

OPERATIONAL CASE STUDY February 2018 EXAM ANSWERS

Variant 3

The February 2018 exam can be viewed at

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SECTION 1 - BRIEFING NOTE

RELEVANT COSTS AND REVENUES ON THE CONTRACT

Relevant costs and revenues are those costs that are future, incremental and cash flow based. Tonya is considering the incremental benefit of this one-off contract which is an acceptable approach to take. Looking at each element on Tonya's schedule in turn:

Selling price:

The contract price at G\$48 per unit is G\$10 above our usual price for this design of crystal bowl. This difference of G\$10 is an incremental revenue and is therefore a relevant cash flow.

Materials:

This figure is flawed because the costing presented by Tonya is based on the amount of additional raw materials needed to make the 1,000 bowls. As these materials have to be purchased in quantities greater than those needed for manufacture, there will be G\$880 worth of purchases left in inventory that we will not use. Therefore, we need to add G\$880 to the cost of the contract (less any revenue from selling the materials or plus any future cost of disposing of them).

Engraving:

This cost will only be incurred if we accept the contract. Therefore, this is a future cost relevant to the contract.

Travel expenses:

The travel expenses incurred to pitch for this contract are not relevant as they are a sunk cost.

Machine hire:

While this is a fixed price for a month it is a relevant cost to this contract as it is an incremental cost. If this contract goes ahead these costs will be incurred and if the contract does not go ahead they will not, therefore they are future costs and relevant. The profit claimed for this contract should be reduced by G\$1,000.

Furnace pots:

These pots are usually categorised as a variable overhead. However, for the purpose of this contract four additional pots will be needed to melt the coloured crystal (assuming that we produce each colour for two consecutive days). These pots will be used for this contract only and we will not be able to use them after they have been removed. For this reason, the pots are an incremental cost that should be charged to the contract.

However, as we will not be benefiting from the “normal” pot that is charged through variable overhead, a charge that is already included in the standard contribution for a bowl, the incremental reduction in standard variable cost should be included as a benefit of undertaking this contract.

WORKING CAPITAL MANAGEMENT

Payables:

We can improve our cash position by increasing the length of time we take to pay our suppliers. Withholding payment is a cheap, usually free form of finance with zero transaction costs. However, it could potentially destroy the trust between us and our suppliers which in turn could lead to conflict, damage to the trading relationships and disrupted supply of our materials and services. If we decide to choose this option, we should negotiate longer credit terms with our supplier first to avoid these negative consequences.

Receivables:

Although Paulo does not want us to reduce the credit period offered to customers, it should be noted that many customers already pay outside of the terms agreed and that allowing this to continue is a major drain on our cash balance. It also increases the risk of non-payment. We need to make sure that our credit control systems are efficient: aged receivable analysis should identify and prioritise outstanding invoices, reminder letters should be issued promptly, and customer queries should be answered promptly.

We could also offer prompt payment discounts to our customers. This would benefit our cash inflow and might be an attractive proposal for our customers. We need to be sure that the cost of the discount does not exceed its benefit.

We could use an invoice discounter for our receivables. Invoice discounting will mean that we will receive a proportion of the receivables upfront, for a fee but with no further involvement of the invoice discounting company. Usually this service is confidential, so our customers will be unaware that we have used the value of the debt that they owe us as security against a loan. If the customer does not pay the debt we will still have to pay the invoice discounting company the value borrowed plus a percentage fee and arrangement fee. This is usually an expensive way to raise cash and, if used, will reduce our profitability.

Inventory:

Firstly, as we hold substantial raw material and finished goods inventory, we should investigate the possibility of selling any long standing finished goods or raw materials that we no longer use. We could sell any discontinued ranges or surplus inventory in a sale via the factory shop or website, although we must take care to maintain our image and avoid a "pile it high, sell it cheap" frenzy. The raw materials are likely to be more difficult to sell but returning them to the original supplier and potential for a trade sale should be investigated.

Secondly, we could improve our raw material inventory management system. Although a substantial amount of our raw materials is sourced from overseas, necessitating that we add a buffer to ensure that we do not have stock-outs, we can probably afford to reduce the amount of inventory held in total. The strong relationship that we enjoy with all of our suppliers should help us with this. These actions would reduce holding costs such as: storage, insurance and security and increase cash flow.

As we are a seasonal business we build the level of our finished goods inventory throughout the year in order that we can meet demand in the final quarter. Therefore, the reduction of inventory, beyond the sale of the discontinued ranges is probably limited.

SECTION 2 - BRIEFING NOTE

DECISION CRITERIA UNDER CONDITIONS OF UNCERTAINTY

The three decision criteria used under conditions of uncertainty are known as maximax, maximin and minimax regret.

Maximax criterion:

A decision maker that uses the maximax criterion is an optimist. Using this approach, the option chosen will usually be the one that maximises the maximum pay off. As we are dealing with costs here, our objective is to minimise the total cost and hence this criterion might be better described as minimising the minimum cost. The minimum costs here are: G\$14,000 for machine 1, G\$9,500 for machine 2 and G\$10,000 for machine 3.

Therefore, under this criterion we would choose machine 2 as this gives us the lowest possible cost for the machine.

Maximin criterion:

A decision maker that uses the maximin criterion is a pessimist. Using this approach, the machine that maximises the minimum pay-off achievable will be selected. Again, as our objective is to minimise cost our decision will be to choose the machine with the lowest highest cost of the three machines: minimise the maximum cost. The highest costs are: G\$38,000 for machine 1, G\$45,500 for machine 2 and G\$42,000 for Machine 3.

Therefore, we would choose machine 1 as this has the lowest of the highest costs.

Minimax regret criterion:

A decision maker that uses the minimax regret criterion is often referred to as a “bad loser”. The decision is made by firstly identifying the machine that minimises the cost at each level of contaminants. The cost differential between this machine and the other two represents the “regret” of having made a bad choice.

At a low level of contaminants, machine 2 has the minimum cost so the regret for machine 2 is G\$0 while machine 1 has a regret of $(G\$9,500 - G\$14,000) = G\$4,500$, and so on.

Secondly, from the regret table we choose the machine that minimises the maximum regret that is to say the best of the worst. So, the maximum regret for each machine is: G\$4,500 for machine 1, G\$7,500 for machine 2 and G \$4,000 for machine 3.

Therefore, we would choose machine 3 as this offers the minimum maximum regret of the three machines available.

OUTSOURCING

Advantages:

The company to whom we will outsource will probably be an expert and could offer us economies of specialisation. There are only four known companies who offer this service in Gigland and they are all financially stable. This indicates that they are all capable, as poor service would be reflected in price or market share. As this is a new process for us it is likely to be one where we could make errors due to lack of expertise. At this stage in coloured crystal production errors that could lead to quality issues could mean the difference between a success and failure.

Outsourcing is a variable cost as each of the four companies offer the service at a set fee each time. This means that we can cost our commissions with near certainty. Hiring the machine is a fixed cost which would add to the risk of the business.

Outsourcing is flexible and it will enable us to increase or decrease production quantities relatively easily given that the start-up time of any new part of the business is a time of uncertainty. We do not have any indication of whether the demand is likely to be low, medium or high and, as we have already explained, this will mean that the wrong decisions could be costly. If the launch of the coloured crystal is a disaster we will have to continue to hire our machines as they all have a minimum six-month hire period, but with the outsourcing option we can withdraw immediately without penalty.

Disadvantages:

There is a risk of losing confidential information. It is probable that the other coloured crystal producers we are in competition with also use these companies. As it will be necessary to share some of our production plans with the outsourcing company, there is a risk that this information can be passed onto the competition.

Performing the process in-house means that any problems with communications, ambiguities with results or queries can be dealt with quickly and efficiently. When dealing with a third party managing the process becomes more bureaucratic and can lead to delays in production. There will be a need for a manager to take charge of the relationship and this will mean that there is a hidden cost. Included in the management of the relationship is the need for a dispute resolution process.

When using a company to outsource a key process we will become reliant on the quality of the service given. If this quality falls below an acceptable standard it could lead to us losing our good reputation for quality. When we outsource we enter a relationship that we have to rely on. If coloured crystal is continued long-term we may have to consider the wisdom of allowing a third party to manage a process that can have a large impact on our core competences.

SECTION 3 – REPORT TO MANAGEMENT

IMPACT OF FURNACE PURCHASE AND GRANT RECEIPT ON THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 DECEMBER 2018:

Purchase of the furnace and associated costs:

We are purchasing the furnace from Beeland and will need to pay for it in B\$'s. The furnace will be delivered on 1 October 2018 and on that date, we will record it as a non-current asset at its G\$ value (which will be based on the exchange rate on that day): the corresponding entry will be to create a payable. The delivery and installation costs of G\$150,000 can also be included as part of the furnace's capitalised value because these costs are directly attributable to bringing the asset to working condition for its intended use.

The furnace asset will then need to be depreciated over its useful economic life, which will need to be assessed. Depreciation will commence from the date that the furnace is available for use which will be 1 November: hence there will be two months' worth of depreciation charged to profit for the year ended 31 December 2018. It should be noted that for an asset such as a furnace we could split the cost of the asset into its constituent parts, especially where the asset will be consumed over different life times. So, for example, we could split the cost associated with the furnace lining and treat this as a separate asset for depreciation purposes, as the life of the lining is going to be less than that of the rest of the furnace.

At the year-end 31 December 2018, there will be a payable balance in respect of the furnace as the invoice is payable on 1 February 2019. This payable balance is a monetary liability and as such needs to be retranslated at the exchange rate on 31 December 2018. Any difference from the amount originally recorded will increase profit if it is an exchange gain or decrease profit if it is an exchange loss. The furnace as a non-current asset is a non-monetary asset and therefore no adjustment is required in respect of foreign exchange at the year end.

Government grant:

The specific accounting treatment applied to a grant receipt depends upon the purpose of the grant. In our case the grant has been received specifically for the purchase of the new furnace and hence is a capital grant.

As this is a capital grant, we have a choice of how to initially record it on receipt: we can either present it as deferred income or deduct the grant from the carrying value of the furnace asset.

If we use the deferred income method, on receipt of the grant on 1 November 2018 we will set up a separate liability of G\$280,000 in the statement of financial position. The grant will then be released to profit or loss as income on a systematic basis over the period that we expect to benefit from the grant, which in this case will be the life time of the furnace. Effectively the grant income will match with the furnace depreciation charge.

Alternatively, we could simply net the G\$280,000 from the G\$ cost of the furnace and record the net amount as a non-current asset. This net amount will then be depreciated over the useful economic life of the furnace.

ACTIVITY BASED COSTING (ABC)

The steps in the process of implementing ABC:

To use ABC, we need first to **identify the activities** that are necessary to produce our crystal. In the furnace area some of these have already been identified as material mixing, pot changing and temperature calibration.

Next, the cost of resources consumed during a period need to be allocated to each activity, in a separate **cost pool**. The overhead costs directly related to material weighing might include: labour costs, depreciation costs associated with the assets used to weigh the mix and insurance costs associated with handling chemicals. The costs grouped together in this cost pool will have the same cost driver.

Cost drivers are the factors that cause an increase or decrease in the cost of performing the activities. When setting up ABC we would need to investigate what it is that drives the cost, that is, the activities that cause the cost to be incurred. Once we have the cost in the cost pool and the cost drivers, we can then calculate the **cost driver rate** by dividing the G\$ cost pool by the number of cost drivers. I have detailed some potential cost drivers below.

Once we have established the cost driver rates we can **charge costs to the products** dependant on their consumption of activities and resource. For example, the cost of a pot change will be assigned to the type of crystal that causes the pot to be changed. As coloured crystal will almost certainly cause more pot changes than clear crystal, because the lower volume of production will necessitate shorter production runs, each coloured crystal production run will be allocated more cost than clear crystal. The cost of each production run can be absorbed into the products based on weight of material used. Thus, a coloured crystal jug will have a higher cost than an identical one that is made of clear crystal.

Examples of cost drivers:

For **materials weighing** the cost driver could be the number of different raw materials required for each mix. The greater variety of raw materials needed to be measured for the furnace mix will increase the amount of labour time needed and will therefore drive the cost of this activity. Therefore a batch of green vases will incur more weighing overhead than a batch of blue vases.

For **pot changing** the cost driver is likely to be the number of production runs. A furnace production run will be the number of consecutive days that a furnace produces a single colour (or clear crystal) for. When we made only clear crystal the pots were changed every six weeks. However, now we make four types of crystal (three colours and clear) the pots will have to be changed more frequently because we will have to change the pot every time we change the colour crystal being made.

For **temperature checking** the cost driver is most likely to be the number of checks made which in turn is driven by the type of crystal being heated in the furnace. As coloured crystal is less tolerant to temperature variation it will require seven checks each night whereas clear crystal only needs three. The furnace workers will spend more time checking and adjusting the furnace temperature for coloured crystal, which will require more energy and labour time, so this is driving the cost.

SECTION 4 – BRIEFING NOTE

VARIANCES

Fixed overhead expenditure variance G\$5,500 adverse:

This variance is simply the difference between the actual fixed overheads incurred in November 2018 and the budgeted overheads. As the budget was set nearly a year ago the scope for variances is higher than for a budget set more recently. For example, the actual costs for power may be higher due to price increases in excess of inflation.

As we have increased our production capacity it is possible that the fixed overheads have increased. Although fixed overhead, by definition, do not change as a result of an increase in activity, it is likely that in reality we have stepped fixed costs, and this could be the reason for the actual cost being higher than budgeted.

Fixed overhead capacity variance G\$35,312 favourable:

This variance is a result of working more labour hours than originally budgeted. For November this is a significant variance. The reason for this is probably due to the increase in direct staff due to the expansion of the production capacity. We know that we have 10 new trainees and that this number of new trainees is considered to be exceptional.

Fixed overhead efficiency variance G\$28,477 adverse:

This variance is the difference between the overhead absorbed by standard hours produced and overheads absorbed for actual hours. We have an adverse variance because direct labour has worked inefficiently. The reason for this variance is that the new recruits are not experienced and therefore they are not efficient. In addition, in the glassblowing department at least, they are also slowing down the experienced glassblowers who are having to mentor them. This labour inefficiency translates into a poor fixed overhead efficiency variance.

Limitations:

The capacity and efficiency variances have little value in terms of controlling overhead costs. They are adjustments for the under or over absorption of overhead. The main disadvantage of using the blanket overhead absorption rate to calculate fixed overhead variances is that it is not specific to any department or production area, which limits the information that it provides. For example, a major source of the direct labour inefficiency is the use of trainees in the glassblowing department. The fixed overhead efficiency variance does not identify this as it is calculated for the whole factory.

The current system assumes that overhead is driven by volume of direct labour hours which may not be true. Although the efficiency variance shows us that workers have been inefficient, because they worked more hours than standard for the actual output, it has little use for the management of overhead because overhead costs are not directly linked to direct labour hours. This assumed relationship between direct labour hours and fixed overheads is particularly inappropriate in the furnace department as no direct workers work there. As the overhead absorption rate is not linked to those activities that cause the cost to fluctuate in the different departments, the variances provide a poor basis for control or budgeting for future resource needs.

PURPOSE AND BENEFITS OF A FORMAL SUPERVISOR/APPRAISEE APPRAISAL PROCESS

The purpose of an appraisal is to assess an employee's performance, potential and training needs. The benefits of each of these elements are discussed below.

Assessing performance through goal setting:

During an appraisal the supervisor and trainee will agree performance targets in line with the job analysis. At the next appraisal, the performance of the trainee will be assessed against these goals therefore we will have a base line against which to assess all trainee performance.

If there is a performance gap between the goals set and achieved, the appraisal will identify them and the supervisor can suggest tactics to help the trainee achieve the goals suggested. Most likely these will be the identification of specific training or development needs and thus there will be a systematic follow-up of staff development activities. If goals are achieved new ones can be set, thus we will have a record of all trainees' progress.

As goals are set based on the job analysis, individual performance should be linked to organisational goals. In the case of King Crystal our goals are clearly based on quality. The trainees will learn the cultural norms through this process.

Review of trainees' potential and training needs:

Some of the trainees will have long-term career goals, for example some will want to become master glassblowers while others will not wish to commit to a 10-year training period or may simply lack the aptitude. Some trainees may be better suited to a different area within the company and be suitable for transfer. If we can identify the potential of the trainees at an early stage it should prevent wasting resource.

Appraisal is a time to discuss the aims and aspirations of the trainee and to assess the level of their motivation. For example, some trainees may shy away from promotion even if they have the aptitude. Knowing the potential of all trainees is useful for us as it will help with our succession planning. Although as our trainees have only been working for 2 months this is too early to judge at present, but it will be useful in the future.

Other benefits:

The review of rewards may be included in the appraisal to inform the trainees of incremental pay increases or performance bonus. This may motivate trainees to work well as it will link the performance to financial benefit. The appraisal should foster an open atmosphere where issues can be discussed honestly and freely. In turn, this should lead to the creation of better relationships between trainee and manager.