Unit 20
Standard Costs: Application

ILO1. Using Standard Costs: Direct Materials Variances
ILO2. Using Standard Costs - Direct Labor Variances
ILO3. Using standard costs - Variable Manufacturing Overhead Variances

ILO1. Using Standard Costs: Direct Materials Variances

We analyze direct materials standard by using the feedback from example company Stormwear Inc. for its winter jackets. For this process we include the additional costs of 0.1kg of fiberfill per parka at $5.00 per kg. During the previous month 210kg of fiberfill were purchased to make 2,000 parkas. The total material cost amounts to $1,029.

Fig 20.1 Direct Material Variances Example

The difference between what is paid for an amount of materials, and what should have been paid according to the predetermined standard is referred to as the materials price variance. For our example, this variable is $21 and is favourable. We classify it as favourable due to the actual price paid of $4.90 per kg, being less than the standard price of $5.00.

Conversely, the materials quantity variance is the difference between the quantity of materials needed for produced, and the amount that should be needed designated by the standard. Referring to our example again, this difference amounts to $50 which is unfavourable.

The quantity variance is unfavorable due to the actual quantity being greater than the standard quantity allowed by 10 kilograms (= 210 kgs. – 200 kgs.).

For materials price variance, we can use the following calculations.

$$\begin{aligned} MPV &= (AQ \times AP) - (AQ \times SP) \\ &= AQ(AP - SP) \\ &= 210 \text{ kgs } (\$4.90/kg - \$5.00/kg) \\ &= 210 \text{ kgs } (-\$0.10/kg) = \$21 \text{ F} \end{aligned}$$

For materials quantity variance, we can use the following calculations.

MQV = (AQ × SP) – (SQ × SP)
= SP(AQ – SQ)
= $5.00/kg (210 kgs – (0.1 kg/parka × 2,000 parkas))
= $5.00/kg (210 kgs – 200 kgs)
= $5.00/kg (10 kgs) = $50 U

Our additional notes include:

- Standard quantity of 200 kg
- Actual price of $4.90 per kg

To summarize our direct materials variances, the purchasing and production manager are responsible for the materials price variance, and the materials quantity variance. A standard price is sued to calculate the quantity variance so that the production manager is not accountable for the performance of the purchasing manager.

For example, the production manager may allot production so that it requires express delivery of materials, causing unfavourable materials price variance. Likewise, the purchasing manager may acquire lower quality materials causing an unfavourable materials quantity variance for the production manager.

ILO2. Using Standard Costs - Direct Labor Variances

If we look at direct labour variance in conjunction with our Stormwear Inc company, we can investigate using the following details.

- 1.2 standard hours per parka at $10 per hour
- During the previous month, staff worked a total of 2,500 for a total labour cost of $26,250 in order to make 2,000 parkas.

Fig 20.2 Direct Labour Variances Examples

The difference between the actual average hourly wage and the standard hourly wage is referred to as the labour rate variance. For our example this amount is $1,250 unfavourable. It's classified as such due to the actual average wage being greater than the standard wage (= $10.50 per hour – $10.00 per hour).

The difference between the actual quantity of labour hours and the quantity allowed by the benchmark is called the labour efficiency variance. For our example this amount is found to be $1,000 unfavourable. The efficiency variance is unfavourable due the actual quantity of hour being greater than the standard quantity allowed (2,500 hours – 2,400 hours).

If we demonstrate the calculations, then we require the supporting numbers.

- Standard quantity of 2,400 hours
- Actual price 0f $10.50 per hour

Calculations for Labour Rate Variance.

LRV = (AH × AR) – (AH × SR)
= AH (AR – SR)
= 2,500 hours ($10.50 per hour – $10.00 per hour)
= 2,500 hours ($0.50 per hour)
= $1,250 unfavourable

Calculations for Labour Efficiency Variance

LEV = (AH x SR) – (SH x SR)
= SR (AH – SH)
= $10.00 per hour (2,500 hours – 2,400 hours)
= $10.00 per hour (100 hours)
= $1,000 unfavourable

To expand on the direct labour varainces, we need to be aware that employees and managers can have a big influence over this measure.

- Assign highly skilled and lower skilled worker to tasks consistent to their level
- Employee motivation in the production department
- Quality of supervision
- Quality of training

Not only manager or employee can influence labour variance, but the department itself can cause fluctuations in variance. For example, the maintenance department may do a sub standard job maintaining equipment. This may lead to longer processing times, resulting in an unfavourable labour efficiency variance. The purchasing manager may buy cheaper quality resources which will also contribute to unfavourable labour efficiency variance for the production manager.

ILO3. Using Standard Costs - Variable Manufacturing Overhead Variances

To study variable overheads rates, we apply them to a context. We will use Stormwear Inc for this purpose. Stormwear has predetermined overhead rates that it calculated using direct labour hours for a base. With some calculations Stormwear had the following standard variable manufacturing overhead costs.

- 1.2 standard labour hours per parka at $4.00 per labour hour

- During the previous month, staff worked 2,500 labour hours to produce 2,000 parkas. The actual variable manufacturing overhead was $10,500

The difference between the actual variable overhead costs incurred, and the standard costs based on the actual activity is referred to as the variable overhead rate variance. For our example this amount is $500 and unfavourable.

The difference is unfavourable due to the actual variable overhead rate being greater than the standard variable overhead rate by $0.20 per labour hour ($4.20 per hour - $4.00 per hour).

For the variable overhead efficiency variance, this is found by deducting the standard activity allowed, from the actual activity for a production period, multiplied by the vriable part of the predetermined overhead rate. Our example results in $400 and is unfavourable.

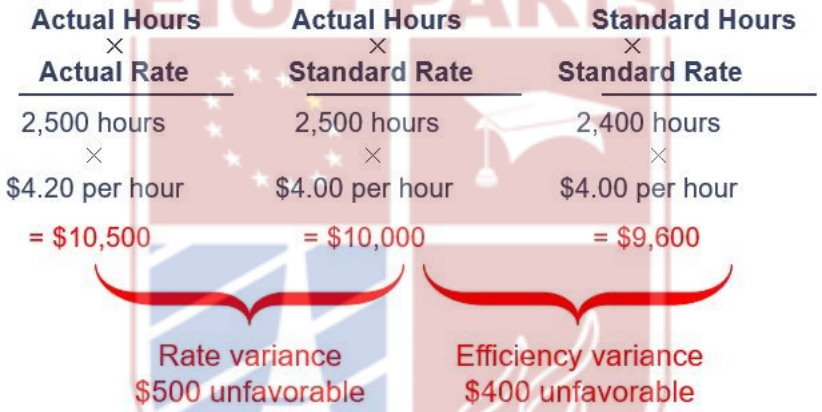

Fig 20.3 Variable Manufacturing Overhead Variances Example

The efficiency variance is unfavourable due to the actual quantity of labour hours being greater than the standard quantity of activity; 100 labour hours (2,500 hours – 2,400 hours).

We can demonstrate the calculations below. We start with the variable manufacturing overhead rate variance.

VMRV = (AH × AR) – (AH – SR)
= AH (AR – SR)
= 2,500 hours ($4.20 per hour – $4.00 per hour)
= 2,500 hours ($0.20 per hour)
= $500 unfavorable

We calculate the variable manufacturing overhead efficiency variance.

VMEV = (AH × SR) – (SH – SR)
= SR (AH – SH)
= $4.00 per hour (2,500 hours – 2,400 hours)
= $4.00 per hour (100 hours)
= $400 unfavorable

- Standard quantity of 2,400 labour hours
- Actual price of $4.20 per labour hour

A final point of consideration involves material variances. This is the difference between the quantity used in production and the quantity of materials purchased. The price variance is dependent upon the quantity purchased, and the quantity variance is based on the quantity used n production. We illustrate this process with data taken from Stormwear Inc.

- 1 kg of fiberfill per parka costs $5.00 per kg
- During the previous month 210 kg of fiberfill were purchased at a cost of $1,029. The company used 200 kgs to produce 2,000 parkas.

Fig 20.4 Material Variances Example

The materials price variance is calculated using the actual quantity purchases; 210 kg, the materials price variance can then be found as $21 and is favourable. While the materials quantity variance is found using the actual quantity used for production; 200 kgs, the materials quantity variance can then be found at $0.

References:

1. Managerial accounting, Ray Garrison-Eric Noreen-Peter Brewer - McGraw-Hill Education, 16 ed., 2018
2. Managerial accounting, John Wild-Ken Shaw - McGraw-Hill Education, 7ed, 2019
3. Management accounting, Will Seal-Carsten Rohde-Ray Garrison-Eric Noreen - McGraw-Hill Education, 6ed. - 2019