

## **SECTION A – CASE QUESTIONS** (Total: 50 marks)

Date : xx July 2011  
To : Board of Directors  
From : Mr. T. T. Chan  
Subject : Various concerns raised by the board members

Thank you for the board's enquiries on the subject. Our CFO has asked me to explain to the board various matters discussed in the last board meeting.

### **Answer 1(a)**

Target costing involves setting a target cost by subtracting a desired profit margin from a competitive market price, the crucial elements to consider are market price and the cost.

Certain enterprises may have less control over price, i.e. they are price takers due to the market forces, i.e. demand and supply. Enterprises adopting target costing are typically facing this challenge.

Therefore, cost reduction is normally at the design stage which has a greater chance to reduce costs by applying target costing techniques.

In order to achieve a reasonable profit margin, the natural move is to consider the reduction of costs at a target level which is a function of the selling price, say 80% to have a 20% profit margin.

### **Answer 1(b)**

TV products have the following features:

#### Understanding TV design

- (1) A lot of designs for the separate parts, industrial design (the outlook), closely-related parts which may be bonded in a printed-circuit board.
- (2) Each different TV may have its unique outlook, features and functions (software) and hardware due to different functionalities and industrial design.
- (3) Different packaging.
- (4) Common parts are available for all TVs and changes are only required for the outlook and the software.
- (5) The design of the production process is also important to save labour costs and to avoid the LCD and LED TVs becoming heavier and bulkier.

### Other considerations

- (6) Quality control work should also be comprehensively considered and balanced as any reworking or rejection of products in the production line would be costly.
- (7) Since TVs normally come with a product warranty period for the customers, the facilitation of easy maintenance should be considered in the product design stage.
- (8) Changes in technology are also important as the new LCD module may be different from the old one, but with more functionalities and may also be cheaper.
- (9) A tight inventory control on the panel and other spare parts to avoid product obsolescence (i.e. to save the overall cost); therefore, the adoption of just-in-time inventory control with a strong enterprise resource planning system and working closely with the procurement (purchasing) department is also crucial for attaining target cost as electronic components' prices tend to keep decreasing.
- (10) The prices of LCD and LED TVs are very transparent in the market, the difference in price for the same line of products should not be material for the same grade of products. Of course, Japanese and Korea brands are in a different grade due to the branding effect and may command a higher price.
- (11) TV manufacturers are normally price takers and their products would not have much product differentiation and the technologies are normally shared between the manufactures as most of the technologies are available in the market.
- (12) Other valid points (e.g. market competition).
- (13) Target costing, therefore, is very appropriate to be used in the TV manufacturing sector.

### **Answer 1(c)**

The three steps to attain the target cost are to:

#### Planning stage

- (a) Set selling prices which the market would accept for the products to be designed by comparing the market available products.
- (b) Estimate the required profit margin based on the return on sales.
- (c) Estimate the target cost = target selling price – target profit.
- (d) Compile an estimated bill of material costs for the products based on the anticipated design specification and current cost levels.
- (e) Calculate the target cost gap = estimated cost – target cost.

### Development Stage

- (f) Make an effort to close the gap:
- Working with the design team to determine which parts should be combined to save logistics and purchase costs and even the production cost.
  - Working closing with the procurement and product development departments by sourcing new technologies or products to replace the existing components.
  - Replacing the parts with inexpensive parts without compromising the quality.
  - Redesigning the production process if there is room for reducing labour and logistic costs.
  - During the above processes, there may need to be a trade interest of the functionalities, industrial design/outlook, and the costs.
- (g) If the estimated cost after the above deliberation process still exceeds target cost, repeat cost analysis/value engineering to reduce the estimated cost to the target level (an iterative process).

### Execution and Control

- (h) Manage the costs incurred during production of the product to attain the pre-set target cost.
- (i) Considering the manufacturing process (breakdown of electricity system), technology development (short of supply of certain old components), economic situation (the increase in material costs, for example the copper price fluctuates) and the procurement process (decision to get a low price supplier which might stop supply of the components to other customers for a higher margin), the management of the product cost is very important.

### **Answer 1(d)**

#### Implementation of target costing has the following benefits:

- (1) Positive and proactive approach to cost management, i.e. to consider cost at the design stage to avoid unnecessary spending in material, logistics, and production costs.
- (2) Since the selling price is crucial, the project team has to think through the customers' needs and avoid unnecessary functions to be provided to customers.
- (3) Co-ordination with different departments is extremely important and the process in cost design will build up a close relationship with the departments involved.
- (4) The implementation process will enhance employee awareness of the product development and the cost design; of course, staff will also be empowered to do the right things during the product development in order to achieve corporate objectives.

- (5) During the implementation process, the relationship with suppliers should be fostered and maintained in order to achieve a better ordering cycle and high commitment in terms of the quality, quantity and the price.
- (6) The non value-added activities or drivers will be minimised to reduce unnecessary cost. Focus will be on the selection of the lowest cost valued added activities.
- (7) A well-planned product design and production process will definitely reduce the product to market time.

Implementation of target costing has the following limitations:

- (8) The prerequisite for the effective implementation of target costing is the development of detailed cost data for analysis purposes which will require precise cost calculation subject to dynamic market influences.
- (9) Multi-departmental cooperation is crucial for the successful implementation of target costing which also requires managing departments' willingness to cooperate and their commitment.
- (10) The process may be long and detailed, therefore, it requires lot of meetings for coordination, and conflicting meeting schedules may also affect progress.
- (11) It is always the case that the use of cheaper components, which may be of inferior quality, may accordingly reduce the quality of the products and increase the cost of warranty.

Should the board require more information or have more enquiries, please let me know.

Yours truly,

T. T. Chan  
Deputy CFO

**Answer 2(a)**

Transfer prices are a way of promoting divisional autonomy, ideally without prejudicing divisional/company performance measurement or impacting overall corporate profit maximisation.

The objectives in setting the transfer pricing system between a group of companies should include the following:

Divisional/Company autonomy

- It can promote divisional autonomy. Transfer prices are particularly appropriate for profit centres such as TTM or TTV because if one profit centre does work for the other, the size of the transfer price will affect the costs of one profit centre and the revenue of the other.

- However, a danger with profit centre accounting is that the business organisation will divide into a number of self-interested segments; each may act at times against the wishes and interest of other segments. A profit centre manager might take decisions in the back interests of his own part of the business, but against the best interests of other profit centres and possibly the organisation as a whole.
- A task therefore is trying to prevent dysfunctional decision making by individual profit centres. To do this, some power and authority must be reserved for bringing influence so that profit centres cannot be allowed to make entirely autonomous decisions.

#### Divisional/company profit maximisation

- Profit centre managers tend to put their own profit performance above everything else. Since profit centre performance is measured according to the profit they earn, no profit centre will want to do work for another and incur costs without being paid for it. Consequently, profit centre managers are likely to dispute the size of transfer prices with each other, or disagree about whether one profit centre should do work for another or not. Transfer prices affect the behaviour and decisions by profit centre managers.

#### Corporate profit maximisation

- When there are disagreements about how much work should be transferred between divisions/companies, and how many sales the division should make in the external market, there is presumably a profit-maximising level of output and sales for the organisation as a whole. However, unless each profit centre also maximises its own profit at this same level of output, there will be inter-divisional disagreements about output levels and the profit-maximising output will not be achieved.

### **Answer 2(b)**

#### Scenario A: No spare capacity in TTM factory

X = Marginal cost of producing modules = \$867

Y = Opportunity cost of making internal transaction = lost contribution from foregoing the sale to the external customer = [\$1,600 selling price - \$867 marginal cost] = \$733 per unit.

Hence: The minimum transfer price for TTM = X + Y = [Marginal cost + Opportunity cost] = \$867 + \$733 = \$1,600 per unit

TTM will not want to transact their product for less than \$1,600 as such action would reduce the divisional profit.

Indeed, this decision achieves the goal congruence objective (i.e. it is in the best interests of the group as a whole) and any other transfer price would be detrimental to the group's best interests.

### Scenario B: Spare capacity in TTM factory

Now, TTM has spare capacity to increase its output above the current level of four million modules per annum, and yet there is no demand from external customers for this available capacity. This means that it is now possible to produce some extra modules for sale to TTV without any reduction in the quantity sold to external customers. So, where spare capacity exists, there is no opportunity cost by making such a transaction.

The minimum transfer price of the modules for TTM produced using spare capacity can be calculated as follows:

X = Marginal cost of producing modules = \$867

Y = Opportunity cost of making internal transaction = nil.

Hence: The minimum transfer price for TTM = X + Y = [Marginal cost + Opportunity cost]  
=\$867 + nil = \$867 per unit

If TTM produced the modules using spare capacity and sold to TTV at any transaction price in excess of \$867 per unit, TTM's profits would be increased by: [(Transaction price - \$867) x number of modules transacted].

On the other hand, if TTV pays a module price less than \$1,400 per unit (i.e., the price currently charged by the external supplier), TTV's profits will be increased by: [(\$1,400 - transaction price) x number of modules transacted].

Hence, as far as units to be produced using spare capacity are concerned, a transaction price which is greater than \$867 but less than \$1,400 ( $\$867 < P < \$1,400$ ) will result in increased profits for both companies (compared with the profits which they would earn if they did not trade with each other). In line with the principle of divisional autonomy, it is appropriate to leave it to the two companies' managers to negotiate the exact transaction price within the range.

Again, goal congruence is also achieved. By utilising the spare capacity, TTM is producing modules only at an incremental cost of \$867 per unit and TTV is buying it at a price less than the price quoted from an external supplier at \$1,400 per unit.

In conclusion, the group's profits are increased by: [(\$1,400 - \$867 = \$533) x number of modules produced using spare capacity and sold to TTV].

### Scenario C: Limited spare capacity in TTM factory

The maximum production capacity of TTM is 4.5 million modules per annum. Since there is demand from external customers for 4 million modules, the spare capacity is 500,000 modules.

TTV module demand is much greater than the available spare capacity that TTM could provide per annum. Needless to say, TTM will provide TTV 500,000 modules to be produced using its spare capacity and priced in accordance with Scenario B ( $\$867 < P < \$1,400$ ).

If TTM were to also provide TTV more than 500,000 modules then it would have to reduce sales to external customers by the same quantity. Therefore, these units should be priced in accordance with Scenario A (\$1,600).

Hence, under these circumstances, it is optimal to have two transaction prices, i.e., a lower one for transactions which can be produced using spare capacity and a higher one for transactions which involve an opportunity cost because they involve foregoing sales to external customers.

It is important to resist the temptation in these circumstances to use an 'average' price for all transactions, because it is sure to be suboptimal.

### **Answer 2(c)**

#### **When negotiation fails**

We saw in Scenario B that inter-company negotiations are likely to happen with a view to determining the transaction price which should apply to output produced using spare capacity. Inevitably, this raises the question as to what should happen if the negotiations fail.

We have seen that the range of transaction prices which should be acceptable to both managers (for output produced using spare capacity) is \$867 to \$1,400. Supposedly, each company tries to get a transfer price favourable to itself (e.g. TTM refuses to go below a transfer price of \$1,400 and TTV refuses to go above \$867). Because there is no agreement on transfer price there will be no inter-divisional transfers, and TTV will continue to buy all of its modules from external suppliers at \$1,400. Since TTM could have produced modules at \$867 per unit, this is clearly suboptimal for the group as a whole.

When both companies' managers cannot agree on a transaction price, should the group's top management intervene in both companies to order to make the transaction happen if (as in this case) it is obvious that the transfer would be in the group's best interests? The answer is 'no' for one school of thought. There are two reasons for this:

- (1) For the reasons stated earlier, the preservation of divisional/ group company's autonomy is an important principle which should not lightly be breached.
- (2) If the divisional managers are allowed to suffer the consequences of their own intransigence, then they are unlikely to make the same mistake in future.

For example, both companies' management will soon be aware that if they had 'shared the difference' and agreed on a transfer price of \$1,133.5 per unit ( $\$867 + \$266.5$ ), then they should each have earned an incremental profit of \$266.5 per unit. By failing to compromise on a transaction price, they have deprived themselves of this profit in the current period. They are likely to remember this lesson in future transfer pricing negotiations.

Another school of thought is that by referring to the objectives above, a balance ought to be kept between divisional autonomy to provide incentives and motivation, and retaining centralised authority to ensure that organisation's profit centres are all working towards the same target. Therefore, a separate division in the organisation may be set up to deal with this issue and retain goal congruence within the organisation.

[**Note:** Some candidates may refer to Scenario C that there is a likely negotiation between TTM and TTV. However, there will be slight chance that the negotiation will fail. After negotiation the only negotiated price will stay at \$1,600, therefore, it is not a negotiated price instead it is a compromised price which should be acceptable by both parties. Unlike Scenario B that there is a range of negotiated prices as stated above and the negotiation is needed between TTM and TTV.]

### **Answer 3**

#### **Tina So's disposal of shares**

The disposal of shares by a board member is not a problem in a business except when he or she possesses insider information about the company.

Although TTV has made an announcement of the positive profit alert, the public still does not have the detailed financial information of the company.

Since the board has approved the announcement of the positive profit alert, it is expected that the board members would have more financial information than the public; therefore, any trading of shares may be considered as insider dealing activity under the Securities and Futures Ordinance of Hong Kong.

Insider dealing takes place where a person buys or sells shares in a listed company when he has insider information – that is, knowledge of certain facts about that company which the public does not have and which, if known to the public, would have an impact on the price of the company's shares.

[**Note:** Bonus points only] Further, there is a black-out period requirement for a board member to deal with the company's share dealing activities. According to the Appendix 10 of the listing rules paragraph 3(a), a director must not deal in any securities of the listed issuer on any day on which its financial results are published and:

- (i) during the period of 60 days immediately preceding the publication date of the annual results or, if shorter, the period from the end of the relevant financial year up to the publication date of the results; and
- (ii) during the period of 30 days immediately preceding the publication date of the quarterly results (if any) and half-year results or, if shorter, the period from the end of the relevant quarterly or half-year period up to the publication date of the results,



Though there are exceptional circumstances when a director may have a good defence for the disposal, the immediate reporting of this incident to the Hong Kong Stock Exchange and the Securities and Futures Commission is recommended to project the good corporate governance image of the company and to protect Ms. Tina So legal interests.

Further, it is advised that Ms. Tina So should hire her own legal counsel to advise her as to her position.

\* \* \* END OF SECTION A \* \* \*

## **SECTION B – ESSAY / SHORT QUESTIONS** (Total: 50 marks)

### **Answer 4(a)**

#### **Early settlement discount**

The company may turn the normal accounts receivable into cash quickly by offering an early settlement discount, i.e. the company may set a policy to allow our customers a discount, i.e. pay less than their full debt if they pay sooner than the end of the pre-set credit period.

In this case, the company will receive less cash from customers than expected; therefore, a comparison may need to be made against the borrowing cost to justify the offering of the early settlement discount. In any case, the income statement will record a charge and hence reduce the profitability level.

A recalculation on the working capital requirement throughout the working capital cycle may be needed as less is received than at a later stage.

Of course, the cash collected will increase the cash balance i.e. the cash (cash asset) ratio will become more favourable.

The bank loan or overdraft may also be reduced to save the interest.

Since the receivable has been collected earlier, the customer default risk is reduced to zero.

The company's credit risk to the banker may be lowered and the overall cost of borrowing may be reduced eventually.

The pressure on the working capital is reduced.

Sales may increase as the customers believe that they enjoy a higher sales discount.

### **Answer 4(b)**

#### **Financing the Investment Project**

The short-term financing option tends to be riskier than long term financing as the future interest rates fluctuate due to market uncertainty.

Of course, the short term bank borrowing facilities may not be renewable due to market uncertainty and, of course, due to the internal financial results and position.

Though the short term financing option has higher risk; however, it may lead to higher expected returns, under normal circumstances, the short-term interest rates are lower than the long-term interest rates (i.e. the term structure is normally upward sloping).

During the financial tsunami, the short-term interest rates appeared to be higher than the long-term interest rates, or even the banks did not want to offer short term loans due to customers and other banks as well due to the market uncertainty. Therefore, the uncertainty level for short-term bank financing is very high.

However, the short-term financing option does offer a high flexibility level, whenever the company has sufficient cash, the short-term debt could be paid off at any time.

As a general principle under the maturity matching approach, an enterprise should finance long-term assets (i.e. fixed assets and other permanent current assets) by using long-term financing options (such as long-term debt, equity and leasing) whereas by matching its seasonal variations in current assets with the short-term financing option for temporary asset requirements by using short-term borrowings or payable financing option, the enterprise, indeed, hedges against changes in short term interest rates.

If an enterprise adopts a conservative approach, it can finance long-term assets, all permanent current assets, and some temporary current assets with long-term sources of funds. This approach relies more heavily on long-term financing than the other approaches. The enterprise will need to pay higher interest expenses under normal circumstances.

The enterprise may adopt an aggressive approach; that means the enterprise finances all temporary current assets, and some of its permanent current assets with short-term sources of financing. This approach will use up more short-term financing than the other approaches. The enterprise may pay lower interest expenses under normal circumstances.

During the board meeting, the time available for discussion the financing option may not be sufficient as we need to consider the overall financial position in order to determine the optimal financing solution for our company.

As the company will have payable to settle and other short-term requirements, for example, for the settlement of long-term loans soon, the financing option for the Investment Project should not merely consider the large sum of accounts receivable and the cash available.

It is a very good start for the board meeting to consider the financing option and it is believed that the company should formulate a financing policy from a board perspective after considering the short-term, and long-term funding requirements for the foreseeable future by taking into account the market dynamics, i.e. the expected sales volume, the economic situation, the expected supply of raw materials.

#### **Answer 4(c)**

##### Spin off TTphone

The reasons for spinning-off TTphone by listing its shares on the stock exchange are as follows:

- (1) It provides TTphone access to capital markets for growth independently i.e. to raise funds both at the time of listing and at later stages.

- (2) Broader shareholder base.
- (3) It also provides a better employee incentive and commitment resulting from the granting of employee share options to tie in the TTphone's key staff retention programme. For the technology business, it is hard to retain key staff without offering them a good incentive scheme.
- (4) The high profile and visibility in the capital market could generate reassurance among the company's customers and suppliers.
- (5) Sometimes, it offers the opportunity for TTphone to have a separate credit rating and to have a loan independently without a cross-guarantee from the holding company.
- (6) It may also offer a good opportunity for increasing the valuation of TTV's share price, as and when TTphone raises the funds from the public due to the new injection of funds by issuing TTphone, and also the increase in market valuation of TTphone.
- (7) TTphone may also increase its transparency to the public, shareholders' and bankers; therefore, TTphone may get a lower cost of funds in future.
- (8) The listing of TTphone shares may reduce TTV cash pressure in supporting the expansion activities of TTphone.
- (9) Rigorous disclosure standards demand TTphone to have an improvement in its control, management information and operating systems which may also result in greater efficiency for the company as a whole.
- (10) TTV may sell some of its existing shares of TTphone during the spin-off in order to raise more funds for the expansion of other businesses.
- (11) Since TTV has large and diverse operations, they may not be able to provide the kind of management, financial, and resource support that TTphone needs for continuous growth.
- (12) TTV, after the spin-off, can focus its attention and resources on their core operations.
- (13) The spin-off allows TTphone to negotiate management, finance, operation and other resources issues and make its own decisions with its own board of directors.
- (14) Other valid points.
- (15) In conclusion, the spin-off will have a lot of benefits for TTV.

### **Answer 5(a)**

Description	Y0 HK\$	Y1 HK\$	Y2 HK\$	Y3 HK\$	Y4 HK\$
Initial machine investment	(100,000,000)				
Annual cashflow from operations		37,592,000	37,592,000	37,592,000	37,592,000
Disposal of equipment					200,000
Annual cash flows	(100,000,000)	37,592,000	37,592,000	37,592,000	37,792,000
Discount factor (10%)	1	0.909091	0.826446	0.751315	0.683013
Present value	(100,000,000)	34,174,545	31,067,769	28,243,426	25,812,445
NPV		<u>19,298,185</u>			
IRR		<u>18.63%</u>			

Note:

#### Calculation of annual cash flow

Annual cash flow before tax	40,000,000
Less: Tax (16%)	<u>(6,400,000)</u>
Annual after tax cash flow	<u>33,600,000</u>
Annual depreciation	<u>(24,950,000)</u>
Annual tax shield from depreciation	<u>3,992,000</u>
Total annual cash flows after tax	<u>37,592,000</u>

### **Answer 5(b)**

(b)(i)

<u>Payback</u>	Y0 HK\$	Y1 HK\$	Y2 HK\$	Y3 HK\$	Y4 HK\$
Annual cash flows	(100,000,000)	37,592,000	37,592,000	37,592,000	37,792,000
Cummulative cash flow	(100,000,000)	(62,408,000)	(24,816,000)	12,776,000	50,568,000
Payback		<u>2.66 years</u>			

(b)(ii)

#### Accounting Rate of Return

Annual cash flow from operations	40,000,000
Less: depreciation	<u>(24,950,000)</u>
Annual accounting profit	15,050,000
Less: Tax	<u>(2,408,000)</u>
Annual after tax profit	<u>12,642,000</u>
ARR	<u>12.6%</u>

Notes:

12.6% = Return/Initial Investment value = 12,642,000/100,000,000,000

For this question, ARR = ROI = ROCE

## **Answer 5(c)**

### **Payback**

#### Advantages

- (i) It highlights the liquidity prospects of a proposed investment project;
- (ii) This is important for a company that wishes to receive a quick cash payback on investments; and
- (iii) It is easy to understand.

#### Disadvantages

- (i) It ignores the time value of money by assuming that future cash flows are equally valuable as current cash flows; and
- (ii) It ignores cash flow after the payback period.

### **Accounting Rate of Return**

#### Advantages

- (i) It shows the profitability of a proposed project during a period of time;
- (ii) The bonus can be linked to the realisation of profits; and
- (iii) It is easy to understand.

#### Disadvantages

- (i) It ignores the time value of money;
- (ii) Accounting results can be subject to manipulation by creative managers; and
- (iii) Other valid point.

### **Recommendation**

Both the NPV and IRR (higher than the cost of capital) are attractive. The accounting rate of return is reasonable although it is lower than the IRR, so management may need to weigh this up.

Given the volatility of a high-tech industry, management may need to consider if the estimated payback period is reasonable or not.

**Answer 6(a)**

A handy equation for calculating the indifference point is as follows:

$$\frac{(\text{Operating profit(OP)} - 0)(1-0.16)}{125,000,000} = \frac{(\text{OP} - \$7,500,000)(1-0.16)}{100,000,000}$$

$$100,000,000 \times 0.84 \times \text{OP} = 125,000,000 \times 0.84 \times (\text{OP} - \$7,500,000)$$

$$84,000,000 \text{ OP} = 105,000,000 \text{ OP} - \$787,500,000,000,000$$

$$21,000,000 \text{ OP} = \$787,500,000,000,000$$

$$\text{OP} = \$37,500,000$$

**Answer 6(b)**

	<b>Equity</b> HK\$	<b>Debt</b> HK\$
Operating profit	37,500,000	37,500,000
Interest	--	7,500,000
	<hr/>	<hr/>
	37,500,000	30,000,000
Tax	6,000,000	4,800,000
	<hr/>	<hr/>
Earnings after tax	31,500,000	25,200,000
	<hr/>	<hr/>
Number of shares	125,000,000	100,000,000
Earnings per share (in \$)	0.252	0.252
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**Answer 6(c)**

At a level of operating profit above \$37,500,000, it will be better to issue debt for taking on the project, as every dollar of earnings will be distributed between existing shareholders (lower shareholder base). At a level of operating profit below \$37,500,000, it will be better to issue equity, as the loss of each dollar will be shared by more shareholders.

Therefore, TTphone's attitude will depend on what levels of earnings it expects and also the variability of possible earnings limits. Variations from what is expected will have a greater impact on earnings per share if TTphone chooses the debt financing option.

\* \* \* END OF EXAMINATION PAPER \* \* \*