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Variance Analysis Website- report.pdf

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PRINCIPLES OF ACCOUNTING (II) REPORT:

Variance Analysis Website

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1. Introduction to Variance Analysis:

Variance analysis is a key tool used in management accounting to identify the discrepancies between actual and anticipated (or planned) financial performance. These variations can occur in a company's overhead, labour, and material costs, among other areas.

Variance analysis will improve performance management and reduce costs for businesses by providing insight to plan deviations in terms of which variables influence them. It is a widely used process for operation management and enhancing efficiency in budgeting, cost accounting, decision-making. Analysis of these differences helps companies assess how well they are doing compared to their standards or budget.

Favorable outcomes (F): This happens when actual performance is higher than budgeted or projected. For example, when the real expenses for input factors are less than those budgeted or projected or when income is better than budgeted or projected, this indicates that resources are utilised efficiently or more performance than what was budgeted or expected.

Adverse outcomes (A) : these are results achieved in a situation where performance fails to achieve expectations. For instance, in the eventuality where revenues are less than the budgeted targets or the actual costs are higher than the budgeted estimates, it indicates that there are unfavorable circumstances or ineffective management. Negative deviations require an exploration of the causes so that appropriate remedies could be instituted.

Businesses use standard costs as a benchmark for evaluating their performance because they are predicted or estimated costs. They represent the estimated cost of manufacturing a good or service under typical circumstances. For direct materials, direct labour, and overheads, standard costs are set. Numerous factors, including past data, current market conditions, and projections for the future, influence these expenses.

By creating an application that can quickly calculate the variances of materials and labourers based on the user's inputs we can help managers create quick reports or error areas and take simple corrective measures.

2. Types of Variances and Their Importance:

2.1. Material Variances:
- Price Variance: Difference between the actual price and the standard price of materials
$$MPV = (AP - SP) \times AQ$$

- Cost Variance: Measures the difference between actual and expected material costs
$$MCV = (SQ \times SC) - (AQ \times AC)$$

- Mix Variance: Measures the difference in material mix used compared to the standard mix.
$$MMV = (R.St.\ Qty - AQ) \times SP$$

- Usage Variance : Measures the difference between Standard Quantity that estimated for and the Actual Quantity of materials used, valued at Standard Cost per Unit
$$MUV = SP / Q \times (SQ - AQ)$$

- Yield Variance: Measures the difference between Standard Output (based on Actual Materials) and Actual Output valued at Standard Cost per Unit.
$$MYV = (AO - SO) \times SP / Q$$

2.2. Labour Variances:
- Rate Variance: Labour Rate Variance (LRV) is the variation between the actual and expected or standard cost of labour.
$$LRV = (SR - AR) \times AH$$

- Cost Variance: Labour Cost Variance is the difference between the standard cost of labour for the actual output and the actual cost of labour for the production.
$$LCV = (SH \times SR) - (AH \times AR)$$

- Idle Time Variance: Idle time is paid time that an employee machine is unproductive due to factors that can either be controllable or uncontrollable by management.
$$LITV = Idle\ Time \times SH / Q$$

- Mix Variance: An analysis used in cost accounting to measure the impact of changes in the composition of a labour force on the overall labour cost.
$$LMV = (RStd.\ Hours - AH) \times SR$$

- Efficiency Variance: Expresses the difference between the estimated hours and the actual number of hours worked, valued at the standard rate per hour.
$$LEV = SR \times (SH - AH)$$

- Labour Yield Variance: Pertains to the variance arising from differences in labour productivity or efficiency compared to the standard labour input.
$$LYV = (SH - R.Std.H) * Standard\ Rate / (Standard\ Yield - Actual\ Yield) * Standard\ Rate$$

3. Variance Analysis Tool:

This application simplifies the calculation of different variances. Rather than doing these calculations manually, the application requires an entry of the relevant data, after which the calculated variances are generated. This tool, therefore, helps companies analyze their production, identifies areas where inefficiency has occurred, and points out areas that require improvement.

3.1. Overview of the App's Functionality:

- Input fields: the application contains input fields where actual and standard values for material and labor data are to be entered.
- Calculation Engine: uses similar formulas mentioned above, and accordingly, it processes the data. The application calculates results related to price, usage, rate, and efficiency variances.
- output: the application gives variance calculations. That is all users need to grasp cost deviations and overall performances.

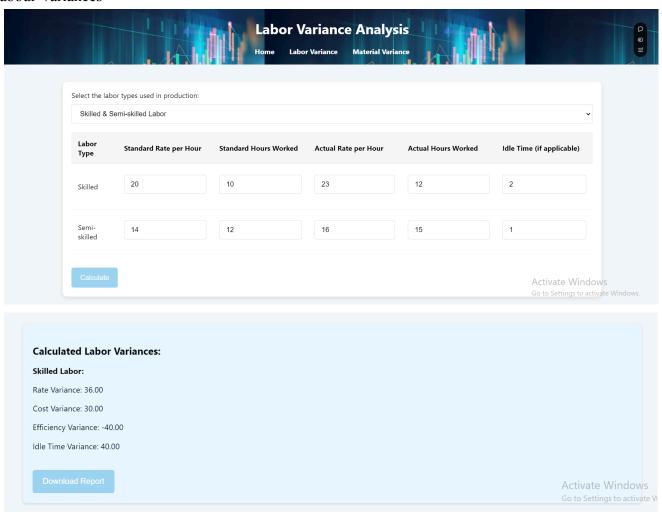### 3.2. Website: variance-analysis-tool

Home page

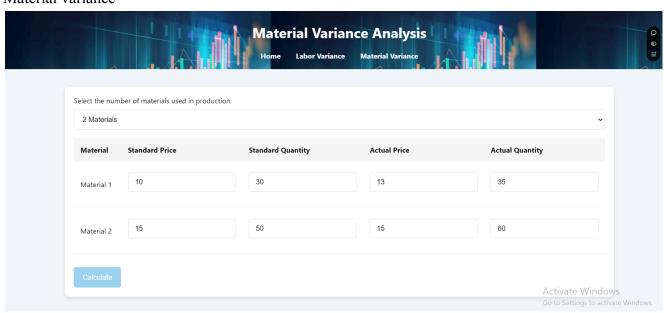**Understanding Standard Costing and Variance Analysis**

Variance analysis helps businesses measure the difference between expected and actual performance.

Some Important of Variances

Material Price Variance	Material Quantity Variance	Labor Rate Variance	Labor Efficiency Variance	Overhead Variance
Formula: (Actual Price - Standard Price) x Actual Quantity	**Formula:** (Actual Quantity - Standard Quantity) x Standard Price	**Formula:** (Actual Rate - Standard Rate) x Actual Hours	**Formula:** (Actual Hours - Standard Hours) x Standard Rate	**Formula:** Actual Overhead - Applied Overhead
Description: Measures the difference in cost between what was paid for materials and what should have been paid according to the standard.	**Description:** Indicates the difference between the actual quantity of materials used and the standard quantity expected to be used.	**Description:** Reflects the difference between the actual labor rate paid and the standard labor rate set by the company.	**Description:** Shows the difference between the actual hours worked and the standard hours expected for the actual output.	**Description:** Measures the difference between the actual overhead costs incurred and the overhead applied based on standard rates.

Labour Variances

Select the labor types used in production:

Skilled & Semi-skilled Labor

Labor Type	Standard Rate per Hour	Standard Hours Worked	Actual Rate per Hour	Actual Hours Worked	Idle Time (if applicable)
Skilled	20	10	23	12	2
Semi-skilled	14	12	16	15	1

Calculate

Calculated Labor Variances:

Skilled Labor:

Rate Variance: 36.00

Cost Variance: 30.00

Efficiency Variance: -40.00

Idle Time Variance: 40.00

Download Report

Material variance

Select the number of materials used in production:

2 Materials

Material	Standard Price	Standard Quantity	Actual Price	Actual Quantity
Material 1	10	30	13	35
Material 2	15	50	15	60

Calculate

3.3. Code Explanation:

The variance analysis tool enables managers to evaluate discrepancies in their costs, including materials and labour, by computing various types of variances. This webpage allows users to calculate material variances by inputting standard and actual values for up to four materials used in production. It provides a user-friendly interface for variance calculations, with a download report option for detailed results.

The key sections are:
 i. Home page section: Contains an overview of what standard costing variances are, and some of the common and important variances used in the industry. It also contains a navigation bar at the top with hyper-links to the page that actually calculates material and labour variances.

ii. Labour Variance : This page will calculate all labour variances based on user given inputs. It Allows users to select the number of materials used in a product and based on their selection, giving them the option to enter standard and actual prices and quantities.

The application uses a code stack of HTML, CSS and JAVA script. Styling with CSS: There was an extensive use of CSS (Cascading Style Sheets) was made to improve the visual design and layout of the tool.

Javascript usage:
i. Input forms: users may enter actual and standard values (e. g. , standard price, actual quantity) in the designated form fields.

ii. Calculation logic: Upon submission of the form by the user, JavaScript functions compute various types of variances (including material price variance, material yield variance, and labor rate variance) using established formulas. The results are presented dynamically on the web page.

iii. Report Generation: After calculating the variances, the tool enables users to download the results in a text format using the downloadreport() function.

User Interaction:
i. Navigation: users can navigate between various sections, such as labor and material variance calculations, using the navigation bar.

ii. Form inputs: The interactive forms enable users to enter data pertaining to actual and standard values, subsequently generating output based on the variance formulas.

Conclusion:

Variance analysis is an insightful tool in managerial accounting that enables businesses to monitor and control costs, efficiency assessment, and overall improvement of the production process. It takes actual results and compares them with estimated standard costs and budgets to understand the reasons for favorable variances and unfavorable variance and take corrective measures. From the viewpoint of materials, labor, or overhead, variance analysis gives very important information for better decision-making and resource management. In the future we hope to be able to create a much more detailed report which can give users personalized advice on how to reduce the variances in their budget and actual results by using AI-integration.

Citations:

1. Standard Costs, Budgets, And Performance Evaluation - FasterCapital
2. Management Accounting in a Dynamic Environment | Cheryl S. McWatters,
3. https://www.coursehero.com/file/p6u5mhko/Zippy-Slide-41-of-13-Hansons-labour-rate-variance-LRV-for-the-week-was-a-310/
4. https://kupdf.net/download/cima-p1-performance-operations-study-text-2013_5afd1749e2b6f5354c1e98be_pdf
5. https://www.coursehero.com/file/p6u5mhko/Zippy-Slide-41-of-13-Hansons-labour-rate-variance-LRV-for-the-week-was-a-310/

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material price variance, material

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Cost Variance: Labour Cost Variance is the difference between the standard cost o...

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Variance : Measures the difference between Standard Quantity

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Yield Variance: Measures the difference between Standard Output

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Idle Time

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LCV = (SH x SR) - (AH x AR

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Actual Output valued at Standard Cost per Unit

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Variance: Measures the difference between actual and expected

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