

Assignment in total cost analysis

Background

The Swedish manufacturer Mulles Mechanics (MM) in Mullsjö produces axles, pistons etc. for different kinds of machinery. They specialize in high quality products in relatively small batches with high possibility for customization. Their customers are mainly situated in the Nordic countries, but sales to the rest of Europe have increased the last few years.

An important part in MM's operations is metal cutting, which requires a large number of cutting blades with various forms and dimensions. Among these, there are three cutting blades with a specific alloy. For several years, these have been purchased from a Swedish company, Skärspécialisten in Sundsvall. Until recently, no competitive alternatives to Skärspécialisten have been known. However, MM has now started searching for suppliers internationally, which has led to the identification of two challengers for these three specific cutting blades. These are: Firma Dvodic in Split, Croatia, and Meyo International in Kunming, China. The MM management has some doubts about purchasing from countries they lack experience from, but the prices these companies offer are so competitive that they feel a thorough evaluation should be made.

Some figures from the previous year connected to the three cutting blades are presented in the table below.

Product	XA200	XB100	XC550
Total processing (cutting) time (Hours)	37 800	66 600	16 800
Yearly demand (No. of blades)	4 200	16 650	2 800

Mulles would like to buy all three blades from the same supplier. So far, they have managed their material supply based on economic order quantities, and they have the ambition to continue in the same manner if possible.

Task

Your task is to help the company perform a total cost analysis for this specific case.

Step 1 – Planning

Your first task is to decide which cost factors you consider relevant to include in the analysis, and specify which facts you'll need to make the necessary calculations. This is to be documented and handed in. (No requirements on report formalia – the important aspect is that you clearly state which information you need for your upcoming calculations.)

It might of course be hard for you to know on what level of detail your requests for information should be. This is also something that is difficult to formulate in a task description, since a too clear description more or less would take the difficulties out of the exercise. In order to guide you about a proper level of detail, an example is given below.

Suppose that your task is to make a total cost analysis for a wedding. Among the cost factors you intend to include in the analysis are “Food and beverages” and “Bus transports of guests to and from the wedding party”

Food and beverages: To ask for the “cost for food and beverages” is too general (this indicates that you haven't penetrated the problem, and ask for a solution instead of factors helping you reach a solution). A proper level is to ask for “number of guests” and “cost per guest from the catering firm”. It would be too detailed to ask for prices for ingredients, staff wages, time needed for cooking activities etc.

Bus transport: To ask for “Cost for bus transport” is too general. A proper level is to ask for “Number of guests”, “Travel distance” and “The bus company's tariff rates based on distance and number of passengers”. It would be too detailed to ask for fuel consumption, drivers' wages, and depreciation on vehicles etc.

Step 2 – Execution

Based on the plan/request you hand in, you'll be provided with specific data. You're supposed to use this data to make a total cost analysis, which is to be documented in a written report, including:

- Description and motivation of cost factors included
- Explanation of your calculations
- Result from your calculations
- Your recommendation to the company

There is no formal limitation on the size of your report, but 5-6 pages might be an indication of an average report.

Assessment

The following aspects will be considered while assessing your reports (the order of aspects does not represent a ranking of importance)

- Readability
- Clarity in descriptions and discussions
- Precision (i.e. it's better to express something short and concise than to use a lot of words)
- Suitability of chosen cost factors
- Correctness in calculations
- The recommendation given – connected to the calculations

Facts about Muller's Mechanics

Inventory interest rate (%)	20
Calculus interest rate (%)	10
Wages (SEK/hour)	350
Turnover (MSEK/year)	223
Total purchasing value (MSEK/year)	145
	20
Estimated yearly sales increase (% compared to present state)	
Std deviation in production volume (%)	5
Set-up cost for change of cutting blade (SEK)	30
Ordering cost connected to purchase orders (SEK)	500
Cash liquidity (%)	187
Solidity (%)	44
Return as assets, R(tot) (%)	13

Specific data for each cutting blade

	XA200	XB100	XC550
Total processing (cutting) time (hours/year)	37 800	66 600	16 800
Weight (g/unit)	82	32	160
"Density" (units/m ³)	12 700	35 400	6 450
Present safety stock (units)	24	94	16

Supplier specific data

		Skär-specialisten	Firma Dvovic	Meyo International
Price (SEK/unit) (Secured against currency fluctuations; No quantity discounts)	XA200	180	125	65
	XB100	112	82	38
	XC550	535	390	195
Minimum order quantity (units/order)	XA200	0	200	500
	XB100	0	200	1 000
	XC550	0	100	300
Expected lifetime (cutting hours/unit)	XA200	9,0	7,0	5,5
	XB100	4,0	3,0	2,5
	XC550	6,0	5,0	4,0
Supplier lead time (days)		5	10	20
Std deviation in supplier lead time (days)		1,0	2,0	5,0
Transportation time (door-to-door) (days)		1	2	45
Std deviation in transportation time (days)		0,0	0,0	10,0
Transportation cost), fixed (SEK/shipment), insurance included		0	500	15 000
Transportation cost), variable (SEK/kg), insurance included		60	325	440
Defect rate (blades with quality problems) (%)		0,0	2,5	3,0
Terms of payment (days)		30	45	20
Delivery reliability (% deliveries on the right day)		99,99	99	95
Delivery precision (% deliveries with sufficient quality)		100	100	100
Muller's part of company's turnover (%)		17	3	0,5

Muller's estimation of increase in transaction costs compared to the present situation

	Skär-specialisten	Firma Dvovic	Meyo International
Ordering & delivery control (hours/order)	0	0,5	2
Supplier visits - working time (hours/year)	0	50	250
Supplier visits - travel costs (SEK/year)	0	30 000	150 000

Miscellaneous

Package size	No limitations
Packaging cost	No difference between suppliers
Time to mount a new blade in the machine	No difference between suppliers
Recycling of used cutting blades	No cost
Safety stock	Calculated to reach 98 % stock availability (SERV1).
Suppliers' financial situation	Satisfactory
All blades will be ordered from the same supplier	
Desired contract duration	Minimum 2 years
Capacity and space in the warehouse	No limitations
Quality control	Made at every change of blade
Terms of delivery	ExWorks (buyer in response for transports)
Compensation from supplier for defect blades	Not at normal defect rate
Compensation from supplier for late deliveries	Not in normal circumstances
Maximum quantity per year	Unlimited for all suppliers
Customs fee (% på custom value, dvs product price + transp. cost)	1,7 % (NB! No customs within the EU)

For other requests there is unfortunately no information available

TETS23 2016 - Information to the total cost exercise

Grupp XX

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Assessment Total cost analysis, Mulle's Mechanic

Group ____

Important data not requested, and how this lack of data was handled

Readability

Clarity

Precision

Relevant costs

Correctness in calculations

Recommendation vs calculations

Credits

F	0	0,5	1	1,5	2	2,5