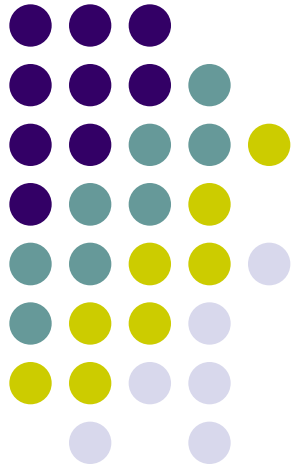
Activity Based Costing (ABC)



Ladislav Šiška

Why Activity Based Costing?

“You can have any colour,

as long as it's black.“

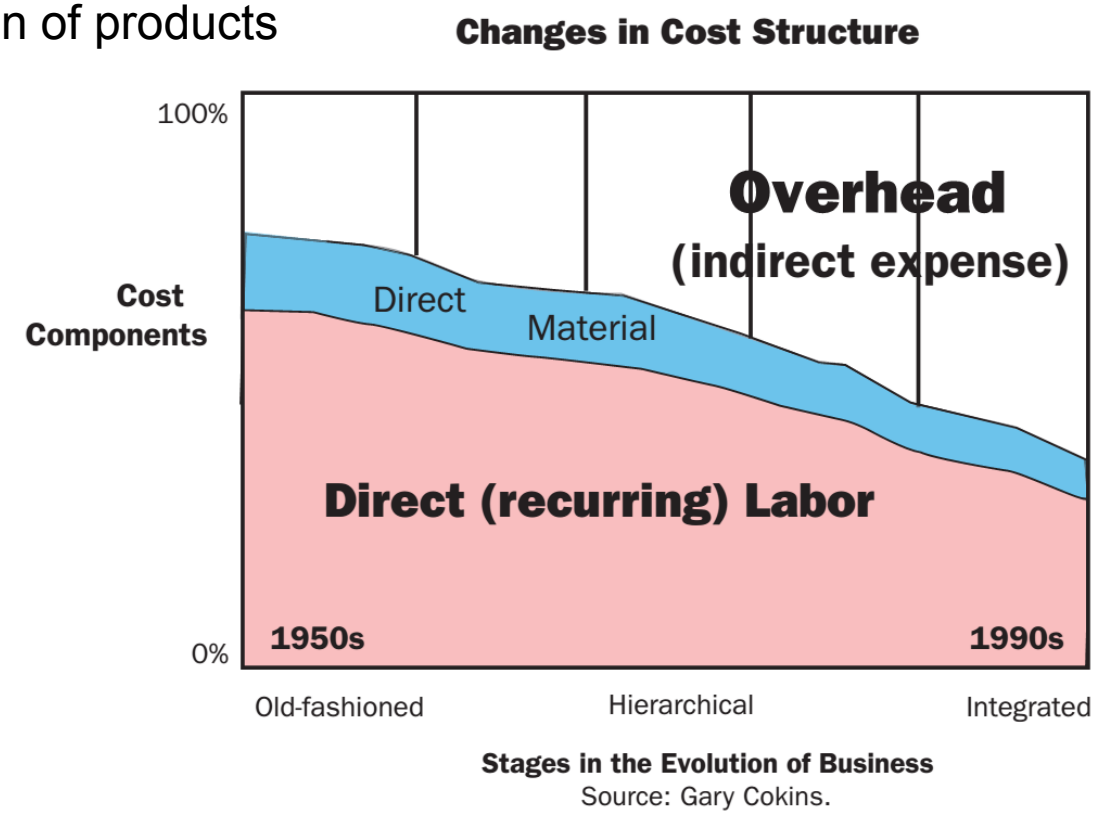
v. Today?

Why Activity Based Costing?

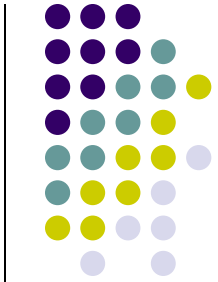
Trends like

- complex structure of products
- multiple orders and shor delivery times
- quality requirements
- shortening of product life-cycle
- differentiation and customisation of products

=>



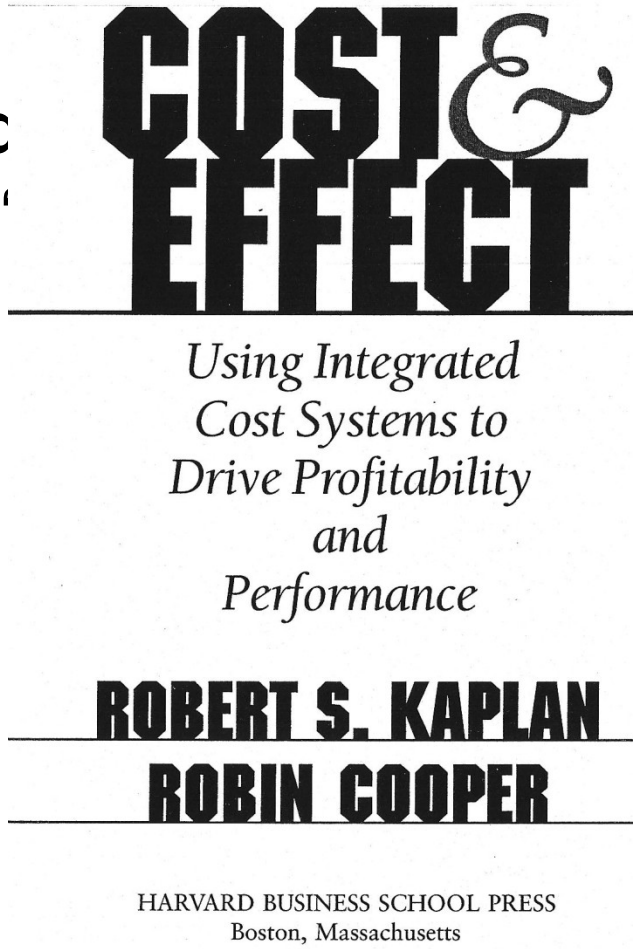
Innovations in Management Accounting (MA)



- **1980s Criticism of MA developmnet**
  - **H. Thomas Johnson, Robert S. Kaplan**
    minimal progress after 1925
- **Main concepts:**
  - **Activity Based Costing / Management** (1980s/1990s)
  - **Target Costing** (Japan, 1990s)
  - **Life Cycle Costing**
  - **Balanced Scorecard** (1996)
  - in German speaking countries
    – **Controlling (Controllership)**

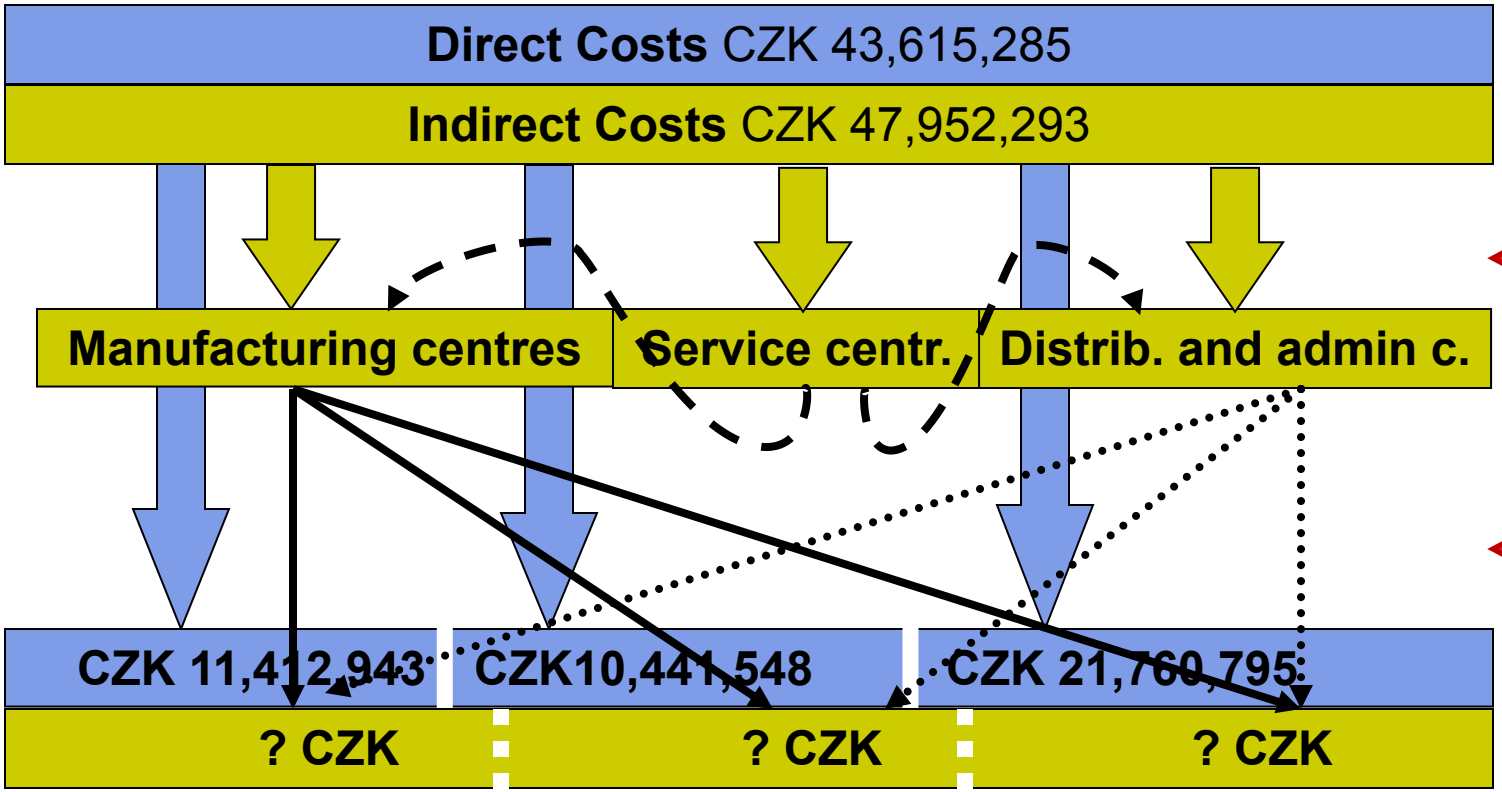
Activity Based Costing

- initiated by CAM-I
  - „**Consortium of Advanced Management** International" (originally **Industrial**)
  - http://www.cam-i.org/
- wide spread through consultants
- German-speaking countries
  - Prozesskostenrechnung, Aktivitätskostenrechnung



R.S.Kaplan, R.Cooper (1989)

Traditional Costs Allocation



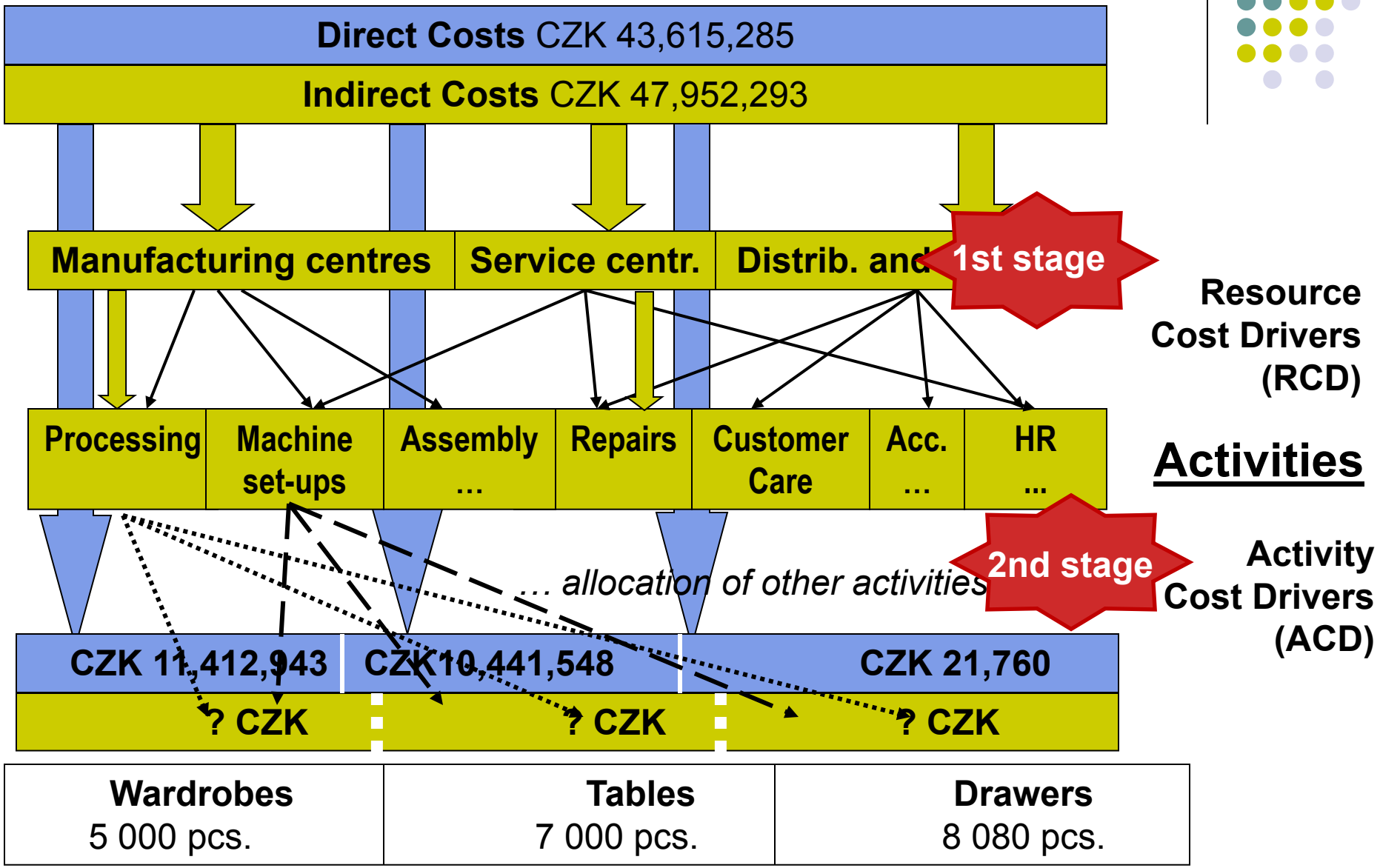
1st stage

2nd stage

Wardrobes	Tables	Drawers
5 000 pcs.	7 000 pcs.	8 080 pcs.

How to assign indirect cost?

Logic of Activity Based Costing



ABC terminology

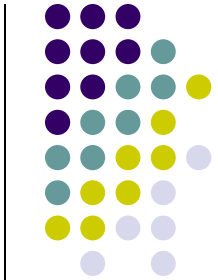
- Activities
  - parts of the whole company process

  = sub-processes
- Cost objects 
- Cost drivers
  - analogy to allocation bases
- Cost pools
  - analogy to cost centres (Drury, 2012)
  - collection of activities cost

Designing ABC systems (1/2)

1. **Identify the major activities :**
   - reasonable level of aggregation
     - *max* 5 % of resource capacity [Kaplan, Cooper (1998): *Cost and Effect*]
   - **Choice of activities** influenced by
     - the total cost of the activity centre and
     - the ability of a single cost driver to provide a satisfactory determinant of the cost of the activity.
2. **Assign costs to cost pools (cost centre) for each activity:**
   - Costs assigned to activity cost pools include
     - direct and
     - indirect costs - **resource cost drivers (RCD)** used to assign them

Designing ABC systems (2/2)



3. **Determine the activity cost driver** for each activity:
   - they should:
     - provide a good explanation of costs of each activity pool.
     - be easily measurable
     - the data easy to obtain and identifiable with the product.
   - ACD classification:
     - transaction ACD
     - duration ACD
     - intensity ACD
4. **Assign the cost of activities to products**

A comparison of traditional and ABC systems

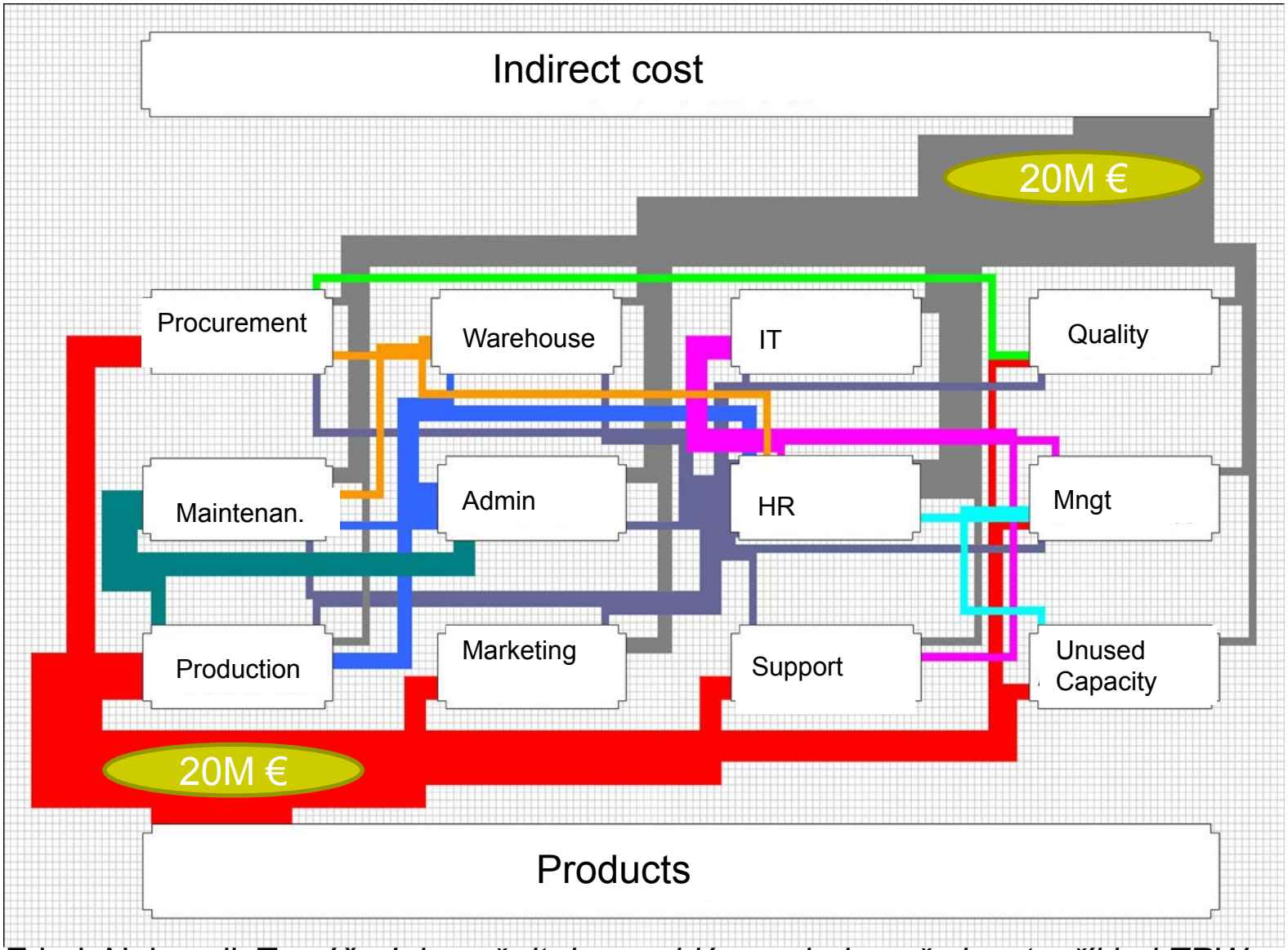
Traditional cost systems

- two-stage allocation process
  - the first stage to allocate **costs to departments**
  - the second stage: smaller number of usually **volume-based cost drivers** (typically direct labour hours DLH or machine hours)
- traditional systems often rely on **arbitrary allocation bases**

Activity-based systems

- two-stage allocation process
  - the first stage to allocate **costs to activities** (ABC systems tend to have more cost centres/cost pools)
  - the second stage: ABC systems use **many second stage cost drivers**.
- ABC systems seek to use only **cause-and-effect**

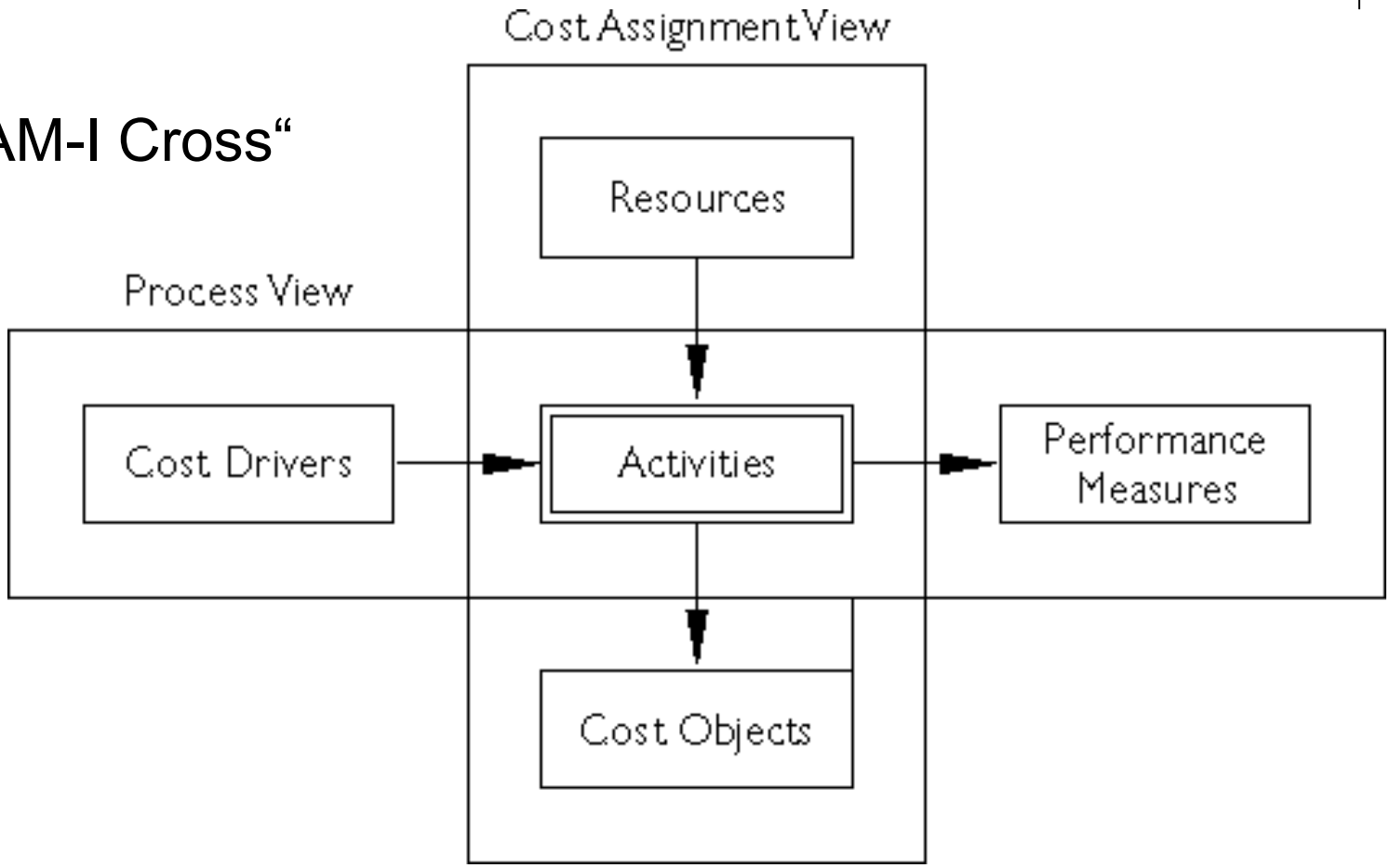
Multistage Activity Based Costing



Zdroj: Nekvapil, Tomáš. *Jak změnit dva problémy v jednu přednost: příklad TRW Autoelektronika, s.r.o.*, 2006. (dostupné též na http://abcosting.biz)

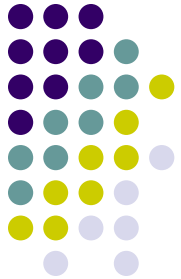
ABC Effects: **AB management**

„CAM-I Cross“



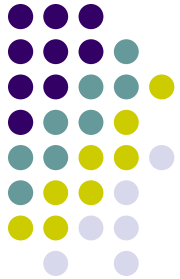
- ABC can be used for a range of cost management applications besides product costing.

ABC Effects:
Classification of activities (1/2)



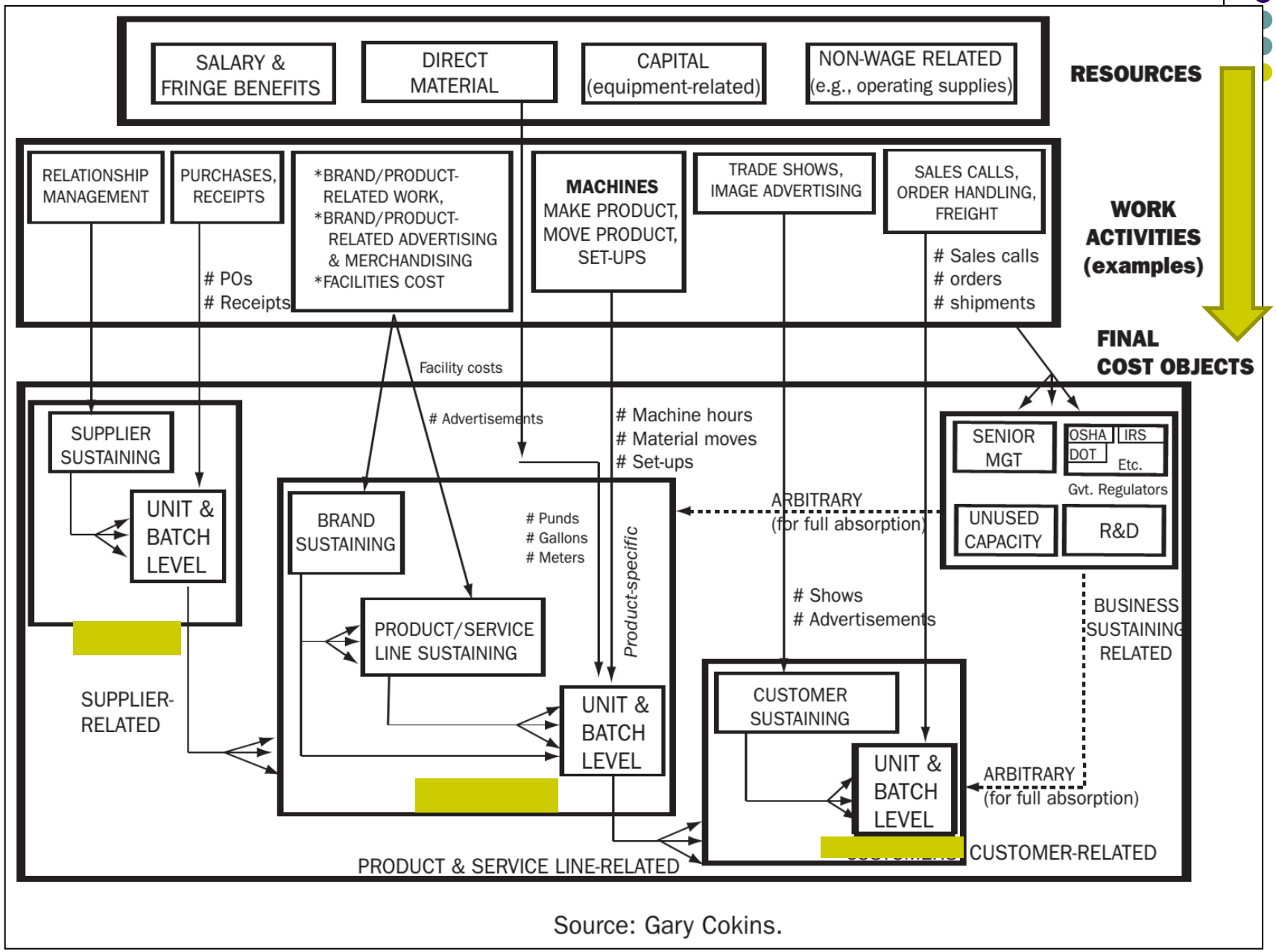
- **Unit-level activities:**
  - Performed each time a unit of goods is produced.
  - Resources are consumed in proportion to the number of units of the product or service produced or sold.
  - Examples:
    - Direct materials and labour, energy costs,expenses consumed in proportion to machine processing time
- **Batch-related activities:**
  - Performed each time a batch of goods is produced.
  - Costs vary with the number of batches made.
  - Examples:
    - set-ups, purchase ordering, first-item inspection activities.

ABC Effects:
Classification of activities (2/2)



- **Product/service sustaining activities:**
  - Performed to enable the production of individual goods
  - Examples:
    - activities related to maintaining an accurate bill of materials, preparing engineering change notices
- **Facility-sustaining (or business-sustaining) activities**:
  - Performed to support the organization as a whole.
  - Examples:
    - plant management, property costs, salaries of general administrative staff, general selling and marketing expenses
  - Common to all products and services
    => not allocated to products/services

ABC Effects: **Different cost objects**



Source: Gary Cokins.

Cost object: customer

CUSTOMER: XYZ CORPORATION (CUSTOMER #1270)

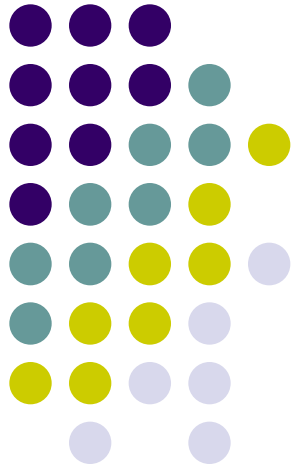
Sales	**$$$**	**Margin $ (Sales – ΣCosts)**	**Margin % of Sales**	
Product-Related				
Supplier-Related costs (TCO)	$xxx	$xxx	98%	
Direct Material	xxx	xxx	50%	**Product-related costs**
Brand Sustaining	xxx	xxx	48%	
Product Sustaining	xxx	xxx	46%	
Unit, Batch*	xxx	xxx	30%	
Distribution-Related				
Outbound Freight Type*	xxx	xxx	28%	**Customer-related costs**
Order Type*	xxx	xxx	26%	
Channel Type*	xxx	xxx	24%	
Customer-Related				
Customer-Sustaining	xxx	xxx	22%	
Unit Batch*	xxx	xxx	10%	
Business Sustaining	xxx	xxx	8%	
			8% Operating Profit	
Capital Charge** (inventories, receivables)	xxx	xxx	2%	
			6% Economic Profit (for EVA)	

* Activity Cost Driver Assignments use measurable quantity volume of Activity Output (Other Activity Assignments traced based on informed (subjective) %s)

**Capital charges can also be directly charged as imputed interest to products & cust.

Source: Gary Cokins.

Customer profitability



ABC Effects: **Customer Profitability**

- **manufacturing costs of typical products** are customer independent
- **MSDA** (=Marketing, Selling, Distribution, Administrative) **overheads** allocated:
  - **usually the cost objects are customers** not products
    - traditional allocation:

    - Activity-based allocation:

Customer Profitability

Example

- traditional allocation of MSDA Expenses

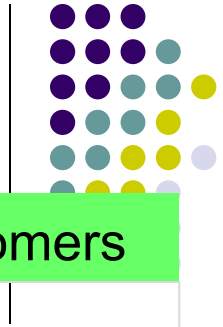
	Carver	Delta
Sales	$320,000	$315,000
Cost of goods sold	190,000	195,000
Gross margin	$130,000	$120,000
MSDA expenses at 30% of sales	96,000	94,500
Operating profit	$34,000	$25,500
Profit percentage	10.6%	8.1%

Customer Profitability Example

- Activity based allocation of MSDA Expenses

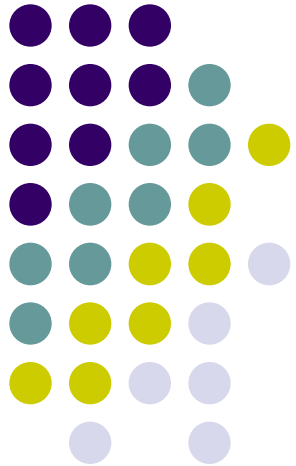
	Carver	Delta
Sales	$320,000	$315,000
Cost of goods sold	190,000	195,000
Gross margin	$130,000	$120,000
Gross margin percentage	40.6%	38.1%
Marketing and technical support	7,000	54,000
Travel to customers	1,200	7,200
Service customers	4,000	42,000
Handle customer orders	1,400	26,900
Ship to customers	12,600	42,000
Total MSDA activity expenses	26,200	172,100
Operating profit	$103,800	$(52,100)
Profit percentage	32.4%	(16.5%)

Customers' segmentation

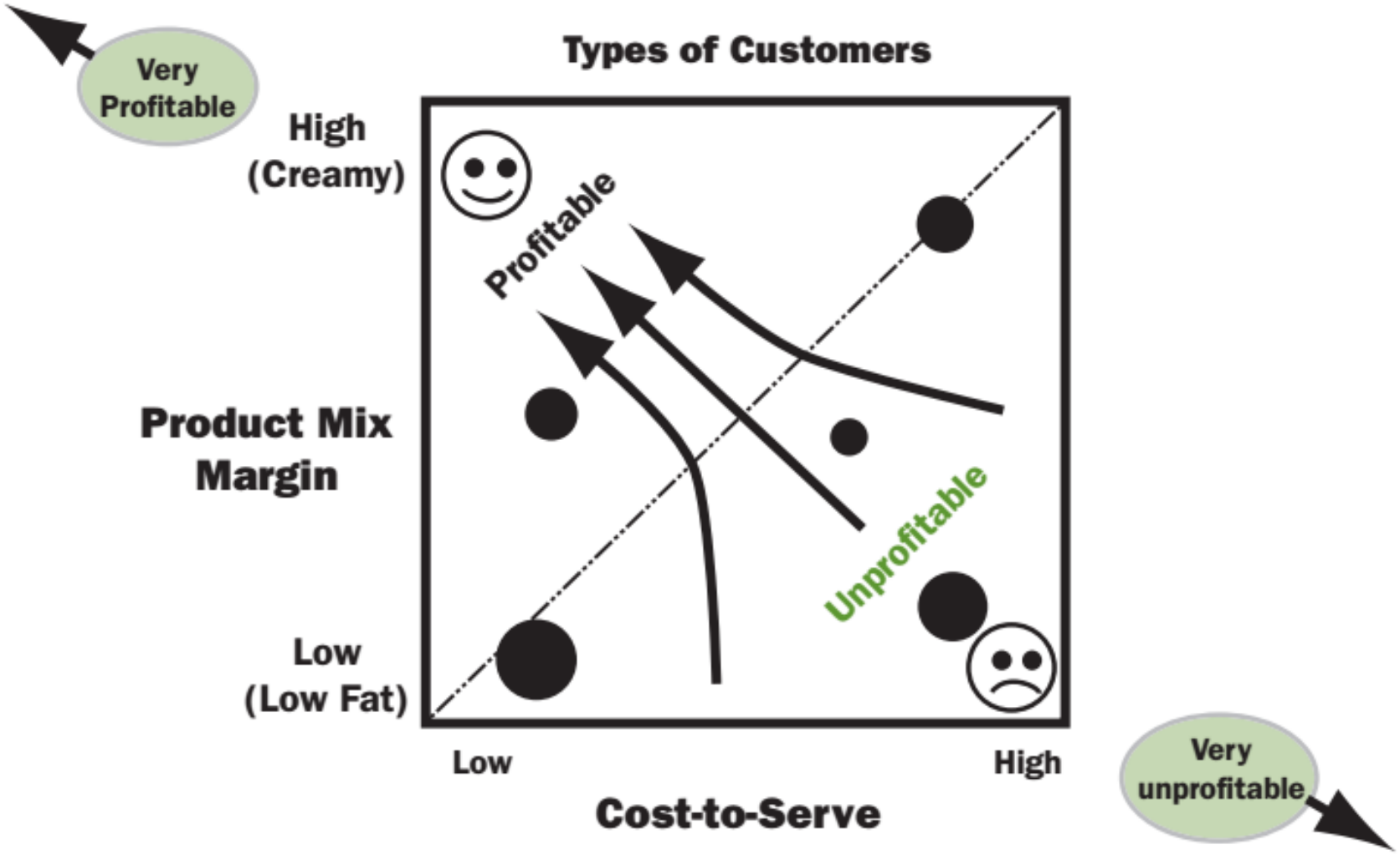


High Cost-to-Serve Customers	**Low Cost-to-Serve** Customers
• Order custom products • Small order quantities • Unpredictable order arrivals • Customized delivery • Change delivery requirements • Manual processing; high order error rates • Large amounts of pre-sales support (marketing, technical, and sales resources) • Large amounts of post-sales support (installation, training, warranty, field service) • Pay slowly (have high accounts receivable)	• Order standard products • High order quantities • Predictable order arrivals • Standard delivery • No changes in delivery requirements • Electronic processing (EDI) with zero defects • Little to no pre-sales support (standard pricing and ordering) • No post-sales support • Pay on time (low accounts receivable)

Customer porfolio visualisation



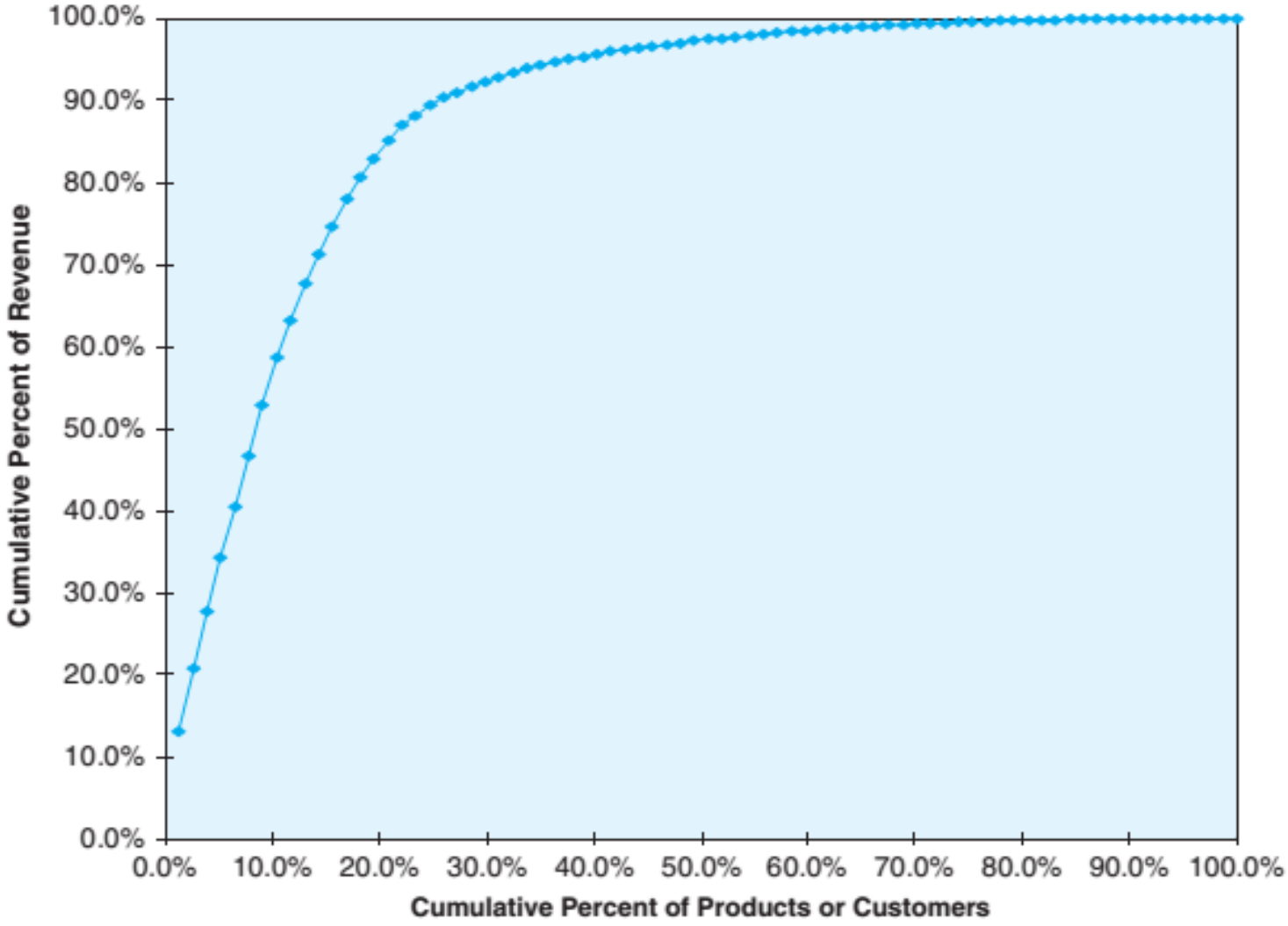
Zero-profit line



Source: Gary Cokins.

Whale curve

- 80–20 law applies wel to sales revenues:



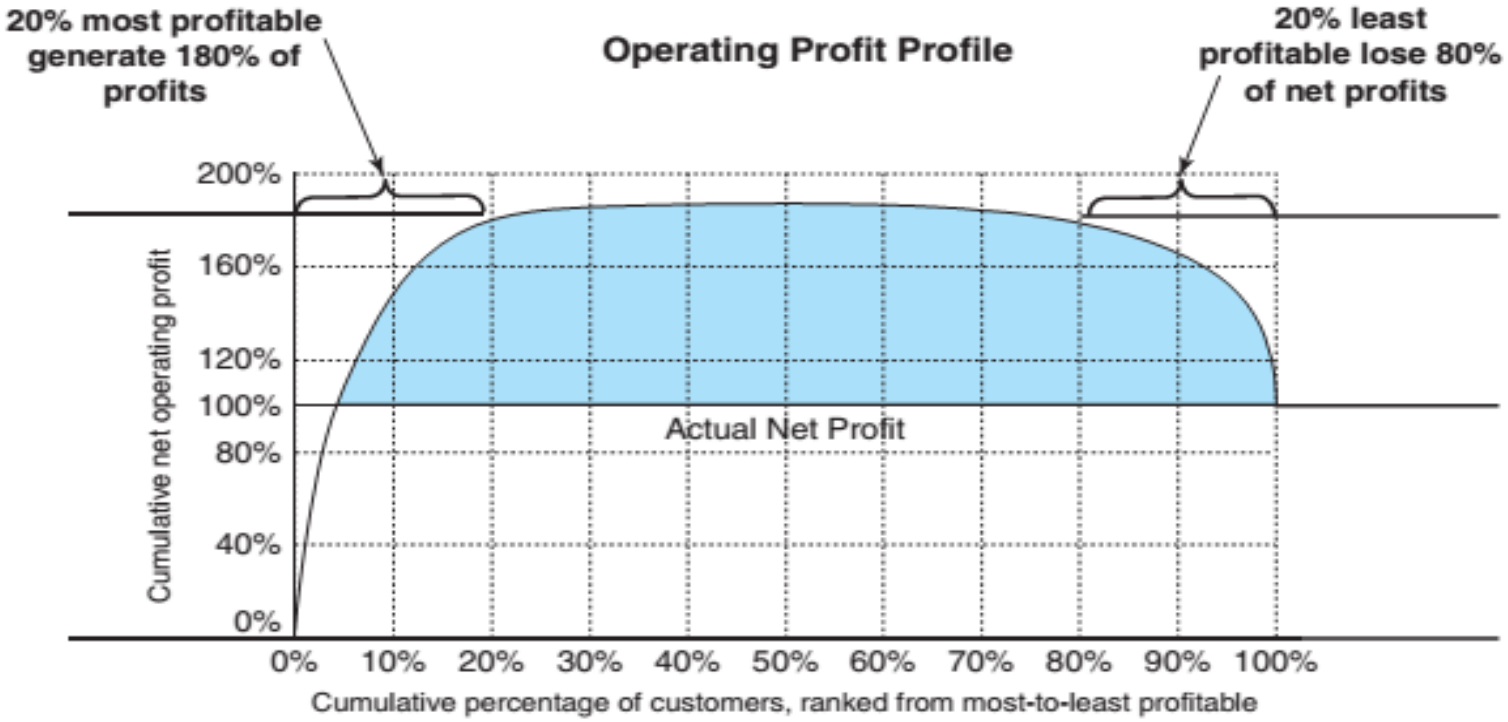
Whale curve

80-20 law does not apply to profits!

Whale curve

- A graph of cumulative profits versus customers
- The hump (or maximum height) of a cumulative profitability curve generally hits **150% to 250% of total profits**, and this height is usually achieved by the most profitable **20% to 40% of customers**

Customers' segmentation



Opportunities to transform loss customers into profitable ones

1. **Process Improvements**
   - Improve the processes used to produce, sell, deliver, and service the customer.
2. **Activity based pricing**
   - menu-based pricing to allow the customer to select the features and services it wishes to receive and pay for.
3. **Managing Relationships**
   - Enhance the customer relationship to improve margins and lower the cost to serve that customer.
   - Customer life-time value (CLV):

$$\text{CLV} = \sum_{t=1}^{t=n} \frac{(M_t - c_t) \times (\text{retention rate}_t)^{t-1}}{(1+i)^t} - \text{Initial acquisition cost}$$

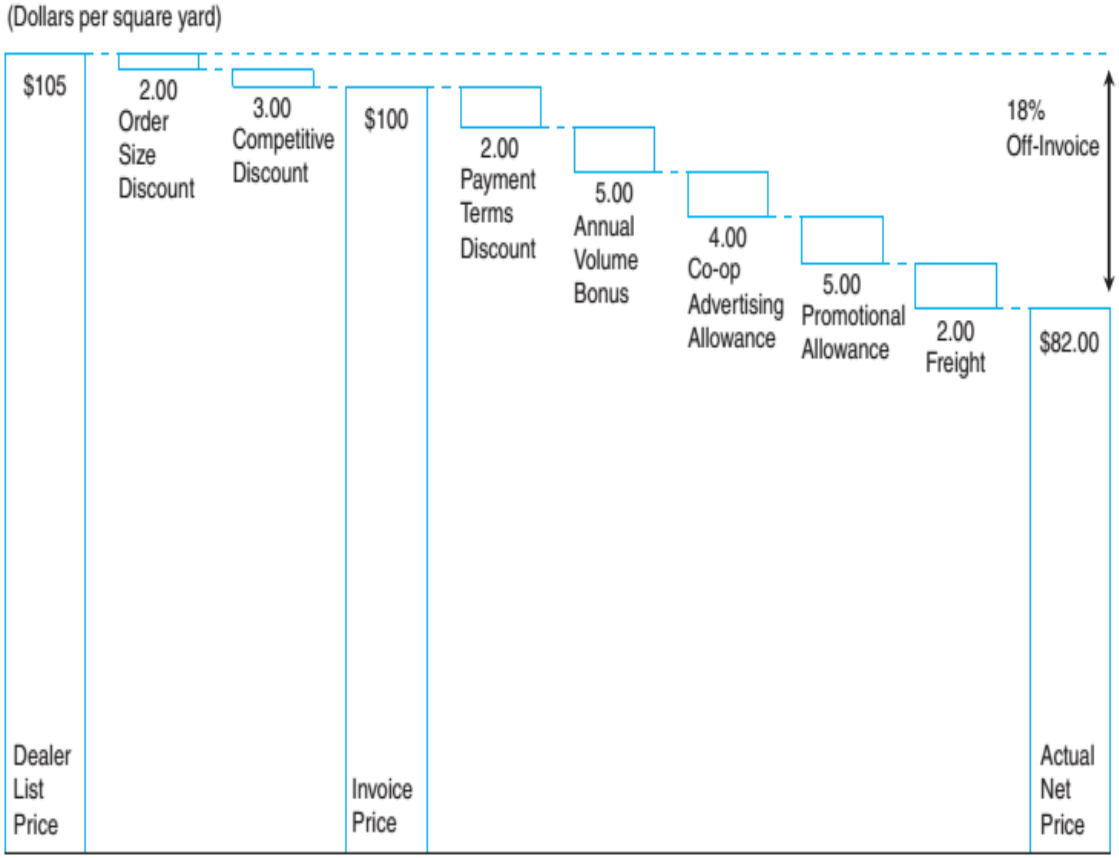
M_t = Margin (revenue less cost) from customer in year t
c_t = Any additional costs-to-serve (and retain) customer in year t
i = Cost of capital (e.g., 10%)

Opportunities to transform loss customers into profitable ones

4. **Use more discipline in granting discounts and allowances**

=>

avoiding „price waterfall“



Thank you for your attention!