OPERATIONAL CASE STUDY February 2018 EXAM ANSWERS

Variant 2

The February 2018 exam can be viewed at

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SECTION 1 - BRIEFING NOTE

CORPORATE AND SOCIAL RESPONSIBILITY (CSR) REPORTING

What we should include in an annual CSR report:

Environmental impacts include carbon emissions from our use of electricity to power our production processes and the amount of water that we use throughout our production process from glassblowing to the cleaning of finished products. A CSR report should include a measure of our carbon footprint and our water consumption. It should also include any measures that we take to mitigate our impact (such as the solar panels that are due to be installed shortly, the planting of trees and the water recycling system that we have in operation) and the impact that these measures have on our carbon footprint.

In respect of our impact on society we should report on matters that affect our staff. For example, we should include measures of staff turnover. We should also report on our commitment to staff in respect of always paying above the minimum wage and the training that we provide our glassblowers for them to develop their skills. In addition, we should include any philanthropic activities such as the amount the business donates to charity, including our sponsorship of a local community arts and crafts group.

Benefits to the business of formal CSR reporting:

A key benefit of formally reporting on CSR is that it makes us focus on environmental and social responsibility matters which can then lead to improvements in the business. For example, by quantifying our carbon emissions, it means that we have knowledge regarding the elements of the production process that are having the greatest impact and can investigate ways in which the process could be changed to reduce this impact. Not only would that be better for the environment but could also potentially save us money due to reduced energy consumption.

Public perception about our business might also be improved as a result of formally reporting on CSR matters. Like Paulo, many people have become increasingly more aware of CSR and as a result, there is perhaps more expectation now that a business should report on these matters. By reporting voluntarily, it could help to enhance our reputation as a responsible business, hence enhance existing customer loyalty as well as potentially attracting new customers. Formally reporting could also have a positive effect on suppliers and other stakeholders such as potential lenders and future staff.

ENVIRONMENTAL COST REPORTING

Within an environmental cost of quality report there are four categories of environmental cost: prevention, appraisal, internal failure and external failure.

Environmental prevention costs:

These are the costs that we incur to prevent an environmental impact from happening.

An example of such a cost will be the cost of installing the solar panels on our roof. It is a preventative cost because the solar panels will allow us to generate our own electricity and hence reduce the carbon emissions that we would have generated were they not in place.

The costs incurred developing a new range of products using externally recycled glass as a key material input could be seen as a prevention cost. By using recycled glass from external sources, production has less of an impact on the natural resources of the world as we will use less silica sand and other minerals in production of the range.

Environmental appraisal costs:

These are the costs incurred to assess whether we are complying with environmental standards and policies, whether these are internally or externally set.

The costs incurred in compiling the environmental aspects of the annual CSR report is an example of an appraisal cost. Specifically, this will include management time as well as the costs of any external consultants engaged to calculate our environmental impact.

Environmental internal failure costs:

These are the costs that are incurred to mitigate environmental impacts that the business has created. These are costs that are borne entirely by the business.

An example is the additional costs we incur when we recycle broken crystal as cullet in our production process. The fact that there is waste indicates an internal failure and the costs to recycle are costs of the environmental failure.

Environmental external failure costs:

These are the costs that are environment suffers due to the actions of our business in generating harmful emissions.

There are many examples of such costs including carbon emissions from using externally generated electricity, water usage and the depletion of natural resources such as silica sand and minerals. Each of these has a potentially large impact on the environment and we are responsible for creating that impact, hence external failures where the environment effectively bears the cost. The cost to our business could be in respect of the impact on our reputation and goodwill should there be bad publicity about these environmental effects.

SECTION 2 - BRIEFING NOTE

CONSULTANTS SCHEDULE:

The data in the schedule:

The schedule shows that there are four options to choose from: a 30% recycled glass mix either hand-blown or machine made, or a 50% recycled glass mix which can either be hand-blown or machine made.

The first column in each table shows the potential additional profit to be gained for three different sales levels under each option. This represents the additional contribution of the units to be sold less additional fixed costs of production (which includes machine hire costs for options 2 and 4). It can be noted that there is a possibility of making a loss (where fixed costs are not covered by additional contribution) under each of the machine options due to the higher fixed costs arising from hiring the machinery. Another observation is that the 50% mix is expected to be more profitable than the 30% mix under both production methods, presumably as a result of lower variable costs of production.

The probabilities have been assigned by the consultant and represent his assessment of the likelihood of each level of sales occurring under each option. His probabilities show that he anticipates a higher chance of a larger volume of sales if the range is hand-blown, compared to machine made. This is perhaps because hand-blown products are more in keeping with what we already do. The expected value is the weighted average of all outcomes where the weighting is based on probability. The standard deviation for each option is a measure of the possible variations of the outcomes from the expected value and is therefore an indication of risk. The coefficient of variation for each option is its standard deviation divided by its expected value and allows the risk of each option to be compared.

Risk attitudes:

If we have a risk seeking attitude to this decision, we would choose the option which would give us the best outcome no matter how small the likelihood of it occurring. We would choose option 4 as this has the highest of all possible outcomes with an additional profit of G$166,800. This option has the highest standard deviation and therefore is the riskiest option, which is consistent with it having the largest spread of outcomes. It also has a possibility of making a loss, although we would ignore this if we had a risk seeking attitude.

If we have a risk neutral attitude to this decision, we could choose the option that would give us the highest expected value. We would ignore both the standard deviation and coefficient of variation and would again choose option 4. It should be noted that this approach is based on the expected value which is the long-run average result if the decision were to be repeated a number of times: it is not appropriate therefore for one-off decisions such as this.

If we have a risk averse attitude to this decision we would choose the option which, given the same level of profit, has the lowest level of risk. We would use the coefficient of variation and choose the option with the lowest measure because this represents the amount of risk for each G$1 of additional profit that we would gain. We would therefore choose option 3.

PRICING CONSIDERATIONS FOR GEN Z

Cost:

In determining prices for the new product range, we need to consider what it will cost us to produce them. Ultimately, we need to make a profit and therefore need to set a price that gives us a margin above the cost of production.

Raw material costs will depend upon whether a 30% or 50% mix is used. The recycled glass itself is relatively cheap to buy in and therefore a 50% mix is likely to cost less in raw materials than a 30% mix (assuming that the additional waste from a 50% mix does not erode this benefit).

Direct labour costs will depend upon whether the range is hand-blown or machine made. From our budget for crystal it is evident that direct labour cost equates to 27.5% of the cost of goods sold; if the new range is hand-blown it is likely to be similar. If machine made the direct labour cost will be a lot less, however overhead costs will be higher.

In respect of overhead costs, if we machine produce the range we will need to include the cost of the machinery required as well as its maintenance. The trial period will involve renting machinery, however in the longer term, should this range be successful, we might acquire our own machinery and this cost should be taken into account.

Competitors:

As well as cost, we need to consider what our competitors are doing. Whilst competition in the crystal market within Gigland is limited to three other businesses, there are many more manufacturers of glass products.

We need to obtain information about ranges of drinking glasses which include recycled glass to establish how these are priced. This can then act as a bench-mark for the prices that we set, although we will need to be careful in assessing how similar the competitor products are. We have designed a range which is fashionable and not much thicker than our crystal ware; this is probably not comparable to an everyday drinking glass. This means that we should consider entering the market using a price skimming technique to establish premium prices for our range.

Customers:

Lastly, we need to consider our customers. This is a departure from our existing crystal products and therefore it is important that we take note of market research and think carefully about what customers are likely to be willing to pay for non-crystal drinking glasses as it is likely to be considerably less than we are used to.

Having said that, recent news articles indicate that there is a growing consumer trend for environmentally sound products. By using a significant proportion of recycled glass to create a beautiful and desirable drinking glass we can tap into this trend whilst still retain our reputation for quality (especially if the products are hand-blown) and potentially sell at a premium price in this market. However, we might not wish to charge a premium price if it limits the volume that we could sell; a lower price might open us up to new customers.

SECTION 3

From: Finance Officer

To: Freddie Fearn, Finance Manager

Subject: Suspense account and budgeting

ACCOUNTING TREATMENT OF EXPENDITURE IN THE SUSPENSE ACCOUNT

Capitalised as an intangible asset under IAS 38:

The project to develop this new range of recycled drinking glasses has been on-going for a while. In accordance with IAS 38 we can capitalise expenditure incurred from the date on which an intangible asset is created which is when the following criteria are met:

- The intangible asset will generate probable future economic benefit. For this project that will be when we have evidence that a market exists for the recycled glass range and that we will be able to generate future profit. This is 8 February 2018 when we had the external marketers initial market research report.
- There is an intention to complete the intangible asset and use or sell it. This is evident on 1 January 2018 when the project through to completion was approved.
- The resources to complete the development are available. Given that the project budget was agreed to and expenditure approved on 1 January 2018, this was achieved then.
- There is an ability to use or sell the intangible asset. As this is an internal project, with the glass formula and the design of the glasses conducted in-house, this was met at the beginning.
- The intangible asset is technically feasible. This is probably met at the point at which workable glass mix is established: 15 February 2018.
- The costs to be capitalised can be reliably measured. Given we have identified expenditure, this criterion is met.

Considering all of the criteria together it would appear that we can capitalise expenditure incurred on the project from 15 February 2018. Specifically, this will include the wages of the designer and the production employee from 15 February until 31 March (the end of the project) and the raw materials and consumables that were purchased after 15 February. It will also include a proportion of Paulo's salary for the period from 15 February to the end of the project on 31 March; this proportion should reflect the time spent on this project compared to other work commitments.

Once we've established the value that can be capitalised this should be transferred into an intangible asset account. We need to amortise this intangible asset from 1 April 2018 (the date we started to use the intangible asset), which means there will be a three-month charge in the statement of profit or loss for the period. The amortisation period should reflect the useful economic life of the asset which will be the anticipated life of the range.

Written off to profit or loss:

All other costs that cannot be capitalised should be written off to profit or loss in the period. IAS 38 specifically mentions that advertising expenditure should not be capitalised (on the grounds that such campaigns usually have a short-term effect).

ZERO- BASED BUDGETING (ZBB)

Which aspects of the production budget?

ZBB involves starting a budget from a zero-position for each activity within the process and through decision packages (see below) justifying the level of expenditure that is required. This justification is performed on a cost/benefit basis.

As a result, ZBB is most appropriate for support activities rather than direct manufacturing costs; the latter being easily established from, for example, the glass mix recipe and work studies for the time taken in production. In respect of this new facility, support activities will include maintenance of the equipment and furnace, training of staff, quality control activities throughout the process, purchasing, and recycled glass sorting and testing.

Applying ZBB to maintenance costs:

The first stage of the process will be to decide on the decision units, effectively the support activities that will generate cost. In respect of maintenance this could be broken down into a couple of different activities (machinery maintenance and facilities maintenance) or viewed as a single activity. Each activity will have an objective associated with it. For example, the objective of machinery maintenance could be to ensure that break-downs are limited.

For each activity, there will be potentially different ways in which its objective can be achieved or different levels of expenditure that could be incurred. These choices are reflected in decision packages which should be drawn up by those people close to production (rather than the finance team).

Decision packages can either be mutually exclusive (different ways of achieving the same objective) or incremental (different levels of service to achieve slightly different outcomes). For machinery maintenance, mutually exclusive decision packages could be to either perform the maintenance in-house, with our own dedicated staff member or to outsource to an external specialist.

Incremental decision packages can then be developed for each option, starting with the base package. Indeed, we could decide here, that given the machinery will be new, that we perhaps do not need maintenance in the first year or two and start at zero. Clearly this is a potentially risky strategy as any break-down in machinery, no matter how small could be costly. Each incremental package will then build on this and add additional maintenance time and different activities that should be performed.

Once the decision packages have been fully established, a cost/benefit analysis needs to be performed. Clearly, one benefit of spending money on machinery maintenance is to reduce the risk of break-down, which if it happened could have a detrimental effect on the ability to produce. There are other benefits of maintenance though in terms of keeping the machinery working optimally in order to safeguard throughput and the quality of production. Each decision package would need to be considered against these benefits and then ranked in order of preference.

Once all decision packages were ranked the whole budget would need to be considered.

SECTION 4 - BRIEFING NOTE

RAW MATERIALS VARIANCES FOR GEN Z RANGE

Why include mix and yield variances:

Raw materials mix and yield variances arise from splitting the usage variance into the portion that relates to changing the mix of raw materials and the portion that relates to the level of output obtained from the raw materials used (in other words the yield).

The reason that Freddie has included these variances is because they give us a more detailed understanding of how changing the mix as a result of the issue with the recycled glass has affected production costs. With our crystal products, there is no need to show these variances because the mix of silica sand, potash and lead oxide for each batch does not change: it is effectively fixed to ensure the quality of the crystal (although within the other minerals used in crystal there could be a small tweak to adjust for contaminants). With this new range, although we do have a recipe at a 50% recycled glass content, and this is the standard, the mix between recycled glass, silica sand, potash and the other minerals can be changed if necessary, as demonstrated last month.

Price variances:

The price variances show that compared to the standard we paid more per kilogramme for silica sand and other minerals and less per kilogramme for recycled glass. The increase in the price of silica sand is likely the result of having to use a higher-grade sand due to changing the mix. The increase in the average price for other minerals, could be the result of having to source potassium oxide at short notice from a new supplier. Both of these adverse variances are therefore linked to the issue of the quality of the recycled glass purchased. The favourable recycled glass price variance could be a reason why the quality of the recycled glass was an issue: possibly a lower grade of recycled glass was purchased.

Mix variances:

The mix variance overall is G$3,672 adverse, which means that a greater proportion of more expensive raw materials were used than budgeted. We know that due to the recycled glass quality issue we had to change the mix. The individual variances tell us that we used proportionately less recycled glass than the standard mix (shown by a favourable variance) and used proportionately more silica sand and other minerals (shown by adverse variances). This means that we substituted the cheapest raw material, recycled glass, with more expensive inputs. Indeed, other minerals are significantly more expensive (standard price of G$10.50 per kilogramme compared to G$0.40 per kilogramme for recycled glass) which explains why the adverse variance is so much higher for other minerals

Yield variance:

The yield variance indicates that we did not achieve the budgeted level of output, in terms of finished goods, for the amount of raw materials that we used. This could be linked to changing the mix or could be an indication that there were products that had to be thrown away as a result of using the poor quality recycled glass.

SUITABILITY OF EOQ TO MANAGE NEW FACILTY RAW MATERIAL INVENTORY

The nature of our holding and ordering costs:

The EOQ model identifies an optimal order quantity for inventory where the total costs of holding and ordering that inventory are minimised. If this model where adopted we would, for each type of raw material, order the same quantity (the EOQ) each time at regular intervals throughout the year.

For us, costs of holding will include the costs associated with storing the raw materials safely such as the energy used to keep the storage area at the correct temperature, costs of training staff to handle chemicals such as potassium oxide and the costs of providing the storage space in the first place. Holding costs will also include insurance, the cost of any inventory that becomes damaged or obsolete as a result of holding it for too long. Significantly, the cost of holding also includes the finance cost associated with the investment in working capital; the higher the level of inventory the higher this cost.

Ordering costs will include supplier's delivery charges and the internal costs of administration associated with ordering.

Suitability of this model:

In principle, the model is useful because it determines an order quantity that minimises the total of holding and ordering costs. It is possible to build in a level of buffer inventory and we can use the model to assess whether bulk purchase discounts are worthwhile or not, by considering purchase cost, with and without discount, alongside the costs of holding and ordering.

However, the model is based on a number of assumptions, which reduce its usefulness to us. Firstly, EOQ assumes that demand for the raw material is constant throughout the year and can be predicted accurately. This is a new facility making a new range of glassware and hence there is still considerable uncertainty over the level of demand and what production requirements will be for the year. It will be hard to accurately predict demand at the outset, although the model could be refined as demand levels become more predicable through the year. It is likely that we will be carrying out production reasonably evenly through the year (despite maybe peaks in sales demand during the year due to seasonal factors) and therefore the constancy of demand is less of an issue.

The second assumption that is doubtful, is that a holding cost per kilogramme can be established: the model assumes that holding costs are variable with the amount of inventory held. The reality is that this is not the case for most of our holding costs. The costs of providing the silos, the energy consumed for temperature control and the training costs are more likely to be fixed in nature. In addition, insurance cover is probably based on a set amount of inventory and not on a sliding scale. Only the finance cost associated with the investment in working capital will be dependent upon the level of inventory held.