GUIDE TO RECIPE COSTING & MENU ENGINEERING

TABLE of CONTENTS

No one works harder than restaurant owners, operators, managers, and staff. And there's a good reason for it. A successful, growing restaurant is rare, especially in an industry with incredibly tight margins that is sensitive to consumer demands and preferences, as well as shifts in local, regional, national, and global economies.

Recently, operators have been coping with rising wholesale prices due to global supply chain havoc and lingering shortages following capacity reductions brought on by the pandemic. Average wholesale prices in September 2022 were 11% higher than the same month the prior year, **according to the National Restaurant Association**. While this welcome relief from the 17.7% increase posted between April 2021 and April 2022, it was the 14th consecutive month with double-digit gains.

Rising ingredient prices, labor factors like higher wages and benefits, and a lingering shortage of individuals to fill open positions have put restaurant operators under incredible pressure. While there have been gains in recent months, including the number of open positions compared to pre-pandemic levels falling from more than 1 million to **565,000**, operators are now forced to meet booming demand with fewer, more expensive resources.

Despite so much being uncontrollable, there's still a lot that owners and operators can do to boost margins and profits to provide guests with better experiences in the hands of better-trained staff. Chief among them is menu engineering. In this guide, we'll dive into the details of what menu engineering is, how you can leverage technology to make it an integral part of your ongoing operations, and how to analyze, design, and assess your menu's composition and composition profitability. It's important to remember that menu engineering isn't a one-time exercise. Just as the best kitchen leaders constantly taste what's coming off the line to ensure it's up to par, owners and operators must continue examining and tweaking their menus to sustain margins, profits, and growth.

WHAT IS...

MENU ENGINEERING?

Menu engineering is the study of both profitability and popularity of menu items, where specific items appear on a menu, and overall menu design.

In short, menu engineering uses a tech-driven combination of data analytics, proven psychology, and sales tools to reliably and consistently increase profits per guest. The general process starts with implementing a technology platform to accurately gather and review food costs, leads to the categorization of dishes, and finishes by using those insights to determine menu contents and design.

Menu engineering was originally brought to the attention of restaurants in the early 1980s by Professor "Coach" Donald Smith of Michigan State University. Smith created the matrix technique for categorizing the profitability of all of your dishes, which we'll discuss in further detail later.

Restaurant operators traditionally think of menu engineering in terms of paper menus. As technology becomes increasingly essential to everything restaurants do, it's crucial that menu engineering include every aspect of the restaurant business, from the back office to guests, from paper menus to online menus, QR code menus, to what your servers promote, and beyond. Menu engineering is an iterative process and should be conducted twice a year or more for the most significant impact.

THE FUNDAMENTALS OF...

RECIPE COSTING

Before categorizing dishes or creating menu designs, you must understand how to calculate your food costs. Calculating food costs can seem complicated, but if you take the time to understand each value one by one, the process gets easier, and the benefits become clear.

Many restaurants today use some combination of manual processes, Excel, or a generic software solution that cannot adapt to the speed and complexity of the restaurant industry. With manual inventory and slowly produced performance metrics, results are often far from helpful. The first step to generating useful performance data is implementing a restaurant technology ecosystem where all your various functions seamlessly integrate and communicate. Your POS should plug into your operations and accounting platform, allowing you to immediately access sales and employee punch data. A robust, mobile inventory system should be part of it, empowering your team to see how much of any one ingredient is on hand at any particular time, its cost, and how fast it's consumed. Vendors and suppliers should be integrated into that system, providing further insight into costs and the ability to audit them to ensure contract pricing. Finally, the platform where it's all connected should automate many of the critical calculations outlined below and offer robust out-of-the-box, and customizable, reports. This ensures corporate managers have the information they need to keep the business on the right track while store-level managers have everything they need to optimize operations and boost sales to increase margins and profits.

How to Calculate Food Costs

Price = Sales / Quantity

Price is the average menu price for an item over the time period reported. This is calculated as total sales (from POS) divided by the quantity sold for the period reported.

Menu Item Cost = Cost of Each Ingredient + Cost of Purchase

When done manually, menu item costs can be difficult and time-consuming to calculate since you will be dealing with various ingredients and portions. With technology, integration, and automation, this value is the pillar of menu engineering and is crucial to have before pursuing any shift in strategy, recipes, or menu design.

Cost of purchase includes the price you paid, delivery fees, interest, and other charges related to purchasing. This value does not include labor costs.

For example, a loaf of bread costs $1.50 + 50 cents for delivery. You paid a total of $2.00 for the loaf of bread. It has 12 slices which can make 6 sandwiches. Each slice would cost 16 cents. Each sandwich uses 33 cents worth of bread. Overall it might use 33 cents worth of bread, 70 cents worth of turkey, 5 cents worth of mayo, 25 cents worth of tomato, and 10 cents worth of cheese, bringing the total cost of that item to $1.43.

General | Recipe | U Of M Equivalence | Ingredients | Recipes On | Steps | Item Locations

Ingredient	Qty	U of M	Yield %	Instructions	Batch Cost	Portion Cost
Select Item	1.00	Select Unit of Measure	100.00		0.00	0.00 Add
CX - TOMATO CHERRY	30.00	Each	100.00		93.1300	23.2800
Cilantro Fresh Herb	0.50	Pound	100.00		9.3200	2.3300
CX - ONION RED JUMBO	1.00	Pound	100.00		0.6500	0.1600
CX - JUICE LEMON FRESH	2.00	Case - 1 QT	100.00		6.4800	1.6200
CX - GARLIC	0.05	Case - 3 Pound	100.00		0.4600	0.1200
BAY VALLEY SLICED JALAPENO...	2.00	Cup - FL	100.00		1.1200	0.2800
			Compare Costs	Location 100	Current Cost $111.1600	$27.7900

1 - 6 of 6 items

Gross Profit Per Item = Price - Menu Item Cost

Gross Profit (Per Item) is the difference between the selling price and theoretical cost (Price- Cost) for an item.

Using the same example as above, if the turkey sandwich costs $1.43 to produce and you sell it for $8.00, your gross profit for that item would be $6.57.

Quantity = Sum of Each Menu Item Sold

Quantity (Qty) is the number of each menu item sold; this number comes from the imported POS data.

Quantity %

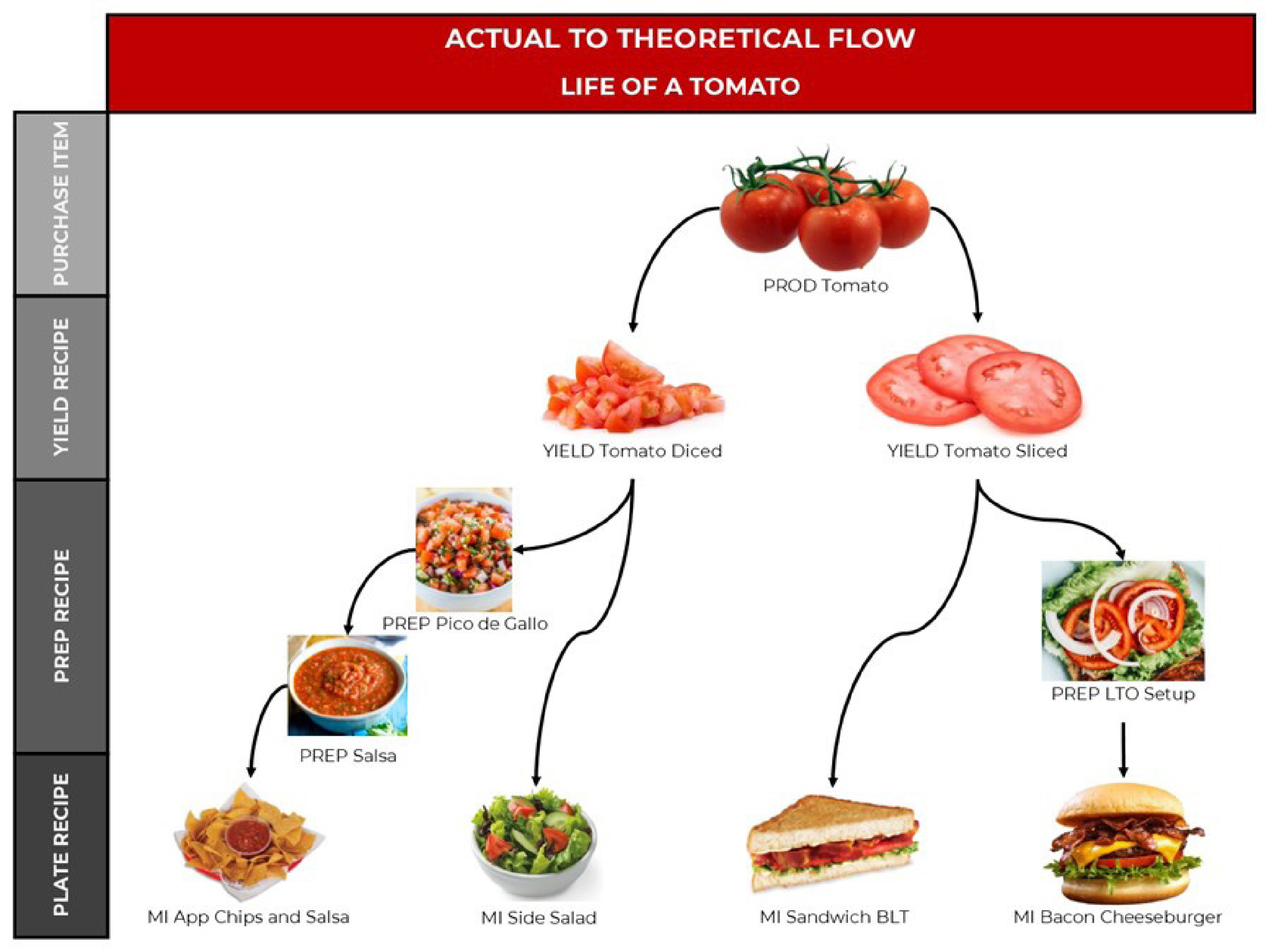
Quantity % is the percentage of the total number of items sold. This is only a percentage of those items included in the report your restaurant management system should produce. For example, if you are reporting only on food items for a particular restaurant, a quantity percentage of 14.7% only indicates that this item comprises that percentage of your food item sales, not total sales, which would include non-food items.

Total Sales = Sum in $ of All Sales for Each Menu Item Within a Set Time Period

Total Sales shows the total amount sold in dollars for the date range selected. This includes the sum of all time periods from the sales mix data.

Sales % = Total Sales Per Item / Total Sales for All Items

Sales % is the percentage of the total dollars sold. This is only a percentage of those items included in the report.



Food Cost Percentage = Menu Item Cost / Price

Calculating food cost percentages requires you to know exactly what you are paying for when ordering food. For this metric to be accurate, you must have a streamlined inventory process and understand how much of each ingredient produces a serving of each dish. This is an excellent benchmark value that you should be tracking monthly or quarterly. Many ambitious, growth-oriented restaurant operators use more frequent flash counts of their 20 most used ingredients, which in many cases account for as much as 80% of their overall cost. This value will help you identify trends in your menu engineering.

Theoretical Cost of Goods Sold = (Item A Food Cost x Units of A sold) + (Item B Food Cost x Units of B sold) + (and so on)

Cost of Goods Sold (CoGS) reveals how much it costs to create each of your menu items. CoGS represents your inventory within a set period. To correctly calculate this value, you need an integrated restaurant management system that automatically records inventory at the beginning and end of the period you want to measure.

Menu Item Analysis

7/1/2019 - 7/15/2019

Location(s): Location 201

Item	Price	Cost	Margin	Cost %	Qty	Sales	Sls %	Priority	Theo Cost	Profit	Category
TIP	2.75	0.00	2.75	0.0 %	686	1,887.69	7.4	0.00	0.00	1,887.69	Opportunity
TAX	2.02	0.00	2.02	0.0 %	859	1,738.94	6.8	0.00	0.00	1,738.94	Opportunity
Hot Crispy	10.95	0.00	10.95	0.0 %	152	1,664.40	6.5	0.00	0.00	1,664.40	Star
Bacon Burger	11.95	0.00	11.95	0.0 %	125	1,493.75	5.8	0.00	0.00	1,493.75	Star
Vegan Chick'n	11.95	0.00	11.95	0.0 %	123	1,469.85	5.7	0.00	0.00	1,469.85	Star
Crispy Chicken	10.95	0.00	10.95	0.0 %	115	1,259.25	4.9	0.00	0.00	1,259.25	Star
Bird Combo	11.95	0.00	11.95	0.0 %	96	1,147.20	4.5	0.00	0.00	1,147.20	Star
Burger Combo	11.95	0.00	11.95	0.0 %	96	1,147.20	4.5	0.00	0.00	1,147.20	Star
Good Burger	10.95	0.00	10.95	0.0 %	73	799.35	3.1	0.00	0.00	799.35	Star
Crispy Combo	10.95	0.00	10.95	0.0 %	62	678.90	2.7	0.00	0.00	678.90	Star
Chicken Tender	9.95	0.00	9.95	0.0 %	61	606.95	2.4	0.00	0.00	606.95	Star
Chicken Salad	9.95	0.00	9.95	0.0 %	61	606.95	2.4	0.00	0.00	606.95	Star
Old Fashioned	10.95	0.00	10.95	0.0 %	54	591.30	2.3	0.00	0.00	591.30	Star
Chicken Combo	9.95	0.00	9.95	0.0 %	59	587.05	2.3	0.00	0.00	587.05	Star
Shake - O	6.95	0.00	6.95	0.0 %	45	312.75	1.2	0.00	0.00	312.75	Star
Grilled Combo	9.95	0.00	9.95	0.0 %	28	278.60	1.1	0.00	0.00	278.60	Star
Hot Combo	10.95	0.00	10.95	0.0 %	24	262.80	1.0	0.00	0.00	262.80	Star
Chicken Tender (2)	8.95	0.00	8.95	0.0 %	28	250.60	1.0	0.00	0.00	250.60	Star
Bacon Burger	14.95	0.00	14.95	0.0 %	16	239.20	0.9	0.00	0.00	239.20	Star
Coke	2.95	0.00	2.95	0.0 %	78	230.10	0.9	0.00	0.00	230.10	Opportunity
Shake - C	6.95	0.00	6.95	0.0 %	32	222.40	0.9	0.00	0.00	222.40	Star
French Fries	3.00	0.00	3.00	0.0 %	62	186.00	0.7	0.00	0.00	186.00	Dog

Theoretical Food Cost (as a percentage) = Theoretical Cost of Goods Sold / Food Sales

Contribution Margin = Menu Item Sales - Food Costs (within a certain period)

This value helps measure profit and shows how sales affect your net income.

Contribution Margin (CM $) high or low, indicates whether the gross profit per sale of the item is above (high) or below (low) the average gross profit per sale of the report items. This is the total number of dollars that you take to the bank.

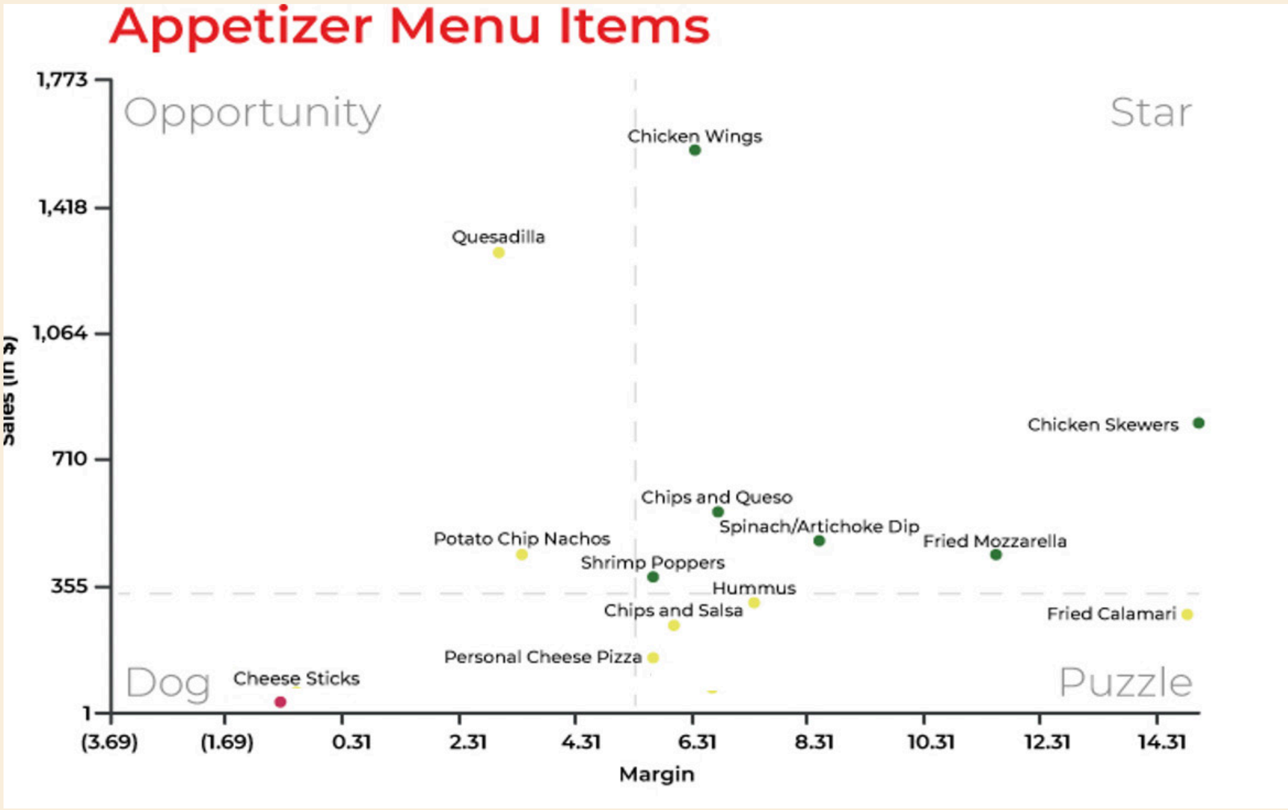
Menu Mix (MM %) high or low, indicates whether the menu item achieves 70% or more of the average number of sales for the listed group (high) or less than 70% of the average (low). This is an indication of a dish's popularity.

Gross Profit $ is the total gross profit for an item over a specified period. This is calculated as gross profit (per item) x quantity.

RECIPE ANALYSIS & CATEGORIZATION

Now that you know how to calculate all the food costs to complete an analysis, you can start categorizing your dishes. The fastest and most accurate way is to automate the process with restaurant-specific software that also regularly monitors your menu's successes and shortcomings.

Using the data from a certain period, your integrated platform should create a scatter graph with each item's contribution margin and popularity (quantity sold). It could be the past month or the past quarter. For reliable results, it's important to keep the time period variable constant.



Within that graph, your system will calculate trend lines on the x and y axis that run through your items to determine what they are.

Stars = High Profitability + High Popularity

Stars are just what they sound like: your best dishes. They lead in both profitability and popularity.

Your menu design should highlight your stars. You should keep these dishes consistent and promote them in any way possible. Regarding layout, you want to place your stars near the top of your menu and emphasize them. You can do that by adding color, a box around them, or a callout like "customer favorite" or" most "popular." Keep your stars in a position where they can continue to shine.

Puzzles = High Profitability + Low Popularity

Puzzles are dishes with a decent profit margin but don't sell as well as you'd like.

If you are sure the customers who order these items are pleased with them, consider ways to better highlight and promote them. Change plating and presentation or consider creating a couple of specials around them to see if that attracts more orders. Sometimes lowering the price of these dishes, even just a little, can help sales, but be sure you know each dish's performance metrics to avoid turning any into a loss leader.

Dogs = Low Profitability + Low Popularity

In most cases, your dogs are the dishes that you should re-work or eliminate. However, there are some items you can't eliminate, such as the kid's menu or special diet items. Since these are low profit and the people who need them will find them anyway, de-emphasize or even place them on a standalone menu available upon request.

Opportunities = Low Profitability + High Popularity

Your opportunities are dishes guests love and order frequently but cost more than they earn.

When it comes to opportunities and how to turn them into stars, there are a few different solutions:

1. One solution would be to source cheaper ingredients or make swap outs to reduce cost.
2. An alternative would be to raise the price; however, be careful when playing with prices. These dishes may be popular because they're inexpensive. You don't want to kill sales by immediately raising prices.
3. Watch portion size. Could you serve smaller portions for the same price? Watch customers for a few days and see how much comes back to the kitchen to determine reductions
4. Make sure your kitchen is consistent with portion sizes. Provide training and appropriate measuring utensils for portioning and supervise them to ensure proper portioning.

The Fundamentals of...

Menu Design

Your menu's design has more power than you may realize. By some measures, small changes can increase your revenue by up to 35%.

The key to optimizing your menu design is to remember two things. One, your guests spend far less time reviewing your menu than you think. On average, diners spend about 109 seconds scanning their menus before making an order, **according to a Gallup poll**. Second, all guests engage in a variety of unconscious psychological tendencies or behaviors when presented with menus of varying shapes, sizes, layouts, and detail. The point of menu engineering and menu design isn't to manipulate guests but to drive them toward those dishes that will provide them with the best experience and the restaurant with the most benefit.

1. Placement power

When looking at a standard two- or three-fold menu, your eyes typically start in the middle of a page, then move to the top right, then top left in the "eye gaze path." If you look at this path, you'll see the majority of time is spent looking at the top portion of your menu in a triangular formation.

That's why it's called the "golden triangle." This is your menu's most valuable real estate. Consider placing high-margin dishes at the center and upper-right corner of your menu. A great menu works as a silent salesperson when arranged correctly and does most of the heavy lifting for you.

2. Maximize negative space

If a menu is crammed with too much text, customers' will naturally move toward any open spaces. You can increase the likelihood that your most profitable menu items will be ordered by creating negative space around them. In many cases, this simple change can boost sales of your restaurant's highest-margin items.

3. Use a decoy

Consider placing lower-priced, high-profit menu options as decoys right next to higher-priced menu items. For example, box your higher-end offerings below some lower-priced fare that may be less expensive but has a higher margin than your pricier dishes. That way guests who order lower-priced dishes feel like they're getting a deal while your restaurant racks up a more profitable sale.

4. The magic menu number 7

Limit the number of items in each menu section to no more than seven. Any more creates a **paradox of choice** that increases anxiety and makes guests feel overwhelmed or confused. When this happens, many will default to a dish they've ordered before thinking, "Well "I don't want to choose unwisely and spend too much money, so I guess I'll go for something cheap and safe."

5. Use color to influence

Colors evoke a range of reactions and behaviors that can have a meaningful impact on your restaurant company's bottom line. Colors often speak even louder than words, so the careful use and potential avoidance of certain colors is essential.

Here are how different primary colors impact diners' decisions:

Red —This is the color of action and passion, so smart but limited use of red can motivate customers to order an associated item.
Orange — This appetite-stimulating color can be ideal for encouraging impulse ordering.
Yellow — This color is an attention-getter that makes people feel happy. It can be an excellent way to capture diners' attention when used legibly (watch out for light shades and avoid yellow completely in dimly lit restaurants).

Green — This fresh color can increase the appeal of salads and seasonal menu options and bring that bright emotion to dishes that might not traditionally spark them.
Blue — Unless your brand has a powerful connection with seafood, this hue can tire guests, so limit its use.

While many of these behaviors have been widely recorded, it's vital to test menu versions to see which combinations of methods work best for your restaurant. Ask friends, family, and regulars to order from the new menu to evaluate your new menu marketing.

6. Avoid column pricing and the dollar sign

Many restaurants arrange their menus with prices on the far-right-hand side. While that works for some restaurants, using aligned pricing can sometimes cause customers to seek out and order the lowest-priced item. If you manage a restaurant that doesn't focus on low prices, deemphasize the pricing.

Don't use decimals. Decimals can sometimes make numbers appear larger than they are. This causes customers to spend less. Which item would you rather order, one priced at $25.00 or 25?

Don't use the $ sign. Research has found that guests given the numeral-only menu spend significantly more than those who received a menu with prices written out in words or menus showing a dollar sign.

7. Use descriptions to pique interest

One of the key opportunities to influence guests to order a specific item is the description. Menu items with unique titles and descriptions see increased sales by up to 27%.

Which one of these chicken sandwich descriptions sounds more appetizing?

Fried Chicken Sandwich OR Grandma's Famous Fried Chicken Sandwich. Nostalgia is a powerful tool that restaurants can use to boost appeal. One way to make writing descriptions easier is to add words and elements that appeal to taste, texture, preparation, geography, nostalgia, or brand.

8. Appeal to touch

Great menus don't just appeal to your guests' appetites; they also appeal to touch. Pay attention to the size of your menus, how easy they are to handle, and their texture. If you are a high-end restaurant, you want it reflected in all areas of the guest experience, including your menu. Keep QR code menus in mind as you design your menu, as most customers now prefer contactless menus.

9. Consider separate menus

Separate menus for entrees, desserts, and drinks keep your guests focused on their order and helps your restaurant segment, organize, and upsell.

Finally, remember to take time to train staff on the new menu design and which menu items are priorities. This knowledge will help them guide guests to more profitable dishes that will improve their experience and your bottom line. Because tips are based on check totals, your servers will be motivated to promote higher-cost items.

CONCLUSION

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While it's critical to methodically and patiently test the many different variables that menu engineering presents, none are viable without the proper foundation. The calculations, metrics, and reporting that provide operators with the insights to conduct menu engineering aren't feasible with most of the outdated analog tools that have plagued the industry for decades. By underpinning your company with a Restaurant Enterprise Management platform that frictionlessly integrates all of the vendors, partners, and people involved in successful restaurants, you and your team can easily access and understand all your restaurant's performance metrics before embarking on the engineering exercise.

The final phase of menu engineering is evaluating your new design. To maximize results, it's important to monitor and compare item sales with the new menu against the old. Assuming steady order volume for most of your menu items, you should start seeing statistically significant changes after one to two months.

If the new design is a success, you will notice that your high-profit dishes are selling more often, your margins are growing, and your bottom-line profit is rising.