Additional Standard costing notes Semester 2 2014 MAC3701

STANDARD COSTING

MAC2601 ASSUMED PRIOR KNOWLEDGE:
Study unit 23: The standard costing system
Study unit 24: Calculating selected variances
Study unit 25: Recon & analysis of variances

Variance = difference between **standard** costs and the **actual** costs of manufacturing the product on the one hand, and the difference between the **standard** selling price and the **actual** selling price (xAQ) on the other hand.

Variances may be ***favourable*** or ***unfavourable***.

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STANDARD COSTING

Variances for MAC2601:

***Direct material**
①Total variance; ② Material purchase price variance; ③ Material quantity/usage variance

***Direct labour**
①Total variance; ② Labour rate/tariff variance; ③ Labour efficiency variance

Manufacturing overheads:

***Variable manufacturing overheads - Variable with labour hours worked**
①Total variance; ② Overhead rate variance; ③ Overhead efficiency variance

***Variable manufacturing overheads - Variable with units produced**
①Total variance; ② Overhead rate variance; ③ Overhead efficiency variance

***Fixed (period) overheads –** (absorption costing approach not covered in MAC2601)
② expenditure variance

***Variable sales and distribution overheads**
①Total variance; ② expenditure variance; ③ Volume variance

In Mac2601 you assume budgeted volume sold = actual volume sold = zero volume variances

***Sales**
② Sales price variance

In MAC2601, only one product manufactured and sold

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STANDARD COSTING – NB 2nd year principle

When calculating price/rate variances:
-quantity/hours remain unchanged.
-compare standard and actual costs.

When calculating quantity/efficiency variances:
-price/rate remain unchanged.
-compare actual and standard quantity/hours.

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STANDARD COSTING – NB 2nd year principle

With all the **"expense"-variances** – whenever the *actual cost is more than the standard cost*, the variance is unfavourable.

With an **"income"-variance** – whenever the *actual price is more than the standard price*, the variance is favourable.

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STANDARD COSTING – Framework (2nd year)

The framework that you can use for the expense variances:

Expenses

AC or AQxAP		AQxSP		SQ allowed x AcProd x SP
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Rate/price/spending		Quantity/efficiency		
Total				

It's important to determine how many units were actually produced, because the standard is usually given per unit, and you need to know what the standard quantity allowed would be for actual production (all the units actually produced).

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STANDARD COSTING – 2nd year Framework

The framework that you can use for the income variances:

Income

AIncome or AQxAP

AQxSP

This leg will not be required from MAC2601 students

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Selling price	Quantity
Total	

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STANDARD COSTING – 2nd year Framework

The framework that you can use for the income variances:

Income

AIncome or AQxAP

AQxSP

This leg will not be required from MAC2601 students

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Selling price	Quantity
Total	

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STANDARD COSTING – MAC2601 summary

For ACTUAL volume of completed units produced

		Allowed			**Allowed**
AQ x AP	–	AQ x SP	→	AQ x SP	– SQ x SP
AH x AR		AH x SR		AH x SR	SH x SR
Price/Rate variance				**Usage/Efficiency** variance	
AQ x (SP – AP)				(AQ – SQ) x SP	
AH x (SR – AR)				(AH – SH) x SR	

Source: MAC2601, 2012 (adapted)

Direct costing system only for MAC2601

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STANDARD COSTING – MAC3701…

Reminder: MAC2601 = assumed prior knowledge

Variances where actual output differs from budgeted output

MAC3701: 2 products / 2 materials resulting in mix & yield/quantity variances

For the ACTUAL volume of completed units produced or sold								BUDGETED volume produced or sold
		Allowed			**Allowed**			
AQ x AP	–	AQ x SP	→	AQ x SP	– SQ x SP	→	SQ x SP (=AV x SC)	– (material) BV x SC
AH x AR		AH x SR		AH x SR	SH x SR		SH x SR (=AV x SC)	BV x SC (lab and o/h)
Price/Rate variance				**Usage/Efficiency variance**			**Volume variance**	
AQ x (SP – AP)				(AQ – SQ) x SP			(BV – AV) x SC for material	
AH x (SR – AR)				(AH – SH) x SR			(BV – AV) x SC for labour and o/h	
							(AV – BV) x SP for sales	

MAC3701: actual units produced and sold not always equal to budgeted units produced and sold

Direct costing system vs Absorption costing system ? ← MAC3701

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STANDARD COSTING – MAC3701

DIRECT MATERIALS MIX AND YIELD VARIANCES

More than one type of raw material is used in a specific proportion.

Material usage variance = Material mix variance + Material yield variance

(The material mix and yield variances = further analysis of the material usage variance)

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STANDARD COSTING – MAC3701

Material mix variance = (actual quantity used in standard mix proportions – actual quantity used) x standard price

	Actual usage in standard mix proportions	Actual usage in actual proportions	Standard price	Mix variance R
	① x / ②		R	
	① x / ②		R	

① Total number of kilogram issued to production

② Ratio of kg required for 1 unit in standard mix = *x* kg + *y* kg and ratios *x*/(*x* + *y*) or *y*/(*x* + *y*)

In MAC3701, we use the actual quantity of material *used* in our calculation of the material mix variance.

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STANDARD COSTING – MAC3701

Material yield variance = (actual yield – standard yield from actual input of material) x standard cost per unit of output

	Input allowed for *actual output* (Input allowed for actual yield)	Actual usage in standard mix proportions	Difference at standard price	Yield variance R
	x kg =	③	( ) x R	
	x kg =	③	( ) x R	

Note:

It is very important that you use the **input allowed for actual output** in your calculation above.

The output is also called the "yield".

③ We have already arrived at these numbers in our material mix variance calculations.

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STANDARD COSTING – MAC3701

LABOUR IDLE TIME VARIANCE & EFFICIENCY VARIANCE

When a question provides information on **clock hours, working hours** (operating or productive hours) **and standard hours**

Labour efficiency variance = Labour idle time variance + Labour efficiency variance

Labour efficiency variance (as per MAC2601) =
(standard hours allowed for actual production – actual [clock] hours) x standard price

In MAC3701 → The labour efficiency variance is now computed with the actual work/productive hours and no longer with the actual clock hours.

Clock hour rate/tariff = This is the standard (budgeted) or actual rate/tariff paid to employees for each clock hour.
Work hours = Work/Operating/Productive hours refer to the time that the employee is productive. This is usually recorded on job cards.
Idle time = Idle time is the difference between the clock hours and the work/operating/productive hours.
Standard work/productive hour rate/tariff = This is the standard clock hour rate/tariff adjusted for the standard (budgeted) idle time allowed. Standard workhour rate = standard clock hour rate / (1 – standard idle time %).
Standard hours = Standard hours are the **actual** clock hours after allowing for the standard or normal allowed idle time percentage, in other words, clock hours x (1 – standard idle time %).

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STANDARD COSTING – MAC3701

LABOUR IDLE TIME VARIANCE & EFFICIENCY VARIANCE

Idle time variance = (actual productive hours – standard hours①) x standard work hour rate ②

① Standard hours = actual clock hours x (1 – allowed idle time %)

② Standard work hour rate = standard clock hour rate / (1 – standard idle time %).

Note: Remember that the "standard hours" in the idle time variance refer to the standard **work** hours **allowed for actual production**

Efficiency variance = (standard quantity of labour hours for actual production – actual labour hours) x standard work hour rate

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STANDARD COSTING – MAC3701

SALES VARIANCES IN A DIRECT COSTING SYSTEM:

Sales variances arising when one type of product is manufactured and sold:

*Total sales variance = Sales price variance + sales volume **contribution** variance*

*Total sales variance = (actual sales revenue – standard variable COS for actual sales volume) – budgeted **contribution***

Sales price variance
= (Actual selling price – standard selling price) x Actual sales volume

**Take note: Sales margin price variance = sales price variance. This is because the standard variable cost cancels out in the formula for the sales margin price variance: [(Actual selling price – standard variable cost) – (Standard selling price – standard variable cost)] x Actual sales volume. Therefore, stick with just a sales price variance, to keep the calculations simple.*

*Sales volume **contribution** variance = (Actual sales volume – budgeted sales volume) x standard **contribution** margin*

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STANDARD COSTING – MAC3701

SALES VARIANCES IN AN ABSORPTION COSTING SYSTEM:

When we use an absorption costing system, we allocate the fixed production overheads to inventory by means of a fixed production overhead recovery or allocation rate.

Sales variances arising when one type of product is manufactured and sold

*Total sales variance = Sales price variance + sales volume **profit** variance*

*Total sales variance = (actual sales revenue – standard **profit** for actual sales volume) – budgeted **profit***

Sales price variance
= (Actual selling price – standard selling price) x Actual sales volume

*Sales volume **profit** variance = (Actual sales volume – budgeted sales volume) x standard **profit** margin*

*In order to calculate the sales volume **profit** variance for an **absorption costing** system, you first need to calculate the fixed overhead recovery rate per unit and the standard (budgeted) profit per unit.

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STANDARD COSTING – MAC3701

SALES VARIANCES

Where more than one type of product is manufactured and sold, the **sales volume variance** is subdivided into a **mix** and **quantity variance**.

Sales volume variance → Sales mix variance
Sales volume variance → Sales quantity variance

(The mix variance is calculated in exactly the same way as the mix variance for materials.)

DIFFERENT TREATMENT FOR DIRECT COSTING SYSTEM & ABSORPTION COSTING SYSTEM…

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STANDARD COSTING – MAC3701

DIRECT COSTING SYSTEM

Sales margin volume variance = (Actual sales volume – budgeted sales volume) x standard contribution per unit

Product	Actual sales volume (units)	Budgeted sales volume (units)	Difference in volume (units)	Standard contribution (R)	Sales margin/contribution volume variance (R)
	①	②	③ = ① - ②	④	③ x ④
X					
Y					
				Total	

Standard contribution per unit	X R	Y R
Standard selling price		
Less: Std. variable costs per bag	( )	( )
Std. variable production costs per unit		
Std. variable selling costs per unit		
Standard contribution per unit		

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STANDARD COSTING – MAC3701

DIRECT COSTING SYSTEM

Sales margin mix variance = (Actual sales volume – actual sales volume in budgeted proportions) x standard contribution per unit

Product	Actual sales volume (units)	Actual sales volume in budgeted proportions (units)	Difference in volume (units)	Standard contribution (R per unit)	Sales margin/contribution mix variance (R)
	①	②	③ = ① - ②	④	③ x ④
X					
Y					
				Total	

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STANDARD COSTING – MAC3701

DIRECT COSTING SYSTEM

Sales margin quantity variance = (Actual sales volume in budgeted proportion – budgeted sales quantity) x standard contribution per unit

Product	Actual sales volume in budgeted proportions (units)	Budgeted sales volume (units)	Difference in volume (units)	Standard contribution (R per unit)	Sales margin/contribution mix variance (R)
	①	②	③ = ① - ②	④	③ x ④
X					
Y					
				Total	

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STANDARD COSTING – MAC3701

ABSORPTION COSTING SYSTEM

Sales margin volume variance = (Actual sales volume – budgeted sales volume) x standard profit per unit

Product	Actual sales volume (units)	Budgeted sales volume (units)	Difference in volume (units)	Standard profit (R per unit)	Sales margin volume variance (R)
	①	②	③ = ① - ②	④	③ x ④
X					
Y					
				Total	

	X R	Y R
Standard **profit** per unit		
Standard selling price		
Less: Std. variable costs per bag	( )	( )
Std. variable production costs per unit		
Std. variable selling costs per unit		
Standard contribution per unit		
Less: Std. **fixed production** overhead cost per unit*		
Standard **profit** margin per unit		

*To calculate the standard fixed production overhead cost per unit we have to calculate the fixed production overhead recovery rate per unit

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STANDARD COSTING – MAC3701

ABSORPTION COSTING SYSTEM

Sales margin mix variance = (Actual sales volume – actual sales volume in budgeted proportions) x standard profit per unit

Product	Actual sales volume (units)	Actual sales volume in budgeted proportions (units)	Difference in volume (units)	Standard profit (R per unit)	Sales margin mix variance (R)
	①	②	③ = ① - ②	④	③ x ④
X					
Y					
				Total	

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STANDARD COSTING – MAC3701

ABSORPTION COSTING SYSTEM

Sales margin quantity variance = (Actual sales volume – actual sales volume in budgeted proportions) x standard profit per unit

Product	Actual sales volume in budgeted proportions (units)	Budgeted sales volume (units)	Difference in volume (units)	Standard profit (R per unit)	Sales margin mix variance (R)
	①	②	③ = ① - ②	④	③ x ④
X					
Y					
				Total	

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STANDARD COSTING – MAC3701

Fixed overhead variances

DIRECT COSTING SYSTEM

The fixed manufacturing overhead expenditure variance is the **only** variance that occurs in a direct costing system in respect of fixed overheads. This is because fixed overheads are deducted in full from contribution in the income statement and are not allocated to the manufactured products. (MAC2601)

ABSORPTION COSTING SYSTEM

Fixed overhead **expenditure** variance & fixed overhead **volume** variance.

*The fixed overhead **expenditure** variance is the same as that calculated for the variable costing system.

The fixed overhead **volume** variance arises due to the fact that fixed overheads are allocated to products based on predetermined fixed overhead recovery rates.

The fixed overhead volume variance can also be made up of the **fixed overhead (volume) capacity variance** and the **fixed (volume) overhead efficiency variance.**

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STANDARD COSTING – MAC3701

Fixed overhead variances

ABSORPTION COSTING SYSTEM:

Fixed overhead expenditure variance = budgeted fixed overheads – actual fixed overheads

Fixed overhead volume variance = (actual production units – budgeted production units) x standard fixed overhead rate per unit

Remember that the fixed overhead volume variance = volume capacity variance + volume efficiency variance

Fixed overhead efficiency variance = (standard quantity of input hours for actual production – actual input hours) x standard fixed overhead rate

Fixed overhead capacity variance = (actual hours of input – budgeted hours of input) x standard fixed overhead rate

TOTAL fixed overhead variance = (actual production x standard fixed overhead rate per unit) – actual fixed overhead cost

When we calculate the fixed overhead volume variance, we work with budgeted and actual **output units** and cost per unit. When we calculate the **volume capacity** and **volume efficiency** variances, we work with **direct labour hours (or another allocation base)** and the cost per labour hour.

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