Faculteit Bedrijf, Bestuur en Technologie
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Universiteit Twente
de ondernemende universiteit

tentamen
management accounting & control (186056)

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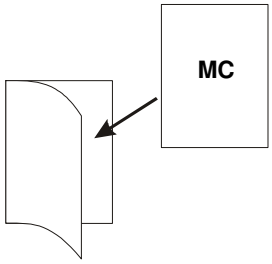
datum: 20 augustus 2004
tijd: 9.00 – 12.30

voor de duidelijkheid:
Aan dit tentamen kan door studenten van alle studierichtingen worden deelgenomen, onafhankelijk van het trimester waarin men het vak gevolgd heeft (of niet). Eventuele bonuspunten die zijn behaald in het collegejaar 2003–2004 zijn voor dit tentamen geldig.



tentamenbriefjes:
Het computerformulier dient uitsluitend ter vervanging van het tentamenbriefje. Lever het computerformulier **in uw uitwerkingen in** (zodat ze bij elkaar blijven, zie figuur). Vermeld ook altijd duidelijk uw naam (inclusief voorletters) en studentnummer op uw uitwerkingen.

inschrijving vergeten:
Heeft u zich niet ingeschreven, geef dit dan duidelijk aan op uw uitwerkingen (heeft geen effect op uw beoordeling, maar u wordt wel vriendelijk verzocht u in het vervolg toch in te schrijven).

taal:
De vragen zijn in het Engels, maar u mag uiteraard gewoon in het Nederlands antwoorden.

waardering opgaves (ongeveer):
opgave 1: 25 pnt
opgave 2: 25 pnt
opgave 3: 30 pnt
opgave 4: 20 pnt

U mag de tentamenopgaven na afloop mee naar huis nemen.

assignment 1

Budgets are important tools in managing and controlling organizations.

question a

Give a definition of a budget, and give the four functions of budgets as discussed in class.

Budgets are used as a results control tool. Two other control types are action controls and social controls.

question b

Explain which control type would be appropriate in the following departments or organizations (so simply stating results control or action control is not enough!):

(1) the marketing department of Grolsch (responsible for advertising campaigns, sponsoring etc)
(2) the sales department of Grolsch (the sales representatives who visit customers)
(3) the production department of car manufacturer Volkswagen
(4) the design department of car manufacturer Volkswagen (where new car models are developed)

Plastic Inc is a company specializing in plastic products. It operates a standard costing system. One of its business units manufactures and sells plastic toys. For May 2004, the budgeted production and sales is 1,500 units. The budgeted sales is based on a projected total market for this type of toys of 30,000 units in May. The standard cost price per toy is as follows:

plastic: 0.3 kg at € 5 per kg	1.50
labor: 0.5 hours at € 16 per hour	8.00
fixed costs	8.00
standard unit costs	17.50

The budgeted selling price is € 21.00. This means that the budgeted profit over May 2004 is € 5,250.

On June 6, the actual results over May 2004 are known. Sales was 1,300 units at an actual price of € 22.00, and actual production was 1,450 units. In May, 464 kg of plastics was used, for which a total of € 2,227.20 was paid. Also, 812 hours of labor were used at a cost of € 13,804. Fixed costs over May were € 12,060.

question c

Calculate the actual profit over May 2004 and the budget result.

question d

Calculate all relevant variances (including sales variances) and show that they add up to the budget result. What is your opinion on the performance of procurement ('inkoop'), production and sales?

Market research shows that the total market for this type of toys had a volume of 40,000 in May.

question e

Evaluate the performance of the sales department by calculating the market size variance and the market share variance. Use the actual selling price in your calculations. Does your opinion on the performance of the sales department change?

assignment 2

The firm BioScience has a number of business units that are active in production and sales of pesticides, products which protect plants and crop. Recently, the business unit AgriBulk invested € 5 million in research activities to create a new pesticide that protects tomatoes against insects. The result is a genetically engineered, patented bacterium, called MK27. The patent ensures that AgriBulk will be the only producer of MK27 for the coming 10 years. To manufacture this bacterium, AgriBulk built a plant at a cost of € 12 million, with a 10 year life. The plant has a capacity of 10,000 kilograms per month. The variable costs of producing MK27 is € 3 per kg. Next to the plant depreciation costs, other fixed costs per month are € 60,000. For this year, AgriBulk is budgetted to produce 8,000 kg per month, which is sold to professional tomato farmers at a price of € 30 per kg.

Another division of BioScience, Home Life, wants to obtain 1,000 kgs of MK27 per month to process it further into a consumer product for hobby gardeners called Tomato Safe. The processing costs of Home Life will be € 8 per kg. Home Life will incur € 15,000 in fixed costs per month for the production of Tomato Safe, consisting of the rental of a special mixing machine. The rental contract on this machine can be cancelled at any time. The selling price will be € 32 per kg.

question a

Should the AgriBulk business unit be managed as a cost centre or as a profit centre? Why?

question b

Is the production of Tomato Safe a good idea for BioScience as a whole? What range of transfer prices would lead to a correct decision by both the AgriBulk and the Home Life divisions with respect to producing Tomato Safe?

Suppose that BioScience imposes a variable cost transfer price on this transaction, and that AgriBulk has to supply all MK27 that Home Life wants to obtain. The argument of BioScience management is that Home Life cannot purchase it from other suppliers since MK27 is patented.

However, shortly after doing this, the market for MK27 is starting to take off. Instead of selling 8,000 kg per month, AgriBulk expects to be able to sell 10,000 kg to professional tomato farmers. Due to production technology constraints, a new plant for MK27 cannot be built at a capacity lower than 10,000 kg per month.

question c

For BioScience as a whole, should MK27 be transferred internally to Home Life, or should the capacity be used to produce for professional farmers? Does the imposed variable cost transfer price lead to a correct decision? If not, which price would lead to a correct decision?

question d

What transfer pricing system would lead to correct decisions under question b and under question c? Would it deal properly with the constraint that Home Life has no alternative suppliers of MK27?

In order to better monitor the results, the management of BioScience decides to purchase the software package SAP. To implement SAP, the IT-firm CGM is hired. CGM has drawn up a planning for the implementation of 15 weeks – during which the progress will be linear – in which 900 consultancy hours will be needed at a total cost of € 99,000. However, BioScience has to pay for the actual consultancy hours and costs. After 12 weeks, CGM has billed 700 hours at a cost of € 80,500. According to CGM, the project is on schedule, but the IT-director of Leather Ltd suspects that implementation is only completed for 50%.

question e

Evaluate the progress of the project by calculating the relevant variances when CGM is right, and when the IT-director of Leather Ltd is right. Give two suggestions on how Leather Ltd can improve the control of this project.

assignment 3

Sunrise Inc is a wholesaler ('groothandel') of health products (vitamins, diet pills etc). It buys from manufactures and delivers to three groups of customers: (1) large supermarket chains, (2) drugstore chains ('drogisterijen'), (3) independent shop owners. Sales is registered per customer group, but the cost of goods sold is not. However, based on experience, Sunrise management can estimate the gross margin per type (gross margin is equal to sales minus cost of goods sold). For example, since supermarkets are large customers, they demand a lower price for the products, leading to a lower gross margin. For the month of July 2004, the following numbers are known:

	supermarket	drugstore	independent
sales	€ 700,000	€ 540,000	€ 450,000
gross margin	20%	30%	40%

The organization costs for July 2004 are known to be € 203,880. These indirect costs are allocated to the customers based on their sales, thus leading to a profitability per customer group.

question a

Calculate the profitability per customer group, in euros and in profitability margins (%).

Sunrise management has known for a while that the profitability numbers calculated with the current system are not representative of the real situation. The activities that are performed in meeting customer demands are as follows: a customer places an order, which can contain several items, which has to be administrated and billed. Next, the items are picked from inventory and made ready for shipment. Finally, the order is delivered to the customer by a logistics company. The number of orders is different from the number of deliveries, since more than one order can be delivered at the same time. The total number of items ordered is not known, but based on observations management has made an estimate of the average number of items per order. The following data are available per customer group.

	supermarket	drugstore	independent
number of orders	140	360	1500
average items per order	20	12	6
number of deliveries	120	300	1000

Analysis of the indirect costs shows that the costs of the order administration are € 40,000, of order picking € 64,480, and of distribution € 99,400. Of these costs, the distribution costs are variable, the other costs cannot be changed without reducing the number of employees working in order administration and order picking.

question b

Calculate the profitability per customer group using the information about the activities, and explain the difference with the results from question a.

question c

Which two characteristics make the application of an activity based system useful at Sunrise?

Sunrise management wants to improve the profitability of the independent shop owner group on the short term. It wonders what the effect would be if it would offer a discount of 8% on the current sales prices in return for a reduction in the number of orders and the number of deliveries by 50%. Since it expects that the customers will order the same amount and type of products, the average number of items per order will double.

question d

Calculate the short-term effect on the profitability of the independent shop owners group of the proposal (1) according to the activity based costing model calculated under question b, and (2) the actual short-term effect. Explain the difference between the two numbers. Give one reason why you would focus on the effect according to activity based costing, and one reason why you would focus on the actual short-term effect in deciding on offering the discount.

Calculating profitability numbers is a very limited way of measuring performance. More and more, firms are using instruments like the balanced scorecard which include a number of non-financial performance measures.

question e

Give three advantages of non-financial performance measures over financial performance measures.

question f

Draw up a balanced scorecard for Sunrise Inc., giving two measures for each of the four perspectives of the balanced scorecard.

assignment 4

13.10* Intermediate: Calculation of NPVs of two projects

In the manufacture of a company's range of products, the processes give rise to two main types of waste material.

Type A is the outcome of the company's original processes. This waste is sold at £2 per tonne, but this amount is treated as sundry income and no allowance for this is made in calculating product costs.

Type B is the outcome of newer processes in the company's manufacturing activity. It is classified as hazardous, has needed one employee costing £9000 per year specially employed to organise its handling in the factory, and has required special containers whose current resale value is assessed at £18 000. At present the company pays a contractor £14 per tonne for its collection and disposal.

Company management has been concerned with both types of waste and after much research has developed the following proposals.

Type A waste

This could be further processed by installing plant and equipment costing £20 000 and incurring extra direct costs of £2.50 per tonne and extra fixed costs of £10 000 per annum.

Extra space would be needed, but this could be obtained by taking up some of the space currently used as a free car park for employees. The apportioned rental cost of that land is £2500 per annum and a 'compensation' payment totalling £500 per annum would need to be paid to those employees who would lose their car-parking facilities.

The selling price of the processed waste would be £12.50 per tonne and the quantity available would be 2000 tonnes per annum.

Type B waste

Using brand-new technology, this could be further processed into a non-hazardous product by installing a plant costing £120 000 on existing factory space whose apportioned rental cost is £12 500 per annum.

This plant cost includes a pipeline that would eliminate any special handling of the hazardous waste. Extra direct costs would be £13.50 per tonne and extra fixed costs of £20 000 per annum would be incurred.

The new product would be saleable to a limited number of customers only, but the company has been able to get the option of a contract for two years' sales renewable for a further two years. This would be at a price of £11 per tonne and the output over the next few years is expected to be 4000 tonnes per year.

For Type A waste project, the board wants to achieve an 8% DCF return over four years. For Type B waste project, it wants a 15% DCF return over six years.

question a

Should the company undertake either one or both of the projects (note: they can be considered independently)?

question b

Give two other considerations with respect to the Type B project that the company should take into account, irrespective of the result of the financial analysis.

Dit is het einde van het tentamen. U mag dit opgaveblad mee naar huis nemen.
En nog een prettige dag verder.