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WHAT IS...

MENU ENGINEERING?

Menu engineering is the study of both profitability and popularity of menu items and their influence on menu item placement and design.

In short, menu engineering utilizes a mix of data analytics and art to increase profits per guest. The general process starts with reviewing food costs, leads to categorizing dishes, and then uses that data to influence menu design.

Menu engineering was originally brought to the attention of restaurants in the early 1980's by Professor "Coach" Donald Smith of Michigan State University. Donald Smith created the matrix technique for categorizing the profitability of dishes (which will be discussed more later).

Restaurant operators traditionally think of menu engineering in terms of paper menus but as more and more technology gets introduced in the restaurant space it is very important to think about the overall experience, from the paper menu, to the online menu, QR code menus, and leaderboard-style menus, to what your servers promote, and beyond. Menu engineering is an iterative process and one that should be conducted at least twice a year for the biggest impact.

THE FUNDAMENTALS OF...

RECIPE COSTING

Before you start to think about dish categorization or menu design, you must first understand how to calculate your food costs. Calculating food costs can seem complicated at first, but if you take the time to understand each value one by one, the process gets easier.

Some restaurants prefer to analyze menu items in Excel spreadsheets. If you choose to go that route, **download this convenient template**. For those who are more technologically advanced and don't want to spend hours manually inputting data into Excel and writing formulas to find these values, there are many technologies available that can automate this process for you.

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

Menu item costs can be difficult and time consuming to calculate since you will be dealing with a variety of different ingredients and portioning. This value is the pillar of menu engineering and it is crucial that you understand it well before executing any strategy on recipe or menu design.

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

Ingredient	Qty	U of M	Yield %	Instructions	Batch Cost	Portion Cost	
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	🗑

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1 - 6 of 6 items

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, 10 cents worth of cheese bringing the total cost of that item to $1.43.

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 on the report. 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 on the report.
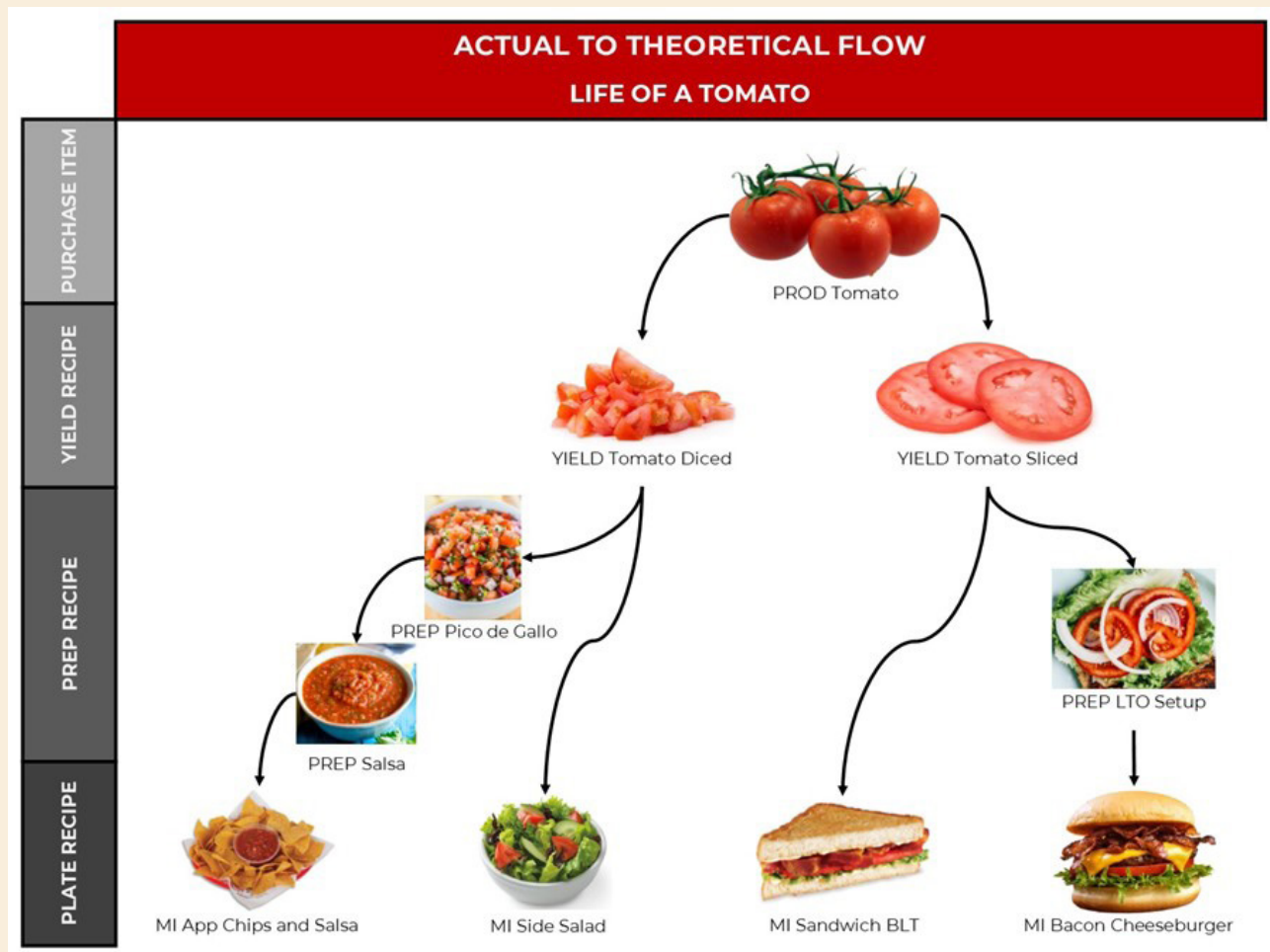
Food Cost Percentage = Menu Item Cost / Price

Calculating food cost percentages requires you to know exactly what you are paying for when you are ordering food. For this metric to be accurate, you must have a **streamlined inventory process** and need to understand how much of each ingredient you are using to produce a serving of each of your dishes. This is a great benchmark value that you should be tracking on a monthly or quarterly basis. 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 (CoGS) sold tells you how much it costs to create each of your menu items. CoGS represents your inventory within a set time period. In order to calculate this value, you need to record 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 you measure profit and shows you how your sales affect your net income.

This will be the net number of dollars that you take to the bank. Contribution Margin (CM $) high or low, indicating 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 an indication of profitability.

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

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

Category classifies each item as a star, opportunity, puzzle, or dog, depending on the combination of contribution margin and menu mix attributes of the item.

Now that you know how to calculate all the food costs necessary to complete your analysis, you should be able to start to categorize your dishes. Software can do this for you automatically, but if you are tracking with Excel manually, this is how that process would work.

Create a scatter graph with your menu items' contribution margin and item popularity (quantity sold) using the data from a certain period. It could be the past month or the past quarter. It doesn't matter which, all that matters is that you use the same period for everything while you complete this process.
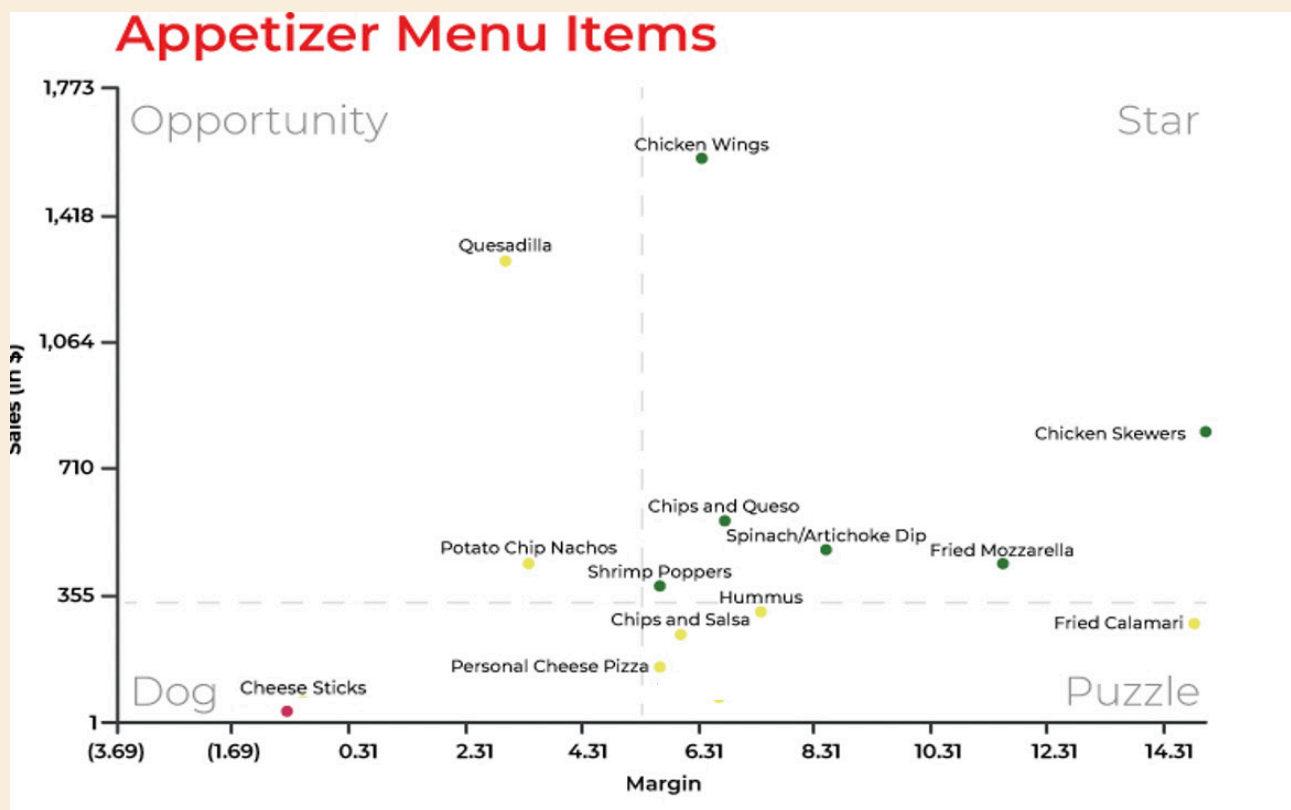
After creating a graph, draw a trend line through your items to determine which quadrant your item falls under.

Stars = High Profitability + High Popularity

Your stars are just what they sound likez: your best dishes. They lead in both profitability and in popularity.

Your menu design should highlight your stars. You should keep these dishes consistent and promote them anyway you can. When it comes to layout, you want to place your stars near the top of your menu and emphasize them. You can do that by adding color, or a box around them, adding a callout like "customer favorite" or "most popular" can also help. You want to be sure that you keep your stars in a position where they can continue to shine.

Puzzles = High Profitability + Low Popularity

Your puzzles are dishes that have a decent profit margin but are not selling as much as they should be.

If you are certain the customers who order this item are pleased with it, then you may want to think of ways to better highlight these items. Change the way you plate it or present it, and/or consider creating a couple of specials around it to see if you can get more guests to try it. Sometimes lowering the price of these dishes even just a little can help it sell better.

Dogs = Low Profitability + Low Popularity

Your dogs are dishes that are not profitable or popular. In most cases your dogs are the dishes that you should re-work or eliminate. However, there are some items you just 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, try to de-emphasize these on your menu, or even place them on a standalone menu available upon request.

Opportunities = Low Profitability + High Popularity

Your opportunities are dishes that customers enjoy and order frequently but when you breakdown the costs, they are actually costing you more money than they are making you.

When it comes to opportunities, you have a few different solutions:

1. One solution would be to source cheaper ingredients or make swap outs where you can to bring down the cost of producing these dishes.
2. An alternative would be to raise the price; however, be careful when playing with prices. The reason these dishes may be popular is because they are low in price. If that is the case, you don't want to kill sales by immediately raising prices.
3. Another thing you can watch for is portion size. Could you serve smaller portions of this dish for the same price? Watch customers for a few days and see if there is a lot of this dish left over on plates. If so, cut the portion size.
4. Make sure your kitchen is being consistent about portion sizes. Give them training and appropriate measuring utensils for portioning and supervise them to make sure they are portioning properly.

All of those tweaks can help you turn your opportunities into stars.

THE FUNDAMENTALS OF...

MENU DESIGN

Your menu's design has more power than you may realize. Small changes can increase your revenue by up to 35%.

Nine things you need to consider when redesigning your menu are:

1. Placement power

When you're 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 what is referred to as the "eye gaze path." If you look at this path, you'll see that the majority of time is spent looking at the top portion of your menu, in a triangular formation.

This is also sometimes called the "golden triangle," because it encompasses some pretty high-value real estate when it comes to menu item placement. Consequently, consider placing high-margin dishes at the center and upper-right corner of your menu. When arranged correctly, a great menu works as a silent salesperson, doing most of the heavy lifting for you.

2. Maximize the impact of "negative space"

If a menu is crammed with too much text, customers' eyes will naturally be drawn to any open spaces. As a result, you can increase the likelihood that your most profitable menu items will get ordered by creating that "negative space" around those items.

That simple action can automatically boost orders, and as a result, sales of your restaurant's most profitable items. And on that note, while photos do help sell certain dishes, they should be used wisely and sparingly. Typically the use of one picture per menu page can increase sales of that item up to 30%.

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 lower in purchase price, but has a higher margin than those higher-end dishes. By doing this simple action, guests who order the more economical fare feel like they've found a deal and your restaurant racks up a more profitable sale.

4. Remember the magic menu number: 7

Work to limit the number of items in each menu section to no more than seven items. Any more than that "magic seven" creates a so-called "paradox of choice" for guests since more options increase the anxiety customers feel to make a choice, leading them to feel overwhelmed or confused.

As a result, many will simply default to ordering an item they've had before thinking, "Well, I don't want to choose unwisely and spend too much money, so I guess I'll settle for something cheap and safe."

5. Use color to influence

Colors evoke a whole range of customer reactions since it's been shown that customers are driven subconsciously by what they see. In fact, colors can sometimes speak even louder than words, so the careful use (and sometimes even outright avoidance) of certain colors on your menu can be essential in driving purchase decisions.

Here are how different primary colors can impact diners' emotions:

Red — This is the color of action and passion, so limited use of red can motivate customers to order an associated item.

Orange — This appetite-stimulating color can be ideal in encouraging impulse in menu item selection.

Yellow — This color of "yield" signs and traffic "caution" lights is an attention-getter that makes people feel happy, so when it is used legibly (watch out for light shades and avoid yellow completely in dimly lit restaurants) it can be an excellent way to capture diners' attention.

Green — This "freshness" color can increase the appeal of salads and seasonal menu options.

Blue — Unless your brand has a very strong connection with seafood, this hue can make guests feel tired, so limit its use.

These pointers should give you some menu design parameters. But, design 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 whether your new menu marketing is a success.

6. Avoid column pricing and the use of the $ dollar sign

Many restaurants arrange their menus with price on the far right hand side. While that works for some types of restaurants, the use of aligned pricing can sometimes cause customers to seek out and order the lowest priced item they can find instead of ordering the one they really want.

If you manage a restaurant that doesn't focus on low prices, deemphasize the pricing. Some of the ways you can do that are:

1. Don't use decimals. The use of decimals can sometimes make numbers look larger than they are. This causes customers to spend less. Which item would you rather order, one priced at $25.00 or 25?
2. 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 your guests toward ordering a certain item is in the description. Menu items that have unique titles and descriptions can increase their sales up to 27%.

For example: Which one of these chicken salad descriptions sound more appetizing?

Chicken Salad Sandwich OR **Grandma's Famous Chicken Salad Sandwich.** Nostalgia is a powerful tool that restaurants can use to boost appeal. One way to make writing descriptions easier is to add different 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 customers' eyes or appetites, they also appeal to touch. Being cognizant about what size your menus are, how easy they are to handle, and what texture they are will help you when you are creating versions of your menu to test. If you are a high-end restaurant, you want to make sure that is reflected in all areas of the customer 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

Having separate menus for entrees, desserts, and drinks not only keeps your guests focused on the order, but also helps you 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 customers to more profitable dishes to improve customer experience while boosting your bottom line. Because tips are usually based on total order cost, your servers will be motivated to promote the higher cost items.

Evalutating your...

NEW DESIGN

The final phase of menu engineering is evaluating your new design. Simply compare item sales with the new menu against what they were before the redesign.

Restaurant365 provides menu engineering tools that automate your recipe costing and menu engineering analysis, as well as help you evaluate your new design. Assuming you have good order volume for the majority of your menu items, you should start seeing statistically significant changes occurring after one to two months.

If the new design is a success, you will notice your high-profit dishes are selling more often, your food cost percentages are healthier, and your revenue has increased.

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