the 3 months ending 31 March?

Suggested Solution:

	Finished goods (units)
Budgeted sales	42,000
Add target closing finished goods stock	24,000
Total requirements	66,000
Deduct opening finished goods stock	<u>22,000</u>
Units to be produced	<u>44,000</u>

Exercise 14.15: Budgeting material purchases.

Suggested Solution:

	Direct materials (in litres)
Direct materials needed for production (44,000 × 3)	132,000
Add target closing direct materials stock	<u>110,000</u>
Total requirements	242,000
Deduct opening direct materials stock	<u>90,000</u>
Direct materials to be purchased	<u>152,000</u>

Exercise 14.17: Revenue, production and purchases budget.

The Suzuki Company in Japan has a division that manufactures two-wheel motorcycles. Its budgeted sales for Model G in 2012 is 800000 units. Suzuki's target closing stock is 100000 units, and its opening stock is 120000 units. The company's budgeted selling price to its distributors and dealers is 400000 yen per motorcycle.

Suzuki buys all its wheels from an outside supplier. No defective wheels are accepted. Suzuki's needs for extra wheels for replacement parts are ordered by a separate division of the company). The company's target closing stock is 30000 wheels, and its opening stock is 20000 wheels. The budgeted purchase price is 16000 yen per wheel.

Required:

1. Calculate the budgeted revenue in yen.
2. Calculate the number of motorcycles to be produced.
3. Calculate the budgeted purchases of wheels in units and in yen.

Exercise 14.17: Revenue, production and purchases budget.

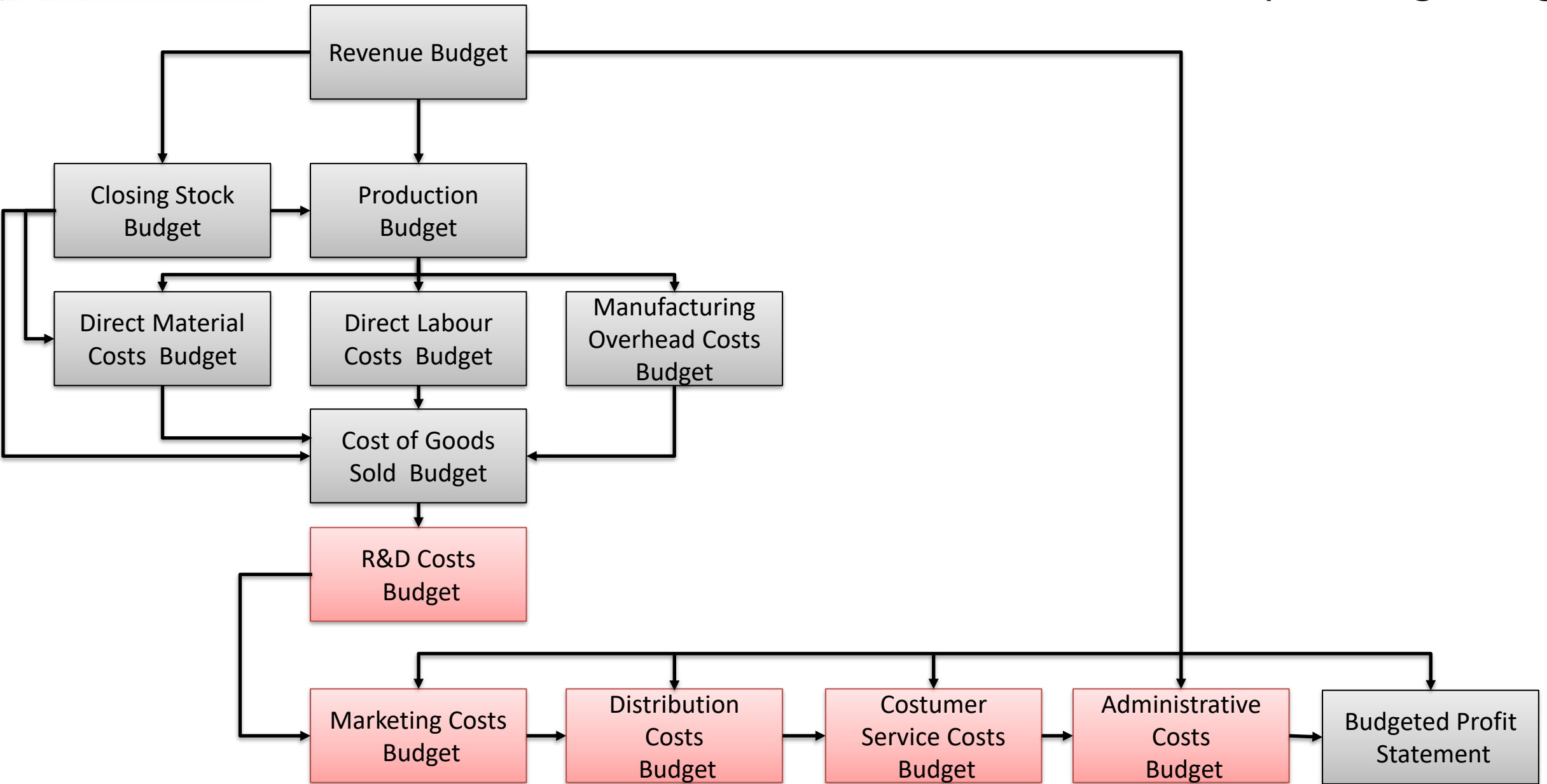
Suggested Solution:

- 1 $800,000 \text{ motorcycles} \times 400,000 \text{ yen} = 320,000,000,000 \text{ yen}$
- 2

Budgeted sales (units)	800,000
Add target closing finished goods stock	<u>100,000</u>
Total requirements	900,000
Deduct opening finished goods stock	<u>120,000</u>
Units to be produced	<u>780,000</u>
- 3

Direct materials to be used in production	$780,000 \times 2 = 1,560,000$
Add target closing direct materials stock	<u>30,000</u>
Total requirements	1,590,000
Deduct opening direct materials stock	<u>20,000</u>
Direct materials to be purchased	1,570,000
Cost per wheel in yen	16,000
Direct materials purchased cost in yen	25,120,000,000

Note the relatively small stock of wheels. In Japan, suppliers tend to be located very close to the major manufacturer. Stocks are controlled by just-in-time and similar systems. Indeed, some direct materials stocks are almost non-existent.



Master Budget: An Illustration

- **Step 8: Other (non-production) costs budget.**
- Schedules 2 (to 7 cover budgeting for Wessex's production area of the value chain. For brevity, other areas of the value chain are combined into a single schedule.

Schedule 8: Other (non-production) costs budget for the year ending 31 December 2006			
Variable costs			
R&D/product design	€ 76 000		
Marketing	133 000		
Distribution	66 500		
Customer service	47 500		
Administrative	<u>152 000</u>		475 000*
Fixed costs			
R&D/product design	60 000		
Marketing	67 000		
Distribution	33 500		
Customer service	12 500		
Administrative	<u>222 000</u>		<u>395 000</u>
Total costs			<u>€ 870 000</u>
*Total variable cost for schedule 8 is €0.125 per revenue euro (€475 000 ÷ €3 800 000)			

Master Budget: Illustration

- Step 9: Budgeted operating profit statement.** Schedules 1, 7 and 8 provide the necessary information to complete the budgeted operating profit statement.

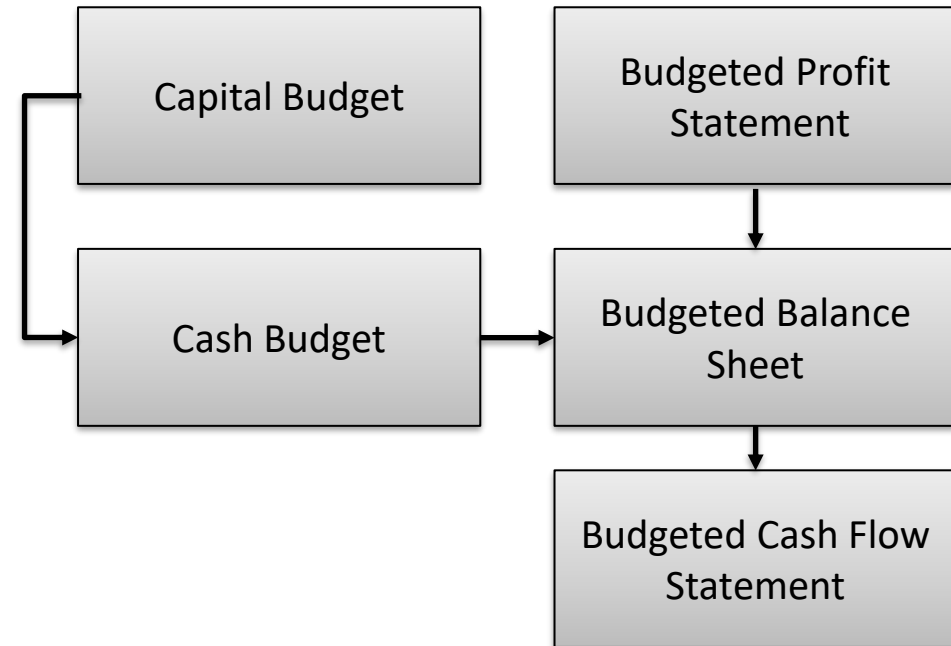
Budgeted operating profit for Wessex Engineering for the year ending 31 December 2006		
Revenues	Schedule 1	€ 3 800 000
Costs		
Cost of goods sold	Schedule 7	<u>2 444 000</u>
Gross margin		1 356 000
Operating costs		
R&D/product design costs	Schedule 8	€ 136 000
Marketing costs	Schedule 8	200 000
Distribution costs	Schedule 8	100 000
Customer service costs	Schedule 8	60 000
Administration costs	Schedule 8	<u>374 000</u>
		<u>870 000</u>
Operating profit		<u>€ 486 000</u>

Organizational Structure and Responsibility

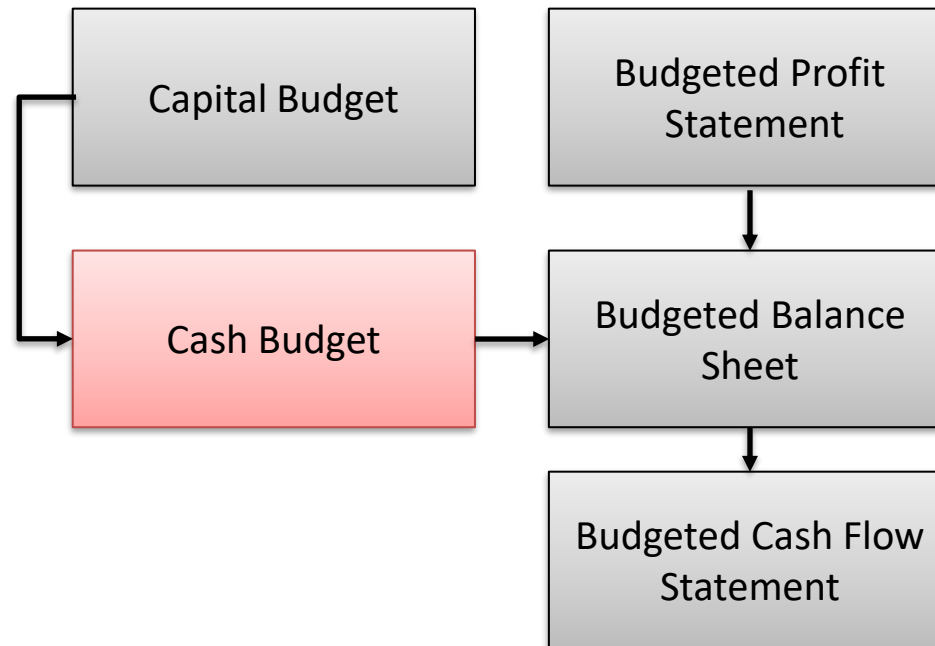
- Organizational structure is an arrangement of lines of responsibility within the entity.
- To attain the goals described in the **master budget**, an organization must coordinate the effort of all its employees.
- Coordinating the organization's efforts means assigning responsibility to managers who are accountable for their actions in planning and controlling human and physical resources.
- Each manager is in charge of **a responsibility center**. A responsibility center is a part, segment or subunit of an organization whose manager is accountable for a specified set of activities.
- **Responsibility accounting** is a system that measures the plans (by budgets) and actions (by actual results) of each responsibility center.
- Four major types of responsibility center are:
 - **Cost center**: manager accountable for costs only.
 - **Revenue center**: manager accountable for revenues only.
 - **Profit center**: manager accountable for revenues and costs.
 - **Investment center**: manager accountable for investments, revenues and costs.

Financial budget

- The major illustration in this lectures features the operating budget.
- The other major part of the master budget is the financial budget, which includes the capital budget, cash budget, budgeted balance sheet and budgeted statement of cash flows.
- We focus on the cash budget.
- Capital budgeting is covered in Lecture 6; coverage of the budgeted statement of cash flows and the budgeted balance sheet is beyond the scope of this module.



Cash budget



The cash budget is a schedule of expected cash receipts and disbursements.

Cash budget

- Suppose that the budgeted cash flows for 2006 of Wessex Engineering are as follows:

	Quarters			
	1	2	3	4
Collections from customers	€913 700	€984 600	€976 500	€918 400
Disbursements:				
Direct materials	314 360	283 700	227 880	213 800
Payroll	557 520	432 080	409 680	400 720
Income taxes	50 000	46 986	46 986	46 986
Other costs	184 000	156 000	151 000	149 000
Machinery purchase	-	-	-	35 080

- Additional information:
 - The company wants to maintain a €35 000 minimum cash balance at the end of each quarter.
 - The company can borrow or repay money in multiples of €1000 at an interest rate of 12% per year. Management does not want to borrow any more cash than is necessary and wants to repay as promptly as possible.
 - By special arrangement, interest is calculated and paid when the principal is repaid. Assume that borrowing takes place at the beginning and repayment at the end of the quarters in question. Interest is calculated to the nearest euro.

	Quarters				4 Year as a whole
	1	2	3		
Cash balance, opening	€30 000	€35 820	€35 934	€35 188	€30 000
Add receipts					
Collections from customers	913 700	984 600	976 500	918 400	3 793 200
Total cash available for needs (a)	943 700	1 020 420	1 012 434	953 588	3 823 200
Deduct disbursements					
Direct materials	314 360	283 700	227 880	213 800	1 039 740
Payroll	557 520	432 080	409 680	400 720	1 800 000
Income taxes	50 000	46 986	46 986	46 986	190 958
Other costs	184 000	156 000	151 000	149 000	640 000
Machinery purchase	0	0	0	35 080	35 080
Total disbursements (b)	1 105 880	918 766	835 546	845 586	3 705 778
+ Minimum cash balance desired	35 000	35 000	35 000	35 000	35 000
Total cash needed (c)	1 140 880	953 766	870 546	880 586	3 740 778
Cash excess (deficiency) (a) – (c)*	€(197 180)	€66 654	€141 188	€73 002	€ 82 422
Financing					
Borrowing (at beginning)	€198 000	€0	€0	€0	€198 000
Repayment (at end)	-	(62 000)	(130 000)	(6 000)	(198 000)
Interest (at 12% per year)†		(3 720)	(11 700)	(720)	(16 140)
Total effects of financing (d)	€198 000	€(65 720)	€(141 700)	€(6 720)	€(16 140)
Cash balance, closing (a) – (b) + (d)	€35 820	€35 934	€35 188	€101 282	€101 282

The opening cash balance plus cash receipts equals the total cash available before financing.

Total cash needed includes total disbursements, keyed as (b), plus the minimum closing cash balance desired.

Financing requirements depend on how the total cash available for needs, keyed as (a), compares with the total cash needed, keyed as (c).

* Excess of total cash available over total cash needed before current financing.

† Note that the interest payments pertain only to the amount of principal being repaid at the end of a given quarter. The specific computations regarding interest are $€62000 \times 0.12 \times \frac{2}{4} = €3720$; $€130\,000 \times 0.12 \times \frac{3}{4} = €11\,700$; and $€6000 \times 0.12 \times \frac{1}{4} = €720$. Also note that depreciation does not require a cash outlay.

Exercise 14.20: Cash budgeting.

On 1 December 2010, Tire-Lire, SNC, is attempting to project cash receipts and disbursements to 31 January 2011. On this latter date, a note will be payable in the amount of €100 000. This amount was borrowed in September to carry the company through the seasonal peak in November and December.

The trial balance on 1 December shows in part the following information:

Cash	€10 000	
Debtors	280 000	
Allowance for bad debts		€15 800
Stock	87 500	
Creditors		92 000

Sales terms call for a 2% discount if payment is made within the first 10 days of the month after purchase, with the balance due by the end of the month after purchase. Experience has shown that 70% of the billings will be collected within the discount period, 20% by the end of the month after purchase, 8% in the following month, and that 2% will be uncollectable. There are no cash sales.

The average selling price of the company's products is €100 per unit. Actual and projected sales are:

October actual	€180 000
November actual	250 000
December estimated	300 000
January estimated	150 000
February estimated	120 000

Exercise 14.20: Cash budgeting.

All purchases are payable within 15 days. Thus approximately 50% of the purchases in a month are due and payable in the next month. The average unit purchase cost is €70. Target closing stocks are 500 units plus 25% of the next month's unit sales.

Total budgeted marketing, distribution and customer-service costs for the year are €400 000. Of this amount, €150 000 is considered fixed (and includes depreciation of €30 000). The remainder varies with sales (i.e., with a fixed ratio 1/6). Both fixed and variable marketing, distribution and customer-service costs are paid as incurred.

Required:

Prepare a cash budget for December and January. Supply supporting schedules for collections of debtors due payments for raw materials, and marketing, distribution and customer-service costs.

Exercise 14.20: Cash budgeting.

Suggested Solution:

Tire-Lire, SNC		
Statement of budgeted cash receipts and disbursements for the months of December 2010 and January 2011		
	December 2010	January 2011
Cash balance, opening	€10 000	€2 025
Add receipts:		
Collections of receivables (schedule 1)	<u>235 900</u>	<u>285 800</u>
(a) Total cash available for needs	<u>245 900</u>	<u>287 825</u>
Deduct disbursements:		
For merchandise purchases (schedule 2)	183 875	141 750
For variable costs (schedule 3)	50 000	25 000
For fixed costs (schedule 3)	<u>10 000</u>	<u>10 000</u>
(b) Total disbursements	<u>243 875</u>	<u>176 750</u>
Cash balance, end of month (a-b)	<u>€2 025</u>	<u>€111 075</u>

Enough cash should be available for repayment of the note on 31 January 2011.

Exercise 14.20: Cash budgeting.

Schedule 1: Collections of receivables.

December: $14\,400 [a] + 50\,000 [b] + 171\,500 [c] = \text{€}235\,900$

January: $20\,000 [d] + 60\,000 [e] + 205\,800 [f] = \text{€}285\,800$

[a] $0.08 \times \text{€}180\,000$ [b] $0.20 \times \text{€}250\,000$ [c] $0.70 \times \text{€}250\,000 \times 0.98$

[d] $0.08 \times \text{€}250\,000$ [e] $0.20 \times \text{€}300\,000$ [f] $0.70 \times \text{€}300\,000 \times 0.98$

Schedule 2: Payments for merchandise

	December	January
Target closing stock (in units)	875 [a]	800 [c]
Add units sold (Sales ÷ €100)	<u>3 000</u>	<u>1 500</u>
Total requirements	3 875	2 300
Deduct opening stock (in units)	<u>1 250 [b]</u>	<u>875</u>
Purchases (in units)	<u>2 625</u>	<u>1 425</u>
Purchases in francs (units x €70)	<u>€183 750</u>	<u>€99 750</u>

[a] $500 \text{ units} + 0.25 (150\,000 \div 100)$ [b] $87\,500 \div 70$

[c] $500 \text{ units} + 0.25 (120\,000 \div 100)$

	December	January
Cash disbursements:		
For previous month's purchases at 50%	€92 000	€91 875
For current month's purchases at 50%	<u>€91 875</u>	<u>€49 875</u>
	<u>€183 875</u>	<u>€141 750</u>

Exercise 14.20: Cash budgeting.

Schedule 3: Marketing, distribution and customer service costs

Total annual fixed costs, €150 000, minus €30 000 depreciation	=	€120 000
Monthly fixed cost requiring cash outlay	=	€ 10 000
Variable cost ratio to sales = 1/6		
December variable costs: $1/6 \times \text{€}300\,000$ sales	=	€50 000
January variable costs: $1/6 \times \text{€}150\,000$ sales	=	€25 000

