

## **OPERATIONAL CASE STUDY February 2018 EXAM ANSWERS**

### **Variant 1**

**The February 2018 exam can be viewed at**

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#### **SECTION 1 - COMPARISON OF STANDARD COST CARDS**

##### **Approach to standard setting and implications:**

Rainbow Glassware uses an ideal approach to setting performance standards such as labour hours whilst we use a current approach. An ideal approach means that the Rainbow Glassware standards are based on the best operating conditions, which in respect of labour hours for Rainbow Glassware means that there is expected to be minimal unproductive idle time, no machinery breakdowns (for example when finishing) and no bottlenecks or hold ups in the process.

This is different to our approach because we base our standards on the actual working conditions at the time of standard setting, which means that we reflect an allowance for machine down-time and idle time. Our standards are therefore more attainable. Indeed, we include a 10% allowance for idle time (compared to a 2% allowance for Rainbow Glassware). When we look at the totals for glassblowing time and the total production time overall, we can see this differential.

An implication of the Rainbow Glassware approach to standard setting is that any idle time variance for Rainbow Glassware is more likely to be adverse and potentially could be significant given that the glassblowing process requires careful synchronisation of a human resource. It is likely that short amounts of idle time creep into production whilst a single glassblower in the middle of the process is waiting for an item to come to him/her, and these short amounts of time, can build up over the course of a month.

### **Rainbow Glassware labour mix variance:**

The mix of glassblowing time is significantly different between our two businesses. Rainbow Glassware uses double the trainee time and far less master glassblower time. This possibly could be because their trainees are at a more advanced stage of their training than ours or because there is a shortage of master glassblower time. It could also be that the properties of glass compared to crystal mean that less skill is required.

Rainbow Glassware had a G\$986 adverse labour mix variance this month which means that they used a greater proportion of more expensive glassblower time, or a lesser proportion of trainee glassblower time, in production than the standard mix.

This could be because the more experienced and more expensive glassblowers had to spend time helping the trainees or rectifying trainee work, as well as attending to their own work. Or it could be that there has been a change in the balance of glassblower staff due to a change in work process that has not yet been reflected in the standard. Indeed, it could be that the standard was incorrect, and the reality is that the skills required for coloured glass are more in line with our crystal standards.

### **DIFFERENT ACQUISITION OPTIONS**

#### **Option A:**

With both his shareholding and his continued involvement in the business Greg Hall will continue to control the activities of Rainbow Glassware. He will be able to make all important decisions because of holding the majority of the voting rights and will drive the way the business operates: he will have the controlling stake.

As a result, we are unlikely to have even significant influence over the business and as such would record our 30% investment as a simple investment in our financial statements. This means that we would record the investment as a non-current asset and record any dividends received as income in our statement of profit or loss.

#### **Option B:**

In Option B, Greg Hall would no longer be involved in the management of the business and would have only 15% of the voting rights: he would not control the activities of the business. Whether a 45% stake gives us the power to exercise control over Rainbow Glassware will depend on how the four managers will act. If they act collectively they will have 40% of the voting rights and if Greg also works with them their total stake will be 55%: a controlling stake. However, if they have their own interests and act independently, our 45% stake could effectively give us the power to control the activities.

It is likely, given the fact that the managers already work together that there will be an element of them working collectively. However, given that it will take all five to work together, it is likely that we will have significant influence over decision making with our 45% share of the voting rights.

Significant influence means that we will treat the investment in Rainbow Glassware as an associate in our financial statements using equity accounting. We will include an asset in the statement of financial position equal to the cost of investment plus a 45% share of the profits earned since the date of acquisition. In the statement of profit or loss there will be a single line for our share of the associates profit for the year.

## **SECTION 2 - TIME SERIES INFORMATION**

### **The trend:**

The regression trend line represents the trend in the sales volumes for stemmed wine glasses, short tumblers and long tumblers over the past two years. The trend is the average position over time with seasonal variations smoothed out.

The first number in each equation represents the number of each type of glass sold in the first quarter of 2016. For example, 10,000 pairs of stemmed wine glasses were sold and 4,000 short tumblers. The second part of each equation represents the trend away from the starting point. For stemmed wine glasses' this means that for each successive quarter the trend is for the volume sold to fall by 900: fall because this is taken away from the starting position. For long tumblers on the other hand the trend was for the volume sold to increase by 600 in each successive quarter.

The data seems to indicate that based on the last two years of data, there is a downward trend in sales of stemmed wine glasses and an upward trend in both types of tumbler. This is in line with recent industry reports about preferences for drinking glasses moving away from the traditional stemmed glass to a tumbler.

### **Seasonality:**

The second part of the analysis looks at variations around the trend that are caused by seasonal factors. For example, looking at short tumblers we can see that in the period January to March sales were 30% lower than the trend. Conversely, in October to December sales were 60% higher than the trend.

For all types of glasses, the period October to December shows significantly higher sales than the trend. This correlates with our own sales pattern, where the peak of our sales is in October when department and independent homeware stores are stocking for the end of year holiday season. For the rest of the year the seasonality effect across the glass types is largely consistent, except for April to June where long tumbler sales are higher than the trend; possibly this is due to the warmer summer months leading to a preference for longer drinks.

### **Usefulness of this information for us:**

Given the similarity of Rainbow Glassware drinking glasses to our products, this time series analysis is useful to us, as it will allow us to predict what future sales will be for the different glass types. This will help us to schedule production and to ensure that we don't hold excessive inventories of stemmed wine glasses where sales are in decline.

However, its usefulness is limited by the fact that it is based on only two years' worth of past data and we would be assuming that the trend from this short space of time will continue into the future. In reality, our market is prone to the whims of fashion and hence it might well be in two years' time that the trend in stemmed wine glasses reverses. In addition, although our products are similar they are not identical, and it is possible that the trends and seasonality factors for coloured non-crystal glass are different to clear lead crystal.

## **WORKING CAPITAL POSITION**

### **Inventory:**

Rainbow Glassware has lower inventory days than us indicating a lower level of funds tied up in inventory and potentially lower costs for its storage and insurance.

In respect of raw materials this could be because they source all raw materials from Gigland and hence their lead times are shorter. We source our most expensive and highest volume raw materials, lead oxide and silica sand, from Beeland, which means that we have higher lead times between ordering and receiving goods. This is why we have a policy of maintaining relatively high raw material levels.

In respect of finished goods inventory days, the difference is quite significant at 60 days compared to 90 days for us. We do produce finished goods for inventory for our most popular lines, especially at this time of year. This means that our finished goods inventory is relatively high to ensure that we can meet orders for these items as they come in. It is likely that Rainbow Glassware has a different approach to inventory management or it is possible that the range of products that they offer is smaller than ours.

In any event we should obtain further information from Rainbow Glassware about the level of unfulfilled orders and any implications in respect of lost business. We should also ask for an aged inventory report to assess whether there is any risk of obsolescence.

### **Receivables:**

Our average collection period is less than that of Rainbow Glassware, meaning that our customers pay us more quickly.

Looking specifically at department store customers (of which Rainbow Glassware has one and we have two) it would appear that both of our businesses struggle to collect cash within the credit term period of 30 days. The national department store chains are very large businesses with many hundreds of suppliers and hence are in a strong position to dictate terms and take advantage. It is important that we retain good relations with these customers which is potentially why credit terms are stretched.

For Rainbow Glassware, the collection of other receivables within the credit limit terms of 30 days is even more of an issue. Like us Rainbow Glassware has a number of small independent store customers that are offered 30 days. In addition, we have international distributors who are given 60-day terms. On the basis of these terms we would expect our other receivables days to be higher, however the reverse is true.

Clearly there is a significant risk with small scale independent business customers that they ultimately will not pay and therefore it is important that there is good credit control in place to chase promptly for payment. In order to assess the strength of the credit collection procedures in Rainbow Glassware we should ask for the aged receivables report and to see the procedures they have in place for chasing payment.

## **SECTION 3 - DRAFT BRIEFING NOTE**

### **BUSINESS PROCESS RE-ENGINEERING (BPR)**

BPR is about rethinking the way that business processes such as the finance function operate. Rather than carrying on with what has always happened, BPR will make us think about the processes and radically redesign them so that the performance of the function and that of the business as a whole can be improved.

It is particularly relevant where a change is already happening, such as our case where we are combining two separate businesses into one function. However, it can be applied at any time.

#### **Application of BPR**

This briefing note will focus on three finance processes to help explain how BPR could be applied. These are chasing customers for payment, processing the weekly payroll and preparing spreadsheets of sales data for the sales team.

#### **Stage 1 in the application of BPR:**

The first stage in the application of BPR is to ask questions such as 'what do we currently do?' and 'why do we do it?'. From this we can determine which processes are necessary in order to add value to the business. Using our three examples, if we do not chase customers for payment, then we might not receive cash for the sales we have made causing financial loss to the business. Similarly, we have to process the payroll to be able to pay our employees; if they are not paid they are unlikely to work. Therefore, it is likely that we would say that these two processes are necessary.

#### **Stage 2 in the application of BPR:**

The necessity of the third process involving preparation of separate spreadsheets of sales data is questionable and this is where the second stage in the application of BPR comes into play. The second stage is to discard non-valuing adding processes altogether; this is known as process rationalisation. Therefore, we need to ask questions such as, is it necessary that the finance team prepare these spreadsheets? Does the sales team actually use the data? If the answer is no, then this finance process should be discarded as it is not adding value.

#### **Stage 3 in the application of BPR:**

The third stage in the application of BPR is to consider whether any of the processes that are necessary and do add value can be carried out in a more efficient way. This is where processes are redesigned, which under BPR requires radical and ambitious thinking that challenges how things are done. BPR encourages creative use of IT and it is likely that the processing of payroll could be greatly improved with investment in integrated payroll systems. Currently our system is stand alone and requires data on hours worked to be input; if our systems were integrated a considerable amount of finance time could be saved.

## **ACTIVITY BASED COSTING (ABC)**

### **Why absorption costing is inappropriate:**

Our fixed production overheads account for 43.4% of total production costs and include the costs of operating the furnaces (energy, staff, depreciation and maintenance) as well as general factory running costs. Under our current absorption costing system, all of this cost is treated as one and is absorbed into units of production at a rate of G\$28.44 per direct labour hour.

However, not all of these fixed production overhead costs are driven or caused by direct labour hours. For example, the energy costs associated with the furnace are driven by the hours of operation of the furnace rather than direct labour hours. The costs of handling raw materials are driven by the volume of materials handled.

Using the example given by Sally Thompson, the cost cards show that 100 pairs of glasses require 36.4 kilograms of raw material compared to 84 kilograms for 100 jugs; a significant difference. However, standard labour hours are much closer at 39 hours for the glasses and 43 hours for the jugs. Using a blanket absorption rate based on direct labour hours means that 100 jugs would only receive a slightly higher proportion of production overhead cost despite having a much higher raw material input and therefore generating a greater share of the overheads associated with materials handling and the creation of molten crystal.

### **Information required to implement ABC:**

There are a number of steps involved in implementing an ABC system and each step will require information. The first step will be to identify the activities that generate overhead cost. In respect of operating the furnaces, activities include loading the furnace pots each evening, the operation of the furnace through the night and the cleaning and resetting of the furnace pot within the furnace at the end of the week. Other activities include cleaning of finished crystal at the end of the process, quality checking and packing into our purpose made boxes.

After the activities have been identified, the next step is to establish cost pools. Each cost pool will include all of the costs associated with activities where those costs are driven by the same driver. Therefore, we will need to look at all of our cost information in detail to be able to assign it to a cost pool. For example, the overhead costs directly related to operating the furnace will include energy costs, the costs of the staff checking that each furnace is to the correct temperature and the depreciation cost associated with the furnace asset.

Each cost pool will need a cost driver which is the factor that drives the level of cost. For furnace operation this is likely to be a duration driver such as furnace hours because the cost of the energy and the staff are directly related to the time that the furnace is on.

Alternatively, given that the output of the furnace is always the same and is always made in the same way, an appropriate cost driver might be weight of molten crystal.

## **SECTION 4 - BRIEFING NOTE TO THE SENIOR MANAGEMENT TEAM**

### **REWARDING GLASSBLOWING STAFF**

#### **Why it is important to reward our glassblowers:**

Our glassblowers are a key resource and we need to ensure that we retain their skills within our business. Their skill in hand-blowing crystal and coloured glass is what gives our products their quality and differentiates us from a crystal or glass business that uses machine moulds. This allows us to charge a premium price for our products and ensures the businesses profitability.

Whilst, there is not a large market for the skills of glassblowers within Gigland, there are still other manufacturers using these skills and hence we need to ensure that our trained glassblowers are not tempted elsewhere: we need to retain them. It takes four years to qualify as a glassblower and a further six years to become a master glassblower: we need to ensure that the time we invest in our staff to reach these levels of qualification stay within the business.

In addition, to retaining our glassblowers, it is important that they are happy so that our quality standard can be maintained. If glassblowers become unmotivated or feel that they are not valued, the quality of production could suffer. This could result in lost efficiency and an increase in waste. We want our glassblowers to be motivated.

#### **Suggestions:**

We should consider encouraging our glassblowing staff to be more involved in the business through regular meetings, possibly as part of a quality circle. We need to listen to and act on, if appropriate, ideas they might have on how to improve the production process or working conditions. Staff that feel part of the decision-making process or see actions being taken based on their suggestions are more likely to feel motivated and valued.

In order for a member of staff to feel valued we need to give some sort of personal recognition. We could have a notice board in the production area on which we can recognise the achievements of the glassblowers such as qualification from trainee or to master. We could give awards on a monthly basis for staff who have demonstrated additional commitment or who have provided solutions to problems.

We need to ensure that the working environment is appropriate for our glassblowers. They work in a hot environment, with many potential hazards in terms of molten crystal/glass. We should make sure that we are giving them adequate rest breaks and plenty of water to drink. We also need to make sure that they have the appropriate tools and health and safety equipment to do their job.

## THE DECISION BETWEEN OPTION A AND OPTION B

In order to make a decision from a purely financial perspective we need to apply relevant costing principles. We will need to identify costs and savings that are incremental (that is costs or savings that are future cash flows and that only arise as a result of that option being taken) to each of options A and B. We will then compare the net incremental cost of each option and choose the option with the lowest net cost.

### Option A (to transfer the existing machine for one year):

In respect of option A, the incremental net cost will be calculated as:

The annual running costs of G\$10,000 + the costs of moving the machine of G\$4,500 + the costs of installing the machine at our factory of G\$1,000 – the net proceeds of selling the machine in one years' time (which is G\$5,000 – G\$500).

Note that the depreciation cost is ignored because it is an accounting adjustment rather than a cash flow. The cost of the new machine in 1 years' time is also ignored because it is not relevant to this decision as that will happen regardless of which option is chosen now.

### Option B (to sell the existing machine now and lease a machine for a year):

In respect of Option B, the incremental net cost will be calculated as:

The lease cost of G\$26,000 + the annual costs of running the machine of G\$8,000 – the net proceeds of selling the machine (which is G\$18,000 – G\$300) + the costs of uninstalling the machine at the Rainbow Glassware site of G\$3,000.

### Other factors to consider:

The decision of which option to take should not be based solely on which has the lowest net incremental cost. We should also consider the following:

- We need to consider whether the leased machine will work at the same speed or whether it is more or less efficient than the existing machine. This will obviously have an effect on finishing time in production.
- The lease cost includes maintenance, but are there limits on what this maintenance cover includes? It could be that there are hidden costs that arise if something were to go wrong. Alternatively, the existing machine could end up costing us more than we anticipate to run for the year if it goes wrong and needs to be repaired.
- Will staff need to be trained to use the new machine? There could be hidden training costs which will need to be factored into the financial analysis.
- Will the leased machine work as effectively as the existing machine? Our products are fragile and we need to ensure that the machine is fit for purpose and not likely to damage any of the properties of our crystal and the new coloured glass.