I'm not a robot

Image Source: The Association for Financial Professionals Variance analysis is a fundamental tool in cost and management accounting that helps businesses compare actual financial performance with expected performance. By identifying different types of variances, companies can take corrective actions to control costs, improve efficiency, and enhance decision-making. This guide will explain the key types of variances—price variance, usage variance, efficiency variance, and volume variance—in a simple and beginner-friendly way. Variances are the differences between actual and budgeted figures. These differences are categorized as: Favorable variance (F): When actual costs are lower than budgeted costs, leading to higher profits. Unfavorable variance (U): When actual costs are higher than budgeted costs, reducing profitability. Variance = Actual Cost or Quantity − Budgeted Cost or Quantity Each type of variance has its own specific calculation, which we will explore below. Price variance measures the difference between the expected cost of materials or labor and the actual cost paid. It helps businesses understand whether they are paying more or less than planned. Price Variance = (Actual Price − Standard Price) × Actual Quantity A company budgets for raw materials at RM5 per unit but ends up paying RM6 per unit for 1,000 units. (6 − 5) × 1,000 = RM1,000 (Unfavorable) Causes of Price Variance: Supplier price changes Bulk purchase discounts Market price fluctuations How to Control Price Variance: Negotiate better deals with suppliers Seek alternative vendors Improve forecasting accuracy Usage variance (or material quantity variance) measures how efficiently raw materials are being used compared to what was expected. Usage Variance = (Actual Quantity − Standard Quantity) × Standard Price A manufacturer expects to use 500 kg of material at RM10 per kg but actually uses 550 kg. (550 − 500) × 10 = RM500 (Unfavorable) Causes of Usage Variance: Wastage or spoilage Inefficient production methods Quality issues with raw materials How to Control Usage Variance: Improve quality control Train employees on best practices Reduce waste through better inventory management Efficiency variance analyzes whether labor and machines are working efficiently by comparing the actual time taken to the budgeted time. Efficiency Variance = (Actual Hours − Standard Hours) × Standard Rate A company expects a job to take 1,000 hours at RM20 per hour, but it actually takes 1,200 hours. (1,200 − 1,000) × 20 = RM4,000 (Unfavorable) Causes of Efficiency Variance: Inexperienced workers Equipment breakdowns Poor work planning How to Control Efficiency Variance: Train employees to improve productivity Maintain machinery regularly Streamline work processes Volume variance measures the difference between the actual number of units produced or sold and the expected volume. It indicates whether production or sales targets were met. Volume Variance = (Actual Volume − Budgeted Volume) × Standard Cost per Unit A company budgets to sell 5,000 units at RM50 per unit but actually sells 4,500 units. (4,500 − 5,000) × 50 = RM25,000 (Unfavorable) Causes of Volume Variance: Demand fluctuations Production capacity issues Changes in market competition How to Control Volume Variance: Adjust pricing strategies based on demand Optimize production capacity Improve marketing efforts Variance TypeFormulaCommon CausesControl MeasuresPrice Variance(AP−SP)×AQSupplier price changes, market fluctuationsNegotiate better deals, find alternative suppliersUsage Variance(AQ−SQ)×SPWastage, inefficient use of materialsImprove quality control, train staffEfficiency Variance(AH−SH)×SRWorker inefficiencies, machine breakdownsTrain employees, maintain equipmentVolume Variance(AV−BV)×SCUDemand changes, production limitsAdjust pricing, optimize marketing Variance analysis helps businesses monitor costs, identify inefficiencies, and take corrective actions. By regularly analyzing price, usage, efficiency, and volume variances, companies can better control expenses, improve operations, and increase profitability. By understanding these variances and applying corrective measures, businesses can achieve financial stability and improve their decision-making processes. Implementing variance analysis as part of regular financial management ensures that a company remains competitive and cost-effective in a changing business environment. SunRun Stock Plunged 40% Tuesday—Watch These Key Price Levels Jun 18, 2025 Some Top CDs Have Raised Rates Instead of Cutting Them—Will More Follow? Updated Jun 17, 2025 Amazon's CEO Tells Staff AI Could Lead to a Smaller Corporate Workforce Jun 17, 2025 S&P 500 Gains & Losses Today: Solar Stocks, Airline Shares Fall; Jabil Climbs Jun 17, 2025 Top CD Rates Today, June 17, 2025 - You Can Still Snag 4.60% APY ... for Now Jun 17, 2025 Homebuilder Confidence Falls To 2022 Low Jun 17, 2025 Why Western Digital Is a 'Key Name' in IT Hardware for Morgan Stanley Jun 17, 2025 Oil Stocks Rise, Airline Shares Fall as Middle East Tensions Continue Jun 17, 2025 Top Stock Movers Now: Enphase Energy, T-Mobile US, Jabil, and More Jun 17, 2025 Today's Lowest Refinance Rates by State - June 17, 2025 Jun 17, 2025 Today's Lowest Mortgage Rates by State - June 17, 2025 Jun 17, 2025 T-Mobile Stock Slides as SoftBank Reportedly Sells Shares at a Discount Updated Jun 17, 2025 Direct material usage variance is the difference between actual material usage and the budgeted material. The company has the standard cost of material used per unit, so the budget material equal to number of actual unit multiply by standard cost. However, the result maybe different from the plan. The variance depends on how accurate we calculate the standard cost and waste control during production.The variance can be both favorable and unfavorable, where the actual can be higher or lower than the expected cost. Favorable when the actual material used is less than standard while unfavorable is the other way around. The company must be investigated when the variance is significant and impact management decisions. It is normal to have variance but the should not be too big which can impact net profit.Favorable variance has positive impact on profit, but it means that company expect higher cost, so it leads to higher price. Company lose competitive advantage over pricing when setting too high price. Unfavorable variance will decrease profit or even lead to unexpected loss.Material Usage Variance FormulaMaterial Usage Variance ExampleCompany A manufacture the shoes, it has to calculate the standard cost the following:UsagePriceLeather20 tons$ 200Rubber15 tons$ 150Textiles10 tons$ 100Calculate the actual costDuring the year, the company produces 20,000 units and the actual usage as follows:MaterialQuantityActual PriceAmountLeather39 tons$ 2007,800Rubber32 tons$ 1504,800Textiles22 tons$ 1002,2002. Calculate the standard costThe standard cost for 20,000 units as following:MaterialQuantityActual PriceAmountLeather40 tons$ 2008,800Rubber30 tons$ 1504,500Textiles20 tons$ 1002,0003. Calculate the varianceMaterialStandard CostActual CostVarianceLeather8,8007,8001,000FavorableRubber4,5004,800(300)UnfavorableTextiles2,0002,200(200)UnfavorableThe total price variance during January is negative $ 500 ($ 1,000 – $ 300 – $ 200), and it will impact the cost of goods sold in the statement of profit and lose. It will reduce the cost of goods sold and increase net income for the period.AnalysisThe favorable variance may raise from the following:The standard quantity is not prepared properly, the manager may wish to increase it in order to protect himself when something go wrong.The work is more efficient than expected.The wastage may decrease after the workers' learning curve improve.The unfavorable (adverse) variance may arise from:The standard quantity is not prepared properly. The manager may under pressure from competitive price and he keep reduce the cost until it is impossible to archive.The purchasing department buys low-quality material which leads to high wastage and error.The old machine produce more errors and high variance. The scrap will increase as well if we keep using the old machine.Cause of Material Usage VarianceBefore finding solutions, we need to understand the causes of this variance which include:Inappropriate use of direct material: management should conduct the investigation whether the variance due to staff negligence during production.Unskill worker: if the majority of the workers are new and do not receive proper training.Defective process: this is a serious issue which means the production process is improper and it causes significant wastage.Thief: There may be unauthorized persons who go into the factory and steal material.Material quality: The poor material quality will increase the wastage as well.Defective machinery: The old machinery may not work well and it will increase defective products which will end up as the wastage.Lack of inspection: Without a proper inspection, worker will be careless during the work and it can lead to defective products.Error in recording: There may be some error in the recording which shows unusual variance.How to Reduce Material Usage Variance (unfavorable)?Reduce Material Usage VarianceWork ineffectiveThe workers need to receive proper training to make sure they can perform the work properly. Unskill workers will increase the wastage and make more errors, so we need to provide more training.Error in the production processThe production process may have some issue which increases the error. We may need to check with the engineering and design team if the process flow works correctly.Low-quality materialLow quality will increase the rate of production failure and wastage. So the purchasing department should follow the quality standards in order to prevent this issue.Unusual wastageThe wastage needs to keep at a reasonable rate. Any factor which increases the wastage, the management needs to find the solution. ➡ Material Usage variance (MUV) is the difference between the standard quantity in production and the actual quantity consumed in production. ➡ During the production process, if the raw materials used in the production differ from the standard quantities that have been used to produce the output then this will result in MUV. ➡ MUV is the deviation of the ratio of the actual quantity of materials consumed for the actual output from the standard quantity of materials to be consumed for the actual output. ➡ The deviation of this quantity is to be multiplied by the standard price to convert the quantity into monetary value. ➡ MUV is favorable when the actual quantity of direct materials used is less than the total standard quantity allowed for the actual output. ➡ The concept of material usage variance refers to the difference between the actual usage of materials in the production process versus the standard usage based on the amount of output produced. ➡ The difference between the actual and expected material quantities used in a process is measured as an actual quantity. ➡ As a result of the production plan and the expected efficiency of the production process, the standard quantity of material is determined. Material Usage Variance Formula The following formula can be used to calculate material usage variance: Material usage variance = (Standard quantity of material allowed for actual output – Actual quantity of material used) x Standard price of material = (SQ-AQ)*SP where, SQ = Standard Quantity SP = Standard Price AQ = Actual Quantity ➡ The variance indicates that more material was used than expected, thereby resulting in higher material costs if the actual amount of material used in production exceeds the expected amount. ➡ Conversely, if the actual amount of material used is less than the expected amount, then the variance is favorable, indicating that less material was used than expected, which can result in lower material costs. ➡ Materials usage variances need to be identified and analyzed regularly to identify their root causes, such as material quality, production efficiency, or even inaccurate planning. ➡ To reduce costs and increase profitability, managers need to understand these variances to improve the production process and minimize waste. Causes of Material Usage Variance Material usage variance can be caused by several factors, including: ➡ The use of poor-quality materials can result in higher levels of waste, resulting in a higher variance in material usage. ➡ A poor production process can result in a higher variance in material usage because more material is used than expected to produce the desired output. ➡ A defective machine can result in excessive material usage as a result of compensating for defects or problems during the production process. ➡ Material usage variance can be caused by inaccurate planning, such as inaccurate production planning, inventory management, or forecasting. ➡ A higher variance in material usage results from operator error, including incorrect measuring, misjudging the required amount of material, or not following standard procedures. ➡ A change in product design or specification can result in a change in the amount of material needed, resulting in variances in material usage. ➡ Theft and pilferage of materials can affect material usage variance since less material is actually used than expected. People Also Ask (FAQs), What is material usage variance in cost accounting? The material usage variance is a cost accounting concept that measures the difference between the amount of material used in production and the amount that should have been used based on standard cost. The material usage variance is calculated by multiplying the difference between the actual quantity of material used and the standard quantity by the standard cost per unit. An unfavorable (adverse) variance indicates that a greater amount of material was used than was necessary if the actual quantity was greater than the standard quantity. The variance is favorable if the actual quantity of material used is less than the standard quantity, indicating that less material was used than anticipated. A variance in material usage can help identify waste and scrap in the production process, as well as evaluate the effectiveness of material management policies. To reduce material costs and improve profitability, companies can analyze material usage variance to identify areas where improvements can be made. What is material cost variance and material usage variance? The variance between actual and expected costs of materials used in production is measured using material cost variance and material usage variance in cost accounting. Material cost variance refers to the difference between the actual cost of materials used and the standard cost of materials expected to be used for a given level of production. It measures the difference between the actual cost of the materials and the standard price set for those materials. The following formula can be used to calculate material cost variance: Material Cost Variance = (Actual Quantity of Materials Used x Actual Price per Unit) – (Standard Quantity of Materials Allowed x Standard Price per Unit) Conversely, material usage variance indicates how much material is used versus how much material is expected to be used at a given level of production. As a result, material usage variance is the difference between the amount of materials consumed and what was expected of those materials. The formula for calculating material usage variance is as follows: Material Usage Variance = (Actual Quantity of Materials Used – Standard Quantity of Materials Allowed) x Standard Price per Unit Companies can use material cost variance as well as material usage variance to identify areas where they can reduce costs and improve their material management processes. A company's material cost variance can indicate whether it is paying too much or too little for materials, whereas its material usage variance indicates whether it uses materials efficiently. What is the difference between material price variance and material usage variance? Variance Definition Formula Material Price Variance The difference between the actual cost of materials purchased and the standard cost of materials that should have been purchased. MPV = (AQ x AP) – (AQ x SP) Material Usage Variance The difference between the actual amount of materials used and the standard amount of materials that should have been used. MUV = (AQ x SP) – (SQ x SP) Where: AQ: Actual quantity of materials purchased or used AP: Actual price per unit of materials purchased SP: Standard price per unit of materials SQ: Standard quantity of materials that should have been used (Founder of Management Notes)MBA,BBA.I am Smirti Bam, an enthusiastic edu blogger with a passion for sharing insights into the dynamic world of business and management through this website.I hold a MBA degree from Presidential Business School, Kathmandu, and a BBA degree with a specialization in Finance from Apex College, January 13, 2025 January 13, 2025/ Steven Bragg A usage variance is the difference between the expected number of units used in a process and the actual number used. If more units are used than expected, the difference is considered an unfavorable variance. If fewer units are used than expected, the difference is considered a favorable variance. For example, the standard number of ounces of titanium needed to fabricate a widget is ten. If the actual number used is eleven, there is a negative usage variance of one ounce.The usage variance concept is only used in a standard costing system, where the engineering staff creates standard usage levels that form the baseline for analyses. Standard usage amounts are stored in bills of material (for materials) or in labor routings (for labor). These standards may be adjusted from time to time, based on subsequent engineering reviews of products and processes, and on changes in the expected level of scrap derived from a process. If a standard is set incorrectly, it will trigger an essentially meaningless variance, since the basis of comparison is wrong.How to Calculate the Usage VarianceA usage variance can be stated in terms of the number of units differential. It can also be restated into currency by multiplying the variance by the standard cost of the units. To continue with the example, if one ounce of titanium costs $100, the cost of the one-unit usage variance is $100. The calculation of this costed form of usage variance is:(Actual usage - Expected usage) x Standard cost per unit = Usage varianceRelated AccountingTools CourseCost Accounting FundamentalsStandard Costs and Variance Analysis The usage variance concept is most commonly applied to judge the volume of materials used in a production process, and is called the direct material usage variance. This variance is the difference between the actual and expected unit quantity needed to manufacture a product.The concept is also applied to the amount of labor used; in this case, it is called the labor efficiency variance. This variance is calculated as the difference between the actual labor hours used to produce an item and the standard amount that should have been used, multiplied by the standard labor rate. The labor efficiency variance is used less frequently, especially when there is a lower proportion of labor-related cost in a product.When to Use Usage VariancesThe usage variance can be of considerable utility from a management perspective, since it highlights areas in which there may be excessive levels of waste. These areas can then be targeted for investigation, followed by one or more improvement projects. The management team will typically compile a list of the causes of one of these variances, sort the list by size, and then work on fixing the largest dollar-value items first. This is a cost-effective way to deal with the variance, since it results in the greatest cost savings in the near term. January 13, 2025/ Steven Bragg/ Science, Tech, Math All Science, Tech, Math Humanities All Humanities Languages All Languages Resources All Resources Take the free quiz below and find out! Share — copy and redistribute the material in any medium or format for any purpose, even commercially. Adapt — remix, transform, and build upon the material for any purpose, even commercially. The licensor cannot revoke these freedoms as long as you follow the license terms. Attribution — You must give appropriate credit , provide a link to the license, and indicate if changes were made . You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. ShareAlike — If you remix, transform, or build upon the material, you must distribute your contributions under the same license as the original. No additional restrictions — You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits. You do not have to comply with the license for elements of the material in the public domain or where your use is permitted by an applicable exception or limitation . No warranties are given. The license may not give you all of the permissions necessary for your intended use. For example, other rights such as publicity, privacy, or moral rights may limit how you use the material. Learning objectives of this article: Define and explain materials quantity/usage variance. How is it calculated? What are the reasons of unfavorable materials quantity variance (excessive usage of materials in production)? Who is is responsible for this variance? Definition and Explanation: Materials quantity variance is computed by comparing the actual quantity of materials used with the standard quantity of material allowed, both priced at standard cost. If actual quantity used is more than the standard quantity allowed to produce a particular number of units, the variance is called unfavorable materials quantity variance. An if actual quantity of materials used is less than the standard quantity allowed, the variance is called favorable materials quantity variance. The standard quantity allowed is determined by multiplying the quantity of materials that should be required to produce one unit (the standard quantity per unit) times the actual number of units produced during the period. The unit produced are the equivalent units of production for the materials cost being analyzed. Formula: The following formula is used to calculate this variance: Materials quantity variance = (Actual quantity used × Standard price) - (Standard quantity allowed × Standard price) Example: Assume that 3,550 pieces of item 5-489 (direct material) are used in producing 1,750 units of finished product. Standard quantity allowed to produce 1 unit of finished product is 2 pieces of item 5-489 and standard price per piece of 1 piece is $2.50. Required: Calculate Direct materials quantity variance. Solution: Pieces × Unit Cost = Amount Actual quantity used at standard price 3,550 $2.50 standard $8,875 Standard quantity allowed at standard price 3,500 $2.50 standard 8,750 50 $(125) unfav. The standard quantity allowed is the result of multiplying 1,750 units of finished product by the standard quantity of 2 pieces per unit. The $125 materials quantity (or usage) variance is unfavorable because the actual quantity used exceeded the standard quantity by 50 pieces of direct materials (item 5-489). Excessive usage of materials can result from many reasons, including faulty machines, inferior quality of materials, untrained workers, poor supervision and theft of materials. Who is Responsible for Direct Materials Quantity Variance? Generally, production department is responsible to see that material usage is kept in line with standards. However, purchasing department may be responsible for unfavorable materials quantity variance if it is caused by poor quality of materials. If purchasing department obtains inferior quality materials in effort to economize on price, the materials may be unsuitable for use and may result in excessive waste. Thus purchasing department rather than production department would be responsible for the quantity or usage variance. A word of caution is in order. Variance analysis should not be used as an excuse to conduct witch hunts or as a means of beating line managers and workers over the head. The emphasize must be on control in the sense of supporting the line managers and assisting them in meeting the goals that they have participated in setting for the company. In short, the emphasize should be positive rather than negative. Excessive dwelling on what has already have happened, particularly in terms of trying to find someone to blame, can destroy morale and kill any cooperative spirit.Relevant Articles: Variance and standard deviation are two closely related measures of variation that you will hear about a lot in studies, journals, or statistics classes. They are two fundamental concepts in statistics that must be understood to comprehend most other statistical concepts or procedures. Below, we'll review what they are and how to find the variance and standard deviation. The variance and standard deviation show us how much the scores in a distribution vary from the average.The standard deviation is the square root of the variance.For small data sets, the variance can be calculated by hand, but statistical programs can be used for larger data sets. By definition, variance and standard deviation are both measures of variation for interval-ratio variables. They describe how much variation or diversity there is in a distribution. Both the variance and standard deviation increase or decrease based on how closely the scores cluster around the mean. Variance is defined as the average of the squared deviations from the mean. To calculate the variance, you first subtract the mean from each number and then square the results to find the squared differences. You then find the average of those squared differences. The result is the variance. The standard deviation is a measure of how spread out the numbers in a distribution are. It indicates how much, on average, each of the values in the distribution deviates from the mean, or center, of the distribution. It is calculated by taking the square root of the variance. The variance and standard deviation are important because they tell us things about the data set that we can't learn just by looking at the mean, or average. As an example, imagine that you have three younger siblings: one sibling who is 13, and twins who are 10. In this case, the average age of your siblings would be 11. Now imagine that you have three siblings, ages 17, 12, and 4. In this case, the average age of your siblings would still be 11, but the variance and standard deviation would be larger. Let's say we want to learn how to find the variance and standard deviation of the age among your group of 5 close friends. The ages of you and your friends are 25, 26, 27, 30, and 32. First, we must find the mean age: (25 + 26 + 27 + 30 + 32) / 5 = 28. Then, we need to calculate the differences from the mean for each of the 5 friends. 25 – 28 = -326 – 28 = -227 – 28 = -130 – 28 = 232 – 28 = 4 Next, to calculate the variance, we take each difference from the mean, square it, then average the result. Variance = ((-3)2 + (-2)2 + (-1)2 + 22 + 42)/ 5 = (9 + 4 + 1 + 4 + 16) / 5 = 6.8 So, the variance is 6.8 and the standard deviation is the square root of the variance, which is 2.61. What this means is that, on average, you and your friends are 2.61 years apart in age. Although it's possible to calculate the variance by hand for smaller data sets such as this one, statistical software programs can also be used to calculate the variance and standard deviation. When conducting statistical tests, it's important to be aware of the difference between a population and a sample. To calculate the standard deviation (or variance) of a population, you would need to collect measurements for everyone in the group you're studying; for a sample, you would only collect measurements from a subset of the population. In the example above, we assumed that the group of five friends was a population; if we had treated it as a sample instead, calculating the sample standard deviation and sample variance would be slightly different (instead of dividing by the sample size to find the variance, we would have first subtracted one from the sample size and then divided by this smaller number). The variance and standard deviation are important in statistics because they serve as the basis for other types of statistical calculations. For example, the standard deviation is necessary for converting test scores into Z-scores. The variance and standard deviation also play an important role when conducting statistical tests such as t-tests. Frankfort-Nachmias, C. & Leon-Guerrero, A. (2006). Social Statistics for a Diverse Society. Thousand Oaks, CA: Pine Forge Press. Understanding and managing usage variance is crucial for businesses aiming to maintain financial health and operational efficiency. Usage variance, the difference between expected and actual resource consumption, can significantly impact a company's bottom line. Effective strategies for analyzing and controlling this variance are essential for accurate budgeting and cost management. Calculating Usage Variance To effectively manage usage variance, it is important to first understand how to calculate it. Usage variance is determined by comparing the actual quantity of resources used to the standard quantity expected for a given level of output. This calculation helps identify discrepancies that may indicate inefficiencies or areas for improvement. The formula for usage variance is straightforward: Usage Variance = (Actual Quantity Used – Standard Quantity Expected) x Standard Cost per Unit. This equation provides a clear numerical value that highlights the extent of the variance. For instance, if a manufacturing process was expected to use 1,000 units of raw material but actually used 1,200 units, and the standard cost per unit is $5, the usage variance would be (1,200 – 1,000) x $5 = $1,000. This positive variance indicates higher-than-expected resource consumption, which could be due to various factors such as inefficiencies or waste. Accurate data collection is fundamental to calculating usage variance. Businesses often employ software tools like SAP or Oracle ERP systems to track resource usage in real-time. These platforms can automatically log data, reducing the risk of human error and providing a reliable basis for variance analysis. Additionally, integrating these systems with other business intelligence tools can offer deeper insights into the causes of variances, enabling more targeted corrective actions. Factors Influencing Usage Variance Understanding the factors that influence usage variance is essential for businesses aiming to optimize their resource management. One significant factor is the quality of raw materials. Variations in material quality can lead to higher waste or rework, thereby increasing the actual quantity used compared to the standard. For example, if a batch of raw materials is subpar, it may require additional processing or even replacement, leading to a higher usage variance. Employee skill levels also play a crucial role. Skilled workers are generally more efficient and produce less waste, whereas less experienced employees might use more resources to achieve the same output. Training programs and continuous skill development can mitigate this issue, ensuring that the workforce operates at peak efficiency. Another factor is equipment maintenance. Well-maintained machinery operates more efficiently and consistently, reducing the likelihood of unexpected breakdowns that can lead to increased resource consumption. Regular maintenance schedules and timely repairs can help keep equipment in optimal condition, thereby minimizing usage variance. Operational processes and workflows are equally important. Inefficient processes can lead to bottlenecks and increased resource usage. Streamlining workflows through process optimization techniques like Lean or Six Sigma can significantly reduce waste and improve overall efficiency. For instance, a manufacturing plant that adopts Lean principles may find that it can reduce its raw material usage by eliminating unnecessary steps in the production process. External factors such as supply chain disruptions can also impact usage variance. Delays in receiving materials or sudden changes in supplier quality can lead to increased resource consumption. Businesses can mitigate these risks by diversifying their supplier base and maintaining safety stock levels to cushion against supply chain uncertainties. Impact on Financial Statements Usage variance can have a profound impact on a company's financial statements, influencing both the income statement and the balance sheet. When actual resource consumption exceeds the standard, it results in higher production costs. These increased costs are reflected in the cost of goods sold (COGS) on the income statement, thereby reducing the gross profit margin. For instance, if a company experiences a significant positive usage variance due to inefficiencies, the additional costs will directly lower its profitability. Moreover, usage variance can affect inventory valuation on the balance sheet. Higher-than-expected resource consumption may lead to increased inventory levels of raw materials or work-in-progress, tying up capital that could be used elsewhere in the business. This not only impacts liquidity but also increases holding costs, such as storage and insurance. Over time, these additional costs can accumulate, further straining the company's financial health. The ripple effects of usage variance extend to cash flow statements as well. Increased resource usage often necessitates higher cash outflows to purchase additional materials, which can strain operating cash flow. This is particularly concerning for businesses with tight cash reserves or those operating in capital-intensive industries. Effective management of usage variance can help stabilize cash flows, ensuring that the company has sufficient liquidity to meet its short-term obligations and invest in growth opportunities. Strategies to Reduce Usage Variance Reducing usage variance begins with fostering a culture of continuous improvement within the organization. Encouraging employees to identify inefficiencies and suggest improvements can lead to significant reductions in resource consumption. Implementing a reward system for innovative ideas that lead to cost savings can further motivate staff to actively participate in this process. Investing in advanced analytics and machine learning tools can also play a pivotal role. These technologies can analyze vast amounts of data to identify patterns and predict future variances. For example, predictive maintenance powered by machine learning can foresee equipment failures before they occur, allowing for timely interventions that prevent resource wastage. Additionally, real-time monitoring systems can provide instant feedback on resource usage, enabling quick corrective actions. Supplier collaboration is another effective strategy. By working closely with suppliers, businesses can ensure a consistent quality of raw materials, reducing the likelihood of variances caused by substandard inputs. Joint initiatives with suppliers to improve material quality and delivery reliability can lead to more stable and predictable resource consumption. Employee training programs focused on efficient resource utilization can also make a significant difference. Regular workshops and hands-on training sessions can equip employees with the skills needed to minimize waste and optimize resource use. For instance, training production staff on best practices for material handling can lead to more efficient operations and lower usage variance. Integrating Variance Analysis into Budgeting Integrating variance analysis into the budgeting process is a strategic move that can enhance financial planning and operational efficiency. By incorporating historical usage variance data into budget forecasts, businesses can create more accurate and realistic budgets. This approach allows for the identification of trends and patterns in resource consumption, enabling more precise allocation of resources. For instance, if historical data shows a consistent overuse of materials in a particular department, the budget can be adjusted to reflect this reality, and corrective measures can be planned. Moreover, variance analysis can inform the setting of performance benchmarks. By understanding past variances, businesses can establish more achievable and meaningful performance targets. These benchmarks can then be used to monitor ongoing performance and make real-time adjustments to operations. For example, if a company sets a benchmark for material usage based on past data, it can quickly identify when actual usage deviates from this benchmark and take corrective action. This proactive approach helps in maintaining control over resource consumption and minimizing unexpected costs. March 13, 2025 March 13, 2025/ Steven Bragg A favorable variance indicates that a business has either generated more revenue than expected or incurred fewer expenses than expected. For an expense, this is the excess of a standard or budgeted amount over the actual amount incurred. When revenue is involved, a favorable variance is when the actual revenue recognized is greater than the standard or budgeted amount.The reporting of favorable (and unfavorable) variances is a key component of a command and control system, where the budget is the standard upon which performance is judged, and variances from that budget are either rewarded or penalized.Examples of Favorable VariancesHere are examples of three types of favorable variances:Revenue variance (sales variance). A retail store expected to generate $50,000 in sales for the month but actually achieved $60,000, resulting in a favorable revenue variance of $10,000. This could be due to increased customer demand, successful marketing campaigns, or higher-than-expected seasonal sales. The extra revenue improves profitability and may indicate a need to adjust sales forecasts.Cost variance (expense savings variance). A manufacturing company budgeted $30,000 for raw materials, but due to supplier discounts and efficient material usage, it only spent $25,000, leading to a favorable cost variance of $5,000. This reduction in costs directly improves the company's gross profit margin and cash flow. Identifying such savings opportunities helps businesses optimize their spending and increase efficiency.Labor efficiency variance (productivity variance). A construction firm estimated that a project would take 5,000 labor hours, but workers completed it in 4,500 hours, saving 500 hours and leading to a favorable labor efficiency variance. This could be due to improved workforce productivity, better project planning, or the use of advanced technology. The saved labor costs contribute to overall profitability and improve operational efficiency.Related AccountingTools CoursesAccounting for ManagersCost Accounting FundamentalsStandard Costs and Variance AnalysisThe Basis for a Favorable VarianceObtaining a favorable variance (or, for that matter, an unfavorable variance) does not necessarily mean much, since it is based upon a budgeted or standard amount that may not be an indicator of good performance. In particular, favorable variances related to price (such as the labor rate variance and purchase price variance) are only derived from the difference between actual and expected prices paid, and so have no bearing at all on the underlying efficiency of a company's operations. A favorable variance either indicates that revenues were higher than expected, or that expenses were lower than expected. Conversely, an unfavorable variance either indicates that revenues were lower than expected, or that expenses were higher than expected. Managers tend to investigate unfavorable variances in much more detail than favorable ones, on the grounds that these variances must be corrected in order to achieve an organization's budgeted results.When to Investigate a Favorable VarianceBudgets and standards are frequently based on politically-derived wrangling to see who can beat their baseline standards or budgets by the largest amount. Consequently, a large favorable variance may have been manufactured by setting an excessively low budget or standard. The one time when you should take note of a favorable (or unfavorable) variance is when it sharply diverges from the historical trend line, and the divergence was not caused by a change in the budget or standard.Related ArticlesAccounting for VariancesCost Variance AnalysisException Report March 13, 2025/ Steven Bragg/ Direct Material Usage Variance measures efficiency in material or material consumption by comparing standard material used for production units with actual material usage or consumption.This variance calculation is essential for management to assess if the current production system is running effectively or not. Negative variance generally means production is not run effectively, and positive variance is normally favorable for management.The direct material usage variance may be divided into mix and yield variances if several materials are mixed in standard proportions.Direct Material Usage Variance:= Standard Price (Actual Quantity – Standard Quantity)Or= Standard Costs of Actual Quantity – Standard Costs of Standard QuantityThe standard price is the price set for a specific product or material at the beginning of the planning/budgeting stage.Under costing, production and inventories are recorded at the standard cost. The standard quantity of direct materials used to make the products is recorded at standard cost.If a manufacturer uses more direct materials than the standard quantity of materials for the products manufactured, the company will have adverse direct materials usage variance. The company shall have favorable materials usage variance if the quantity of direct materials used exceeds the standard quantity of products manufactured.The favorable and adverse variances shall be recorded in a general ledger account.Favorable usage variance suggests efficient utilization of material resources by the production manager. The various reasons for favorable material usage variance are as follows:Use automated tools and constantly improve algorithms and intelligence of these AI tools to manufacture or produce.Purchase of materials of higher quality than the standard. This is also reflected in adverse material price variance.Efficient utilization of labor skillsTraining and development of manufacturing workers and increasing their productivityOn the other hand, Adverse Usage variance suggests higher consumption of material compared with the standard used during the period in question.This is the production manager's responsibility, and he shall be accounted for this adverse variance. The various reasons for adverse usage variance are as follows:Using humans in manufacturing rather than automated tools decreases efficiency and increases error.Ineffective use of skilled laborPurchase lower quality materials than the standard, which is also reflected in favorable material price variance.Increase in material wastage due to wear and tear in plant and machinery in the manufacturing processMarvel Inc produced 10,000 items of idols from the Marvel franchise in November 2018.Following raw materials were purchased and consumed by Marvels Inc during the period:MaterialQuantity UsedStandard Usage per itemActual PriceStandard PriceCloth100 kgs11 kg$ 75 per kg$ 70 per kgPaint150 kgs14 kg$ 21 per kg$ 20 per kgClay250 kgs26 kg$ 11 per kg$ 10 per kgDirect Material Usage variance shall be calculated as:We calculate the standard quantityCloth10,000 * 11/1000110 kgsPaint10,000 * 14/1000140 kgsClay10000 * 26/1000260 kgsNow we calculate the variances as:Material Price Variance = Standard Price (Actual Quantity – Standard Quantity)Cloth70 (100-110)$ 700 FavorablePaint20 (150 – 140)$ 200 AdverseClay10 (250 – 260)$ 100 Favorable Adding all the variances together,Direct Material Usage Variance = $600 Favorable May 29, 2025 May 29, 2025/ Steven Bragg The direct material usage variance is the difference between the actual and expected unit quantity needed to manufacture a product. The variance is used in a standard costing system, usually in conjunction with the purchase price variance. These variances are useful for identifying and correcting anomalies in the production and procurement systems, especially when there is a rapid feedback loop. Standards for raw materials are typically set by the engineering department and recorded in a bill of materials for each product.The variance is most commonly used in a production environment, but can also be used in a services business where hours worked can be compared to a budgeted level.Related AccountingTools CourseCost Accounting FundamentalsStandard Costs and Variance AnalysisHow to Calculate the Direct Material Usage VarianceThe calculation of this variance is as follows: (Actual usage - Standard usage) x Standard cost per unit = Direct material usage varianceIn a larger manufacturing operation, it is best to calculate this variance at the individual product level, since it reveals little actionable information at an aggregate level. The resulting information is used by the production manager and purchasing manager to investigate and correct problems. A company manufactures wooden tables and uses wood planks as a direct material. The standard quantity of wood planks allowed for each table is 10 feet, and the standard cost per foot of wood is $5.00. The company planned to produce 1,000 tables, so the expected quantity of wood needed is:Standard Quantity Allowed = 1,000 tables × 10 feet = 10,000 feetHowever, due to inefficient cutting or increased waste, the company actually used 10,500 feet of wood to produce the 1,000 tables.Step 1: Calculate the VarianceDirect Material Usage Variance = (Standard Quantity − Actual Quantity) × Standard Price = (10,000 feet − 10,500 feet) × $5.00 = (−500 feet) × $5.00 = −$2,500 (Unfavorable)Step 2: InterpretationThe negative variance indicates an unfavorable variance of $2,500, meaning that the company used 500 feet more wood than expected, which increased its costs. This might prompt management to investigate production processes, employee training, or material quality issues to prevent excessive waste.What Causes a Direct Material Usage VarianceA usage variance can arise from any of the following issues:An incorrect standard against which actual usage is measured. For example, a product design engineer puts an incorrect materials quantity in the bill of materials for a new product, resulting in an incorrect baseline value when the direct material usage variance is calculated.Not changing the bill of materials after a production process or product design has been altered that should have resulted in a change in the amount of materials usage.Problems in the production process that cause more than the normal amount of scrap.Problems with the quality of the raw materials purchased (or damage in transit), resulting in more units of raw materials being needed than usual.Related ArticlesDirect Material Mix VarianceDirect Material Price VarianceDirect Material Variance May 29, 2025/ Steven Bragg/ November 07, 2024 November 07, 2024/ Steven Bragg An unfavorable variance is encountered when an organization is comparing its actual results to a budget or standard. The variance can apply to either revenues or expenses, as noted below. Managers like to examine unfavorable variances, since they can be indicators of problems that require immediate corrective action. Consequently, the cost accountant is usually asked to identify and report on unfavorable variances. The types of unfavorable variances are noted below:Unfavorable revenue variance. An unfavorable revenue variance occurs when the amount of actual revenue is less than the standard or budgeted amount. Thus, actual revenues of $400,000 versus a budget of $450,000 equals an unfavorable revenue variance of $50,000.Unfavorable expense variance. An unfavorable expense variance occurs when the amount of actual expense is greater than the standard or budgeted amount. Thus, actual expenses of $250,000 versus a budget of $200,000 equals an unfavorable expense variance of $50,000.Related AccountingTools CourseCost Accounting Fundamentals In general, the intent of an unfavorable variance is to highlight a potential problem that may negatively impact profits, which is then corrected. In reality, the concept does not work that well. The problem is that there is only an unfavorable variance in relation to a standard or budgeted amount, and that baseline amount may be impossible or at least very difficult to attain. We note several examples below:Purchase price variance. The purchasing staff sets a standard purchase price for a widget of $2.00 per unit, which it can only attain if the company buys in volumes of 10,000 units. A separate initiative to reduce inventory levels calls for purchases in quantities of 1,000 units. At the lower volume level, the company can only buy widgets at $3.00 per unit. Thus, an unfavorable purchase price variance of $1.00 per unit cannot be corrected as long as the inventory reduction initiative is continued.Labor efficiency variance. A company that operates with long production runs sets a low labor-cost per unit produced. Midway through the year, it switches to a pull-based manufacturing system where units are only produced if there is a customer order. In total, the company experiences a massive decline in costs, even though there is a large unfavorable labor efficiency variance that is caused by the employees working on fewer units.In short, it is necessary to review the underlying reasons for a unfavorable variance before concluding that there is actually a problem. Usually, the best indicator of an unfavorable variance that requires remediation is when the baseline is historical performance, rather than an arbitrary standard.Exception ReportingThe concept of an unfavorable variance is used in exception reporting, where managers want to see only those unfavorable variances that exceed a certain minimum amount (such as, for example, at least 10% of the baseline and greater than $25,000). If an unfavorable variance exceeds the minimum, then it is reported to managers, who then take action to correct whatever the underlying problem may be.When to Use Unfavorable VariancesThe unfavorable variance concept is of particular use in those organizations that adhere rigidly to a budget. In these companies, a financial analyst reports variances that are unfavorable in relation to the budget. Managers are then responsible for bringing the variance back into conformity with the budget.Conversely, if adherence to budgeted expectations is not rigorously enforced by management, then the reporting of an unfavorable variance may trigger no action at all. This is particularly likely when the budget is used only as a general guideline.Related ArticlesAccounting for VariancesCost Variance AnalysisException ReportFavorable VarianceVariance Analysis November 07, 2024/ Steven Bragg/ This is that portion of material cost variance