OPERATIONAL CASE STUDY February 2018 EXAM ANSWERS

Variant 5

The February 2018 exam can be viewed at

These answers have been provided by CIMA for information purposes only. The answers created are indicative of a response that could be given by a good candidate. They are not to be considered exhaustive, and other appropriate relevant responses would receive credit.

CIMA will not accept challenges to these answers on the basis of academic judgement.

SECTION 1 - BRIEFING NOTE

SUPPLIER EVALUATION

Financial stability:

Financial stability of our suppliers is important for King Crystal as we need to ensure that we are not left in this position again. From the information we can see that Suppliers A and B are likely to have the greatest financial stability as they have been trading substantially longer than suppliers' C and D. The most likely time for a business to cease trading is in the early years of trading. Suppliers C and D are the youngest companies and have not yet proven that they can survive in the medium to long term. In addition, suppliers' A and B, have approximately three times the revenue of supplier's C and D and a smaller overall revenue figure can mean that the total costs of the business are less likely to be covered, an indicator of greater risk.

Supplier B has the safest quick ratio of all four suppliers at 1.5 as this indicates that if all of its suppliers insisted on being paid at once that there is enough cash and receivables to cover the debt at short notice. However, it is probable that supplier A is employing a more aggressive credit control policy than B as the receivable days are half the days of the payables and a quick ratio of 1.0 can be considered "safe" from a liquidity perspective. Supplier D is less liquid and would not be able to pay current liabilities at short notice. This may jeopardise its ability to continue to trade.

Potential credit terms:

As suppliers' C and D are both relatively new businesses it could be expected that they would offer better settlement terms to us in order to build their business. In fact, based on receivable days of 30 days, this is not the case with supplier D, which makes them less attractive to us. Based on the receivables days we would get the best credit terms from supplier C and B with the worst terms from suppliers' A and D. However, it is possible that we can negotiate a settlement discount or better terms than the average receivable days suggests, and these would have to be taken into account.

Currency risk:

The volatility of the H$ might make supplier D a much cheaper supplier than the others if the currency movement works in our favour. Indeed, the H$ has devalued significantly in the past year. However, this makes supplier D a much riskier option and this would mean that supplier D is probably unsuitable as a supplier in financial terms. It should also be borne in mind that although the T$ has been stable for years that this may not always be the case and that there is always additional risk when dealing in a foreign currency. In addition, the administration is more onerous and therefore will increase the purchase and payment time.

COUSIN'S STRATEGIC SUPPLY WHEEL

Cost / benefit:

The cost of the product as well as maintaining the link between the supplier and the company should not outweigh the value of the benefits gained. At King Crystal, the cost of a tonne of silica sand is not a relatively high proportion of the total cost of the raw materials needed to make our products. In order to ensure that our overall strategy of differentiation does not suffer due to poor performance of the silica sand supplied our primary concern must be quality and expertise rather than cost.

Relationships:

Relationship types fall into two distinctive groups: collaborative and opportunistic (or competitive). A collaborative approach is more likely to be sought when the risk is higher, and an opportunistic approach is more likely to be sought when low price is the ultimate objective. Here at King Crystal we would prefer to see our suppliers as partners working with us to achieve long-term success. Our focus is based on quality rather than price and this approach will be more likely to succeed.

Competences and skills:

This refers to the skills and competences of the individuals within the company. It is the ability to communicate and negotiate with the suppliers and them with us. Any changes in the purity of the silica sand will affect our product and we need to work collaboratively to ensure that this does not disadvantage us.

Performance measures:

These are the metrics by which we monitor the success of the supply strategy. At King Crystal, we already have in place a number of tactical measures, such as price and inventory requirements. We would also need to develop further appropriate measures such as: quality checks, reliability and lead times to ensure that our production flow is not adversely affected by substandard or late inputs.

Organisational structure:

This is the final spoke for the strategic supply wheel. It is important that supply management can work cross functionally as a team. At King Crystal, it is vital that we do not become entrenched in our functional silos to the detriment of the success of our strategy. For example, when we assess the silica sand supplier from a financial perspective we may chose supplier B as there is no foreign exchange risk, whereas in procurement you might chose Supplier A if their lead time is the shortest.

SECTION 2 - BRIEFING NOTE

COST OF QUALITY

Prevention:

The checking of the silica sand before it is mixed and added to the furnace will help to prevent the brittle product quality problems happening again; hence the cost of doing this is a prevention cost. The cost of the actual tests and the cost of the time taken to apply it would be appropriate here.

Appraisal:

The new tests during the annealing process will detect the brittle crystal fault at the earliest detection time. These can be classified as “appraisal costs” as we are checking the quality of the crystal products. At this stage, these costs will be the cost of the tests done on the samples chosen from the batch and the sampling.

Internal failure:

The costs associated with the furnace scrub will be classified as internal failure costs as they result from the use of the new silica sand. The issue only arose as a result of the contaminants not being detected and hence these are costs of failure in the production process that are internal to the business.

The cost of remaking the products that were so brittle that they could not be sold will be also be included in this category of quality cost. You mentioned that this amounts to G$11,000 gross profit and as we cannot melt and reuse the crystal like we usually do, we can’t even deduct the cost of materials from this figure.

In addition, we need to be aware that as we are currently working to full capacity that we have an opportunity cost. We will now spend two days replacing the faulty production and this means that we cannot generate contribution from making other products; this is evidenced by turning away the special commissions. Whatever contribution we could have generated in the two days that we will now be remaking these products should be added as a cost of the internal failure. As the furnace scrub involves shutting down the furnaces the cost of lost contribution for this time should also be included.

External failure:

We have sent a batch of the faulty products to a major department store and although we can replace these we will incur additional special delivery costs which are an external failure cost.

In addition, the late deliveries are part of the quality failure and any compensation payments, goodwill gestures and extra time spend liaising and communicating with the customer will also have to be added to this total.

Much more difficult to quantify is the loss of goodwill and damage to reputation that we may now suffer as a result.

TQM

Senior management support:

Any TQM program that is not supported by the senior management will not succeed. Introducing a TQM system at King Crystal will require a cultural change as to date we have been more focused on a quality control approach (inspection and testing) than a TQM approach. This will be difficult to achieve without the passion and commitment of the top-level managers and directors, although as Paulo and Gregor are already enthusiastic this should be achievable.

Prevention:

TQM requires that costs caused by making mistakes, that have to be rectified by consuming more resources, are eliminated. In our case we have just spent extra resource (detailed in the internal and external failure sections of the cost of quality report above) to put right an oversight. If this level of error is repeated frequently it will reduce the long-term profit of the business. Prevention of poor quality will save costs and is often accompanied by the phrase "right first time". The focus is on the design of processes and systems in order to ensure that mistakes are minimised.

Continuous improvement:

This is the understanding that we can always improve upon our existing systems, products and processes. As already detailed, continuous improvement is not confined to the production process. While it is understandable that the mixing team did not recognise the silica sand as a different raw material to the usual silica sand on this occasion, the new tests introduced will ensure that this error is unlikely to occur in the future. The time taken to perform the new tests should also improve as employees actively seek better ways to do their jobs. Small frequent improvements can make significant progress over time.

Participation by all:

In order to ensure an efficient process with a quality output, TQM discourages silo thinking. Each aspect of the supply chain (external and internal) contributes to the quality of the final product and its profitability. Ravi has already been to see the supplier and together King Crystal and the supplier of silica sand will find a way to ensure that the sand supplied will be analysed in order that the mix for the furnace is correct. Close relationships with our suppliers can mean that supplies are delivered at short notice and that we will collaborate in any changes in specification. This will also apply to all of our other suppliers.

Within King Crystal, employees in the glassblowing department already work as teams, to make the quality products that we do. Their ability to adjust to the needs of the other team members and rectify small errors as they occur is an example of the skills and teamwork that would help TQM to flourish in the whole organisation. Participation will empower the employees to act on their own initiative so for example, if a worker in the annealing department realises that a batch of products is faulty, they have the authority to shut down the entire process rather than risk further processing poor quality items.

The customer is the entity that defines quality in any TQM system. The quality of our products is defined by our customers.

SECTION 3

From: Finance Officer

To: Paulo Aldo, Managing Director

CC: Freddie Fearn, Finance Manager

Subject: RE: Furnaces and production schedules

ACCOUNTING FOR THE FURNACE IN THE FINANCIAL STATEMENTS

Existing furnace repairs for the year ending 31 December 2018:

Unfortunately, the repairs to the existing furnace cannot be treated as an asset in the financial statements for the year ending 31 December 2018. This is because these repairs were performed to maintain the furnace's operating condition and therefore can only be classified as an ordinary repair. Only expenditure that improves the condition of the asset beyond its previously assessed standard of performance (so that the future economic benefits associated with the asset are increased) can be capitalised. This is not the case and therefore we will have to expense the cost of the repairs to profit or loss this year.

Impairment for the year ending 31 December 2018:

Under IAS 36: Impairment, we have to consider the report about the condition of the furnace from the specialist furnace company as an impairment event. This means that we need to undertake an impairment review and compare the carrying value of the furnace (its cost less accumulated depreciation) with its recoverable amount and if the recoverable amount is the lower amount we will have to write off the difference to profit or loss. Recoverable amount is the higher of the furnace's fair value less cost to sell (basically what we could sell it for, which in our case is the scrap value less the cost of removing the furnace) and its value in use (which given the report is likely to be very small). In reality, it is likely that we will have to charge profit or loss with an impairment loss in the year ended 31 December 2018.

New furnace for the year ending 31 December 2019:

The new furnace should be recognised as a non-current asset as part of property, plant and equipment because: it is probable that we will receive future economic benefit from its use and its cost can be reliably measured from the purchase cost.

In order to assess which items in the supplier quote can be capitalised, IAS16: Property, plant and equipment states that all directly attributable costs necessary to bring the asset into working condition should be capitalised. In our case these include: the purchase cost, delivery costs, import duty, installation costs and the cost of reinforcing the floor.

The VAT will not be capitalised as it will be reclaimed on our VAT return as input VAT.

EXPLANATION OF THE LINEAR PROGRAMMING GRAPH

As we are faced with more than one constraint: trainee labour hours, glassblower hours and master glassblower hours we have used a linear programming graph to help us determine the maximum contribution that we can earn from these. In order to do this, we assign an axis to each the two products that we are going to make next week: axis X represents the number of jugs to be produced and sold and axis Y represents the number of bowls to be produced and sold.

Lines A, B, C and D represent the constraints on production as follows:

- Line A represents the master glassblower constraint
- Line B represents the trainee glassblower constraint
- Line C represents the glassblower constraint
- Line D represents the minimum number of bowls that we must produce and sell. This is 500 bowls.

The iso-contribution line connects points of equal contribution: so, this shows the contribution earned by the two products.

The optimal production plan:

The optimal production plan can be found by moving the iso-contribution line out from the origin until it is at the furthest edge of the feasible region. The feasible region represents all of the possible production combinations and is the area on the graph that is above line D and below lines A and C. The optimal production plan is the point where lines A and C cross and this represents the binding resources which are master glassblower and glassblower time. Reading from the graph this is approximately 440 jugs and 750 bowls.

How we can use the graph to determine if we should schedule more trainee or master glassblower time:

We would only schedule more time if a resource is a binding constraint as we can only increase our total contribution if we have more of this type of resource. From the graph we can see that the binding resources are master glassblowers and glassblowers. Therefore, we would not schedule more hours and pay overtime for the trainee glassblowers as this is not a binding constraint. It is a slack resource and no additional contribution can be earned from having more off it.

For any binding resources (master glassblowers and glassblowers), we would schedule extra hours and pay a maximum of the normal hourly rate plus the shadow price for each hour of overtime. Scheduling extra master glassblower time would have the effect of moving line A to the right. Once line A intersects with line B it would then cease to be a binding constraint and it would not be worth scheduling more master glassblower time.

SECTION 4 - REPORT TO TOBIAS PHIPPS, HEAD OF GLASSBLOWING

REASONS FOR GLASSBLOWING DEPARTMENT VARIANCES

Rate variance of G$1,020 adverse:

An adverse rate variance means that the workers in the glassblowing department have been paid more per hour on average than the standard rate. As all overtime premium is charged to overhead and the master glassblowers and glassblowers have been paid at standard rate the variance must arise as a result of paying the trainees glassblowers more than the G$11 an hour standard. All trainee pay increases are at the discretion of the department manager, so this variance probably indicates that the trainees are progressing better than expected and have been rewarded accordingly.

Abnormal idle time of G$2,300 adverse:

Idle time is the time that our workers are being paid to work but are unproductive because either they are waiting for their turn in the glassblowing process, there is a changeover in the product being made or they do not have molten crystal to work with (because of a furnace shut down). We build an acceptable level of idle time into our standards (it represents 10% of the standard), but the level of idle time seen this month is in excess of the expected level as evidenced by the adverse variance. It is most likely that this is due to the furnace down time. The faulty furnace was shut down for 3 full days and because the labour costs were still attributed to this department, is the reason for the variance.

Mix variance of G$ 2,758 favourable:

A favourable variance means that we have used proportionately more of the lower-grade labour or proportionately less of the higher-grade labour than standard. From the working, we can see that we have used 172 hours more of the trainee glassblowers time than the standard mix for actual hours worked and as these are the lowest paid workers this has caused a favourable mix variance. The fact that we have used proportionately more trainee labour than the standard mix probably indicates that the trainees are quite advanced in their apprenticeship and capable of more of the glassblowing tasks than expected: this might also account for the pay rise. Master glassblowers have worked for 222 hours less than the standard mix for actual hours worked and as these are the highest paid workers this has also caused a favourable mix variance of G$1,310.

Yield variance of G$6,641 adverse:

The yield variance shows that we have used more hours than standard to produce the output of goods for the month. We have used 6,300 hours in total to produce our actual output, but we should have used less. Or to put it another way, with the hours that we worked, we should have produced more good output last month. As a higher proportion of our total hours worked was worked by trainee glassblowers, it is probable that some of the adverse yield variance is also caused by their inability to work as efficiently as the fully qualified and experienced glassblowers. In addition we know that there was an issue with the quality of silica sand which could well have reduced the efficiency rate of our glassblowers.

THE CONCEPT OF RESPONSIBILITY ACCOUNTING AND CONTROLLABILITY

Responsibility accounting provides the company and each manager of a responsibility centre with periodic, regular feedback on the manager's performance. The objective is to assist in the planning and control of our responsibility centres, which in your case is the glassblowing department. This should help us all to improve our performance throughout the company. Responsibility accounting involves comparing actual performance against budgeted performance.

Responsibility accounting usually involves the preparation of annual and monthly budgets for each responsibility centre. It is likely that you will get more involved in this in the future. As the company's actual transactions are classified by responsibility centre a monthly report is prepared. These reports will be similar to the variance report that you received this month, the reports will present the actual amounts for each budget line item and the variance between the flexed budget (the actual output multiplied by the allowed cost per unit of output) and actual amounts. As you are responsible for the costs in this department you will be in a position to identify and correct any differences between actual and budgeted performance or, if necessary to revise the budget.

For the system of responsibility accounting to work effectively the performance of a manager of a responsibility centre should only be assessed on controllable costs and revenues. For example, you will not be held responsible for the abnormal idle time in the department last month or for any of the adverse yield variance that can be attributed to the two days of production lost due to the silica sand contamination. This is because it was due to factors outside of your control and your responsibility.

The report in future will probably distinguish between planning variances which will usually be outside of your control and operational variances which will be considered within your control. If we can show that the yield variance can be further broken down into these two elements we can identify exactly how much was due to the issue with the silica sand new supplier (planning) and how much due to operational inefficiency (operational). It is possible that the workers in the glassblowing department worked more efficiently than usual but that this is being masked at the moment.

You will be held responsible for the rate variances for the trainee glassblowers and the corresponding mix and yield variances as these are within your control. You opted to pay the trainees a higher hourly rate, presumably because they have achieved a particular standard of working, which is why you allowed them to undertake more of the advanced work during this month. Whether or not this decision has a net benefit to the company can only be determined if the yield variance is adjusted the effect of the supplier issue. Responsibility accounting would adjust the yield variance into the elements caused by the faulty silica sand and the yield due to the number of productive labour hours used to produce the good output. Thus, the true result of your decision would be quantified.