GUIDE

How Big Data is Revolutionizing the Restaurant Industry

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EXECUTIVE SUMMARY

Although “big data” appears a complicated term, it’s really just the process of collecting as much data as possible about your customers in order to better serve them.

Everyone knows that understanding analytics is imperative to improving business operations, but few people actually know how to use it.

This guide explains why tapping into the value of big data doesn’t have to be a colossal challenge, and stresses that it’s actually possible for you to use, collect and combine information from all aspects of your business.

To be effective, you need to collect a broad range of customer and restaurant-specific data on customer loyalty and behavior as well as brand health, which is highly important for understanding location-specific customer preferences and experience measures. You can obtain this data from sources such as social media, loyalty platforms, advertising, email, mobile ordering, marketing, accounting, web statistics, in-store traffic, product logistics/distribution, operations, back-office, POS, food costs and inventory analytics.

Analyzing this information so you can better understand your customers’ preferences, improve your menus and service, and improve your operations, will help you provide your customers with a better experience. This will ultimately lead to significant improvements in your bottom line.

CHAPTER 1

Introduction

This chapter provides an overview of what big data is: the collection and analysis of information from all areas of a company's business including customer data, marketing, accounting, food costs and inventory analytics. Analyzing big data is vitally important to your business, as it will enable you to better understand your customers' preferences, improve your menus and service, and generate greater revenues as a result of improving your customers' experience.

Growing competition

The U.S. restaurant industry is being transformed at a rapid pace. According to the National Restaurant Association, while around 60,000 new locations open every year, 50,000 others close their doors.

Amidst these aggressive turnover rates, the restaurant sector has been the primary driver of growth in the retail space, accounting for 40 percent of the retail industry's revenue generation since 2010.

These figures demonstrate that competition in the restaurant industry is at an all-time high. So the question becomes: how can brands transform their businesses to deliver a superior customer experience and ensure they aren't left behind? Ensuring you provide great customer experience is ultimately what generates loyalty among consumers, which is what restaurants need to survive.

Greater insight available

According to a whitepaper by San Francisco, California-based data analytics firm GoodData, the introduction of new systems and technologies gives restaurant brands significantly more insight into customer behavior and in-store operations than ever before.

"All of the investments that have been made in POS systems, mobile ordering, loyalty apps, social media, review sites, etc. give corporate brands an opportunity to innovate and enhance their franchise models to ultimately improve their overall customer service and satisfaction," the whitepaper says. "Consolidating all the information from these systems is no small task, but that's only one piece of the puzzle. The real value comes into play whenever you get actionable information into the hands of the managers and suppliers that keep your business running."

Previously, big data analytics was the domain of major corporations such as Amazon and Google. Now, thanks to advances in computing and storage technologies, breakthroughs in analytics and CRM software, and access to cloud-based services, restaurants of all sizes can use big data software to mine information from their POS, marketing, accounting, inventory and scheduling systems. This means restaurants can enjoy the same breadth of analytics and depth of business insights previously reserved for companies similar to the likes of Amazon and Google – with the budgets and manpower to build and maintain these complex technology stacks.

Integrated big data systems

A key challenge for large restaurant brands with hundreds or thousands of locations is the inability to report across all locations, due to the disparate nature of systems and data.

It is also challenging for large restaurant brands to get business insights generated by their analytics system into the hands of the staff who manage the operations at each of their locations. Yet restaurant brands need to be able to do this, as that's where the change occurs.

By centralizing global sales, customer satisfaction and operational data into a single analytics platform, restaurant brands are able to:

- Distribute personalized analytics to individual restaurant managers to benchmark their performance against others.
- Incentivize operational improvements in order to increase average sales per unit (SPU).
- Increase visibility into high-level trends and apply their learnings and best practices back into their franchise operating model.

"An integrated big data system will have a lot of outcome-based benefits for a restaurant chain," said Jeff Morris, vice president of strategy at GoodData. "You should push the metrics out to all your different location managers or franchise owners, and your franchisees should share data with each other and with the parent group. It's very important for restaurant operators and the parent group to be able to measure everything and to have deeper-level KPIs (key performance indicators) beyond the average unit volume of a store."

Morris said a good data analytics system will help build a relationship of trust between each district manager or restaurant owner and their parent brand. "Data analytics will provide restaurants with transparent information on their store and on the other locations in the group that will help them see they are part of the core business and that the parent can be trusted," he said. "You can see that what works in one location should work in another, based on what you know about the demographics of each location within your big data analytics system. The external data supplied by the data analytics system on local competitors, such as public health inspector data, will also be helpful to restaurants and enable them to create benchmarks against their competitors."

Most organizations are unable to turn big data into big insights that drive intelligent business decision, Booz Allen says.

Gartner Research says 80 percent of the data which companies own is not mined and leveraged for business value.

Types of data

Restaurant big data systems need to cover a broad range of data from marketing and web statistics to in-store traffic, mobile engagement and ordering, product logistics/distribution, operations, back office, and POS. They need to be capable of processing both structured and unstructured data.

"Big data has applications in front of house and back of house," said Anna Tauzin, Senior Manager of Marketing and Innovation at the National Restaurant Association. "A key issue in front of house is guest management – getting to know your guests better - and you will get data for this from your POS systems which you can mesh with outside data sources. Marketers can rent data from a variety of sources, e.g. demographic information and geographic data such as where people spend their money outside restaurants, where they took their last summer vacation, and what magazines they subscribe to. Knowing that your guest who comes in twice a week to buy a bacon salad and a glass of wine is into golf and goes to the Bahamas twice a year, will influence your marketing focus."

"You can also use CRM data to track what your guests like when they come into your restaurant," said Tauzin. "You can see what items are selling the best, who ordered what and when, and other good front of house data. You can use analytics to improve your menus, as, if you look at what is being ordered with what frequency, you can remove menu items that aren't ordered often. Also, if you see that people order spicy food with sweet items, you can create new items based on different flavor profiles that people enjoy such as an item combining spiciness with sweetness."

Using external data garnered from the web, restaurants can better understand pricing, food and marketing trends. They can see what types of food-related keywords are trending online, which menu items are becoming more popular, and the average price of a particular dish.

"From an internal point of view, you can look at labor data such as who was working last night, who sold the most desserts and which was your best performing staff section," said Tauzin. "For back-of-house data, you can use POS data to look at what is happening in the kitchen such as food orders and how the food moves through the dining room."

Structured data (inside the business in numerical databases)

- **POS** — what's selling, how much it costs, who's buying it
- **Suppliers** — product availability, prices
- **Accounting** — costs, revenue, margins
- **Labor** — wages, salaries, tips

Unstructured data (outside the business)

- **Social media** — likes, trends, retweets, shares, comments
- **Customer profiles and loyalty programs** — names, addresses, email, customer preferences
- **Weather and traffic patterns**

Why you need both

Structured data tells you the "what"; unstructured data tells you the "why."
Using both gives you a more holistic view of your customer.

Source: "Big Data and Restaurants: Something to Chew On," National Restaurant Association

“We have seen quite a few restaurants use data analytics with really good results. Some restaurant brands have created new positions such as director of customer engagement which means they are looking at data sets to improve check averages as well as frequency of diners.”

— Anna Tauzin, Senior Manager of Marketing and Innovation at the National Restaurant Association

Synching data

Tauzin advises restaurants to talk to their POS system provider when they begin gathering data. “It can be very difficult to export data from your POS system, so you need to talk to your POS vendor and tell them what you want to use the data for and what your goal is in using the data,” she said.

Tauzin warns that gathering large amounts of data will be useless unless a restaurant chain is able to synch the data to what its stores’ actual performance is. “You need good data management practices, or you won’t be able to synch all your data together,” she said. “For example, you need to track your orders for back-of-house supplies, and your labor management budget. You need to keep clean spreadsheets that track all the data in the same way on a weekly or monthly basis, or the data won’t be consistent. If you gather unstructured sources of data such as social media, loyalty programs, call center data and Yelp reviews, you also need to track this data in a consistent manner so you can see the changes taking place.”

Tauzin notes that, without a dashboard that provides access to multiple data sources, it can be a challenge to pull all the data together. Without a dashboard, executives have to log in to multiple databases.

“You can get a data analytics technology firm to help you clean up and structure your data and synch it with other data sources in a dashboard,” Tauzin said. “Also you need to have your data structures in place in order to take advantage of things like predictive ordering. If you know from your loyalty system that a customer comes to your restaurant every day at 11.45 a.m. and orders Kale salad and shreds, you can set up an online ordering program, and send a message to her asking if she wants to order her usual meal. Instead of waiting for her to come to you, you’re anticipating her needs. You will increase the number of times she comes to your store and increase her loyalty. Panera Bread does online ordering very well, because it recognized the value of big data four years ago and is now seeing the benefits of it.”

In February 2016, Panera said that 16 percent of total sales are now ordered, produced and paid for digitally and it projected that over 20 percent of its business will be digital by year end. Over a third of Panera’s retail sales come from digital channels in top performing markets.

CHAPTER 2

Industry Insights

This chapter provides insights into the benefits of big data from industry experts.

Improving successes, preventing mistakes

According to "Restaurant Analytics: Making fast casual brands grow even faster," a Fast Casual article by Peter Chen, director of data science at Encinitas, California-based Algebraix Data, fast casual restaurants excel at speedy service, but, when it comes to data, many are stalled.

"Fast casual restaurant owners aren't any different from owners of other businesses," Chen wrote. "They believe data has its place, but they're convinced that nobody — and certainly not software — could ever know their business better than they do. They trust their gut instinct honed by years of experience. When it comes to running a profitable restaurant, they believe nothing tops time in the trenches."

Data science is changing that view. "Terms like 'predictive analytics' and 'data-driven insights' are becoming part of the smartest restaurant-business conversations," Chen wrote. "For decades, restaurateurs had to rely on instincts and experience. Today, it's essential to get unbiased, data-driven information about the present and future of your business. In fact, owners can no longer afford to just trust their guts. Here's why: As you build experience, you inevitably also build up biases, whether they're about the 'best' people for servers or which dishes 'always' sell. However, even once-valid biases eventually go out of date, and intuition simply isn't reliable."

"Imagine coming up with what you suspect is a brilliant idea AND having a way to test it against data," Chen wrote. "Analytics can't come up with ideas, but it can help you improve on good ones, avoid trying bad ones, and uncover flaws that can be fixed."

"When you use analytics to get a data-driven assessment of your business, it erases biases, preconceived notions, and delicate personalities; algorithms have no ego."

Gaining a competitive analytics edge

Chen advises restaurants which have yet to invest in brand-wide analytics to consider what they are missing out on.

"Let's say your closest competitor has hired a consulting firm to run restaurant analytics and have a data scientist interpret the results," Chen wrote. "That company is already analyzing your rival's data on everything from payrolls to parsley. What is the competition learning that you're not? A lot. Let's focus on an area critical to every restaurant, especially fast casual chains: pinpointing your most/least profitable times of the day and days of the week. I bet you're sure you know the answers. But, are you right? If so, do you know why? And most important, do you have reliable, tested insights on how to improve the results?"

Those are just some of the things that truly competitive restaurants are learning from analytics and using to drive performance. They're using analytics that are specific to the restaurant business, which focus on challenges like:

- Menu optimization.
- Customer segmentation.
- Staff optimization.
- Operations improvement.
- Time of day and day of week analysis.

Another key benefit from using restaurant-specific analytics technology is the ability to improve the customer experience based on localized customer preferences and trends.

Two things you never want to hear yourself say

According to Chen, there are two things you never want to hear yourself say:

1. "Our morning business is booming. Who knows why?" This is an example of an easily made mistake that a good data scientist would quickly spot while looking for insights into a restaurant's data. Say there's been an aggressive push to encourage customers to phone in take-out orders ahead of time. That can easily throw off "peak hours" data. It looks like the a.m. business has finally taken off, when, actually, it's just that lunch orders called in early are being logged as breakfast business.

2. "This restaurant is different from all our others. Who knows why?" Let's suppose that dinner is the biggest business in all of your fast casual restaurants. Then you expand into your first shopping mall. It's a big, bustling place, but your dinner business is a nightmare. It's not the manager; it's the location. As predictive restaurant analytics could have told you, dinner receipts typically plunge in a food court.

Basing QSR product offerings on customer preferences

According to "Bytes for bites: How disparate data can boost QSR franchise profits," a QSR-web.com article by Tyler Walton, marketing manager at Ambler, Pennsylvania-based Clutch, QSR giants aren't exempt from the rule that businesses should base product offerings on customer preferences.

"After two straight years of declining same-store sales, McDonald's Q4 earnings report came sunny-side up," Walton wrote. "The company attributed its 5-percent increase in global sales to a new buttermilk chicken sandwich and all-day breakfast menu, a turn toward product strategy rather than advertising push tactics.

"(QSRs) arguably have the most access to data, yet many fail to translate that information into action, falling back on an 'if we make it, they will come' approach that fails to entice modern consumers. Instead, products (and services) must be shaped by abundantly available digital data. POS terminals, e-commerce transactions, social media, and mobile apps all offer insight into your customers' voices.

"But for brands like McDonald's whose business is built on franchising, how do you accomplish that? It starts with collecting data at the franchise level, synthesizing the information, and using analytics to drive overarching corporate strategy. Doing that will keep both franchisees and customers lovin' it.

Franchises need data to drive regional strategy

Big data is the hot topic in big business, but many brands aren't capitalizing on its full potential. "They capture and analyze data, then align incentives and motivators to drive purchases," Walton wrote. "But they're missing the opportunity to use data-collection platforms to connect with customers, understand their likes and opinions, and then develop and deliver products accordingly. This process becomes particularly vital in a franchise business. Do your customers in the South want the same thing as your customers in the North or on the West Coast? I'd be surprised if the answer was yes. Before betting on a new product or promotion, franchise brands must segment customer geographies, then assess age, gender, and other relevant demographics to determine what motivates their customers."

Collecting data from hundreds of franchises is challenging but not impossible

"It's difficult to collect and synthesize data in a franchise business," Walton wrote. "The data collection challenge can be solved by integrating third-party consumer management software to aggregate data from disjointed sources and across channels. Elevation Burger, for example, implemented a consumer management platform to collect and synthesize data from its 60-plus global franchise locations. Not only is the data used to drive targeted marketing campaigns, it is shared with franchisees to help them improve communication with their local customers.

According to Walton, how you collect data doesn't matter so much as that you're collecting it at all because ultimately data from franchises and channels enables you to segment customers, find trends, and identify opportunities to improve brand loyalty.

Profit formula: data + customer listening = product offerings and promotions

"With historical data to create customer profiles and show past and present trends, connecting with and listening to your customers will help plan for the future," Walton wrote. "Start with a single demographic identified in your segmentation exercises. Let's say it's a group of 10,000 college students who visit McDonald's for coffee. What else do they want? Ask through social media, an app and/or market research. If you learn they want breakfast all day, you have an actionable idea of how to customize your menu to boost sales.

"While most industries are (finally) recognizing that data-driven marketing yields fruitful results, the food industry must accept that the same is true for product offerings. For the all-day McDonald's breakfast offering, McMuffin customers were actually segmented from biscuit customers, and products were offered accordingly. That's proof that, in a franchise business, segmenting customers based on sales trends is essential to delivering the right products and promotions to the right people. In today's competitive marketplace, the brands who win aren't the ones who spend big money on advertising — it's the ones who spend time with data."

QSRs: predict customer behavior

"QSRs can bring in more revenue at the individual store level and at the corporate brand level when predictive capabilities are applied to the data they are already producing," Kunal Jain, associate director at Alameda, California-based Absolutdata, wrote in a GoodData blog post.

"For QSRs, there are many moving parts in each location. There are fluctuations in staff and foot traffic, changes in supply chain, responses to marketing offers, and other elements of daily business. Nearly all these variances represent a larger trend, such as seasonal effects or changes in consumer behavior. While the franchisees are busy ensuring customer satisfac-

tion, corporate brands can help their franchise partners by letting them foresee and understand these variances. This enables the franchisees to proactively use the levers in their control to make better business decisions.

“Let’s take the example of a burger chain. While the franchisee would know the information about sales at their outlet, it would be far more powerful to know that the marketing campaign they just participated in will result in an 8 percent increase in foot traffic in the next few weeks. With this predictive information, they can be prepared with inventory levels and staff to meet that spike in demand.”

Cross-data source collection, measurement, analysis

“With the advent of digital customer loyalty programs, mobile ordering, social media interactions, and smart POS systems, QSR franchises are focusing on innovation and making major investments in how they interact with customers,” Bill Creekbaum, vice president of product at GoodData, wrote in a blog titled, “Data Driven QSR Customer Experience and Innovation: Part I.”

“Many national household QSR brands and smaller regional QSRs are deploying pilots in various markets to test these systems and determine the best methods to coordinate them into a comprehensive customer experience,” Creekbaum wrote. “But one size doesn’t fit all, and the best way forward is to collect, measure, analyze, hypothesize, and test to drive continuous improvement. The challenge is that data being collected from different POS systems, mobile ordering, social media sources, etc., doesn’t magically combine itself and reveal those key trends and insights, preventing franchises from analyzing their performance, forming a hypothesis, and testing those theories.

“In other words, cross-source data collection, measurement, and analysis must be designed in as a key requirement of innovative QSR pilot programs, because, without this ‘telemetry,’ restaurant franchises will be less able to truly understand the impact of their innovations and how they work together, and will be at a disadvantage deploying them into new markets. QSR organizations that ‘design-in’ the cross-source data collection, measurement, and analytics into their pilot programs will create a competitive advantage when considering how to expand in existing markets and enter new markets with a faster ROI.

“Once the analysis has been performed, QSRs will be in a better position to identify trends and hypothesize on the cause - either to root out causes of poor performance or identify causes driving increased performance. Opinions will be formed based on data and analysis which will serve to better guide the deployment of innovations. With these hypotheses in hand, QSRs can launch into new markets or even expand in existing markets and, then as the hypothesis is tested, repeat the cycle of data collection, measurement, and analysis to drive continuous improvement, maximizing the potential of investments in innovation.”

CHAPTER 3

Guidance

This chapter provides specific suggestions on how to implement big data.

"Pairing data from traditional internal sources in your operation with external input shows the power of big data," says the National Restaurant Association's "Big Data and Restaurants: Something to Chew On" report. "But it can also be overwhelming."

The report makes the following recommendations:

- Start small. Divide your big data implementation into pieces that you can tackle one step at a time.
- Have a goal as to the problems you want to solve – e.g. reducing your food costs, fixing scheduling problems, finding out which menu items are the most popular. Collect the data which helps to solve these specific challenges.
- Carefully categorize food and beverage items in your POS system.
- Talk to your POS system vendor to ensure you get the information you need from the data you are already collecting. Your POS system should help you identify which menu items are most popular, which marketing efforts show positive results, and which guests use incentive and reward programs.
- Evaluate what your payments processor has to offer in terms of data about your guests.
- Determine whether your systems "talk to each other." POS registers, self-order kiosks, kitchen-management systems, online-reservation systems and websites all generate log files. You need a way to organize and query this data by bringing together your disparate information sources.
- Use software that can integrate unstructured data such as online surveys, customer review sites, blogs and social media with traditional, structured data sources such as your POS system and your inventory system.
- Appoint a Chief Data Officer who can break through data silos in your organization and build cross-functional data collection teams.

- Ensure your big data system respects customers' privacy, so that their data cannot be compromised. You will need to develop a privacy policy and understand the data protection laws applicable in the states in which you operate.

Create a differentiated business model

Competition for new restaurant managers and franchise operators is at an all-time high, GoodData says in a whitepaper.

"In order to accelerate the expansion of the restaurant brand, you need to create a solid, differentiated business model that gives prospective location managers the direction and confidence they need to maximize their success," the whitepaper said. "Creating a standardized set of analytics that outlines your KPIs, analytics and benchmarks gives every franchise manager the specific insights they need to effectively manage their location."

With immediate access to very specific and actionable analytics, franchisees are far better equipped to run an efficient business. Higher sales per unit make the corporate franchise model much more appealing to prospective managers.

Share data with suppliers

In addition to increasing average sales per unit, a key challenge for restaurant brands is figuring out how to forecast demand in order to reduce waste throughout their supply chain.

"By centralizing and sharing system-wide sales data with suppliers, the corporate restaurant gives every supplier far more detailed insights into demand and volume forecasts by geography," the GoodData whitepaper said. "This new visibility allows the supplier to fine-tune their operations, improve just-in-time delivery and maximize their margins. The benefit to the restaurant brands from providing added-value to suppliers is that it gives the corporate more negotiating power, which will improve their overall profitability as well."

Interview with Erin Levzow, vice president of marketing at Freebirds World Burrito.

What are your views on best practice in restaurant analytics?

I think we have come a long way in a short time within restaurant technology. However, we are still behind other industries in many ways.

Analytics are only as good as the information you can a pply. So many times I see marketers and brands who have got bogged down with analytics but haven't defined what the actionable data insights are or set goals going into measuring something.

What key trends are you seeing in the restaurant industry re. big data?

I am very much over the term "big data." Isn't all data big to whoever is using it? Start by using data, then go from there. If you try and attack big data before anything else, that is like trying to fly before you crawl. After you have looked at where all the data you currently have access to resides, then the next step is to get the data to come together. The data becomes powerful when it is working together and telling a story. Again, all of this is only as good as the actions you can take with it.

What would you say are the main benefits you have seen from your analytics system?

Actionable insights. I get very excited when I set out with a hypothesis and can prove it one way or another, and then we know what action to take based on data.

Are there any lessons you learnt from your implementation of big data analytics?

Don't overthink things and include everyone. We are truly better together. I am by far not the smartest person in the room, but I sure know how to get a lot of smart people into a room. The more we can talk through what we are looking for and what makes sense, the more new ideas are uncovered.

CHAPTER 4

Examples of restaurant data analytics deployments

This chapter provides examples of restaurant chains which have profited from their data analytics deployments.

Dickeys Barbecue Restaurants gains operational insight via big data

In 2015, Dickey's Barbecue Pit launched Smoke Stack, a big data, cloud-based platform that gives the chain operational insight across its 500 U.S. restaurants.

Hosted on the Amazon Web Services (AWS) cloud-platform, Smoke Stack was developed in response to the growth of Dickey's business and inability of its previous store-by-store reporting tool to combine data from all restaurants and source systems to provide critical company-wide insights, said Laura Rea Dickey, Dickey's CIO.

"Dickey's needed an easy way to integrate, analyze and act on valuable business data by creating advanced visualizations and performing data analytics with minimal on-site infrastructure and support personnel," she said. "The platform gives us an immersive system to access, query and analyze our rapidly growing and changing business data. We can now quickly and easily understand and act on vital sales, labor, inventory costs and customer satisfaction KPIs throughout our business."

Smoke Stack has made data-driven business insights easy to attain, allowing the chain to focus on using data instead of manually analyzing it, Dickey said.

Speaking at the 2015 Interactive Customer Experience Summit in Chicago, Paula Suarez, Dickey's director of software analysis and development, outlined the chain's big data platform.

Suarez explained that Smoke Stack collects data from Dickey's POS, loyalty programs, customer surveys, marketing promos and inventory systems to provide near real-time feedback on sales and other KPIs.

The "technology in a box," as Suarez described it, was born out of the franchise's need for fast information since it's been expanding so quickly over the past few years. "We experienced an enormous amount of growth and needed better insight into this evolving target market," she said.

How it works

Data warehouse solutions provider iOLAP combined Syncsort's DMX data integration software with Yellowfin's business intelligence platform and the Amazon Redshift cloud-based data warehousing system to create Smoke Stack and implement it across Dickey's locations.

Smoke Stack allows Dickey's to learn about its customers and to assess their needs, which helps it change operational behavior in real time.

All data is collected every 20 minutes and also during a daily morning briefing at corporate HQ. The process includes three steps:

1. Collect guest information via Tech in a Box (TIB) and Spendgo, Dickey's mobile loyalty platform provider, and store that data internally.
2. Run guest data reports in Yellowfin, correlating with sales data.
3. Analyze: did sales increase or decrease; was the campaign effective?

What Dickey's learned

Suarez said the customer information Dickey's has collected is priceless, such as:

- The chain's average lunch guest is male, 43, drives an SUV and commutes 30 minutes to work, so the chain now considers Ford finance customers who live 15 to 30 minutes away from a Dickey's as prime advertising targets.
- Women with children usually visit Dickey's for a later and longer lunch on Wednesdays, and these ladies use Pinterest. To capitalize on this, Dickey's rolled out a Pinterest campaign in which it introduces a craft each Wednesday.
- One of the strongest commonalities among guests is that they play fantasy football and have dogs. This means the chain spends more money on advertising on fantasy football sites than on back-to-school campaigns, for example, and may run commercials on Animal Planet to reach its target audience. It also includes dogs in catering photos to inspire dog-loving consumers to notice its ads.

Levy's Restaurants

Chicago-based Levy's Restaurants uses big data to win contracts at stadiums and arenas, says the National Restaurant Association report "Big Data and Restaurants: Something to Chew On."

Levy's provides high-end, restaurant-quality foodservice at 45 major sports venues. It uses analytics to better understand the correlation between sporting events and food and beverage purchases. It analyzed food trends in Portland, Oregon, to create a highly successful 10,000-square-foot restaurant near the Trailblazers' arena.

Interview with Laura Rea Dickey, Dickey's CIO

What are your views on best practice in restaurant analytics?

- First, collect all data (structured and unstructured) that you can, while keeping information tagged, clean and actionable. You must not only collect data, but analyze it and make it actionable. Otherwise, you're just paying for data storage.
- Second, avoid 'analysis to paralysis'. This speaks to making data actionable. Information is power, so use the resources gained from analyzing big data to react and adapt accordingly. Embrace 'in time' response to data to drive nimble and impactful adaptation.
- Third, embrace flexibility and communications reflective to information. This requires a mapped communication path that takes information full circle: insight/data -> communications -> plan of action -> implementation -> measurement -> feedback -> impact/re-collect.
- Fourth, establish a data-driven culture. Decisions are based on numbers and real-time data, not on impulse or personal preference.
- We like to use the phrase, 'what gets measured gets managed'. By managing each step of the data analytics process, we can avoid data siloing (hoarding) and 'information rot.' We use insight threads to guide the process.

What key big data trends are you seeing in the restaurant industry?

- A huge shift in the industry sees IT/tech/data as no longer a support or implementation tactic, but now a strategy, at least for most relevant, successful and nimble brands (old and new).
- Data isn't optional. In the past three years, big data has become realistic and rewired.
- Restaurant industry operations are (slowly) looking to and adopting 'how can we collect more data,' through sensor technology (Internet of Things), beacons (IOT) or robust loyalty (rewards), and connecting the customer to purchase information to general behavior. We take these four steps in gaining this intelligence:
    - Collect.
    - Develop/use a customized platform to support it.
    - Promote a culture to analyze and make actionable.
    - Measure and re-collect.

What are the main benefits you have seen from Smoke Stack?

- Insight threads, optimization, clarity
    - The data we've collected has helped us understand our guests in a new way. The data offer insights which then gives us clarity on their buying habits and preferences. Because of this, we are able to optimize our in-store offerings to sales, specials and menu items that our guests truly want.

Are there any lessons you learned from your implementation of data analytics?

- Sometimes, the small stuff is the most powerful.
- Validate conventions and prioritize.
- Reinforce the mantra: 'Don't fail to evolve'.
- Ask the right questions for truly insightful big data.
    - For instance, when we switched from free ice cream to free Wi-Fi, we prioritized asking the right questions. We investigated our target consumers' typical behaviors, which helped us discover their priorities.

Fig & Olive

Fig & Olive, a seven-location New York-based restaurant group, has used guest-management software to track over 500,000 guests and $17.5 million in checks, says “Big Data and Restaurants: Something to Chew On.”

The restaurants have been able to customize the dining experience for individual guests and deliver results with targeted email communications. Its recent “we miss you campaign” offered complimentary crostini to guests who hadn’t dined there in 30 days. The result: almost 300 visits and more than $36,000 in sales, translating into a return of more than seven times the cost of the program.

Matthew Joseph, who leads technology and information systems for the company, says linking POS data with online reservations, plus monitoring social media mentions on Facebook, Twitter or TripAdvisor, helped Fig & Olive create its brand identity and build loyalty.

Software firm Venga’s guest management system combines dining reservations with POS data for Fig & Olive. By connecting purchases to individual customers, it can build profiles on each guest’s habits and preferences. Restaurants use the information to increase visit frequency, customer satisfaction and spending through personalized service and targeted email campaigns.

Panera Bread

Panera Bread’s MyPanera loyalty program tracks guest purchases and habits through loyalty cards, says “Big Data and Restaurants: Something to Chew On.”

Guests receive rewards for purchases or when the chain develops a new item similar to previous purchases. The chain is leveraging its behavior data with primary marketing research and third-party data to guide its brand strategy, drive new customer acquisition, retain existing customers and assist in real-estate planning.

Pizza Hut

Pizza Hut uses guest analytics to capture, leverage and segment customer data based on purchasing tendencies and behavioral indicators, says “Big Data and Restaurants: Something to Chew On.”

Pizza Hut has created over 6,000 customer behavioral groups to predict future purchases and engage its customers in the channels they prefer. As a result, the chain has seen a significant rise in customer retention.

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