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Bio

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Introduction

So you opened a café because you were and continue to be super passionate about coffee, right? And/or you're a people person, and communicating the story of your coffees, and getting to know your regulars, are satisfying experiences for you. But however much you love your coffee and your customers, at the end of the day, you're running a business. So would it surprise you to know that, as a conscientious and involved entrepreneur, you have access to the information you need to make your business run smoother, just from the way you interact with your customers?

Coffeehouses store data as part of doing business, and different cafes assign different value to the analysis of this data. This article investigates ways coffee shops can get more out of the data they already store.

Along the way the following points are emphasized:

- Storing your data in a format that is easy to play around with allows you to do more with it.
- The data you store is valuable if you know how to use it.
- Applying a little bit of math to your data can help you get more out it.

In preparing this article, coffee shop owners from a wide range of backgrounds were surveyed. They were asked questions about their existing methods of data collection and analysis. That survey helped prepare the direction this article went, and a summary of the survey results can be found on Pasteboard under "Gathering Data".

How do I know if I am data storing my data effectively?

Every transaction provides you an opportunity to learn something about your customer's behavior. What you do with the data you store over time is up to you. You can do nothing with it. You can store it and not use it for much. Or you can use it as a key piece in the puzzle to help drive the decisions that help determine the future of your business.

In order to make the most of your data, it's critical that you store it in a format that allows you to analyze and manipulate it. Whether you use a third-party POS, spreadsheets, databases, or some combination of them doesn't matter a whole lot – as long as you're able to work with what you've got.

Many of the ideas that follow are relatively easy to implement if data is stored in a format that makes it easy to play around with and analyze. If your data is stored in an ineffective format that restricts what you can get out of it, it might be worth considering alternative ways to store it.

Let's look at some concrete examples at things you can do with types of data you might have readily available in whatever system you are using.

Investigate secondary impacts of products

It's likely that whatever way you store your data makes it easy to see the totals for key metrics you're interested in. If your data is stored in a simple format that is easy to manipulate, then you're well-positioned to dig deeper than just the totals. One such example involves investigating secondary impacts that are not so obvious by just looking at totals.

Let's say you offer coffee by the cup at a few different price points, and you're interested in evaluating whether or not it makes sense to continue offering the most expensive coffees.

We'll use the following menu as our example:

Coffee	Price per cup
House blend	$2.50
Premium: Edelweiss Finagro Tanzania	$5.00
Premium: Kenya Karimikui	$5.00
Ultra-premium: Panama Esmeralda Geisha	$15.00

You might start by evaluating how much of the ultra-premium cup you're selling and compare it to your cost. You probably have perspective on what time frames are relevant to you and what type of performance you need to continue offering a product.

Is there anything more subtle that might be worth considering?

Let's assume you are tracking your sales in way that stores the amount of each type of coffee sold each day. And let's assume you have it in a format that's easy to play around with.

You might design an experiment that helps quantify what (if any) secondary benefits the ultra-premium offering is providing you. Let's say Mondays, Tuesday, and Wednesdays are relatively stable days of business for you, and design an experiment to help us dig into potential secondary benefits of the ultra-premium on those days. Over the course of a few weeks, you might alternate between having the ultra-premium cup on the menu – and not.

On days when the ultra-premium cup is not offered no cups of it will be sold. Only house cups and premium cups will be sold. On days the ultra-premium cup is offered, house, premium, and ultra-premium cups will all be sold.

In a sample week, something like this might be observed:

Base case (do not offer Panama Geisha)

Coffee Type	Monday –Cups sold	Tuesday – Cups sold	Wednesday – Cups sold
House	100	80	90

Premium	100	60	50

Experiment (offer Panama Geisha)

Coffee Type	Monday –Cups sold	Tuesday – Cups sold	Wednesday – Cups sold
House	70	40	30
Premium	125	110	100
Ultra-Premium	2	1	2

Notice that house cups tend to sell at least as much as premium cups when the ultra-premium cup is not offered. Contrast that with the experiment where the ultra-premium cup is offered. While it doesn't sell that much, look at the relative sales of house/premium cups – the difference is dramatic. When the ultra-premium cup is offered, the sales of premium actually dominate those of the house coffee.

Notice that if you simply look at the number of ultra-premium cups sold here, you'll likely come to the conclusion that it's not adding much to your bottom line. However, if you step back from a high level and look at secondary impacts, a more attractive picture might be painted.

The point here is that secondary impacts like this can be significant, and the data you are already storing likely allows you to look for them. If you don't consciously look for them, you probably won't find them. Storing your data in a simple user-friendly format helps make this type of analysis easier.

Coupon

Coffeehouses sometimes offer coupons (e.g. in a local newspaper) that allow customers to make a purchase at a discount. When you offer a coupon you likely keep track of how many of those are used. You have some choices in how you track this. Let's investigate one of those choices in some more detail:

- Just track the number of coupons used each day?
- Or track it their use using a finer time step (e.g. each hour)?

If you track the number of coupons used per day, you might end up with something like this:

	Coupons used this week	Customers this week	Customers in a typical week
Monday	12	450	450
Tuesday	11	425	425
Wednesday	10	400	400
Thursday	9	375	375
Friday	10	400	400
Total	52	2050	2050

Here it looks like about the same number of folks are using the coupons every day. You might compare the totals here to what was paid for the advertisement as a starting point for getting a sense of how effective it has been. That said, you probably have no idea whether these coupons were used by new

customers (i.e. what you're probably hoping) or existing customers. In particular, note the number of customers you have per week is basically unchanged.

Let's say you went ahead and stored information on the hour that each coupon was used, and it looked like this:

Hour	Coupons Used This Week	Customers this Week	Customers in a typical week
6:00 AM	0	300	325
7:00 AM	0	400	375
8:00 AM	0	400	425
9:00 AM	0	300	325
10:00 AM	0	100	125
11:00 AM	0	50	25
12:00 PM	0	50	75
1:00 PM	0	50	25
2:00 PM	37	40	5
3:00 PM	14	20	5
4:00 PM	0	50	50
5:00 PM	1	100	100
6:00 PM	0	100	100
7:00 PM	0	50	50
8:00 PM	0	20	20
9:00 PM	0	10	10
10:00 PM	0	10	10
Total	52	2050	2050

While the totals in both cases are the same, the two charts paint a very different picture.

In this example when you store the number of coupons used by hour, you can notice that the coupon has a significant impact on your 2pm and 3pm crowds. In particular, before the coupon you usually only had 5 customers for the week during each of these periods. This week, with the coupon, those numbers have increased significantly. And interestingly enough most of that new traffic (37 in the 2pm hour and 14 in the 3pm hour) appears to be driven by the coupon. Assuming the coupon can be used at any time, there's probably a good chance that a substantial portion of these customers are new customers.

This type of information can help not only in deciding the effectiveness of a coupon, but also in making decisions on how to proceed with future coupons. For example, here you've observed that this audience may be particularly prone to coming to get coffee from 2pm -4pm – so you might consider offering a special coupon just for this time period.   Or you might choose a different time period whose traffic you'd like to pick up. There are a lot of directions you can go.

The key point here is that if you are just storing the totals by week or day, you might miss some valuable information which would be good to have in making these types of decisions. If you can store not only the day coupons are used, but also the hour, you might obtain some valuable additional information.

"Group Coupon" – The idea of a "Group Coupon" has become increasingly popular over the past few years. Demand for the idea has been driven by stores valuing new business. In practice a store effectively offers $X (e.g. $25) gift certificates in exchange for only $Y (e.g. $15) as long as there's a guarantee they'll get at least Z (e.g. 1000) sales. The issuer of the "Group Coupon" typically has a loyal customer base that frequently purchase Z (e.g. 1000) coupons in a day when they are offered. The coupon is offered for a short period of time (e.g. one day), and the issuer of the coupon typically pays the business upfront for their portion of the sales (e.g. 1000 * $7.50 = $7500).

To evaluate the effectiveness of a coupon like this it is critical to understand

1) How many of the clients were existing customers vs. how many were new customers
2) How many of the clients who are new customers come back again and how often they come back

Obviously it is also important to have a sense of what type of discount you can afford in the context of your profit margin on the products sold.

As a café owner, you have built extensive experience and perspective that provides insight into these questions in advance. How can you leverage that valuable perspective in advance to get an idea of whether or not offering the coupon makes sense?

One idea is to build a "Monte Carlo Simulation" that translates your perspective on the complex nature of your business into actionable numbers.

Sample inputs might look like this:

Value of "Group Coupon" to consumer	$25
Price of "Group Coupon" to consumer	$15
Revenue received by Coffee Shop for sale of "Group Coupon"	$7.50

	Expected	Volatility
Number of Group Coupons sold	1000	500
COGS for each "Group Coupon" Purchase	$ 7.50	$3.00
% of purchases from new customers	30%	20%
Number of follow-up visits in next 3 yrs from new customers	2	4.00
Revenue from each follow up visit	$10	$5
COGS from follow up visit	$3	$2

Then, what you can do is look at lots of combinations of things that could happen (subject to these parameters), and track output like this:

Profit			
Percentile	From "Cashing-in" group coupon	From followup visits from new customers	Total
99%			
95%			
90%			
75%			
50%			
25%			
10%			
5%			
1%			
Average			
Max			
Min			

Volatility of total net profit
% Chance of losing money from total Group Coupon initial visits
% Chance of losing money after 3 full years of follow up visits

With a tool like this, you can then get simple answers to questions like these:

- Under these assumptions what is the impact on the chance of making a profit off the group coupon if I decrease the price to the consumer from $15 to $12.50 or $10?
- Under these assumptions what is the impact on the chance of making a profit off the group coupon if fewer folks that come in are new customers than I'm anticpating?
- Under these assumptions what is the impact on the distribution of profit off the group coupon if follow-up visits do not meet my expectations?
- Under these assumptions does it even make sense for me to offer the "Group Coupon" at all?

Building an effective Monte Carlo simulation can help leverage the perspective you already have to build additional insight into how to act today given uncertainty in the future.

A similar, simpler idea that can help is to simply write down high, medium, and low estimates for relevant potential outcomes in the future. Be independent, objective and conservative with these estimates. Then look at what the outcome would be like if all your "high" assumptions happened, "medium", and "low" separately. If you have decent perspective on the range of customer behavior, this will give you a sense of the range of potential outcomes which could be useful. It won't be as dynamic and informative as a full-fledged Monte Carlo simulation, but it is a simple way to get some of the benefits of one in an easy way.

A mathematical application like this can help you evaluate a decision that involves uncertainty in the future. This particular idea leverages your existing perspective to help turn it into concrete actionable numbers that show you whether or not you want to proceed with a decision (e.g. like issuing a "Group Coupon") based on your underlying assumptions. Be proactive and take the time to analyze things like this upfront – at worst you'll go in better prepared. Doing this type of analysis upfront (before a decision is made) tends to reduce the likelihood of surprises down the road.

Reducing waste without hurting morale

In a coffeehouse waste is an unavoidable cost. There are many ways to manage this cost and try to reduce it. As a coffee shop owner you've likely tried a few of them.

One approach involves simply reacting whenever it is observed (e.g. telling employee "Don't do that"). This has a number of downsides. 1) It's reactive, not proactive 2) It does not inspire collaboration among employees 3) Employees might be scared to do their job because they don't want to be punished for messing up 4) It could create a negative atmosphere.

If you store data on waste effectively, you can use it to help reduce waste while avoiding some of the negatives mentioned above.

One type of waste involves having to throw out drinks because they were made incorrectly or because of a miscommunication with a customer. Suppose you keep track of the number of such drinks for each hour of each day. Over time you'll develop a large sample of data.

Ideas to consider include:

- Investigate waste over time and incorporate it into pricing.
- Waste will likely vary as a function of the drink type. Some drinks may rarely get messed up, while others might get messed up 10% of the time. Incorporating this into pricing may be useful.
- Look for relationships between waste and staffing. Suppose when John works with Lucy on average over the last few months waste multiplies by 10. Suppose when John works without Lucy, waste is more typical. In a case like that, it might make sense to schedule John with Lucy less often.
- Use this information to act proactively to reduce waste, for example, by rewarding folks that have a habit of being associated with shifts with low waste over a large sample. When you focus on long-term information from a large sample, the information is probably tougher to manipulate and more informative.

Standardize analysis of effectiveness of products

One more way to apply mathematics involves standardizing analysis of the effectiveness of products. Fundamentally all products sell at a certain rate with a certain level of uncertainty. Some products have sales that are more volatile than others. Some products sell more often than others. On any given day, random noise will dictate the actually daily sales around these constraints. And the expected sales and volatility of sales might be a function of day or time.

If you are able to strip out these components (e.g. identify the expectation and volatility of sales for each product), you can step back from a high-level and have a standardized set of analysis to evaluate not only all the products you currently sell, but also all the ones you're considering.

Doing this will allow you to do things like classify each product by both its reward and its risk. Products with highly volatile sales are likely risker. Products with more stable sales might be less risky. As a business owner, you likely have a certain mix of reward and risk you are willing to tolerate – and quantifying the expected sales and volatility of those sales for each product can help to meet those goals. This perspective can be useful not only in evaluating existing product lines, but also in deciding whether or not to add new products to the shelf.

Distinguish real moves from random noise

When investigating data, it's a good idea to keep the size of the sample in mind. If the sample size is small, random noise is likely to explain a significant portion of the movement. When using data to make actionable decisions, it is a good idea to think about the size of your sample before reacting too quickly.

For example, let's say revenue is down. One possible reaction to drops in revenue over time is to cut staff and/or employee hours. When you cut staff and/or employee hours, you will definitely hurt the morale of your employees. You want to make sure you don't incur costs like this unless you have a good reason. Keeping perspective of your sample size is critical in this context.

Whenever you're analyzing data, be sure to keep the size of the sample in mind. If you make decisions based on small sample sizes, you might find yourself in an unending spiral of reactions to random noise – potentially incurring real costs along the way. Having more minutes, hours, days, and weeks of data to support the conclusions you are acting on is generally a good thing.

Conclusion

This article provides some ideas for how coffee shop owners can get more out of the data they are probably already storing. It also highlights some of the benefits of storing data in a simple format that is easy to work with.

Hopefully you find some of the ideas useful. If you have any questions, or would like to discuss in more detail, feel free to contact me directly at chris@BoboStrategy.com

Survey Details

Before writing this article, I surveyed the industry on their existing data collection methods. This information was useful in directing the focus of the article.

An overview of the survey follows below.

Demographic background:

- 80% of respondents indicated they owner a coffee shop, and the rest indicated they were managers.
- Responses were evenly distributed between shops that have been open for Less than 1 year, 1-3 years, 4-5 years, 6-10 years, and more than 10 years.

- 70% of the responses came from shops having only one location. 10% came from shops having 2 locations, and the rest came from shops having 3 to 5 locations.
- Total revenue across all locations of the shops was less than $500,000 annually for one third of the responses, $500,000-$1,000,000 for one third, and more than $1,000,000 for the rest.

Please give us some information about what types of software your business uses.

	Don't use	Use basically every day	Use basically every week	Use every month or so
Excel spreadsheet	10%	45%	30%	15%
Access database	95%	0%	0%	5%
3rd party POS system	50%	50%	0%	0%
Non-Excel spreadsheet software	60%	20%	20%	0%
Non-Access database software	75%	10%	20%	0%

On a scale of 1-5, rate your level of satisfaction with what you're getting out of each of these. 1 = Very Unsatisfied to 5 = Very Satisfied.

	0 (Don't Use)	1 (Very Unsatisfied)	2 (Somewhat Unsatisfied)	3 (Neutral)	4 (Somewhat Satisfied)	5 (Very Satisfied)
Excel spreadsheet	5%	5%	5%	25%	30%	30%
Access database	90%	0%	0	10%	0	0
3rd party POS system	45%	5%	10%	0	30%	5%
Non-Excel spreadsheet software	65%	5%	5%	5%	20%	0%
Non-Access database software	80%	0%	0%	10%	5%	5%

For each of the following, please identify whether or not you store that data, and the degree of analysis you perform on it.

	Don't store this information	We store this information, but don't really use it for much of anything.	We store this information and do some analysis of it from time to time.	We store this information and analyze it extensively. We use analysis of it to help make decisions.
Revenue/unit sales by item	10%	20%	40%	30%
Revenue/unit sales by hour/shift/day	15%	25%	15%	45%
Revenue/unit sales by employee	80%	10%	10%	0%
Waste by item	60%	20%	20%	0%
Waste by hour/shift/day	70%	20%	10%	0%
Waste by employee	60%	30%	10%	0%
Customer complaint frequency	50%	15%	15%	20%
Number of customers by hour/shift/day	20%	10%	30%	40%
Impact on shop of changes in music selection	85%	5%	10%	0%
Impact on shop of events (e.g. live band, street fest, etc.)	40%	20%	30%	10%

When asked "What actionable decisions do you wish you could get more help with from your existing data collection/analysis methods than you currently get?", responses included:

- As someone who is extremely not computer-savvy, I really wish I could use the info we have for more analysis...or I wish I could afford to hire someone to do that!
- POS system to be more user friendly
- projected budgets (paper, payroll, etc)
- easier comparisons between time periods
- It would be helpful to be able to analyze what types of drinks/items get sold during which hours (i.e. 16 oz. lattes are sold most often between 11-12 instead of total drink sales for that hour). In theory, we have the data on our POS software, but it would take a large effort to organize it in a way that readily allows us to make quick decisions.
- CSM collects transaction counts (per unit time) but there's no efficient way to access/analyze that data, which would be useful for staffing especially and to understand changes/trends in busy times/days. CSM is also clunky for quick analysis of comps (e.g. year over year comparisons).
- Knowing what types of drinks we sell the least of.
- Item sales by shift
- Average ticket by shift
- Impact of sales by weather/holiday
- Item sales by hour of day
- Instant anaylsis as in % of COGS, Labor, etc.
- Bundle/complementary sale data (what sells with what?)

- Real-time profitability reports based on entered COGS, fixed costs, and labor. Trends in sales that aren't obvious or that don't typically appear in average crystal reports. When things sell out - sales data only reflect that things were sold, but unless you run serious inventory software, you don't have a sense of when you run out of something, and how that affects sales.