

Best Practices for Improving Profits in the Flavor Industry

Benefits of ERP software, minding margins, importance of sales forecasts, supply chain considerations, making new business profitable and more

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Much has been written about improving manufacturing processes, from total quality manufacturing (TQM) to lean manufacturing and 6 Sigma. These principles can be, and should be, applied in the flavor industry. They are designed to create a high quality product with maximum efficiency, and profit certainly can increase as a result.

There are, however, no consistently applied best practices focusing on increasing profits in manufacturing. The flavor industry has its own special considerations and opportunities to create additional profit from existing operations. For years, the artistry of creative flavorists sold at a premium, and no exacting science for generating a specific gross margin was really necessary. Prices were typically determined as an arbitrary multiple of raw material costs in a formula. The industry flourished as profits were reinvested into the science that has produced tremendous technological breakthroughs and knowledge that would not have been had otherwise.

This was the industry that I entered years ago, as an accountant in the executive ranks of a top 10 flavor company. An oddity at industry gatherings, few understood why a CPA was in their midst. Few industry professionals at the time foresaw the coming onslaught of pricing pressures generated from the wave of supermarket mergers, consumer product company mergers, and, finally, flavor company mergers. Competition raged as customers' numbers decreased, even as each remaining customer grew larger. The pressure was reflected in margin declines of 15–18%, approximately one percentage point per year over as many years. Even more recently, sharp and broad-based increases in raw material prices have shaken the industry's gross margins.

The time is ripe for a new twist on lean manufacturing practices, one that goes beyond quality and manufacturing efficiency. It is necessary now to develop a discipline on monitoring and improving flavor business gross profits. While many companies have independently discovered or developed best practices to do so, these practices are not universally known nor applied. This article addresses several of these best practices. The focus is on flavor production, but most best practices are applicable in food and beverage, personal care, nutraceutical and other process industries. Many can be effectively utilized in any manufacturing concern.



The flavorist is first in the line of employees who can effectively influence gross margin.

On Gross Profit

This line on the company's profit and loss statement is regarded as a universal key performance indicator. However, the cost of sales line item that drives gross profit is likely the most complex and least understood number on the profit and loss statement. It does not receive the same in-depth analysis as other key financial statement information. Other than occasional consideration of productive assets and related depreciation, analysts do not necessarily consider hidden profits in cost of sales, even when considering major acquisition transactions. This lack of attention has resulted in making the cost of goods sold line item the next frontier in efficiency and profit improvement.

Know Your Cost

First and foremost, the need for timely and accurate information is paramount in order to understand what a company's profit is, in aggregate and by item. Rule number one in any business is to know your cost. By doing so, businesses may:

1. Develop pricing policies that will achieve margin targets;
2. Quickly ascertain any negative deviation;
3. Develop alert protocols to prevent such deviations; and
4. Create semi-automated initiatives to correct negative deviations.

To be effective at accomplishing these capabilities, a cost of a unit of finished product must be carefully calculated. It is more difficult to calculate the unit cost of a product, especially flavors, than one may think. In both theory and in practice, the cost of a product is at best a good estimate. Therefore, the first best practice is to correctly measure and maintain a matrix of costs, with several costs even for one product. Many of the following best practices are built on this first essential step.

The raw material of a flavor that was purchased and used in a production batch is easily determined for one specific run.

This is typically called the “actual cost.” Purchase records exist to substantiate the value of raw material lots used in production. Most companies maintain actual cost by item, a long-established best practice, allowing comparison against the expected cost, or standard cost, as a benchmark of production efficiency.

While actual cost is important for historical and reporting purposes, the difficulty lies in estimating what the cost will be for subsequent production batches. Material prices fluctuate based on availability, quantity purchased, and degree of urgency to transport the material to the plant. The next batch will likely not have the exact cost as the preceding batch.

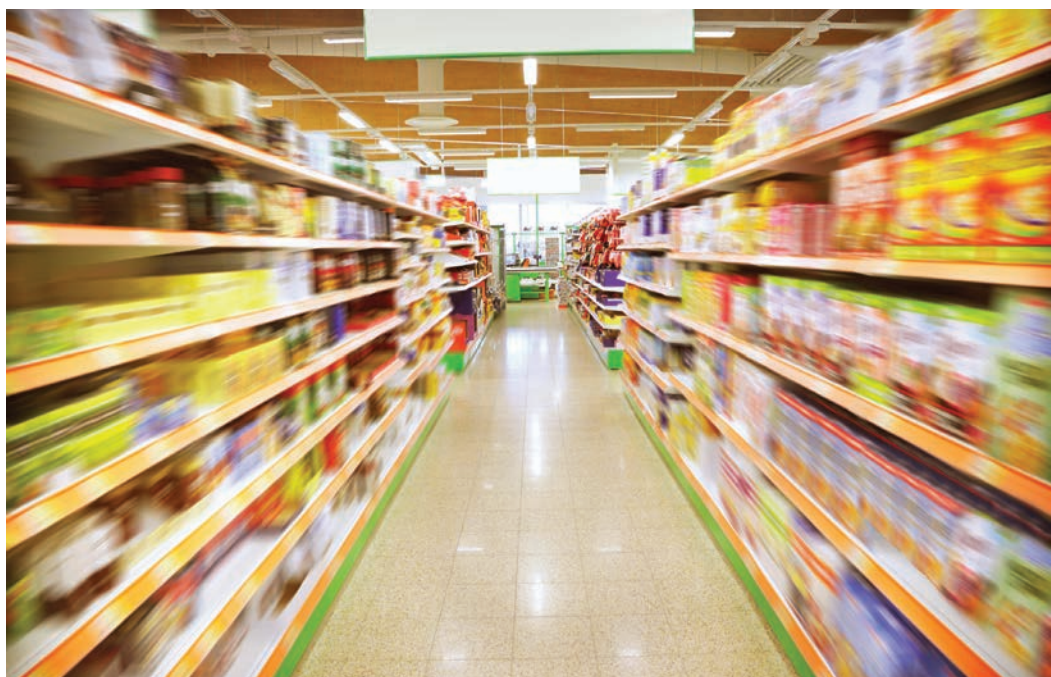
This creates a situation where the Actual Cost for each production batch must be averaged for convenience in reporting historical events, creating the basis for a weighted moving average cost. Thus, the actual cost as employed ceases to be an actual batch cost. Inefficiencies due to batch volume variances then cease to be prominent enough to catch management’s attention so they can initiate corrective action. That is unfortunate, since

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employee. The employee(s) may incur overtime, increasing the actual cost above the estimated, or standard, cost. Since many companies allocate indirect labor based on direct labor results, the variance grows even more.

Overhead allocation methodology is surprisingly inconsistent among manufacturers, even if they are in the same industry. Since the financial statements report a net margin, no specific

accounting rules regarding allocation methods are mandated, so long as the process is logical and consistent. If the process utilizes heat, the cost for steam needs to be allocated. Electricity rates vary tremendously with region, season, time of day and even by peak power consumption at a peak time by the factory. Depreciation expense, regulatory oversight expense (kosher, U.S. Department of Agriculture [USDA]) and all the other indirect costs must be considered in estimating a total unit cost. The best allocation methods and cost accumulation methods are most effectively determined through a cooperative effort among process engineers, operations management and cost accountants.



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a good deal of money is lost by not optimizing batch sizes. It is as much a source to realize hidden profits as effectively controlling material purchase price variances.

Other factors affect material cost in ways that may not be seen. If a bill of materials consists of only solvents and aromatic chemicals with unusually long shelf life, enough may have been purchased at one time to keep making the product for some months or years without buying more. However, expenses have now been incurred to store the materials, since they take up valuable real estate in the warehouse. This cost increases even more if the chemicals require cold storage. Also, the probability of obsolescence increases the longer a material is held, and more so if the quantity stored is large. These are costs that should have been taken into account when calculating the material cost alone.

Labor and overhead expense allocation to the unit cost is an even more complex estimate. Direct labor costs are allocated based on estimated time spent at a standard or actual wage per

While historical costs and standard costs are typically employed, an often overlooked best practice is to maintain future unit costs as well. A key to effectively maintaining margins on a go-forward basis is estimating what those materials will cost in the future, at the expected time of raw material delivery, and at the volumes to be purchased. Since the price to the customer has been set, and is not as fluid as raw material costs, there is a need to anticipate the cost and availability of raw materials in advance of price determination. The same principle applies with expected labor rates, increases in plant and equipment that will impact depreciation for the product, increases in utility expense and similar overhead items. For this purpose, a second listing of costs is necessary. This cost list may sometimes be called simulated costs, future costs, new standard costs, or something else to describe the purpose as applying to the applicable future period being planned for, say, the next 12 months.

A common problem in calculating a cost for a flavor company is the size of a production lot or batch. The low use level of a flavor in a final product is possible because of the inordinate contribution the flavor gives in the final product. That inherently dictates production batches that often are smaller than their optimum batch size. Unlike other industries, labor more closely resembles a fixed cost in flavors and other process industries due to this characteristic, rather than a variable cost. The time required for pulling, say, 20 materials is almost the same regardless of the batch size—either 1 gallon or 5,000 gallons. Production time correlates to a small degree, but not in direct proportion to the volume. Third party oversight, such as rabbinical inspection, USDA inspection or halal inspection, is also a fixed cost. Packaging will vary as can be expected. What happens in this situation of different batch sizes is that the costs of production are generally spread over all batches for this particular process, or shop routing. Spreading the batch cost variances is a convention necessary to finalize reports, but doing so conceals inefficiencies, and masks the profitability of more effectively sized batches. A thoughtful analysis of this predicament by qualified professionals will yield a surprising increase in profits.

Another cost is often employed, reflecting the cost to be used in valuing the financial statements using different accounting principles. While generally accepted accounting principles (GAAP) require the use of first in, first out (FIFO), companies may often operate using a different standard such as weighted moving average (WMA), or for tax purposes, last in, first out (LIFO). Management may have a variety of reasons for using these methods, depending on regulatory requirements, ease of calculation, internal decision-making and income tax planning, all of which play an important role in management strategy to increase profits.

Complicating the calculation of unit cost further is the fact that the accounting profession only gives theoretical guidelines in designing and applying methods to make these estimates. This is by design, since every entity and every entity's needs are different, and require a customized internal protocol for making estimates. A process manufacturer like a flavor company will have to determine its own methodology to suit its operation. Companies need the flexibility to determine what works best for them. The practice of making estimates falls into the realm of a sub-discipline called cost accounting, or managerial accounting, the primary function of which is to deliver key financial and economic information to management in order to internally assess efficiency and profitability.

Let ERP Software Do the Work

Maintaining multiple cost lists and updating information to make those costs relevant is a very intensive exercise that would require a large staff of accountants. The most efficient way of determining and tracking these estimates is to use an enterprise resource planning (ERP) software package. The very speed at which the ERP system calculates these numbers ensures delivery of this critical information in real-time, allowing time for immediate action to correct problems before profit is impacted. Moreover, these unit costs can be used to provide required valuation for financial statement presentation, say for inventory and cost of goods sold.

To fully leverage the power of an ERP system, it must be designed with the end goal in mind. Information flow has a

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beginning and an end, with the end being information that explains the activities of the organization that will be reported externally and utilized internally for purposes of management decision-making and regulatory compliance. For example, production details are kept to measure economic activity, report financial results, and develop strategic plans, as well as to serve as a reference tool required by the U.S. Food and Drug Administration for traceability.

Within the scope of improving profits, however, most ERP implementations fall short. This is not due to the quality of the ERP software, but rather due to failure to identify what internal information would be required of the ERP system at the outset of the implementation. Fortunately, this can be rectified post-implementation to a degree, due to the availability of information kept for other purposes. This information can also be useful for alternative performance and future indicators.

Ideally, however, the heaviest users of summary information should indicate what information is needed for their purpose in managing the company. These heaviest users are typically at the C-level of the company, where strategic plans are created, executed and monitored. The CEO, CFO, COO, as well as other specialized chief officers must be involved early in the process to identify the key data that will help them improve profit in their respective realm of responsibilities. Department managers will also use the numbers to provide a series of reports for executives' benefit in effectively managing the company. These will be discussed further.

Minding Your Margin

With unit costs in hand, it is very easy to periodically track margins. It is interesting to note that historically most flavor companies had no such system and had no idea how specific products or product lines were really contributing to the bottom line, although a hands-on executive with a variety of experience would have a sense for it. Companies have grown in size and complexity, and now this type of executive is hard to find.

Another best practice should be established to track margins by product. This can be done using a specific computer program or a simple query to load the daily information onto your dashboard. Indeed, margin fluctuations should be one of a company's key performance indicators.

Following margins closely is necessary, but in order to track macro trends in margins, it is necessary to group sales and margins in larger clusters, such as margins by territory, product line,

type of process required to manufacture the items, or defined areas of authority such as regions, customer type, etc.

Another margin fluctuation alarm would show up on the same dashboard as a future indicator for any item that is threatened by anticipated increases in the materials included in the bill of material. Purchasing details, including last price paid, active quotes and the corresponding term of the quote, and qualitative information regarding commodities markets should also be incorporated to automatically update the future cost list.

Most manufacturers utilize a system of variance analysis for expenditures constituting cost of goods sold. Standard costs are compared to the actual cost incurred to see if there is a variance from what was expected to what actually occurred. This best practice has been employed for quite some time, even to the point that successive accounting staffs actually forget the importance of doing so. Surprisingly, this variance is often ignored or dismissed, because the variance occurs so frequently that it ceases to alarm. The variance was set up to serve as an alarm that something is going wrong. The cause must be identified, or profit will continue to leak from the operation.

If, upon investigation and the successful discovery of the cause, the variance is determined to be unavoidable or expected, then management should change the protocol to calculate the variance. Variances are helpful only if they give an alarm to a situation that can be rectified. If the variance is going to occur regardless of what management does, then the variance has little meaning and should be discarded and replaced with a variance calculation that can be effectively used. Variances should never be ignored.

The ability to have an ERP system run the calculation on the bill of materials against actual or anticipated costs will deliver very valuable information to management. This information provides it an opportunity to address the problem months before any margin erosion occurs.

The Importance of Sales Forecasts

The “P” in ERP stands for planning. Planning effectively means starting at the beginning of the business cycle, e.g., winning new business and taking the sales order. Very few of these best practices can be implemented without a good forecast of what is to be made and sold. This requires a forecast by item, and preferably by customer.

Large companies have numerous resources to build a forecast. Marketing departments may exist in international

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regions giving a careful analysis of product trends, competition and new outlets. It could be argued that they are more accurate than a smaller company without such resources, but the fact remains that a perfect forecast does not exist. In fact, there does not seem to be a correlation between size and accuracy, especially to the item-level detail. The better the forecast, the better the chances are to increase efficiency and profitability.

The ERP system should be leveraged here as well. Using any one of many algorithms or statistical models, sales by item by month can be calculated. This can be accomplished by applying simple methodologies such as an 80/20 rule, or as complex models that a statistical planning department would calculate. The discipline of a strong sales force should be coupled with the output to fine tune the forecast and adjust for anticipated new business wins or anticipated losses.

Supply Chain Considerations

The sales forecast by item drives manufacturing resource planning (MRP) within the scope of the ERP system. When detailed revenue forecasts by item are paired with anticipated costs, supply chain management is given an opportunity to maximize profits through reducing the cost per unit for raw materials by aggregating larger volumes of purchases to leverage volume discounts. The frequency of orders is also reduced, leading to savings in freight-in costs and transactional costs. A monthly sales forecast is extremely important in generating raw material savings.

Establishing an economic order quantity dovetails very nicely with the *mura* (translated from the Japanese as “unevenness”) concept found in lean manufacturing. That is, to keep everything moving evenly, such as in a just-in-time (JIT) system, at the best possible raw material prices the operation will allow. The ERP system will utilize the forecast by item to identify common raw material requirements in similar periods to achieve savings from aggregate ordering as described. Additionally, warehousing cost can be cut significantly by timing the order to meet production needs. Ideally, this MRP calculation will also consider shelf life and any special shelf life requirements of a given customer.

Keeping the number of raw materials limited will provide more opportunities for aggregation. However, in a flavor company, this presents conflicting interests between purchasing and flavorists, who are in search of a new material to make their formula unique and desirable. The question must be asked if there is more profit to be had by winning a new sale by using the new material, or is there more cost savings from aggregating an existing material, leveraging volume discounts and reducing risk of obsolescence.

Let's consider this unique flavor industry relationship between purchasing and product development. In other manufacturing concerns, product development turns out only a handful of new products in a year. Flavorists will create dozens of formulas each year, and depending on the number of flavorists within the company, thousands of new formulas might be typical. Purchasing has a large responsibility to keep both current and future costs maintained and recorded in the ERP system. Vendor quotes should be maintained, along with the active period of the quote and the volume discounts available. As touched upon hereafter, the creative staff must hit raw material cost targets in order to provide for an acceptable margin within the constraints of the targeted price. This is not possible without the purchasing department keeping material costs updated.

Volume discounts are difficult to attain for a flavor company. Many fail to aggregate material needs and therefore do not utilize MRP effectively. Another practice circumvents this shortcoming by working with a business partner—such as a related party or a customer—to combine orders for particular materials and

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coordinating the order and drop-ship locations. Large commodity items that have minimal flavor quality impact, such as solvents or carriers, are good candidates for this practice.

As with any process industry closely associated with natural raw materials, special consideration of forecasts and crop availability must be made in order to avoid material shortages, which would result in lost sales, and the purchase of excess materials, creating the probability of dead stock write-offs. This is an exercise that is widely practiced simply due to the fact that a bad purchasing decision for key natural materials has been known to yield devastating results for a small company.

Finally, with regard to the daily activity of purchasing materials, every purchase should be compared against the expected price, last price paid and/or the standard in some environments. A parameter should be set such that any variance between the expected cost and the actual price paid for the material should be the means to extract and report on that variance. This is best run daily, so all such problems can be dealt with at once. Purchasing or accounting should follow up with the reasons for the change and consider if 1) a mistake was made in ordering, 2) a price change occurred, or 3) the supplier was changed. Upon determination of what caused the variation, corrective action should be taken. By dealing with the issue the first time it occurs, future margin degradation is avoided.

When Margins Decline

With the tools in place to detect margin erosion, the question now is what to do once a problem arises. It is important to act quickly, and be open to trying multiple approaches simultaneously.

First, the root cause of the margin erosion must be investigated. A drop in a product line margin or a territory margin indicates a pervasive problem, such as the increase in cost of a common material. This would be a good time to verify that the daily purchase variance resolution procedures are being effectively applied.

If the root cause is due to a raw material or class of raw materials, several options exist to stem the drop in margin for the identified product. Typically, a raw material supplier can be changed for an identical raw material from another vendor if an alternate vendor has been pre-approved. This makes margin correction very effective, requiring little effort.

On the other hand, if no alternate suppliers or raw materials have been pre-approved, reformulation must be considered. Reformulation will require some product development time, but if the absolute value of the margin decline is greater than the related costs to resubmit to product development, then it will be worth the effort.

A well-designed material management system should include procedures for identifying an alternate raw material. That

makes material substitution a quick, cost effective response to a declining margin. Ideally, a formula should not be commercialized without alternate suppliers for the raw materials. In the flavor industry, however, this is not always possible, due to the vast variety of raw materials with unique flavor and regulatory characteristics.

In the same line of activity, there should be ongoing efforts to proactively review flavor formulas for opportunities to increase margins by analyzing quoted prices from alternate suppliers. An automated report generated periodically would select new price quotes from alternate suppliers, apply that price to the regular volume of those materials and calculate a projected savings amount that the switch to the alternate material would provide. This requires some thought in setting up the report, but very little effort in reviewing and making changes.

Another option in responding to a declining item margin is obvious: to raise the price. The cost associated with doing so, the potential loss of business or at least the loss of some customer goodwill, is likely higher than applying the measures to change material suppliers or reformulate. If a system is not set up that allows for easy switching of suppliers or quick reformulation, as is the case in most companies, then increasing the price becomes the obvious solution. Worse, if nothing is done, the eroding margin is accepted by the flavor company. Clearly, the company that exercises the planning and discipline in maintaining alternate suppliers and raw materials will earn more profit from happier customers than those that revert to traditional options of doing nothing or raising prices.

If all attempts to preserve margin fail, then the item in question should be considered for discontinuation. This, like price increases, can have a negative impact on customer relationships. That is why this is best done only when an entirely new flavor formula is ready to be submitted. It is best to position it so the customer will make an obvious choice to take the new and improved item. Using altogether new materials that are more economical is one approach. Increasing the concentration of the flavor that will return a better cost-in-use for the customer is another convincing approach. By doing so, recognize the cost of reduced production volume, necessitating manufacturing costs to be allocated at a higher rate to other products. The priority of keeping a customer needs to be balanced against the cost of doing so.

This works in reverse as well. It may be that the decision to keep the price the same will assure increasing volumes. The most effective way to increase gross margins is to increase production volume, which means to increase sales. This is especially true in a plant that has excess capacity. As such, another best practice is to monitor the utilization of each processing activity. Any plant that is under target utilization offers a unique opportunity to increase profits through the reduction of prices for the goods produced there. This requires careful market studies to determine a realistic price point that will generate the volume of business needed to hit the target margins. The targeted volume of business should then be analyzed for potential raw material volume discounts by backing the calculation through the respective bills of materials of product

made in the plant. The net result of lowering material costs and increasing production against fixed overhead costs will, if properly executed, yield a higher margin even with a reduced product price.

Making New Business Profitable

The historical model for winning new flavor business was to receive a request from a customer defining its particular needs and then formulating a flavor to satisfy the requirements. Even if a library item existed, the customer frequently asked for modifications, to which the flavorists again responded with a new formulation.

Sample request in hand, and with the liberty to literally scan the globe for the best raw material, the formula would be created, samples made and evaluated, and the flavor sampled to the customer. Pricing would not accompany the sample, and only cursory review of the costs would be made during formulation. The goal for both the flavor company and for the customer was to create the best possible product, from which profit would naturally and effortlessly flow. Regulatory compliance, being much simpler in the past than now, was easy to determine. Things have obviously changed since then.

This example demonstrates several opportunities for profit improvement. It also serves as a gauge against how efficient a flavor company has become by comparing these traditional methods with new and efficient methods.

Sales staff must be accountable for the opportunities it brings in. As part of the historical model previously cited, the salesperson would at times unilaterally generate the sample request, persuading the customer that it needs the particular sample. Even if the customer did not have the need for the sample, it was much easier to placate the salesperson and agree to the request for a sample. Upon receipt, the sample sat unused on the bench until its eventual demise. Traditionally, there was no accountability on the part of the salesperson or the flavorist for the wasted time of the flavorist working on projects with little to no likelihood of success.

A flavor request should reflect a realistic opportunity to win new business and should be accompanied by anticipated sales volume, regulatory requirements, and a target price or target cost-in-use figure. The salesperson generating the request should also gather competitive information and any other qualitative information that will help the flavorists meet the needs of the customer. This information is critical for the flavorists to efficiently use their time, and to develop a product the first time that will meet regulatory and economic requirements. This helps to avoid an embarrassing situation when the price comes in far from the customer's anticipated target, and also avoids time-consuming reformulating to meet the target.

The modern flavorist will be responsible not only for creating the perfect profile, but for assuring that margin targets are achieved. The flavorist is first in the line of employees who can effectively influence gross margin. The flavorist receives the target price from the sales staff, the required margin from management, and the estimated cost of production from the accounting department.

Purchasing is responsible for having a cost for all raw materials at the flavorist's disposal, and ideally information on volume discounts, regulatory data, alternate vendors and active quotes for future periods. This information will have been registered and will be accessible to flavorists through the ERP system.

Immediately, the flavorists will deduct the required margin and production costs from the target price to arrive at their upper limit on raw material costs. Now as the creative activity begins, each raw material being selected for the formula prototype will be automatically reviewed and flagged by the system for potential problems. Such problems include material availability, missing or outdated costs, allergens, or compliance with religious or regulatory requirements.

Another reality of the flavor industry bears repeating in light of gaining new business, which is that thousands of raw materials are used in flavor creation. Effectively managing the number of SKUs of flavor materials is a paradox. There must be a balance between purchasing and product development. A flavor company must minimize risks associated with each new raw material and maximize the opportunity to create a new unique flavor that will impress and sell. Risks associated with a new raw material include difficulty in sourcing and ordering, along with the potential for dead stock, should the new material not be used in other products. Worse yet, if the new flavor does not sell as expected, this new material becomes useless, and must be expensed.

Dangerous materials will also be flagged so flavorists will exercise caution in formulating on the bench, and give adequate consideration for workplace safety once the formula is commercialized and produced in the factory.

An opportunity for profit exists between the time the prototype formula is created and the time the sample is sent. The formulator needs to step back and take a critical look at the formula from the perspective of the plant workers. Are there unnecessary intermediates or duplication within intermediates that should be rationalized?

Ideally, a flavor sample should be accompanied by a price quote, preferably with tiered pricing that reflects volume discounts for raw material purchases or for factory efficiencies. This is a time to be very careful before a long-lasting negative impact occurs due to oversight. A separate department, such as the cost accounting department, should review the costs of the flavor to confirm the costs reflect active price quotes for raw materials. If not, a quote should be obtained before a price is set. Depending on the level of regulatory familiarity of the flavorists, the regulatory department may also need to review the formula.

With the components' accuracy and compliance confirmed, the person authorized to set prices will decide on the final price. This person should have accountability for gross margin performance, not simply sales performance.

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