Big Data and Restaurants:
Something to Chew On

Big data. It's what Amazon uses to track millions of products and customers to deliver personalized buying suggestions whenever anyone visits its website. Or how Netflix recommends movies to keep its customers coming back.

Maybe you've heard the term, but you don't see how big data could possibly apply to your restaurant. It seems *so big* and so complex.

Actually, big data isn't that big anymore, thanks to tremendous gains in computing power, storage space, access to the cloud, and new software designed to help restaurants of all sizes unlock the secrets of their data and put useful information at their fingertips.

The data from your POS, marketing, accounting, inventory and scheduling systems is a vein of gold just waiting to be mined. Now your establishment can benefit from the same predictive analytics and business insights previously reserved for the likes of Amazon or Google.

This guide will help you understand what big data is and how you can collect, measure and use it to make improvements to your operation and your customers' dining experience. Big data can help you reduce costs and maximize your marketing ROI. It can lead to new customer insights, enhance guest service, build loyalty and increase profits.

> "Savvy restaurant operators leverage today's technology to turn POS and marketing data into actionable knowledge that can yield positive business results."
>
> *Hudson Riehle, SVP of Research, National Restaurant Association*

What is big data?

isa Arthur, who wrote the book "Big Data Marketing," defines big data as "a collection of data from traditional and digital sources inside and outside your company that represents a source for ongoing discovery and analysis."

Most experts describe the characteristics of big data using the three Vs: volume, velocity and variety. Doug Laney of Gartner, a leading information technology research and advisory company, originally made those distinctions in a 2001 paper that

has become the accepted definition of big data. SAS, the business analytics software company, made further refinements to better understand the variables of big data. SAS added two more dimensions to the original big data definition — variability and complexity. In a nutshell, big data encompasses structured and unstructured data — from traditional sources (inside your operation) and digital sources (including those outside your restaurant from the Internet or social media).

Variables of Big Data

Volume

Transaction-based data stored over time, unstructured data from social media, and sensor and machine-to-machine data are examples of large volumes of data that can be easily and inexpensively stored in the cloud. However, with decreased storage costs comes new issues: How do you determine relevance and use analytics to create value from your data?

Velocity

Data is streaming at unprecedented speeds, and it's becoming increasingly difficult to process it in a timely manner. Sensors, smart metering and RFID tags drive the need to deal with torrents of data. As SAS notes, "Reacting quickly enough to deal with data velocity is a challenge for most organizations."

Variety

Data comes in many formats. Some is structured and in numeric databases. Unstructured data include documents, email, video, financial transactions, social posts or customer preferences. "Managing, merging and governing different varieties of data is something many organizations still grapple with," SAS says.

Variability

Data flows may be highly inconsistent because of periodic peaks. Social media may trend. Daily, seasonal or event-triggered peak data loads can be a challenge to manage. Think about the busy times in your restaurant.

Complexity

Data flows from multiple sources. It's a challenge to link, match, cleanse and transform data across systems. However, SAS notes, "It is necessary to connect and correlate relationships, hierarchies and multiple data linkages, or your data can quickly spiral out of control."

Think of the possibilities

As you read through this guide, take a few minutes to jot down the types of data your establishment collects internally and externally, from point-of-sale transactions to customer information such as birthdays and anniversaries. You'll be surprised how much data you have. The question is, are you collecting and processing the data in a way that is useful to your managers and staff?

Mike Hampton, dean of the Chaplin School of Hospitality and Tourism Management at Florida International University, says the purpose of collecting data is to better predict changing guest desires, behaviors and trends. In turn, that data can drive menu changes, service, delivery changes or new location opportunities.

As the case study below demonstrates, there are many, many data points in a restaurant. Everything you do creates data. When you think about it, your restaurant is a complex, multi-faceted operation that produces an incredibly rich array of data.

Think about your product mix, food and beverage costs, labor costs, customer interactions and social media — a few obvious data points. You've got food coming into your kitchen from various suppliers, menu and ingredient considerations, meal preparation, bar management, staffing schedules, table turnover, customer promotions — a ton of information just waiting to be analyzed.

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Before considering what data you should collect and how you can analyze it, take a look at this foodservice example, courtesy of Gartner's Doug Laney. This might whet your appetite for big data and give you a few ideas.

CASE STUDY

QUICKSERVICE DRIVE-THRU

A quickservice chain monitors its drive-thru lanes to determine which items to display on its digital menu board. When lines are longer, the menu features items that can be prepared quickly. When lines are shorter, the menu features higher-margin items that take a bit longer to prepare. Those subtle changes in the menu board wouldn't be possible if the company couldn't tap into a steady stream of data in real time to make instantaneous adjustments.

Measurement leads to improvement

But data isn't just numbers. It's information. And information is power. The faster and more accurately you can access and analyze information about your establishment, the better you can manage, control and improve your operation.

Performance improvement expert and author H. James Harrington once said, "Measurement is the first step that leads to control and eventually to improvement. If you can't measure something, you can't understand it. If you can't understand it, you can't control it. If you can't control it, you can't improve it."

The rate at which you use condiments — that's data. The number of times employees come in late — that's data. The number of comped drinks you give because of service errors — that's data. There are also opportunities to use data to drive incremental revenues and target new customers more effectively.

Your data has value. It may seem trivial or underwhelming at first glance, but even the most discrete bits of information can help you better run your restaurant if you can measure them.

Any information you can collect provides actionable data to identify trends, reduce costs, gain customer insight and provide a better experience. All you need is a way to identify, track and optimize your data.

That sounds like a tall order, but it's not.

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>
> *H. James Harrington*
> *Author*

Gathering the data

Start with data creation. Where does data in your restaurant come from, and how do you store it?

Actually, your staff creates most data. This is information that comes from the operation itself. It's the inventory you take of supplies, food and beverages. All of your sales transactions. The ability of your POS system to break down sales by time, size of party, menu items, even ingredients. Your employee schedules, payroll expenses, your gas and electric bills, credit card sales versus cash. The list goes on and on.

Then there is the data from your customers and outside the operation. That includes guest preferences, such as a customer's favorite table or menu item, special requests, allergies, even photographs.

Other sources of outside information include OpenTable, Facebook, Twitter, Yelp, TripAdvisor, Foursquare, Urbanspoon or Instagram.

Your POS system is your biggest goldmine for information, but many restaurateurs have yet to fully utiize it. Everything runs through your POS, and if you're not taking advantage of its data-collecting and reporting capabilities, you're missing out on huge opportunities.

WHERE DATA COMES FROM

Structured
(inside the business)

- **POS** — What's selling, how much does it cost, who's buying it
- **Suppliers** — Product availability, prices
- **Accounting** — Costs, revenue, margins
- **Labor** — Wages, salaries, tips

Unstructured
(outside the business)

- **Social media** — Likes, trends, retweets, shares, comments
- **Customer profiles and loyalty programs** — Names, addresses, email, 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.

Guest-check analytics to the rescue

Your point-of-sale software generates volumes of data, but most restaurants aren't using that information to their advantage.

Several software solutions can help you analyze that data, known as guest-check analytics. You should be able to draw insights from total sales, total covers, average check, sales and covers by server, food and beverage costs, labor costs by department, the cost of voids and promotions. It also can help you construct server scorecards and identify potential sources of theft or fraud.

Guest check analytics is a growing field, and chances are your POS vendor has add-on service packages that can help you determine what sells well, how often you order certain items and detailed pricing analyses. Equally helpful is the ability to compare key indicators over time, such as how many units of mashed potatoes and gravy you sold last Thanksgiving or how busy the bar was on New Year's Eve.

That's just the beginning when it comes to extracting information from your POS terminals. You might be able to get more granular if you have the capability to identify individual products, such as a brand of beer or wine. For example, GuestMetrics LLC, a

National Restaurant Association partner, has been working for several years to create a "dictionary" of POS abbreviations so codes can be matched with corresponding products.

Unlike grocery stores, restaurants don't have UPC codes on their products, so each restaurant's POS has different codes for the same products. GuestMetrics has created software to "read" these unique codes and digitalize the data to categorize it by brand name, supplier and price class. Then it analyzes and converts the data into easy-to-read dashboards for you and your staff to review.

Data from the kitchen and suppliers also can help you manage recipes and inventory. You'll be able to better control costs and quality and assure consistency.

Thanks to the cloud, much of this data is accessible on tablets or mobile devices. You can be at home, drinking your morning cup of coffee, and pull up sales data for all of your locations. In fact, depending on the programs you're able to access, you might be able to change your menu items in response to trends you see, within a manner of minutes rather than days or weeks.

SMALL BUSINESS AND BIG DATA

The New York Times reports that a growing number of mom-and-pop shops are using **business intelligence (BI) software** to track inventory, better staff their businesses, determine profit margins and achieve greater customer insights.

According to the *Times*, small businesses are using **monitoring software to keep up with Facebook, Twitter, Yelp** and other social media networks. Such software can be programmed to alert companies when they are mentioned so they can respond in a timely fashion.

When it comes to big data, size doesn't matter. In fact, the SMB Group estimates that **18 percent** of small and **57 percent** of medium businesses are currently using BI and analytics solutions.

Watching your labor costs

With big data, you can drill down on labor costs more specifically than in the past. You can compare labor costs to sales, overtime pay, absenteeism, and costs by department and by server. Armed with this information, you can create schedules that accommodate busy and slow times in your restaurant to better manage costs and more efficiently prepare and serve meals.

The next level in analyzing labor costs is to look at the efficiency of your servers. Managers can view individual scorecards that provide insight into a server's performance. That includes a server's average check size, tips, amount of time spent at the table, types of entrées sold and whether the server sells the special, a dessert or bottle of wine.

Smart restaurant managers use that data not to penalize servers but to motivate them to perform better. Some give incentives, such as letting high-performing servers choose the schedules they want or giving awards for better service. By using the scorecards as a teaching tool and motivator, operators are increasing sales and improving the customer experience.

Using data to drive customer experiences

Personalizing customer experiences becomes reality when you draw on all of the data available about your guests. New technology services like Swipely work with your POS system to gather information about your guest checks and present it on a dashboard. Such information includes new and repeat customers, their orders, how long they were at the table and what they tipped.

Bars and restaurants use that data to build customer profiles that include favorite drinks and food. They also use it to create loyalty programs with promotions that target specific items they like to order.

In fact, data-driven insight can maximize your marketing ROI. Scott Shaw, chief innovation officer of Fishbowl, an email marketing company for restaurants and NRA partner, cites a 200-unit casual chain that used guest-level redemption data and real-time promotion tracking to optimize an automated birthday offer. The result was $5 million in incremental sales from the birthday offer. As Shaw says, "They got two new stores for the price of a week's worth of testing."

> " Data-driven insight can maximize your marketing ROI. "
>
> *Scott Shaw*
> *Chief Innovation Officer,*
> *Fishbowl*

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Getting to know your customers

Big data can help you get to know your audience. What are the demographics of your customers? What are their ages? Income levels? Where do they live? Do they have kids? What kind of food do they like? Do they drink wine? Do they have allergies? Where else do they dine out?

Pairing data from traditional internal sources in your operation with external input shows the power of big data.

You can build a customer database with email and by "listening" on social media. Yelp, Urbanspoon, TripAdvisor and Foursquare allow you to see how you're doing, and Facebook, Twitter and Instagram are good for engaging current and prospective guests.

Services like TDn2K's White Box Social Intelligence combine social engagement and measurement tools with operational, sales and competitive data analysis. The service is undergoing testing and isn't widely available yet. However, the company's Black Box Intelligence service, which is available, can compare your operation to your market and national competitors.

Those types of solutions allow you to analyze and track social mentions of food, service, ambiance and intent to return. In addition, you can see how you rate on a restaurant social scoring index, which looks at reviews on leading social media sites and correlates social media ROI with actual sales data.

Food for thought

Are you measuring the performance of your marketing campaigns? Do you know which promotions work? Can you tie your marketing to specific customer preferences, menu items, sales and service? **Can you measure the correlation between menu changes and profitability?**

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Do you have a way to deliver a 360-degree view of the customer to those who need it most? Are you sharing helpful operations and customer data with your staff so they can improve? **Do you have buy-in from everyone on your team?**

. . . .

Do you use OpenTable? How are you using the data? **Are you matching it against your own customer service software?**

. . . .

Are you using data to improve menu items, add new entrées or eliminate ones that aren't popular? **If not, how can you better capture customer feedback, suggestions and monitor social media?**

. . . .

Do you know what social media is saying about your restaurant and other restaurants like yours? **How are you tracking it?**

. . . .

Here are a few examples of how restaurants use data

HAUTE DOGS & FRIES, a two-unit, quickservice restaurant in Alexandria, Va., leverages social media to connect with customers. Being small and community-focused allows the operation to quickly identify market trends and make offers in real-time, says co-owner Lionel Holmes. He monitors social media throughout the day and might post a lunch special at 11 a.m. or a dinner offer at 3 p.m. based on what's trending. "Social media has a pulse and heartbeat," he says. "It's pertinent to today. We like it because it brings us closer to our core demographics, and it's immediate." Haute Dogs & Fries is on Twitter, Facebook and Instagram and uses email to reach customers and build loyalty.

CHICAGO-BASED LEVY'S RESTAURANTS uses big data to win contracts at stadiums and arenas. 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, Ore., to create a highly successful 10,000-square-foot restaurant near the Trailblazers' arena.

FIG & OLIVE, a seven-location New York-based restaurant group, has used guest-management software to track more than 500,000 guests and $17.5 million in checks. 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.

THE SOFTWARE COMPANY VENGA'S guest management system combines dining reservations with point-of-sale data. 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.

Guest-management software can track which guests drink wine or specialty drinks, order seafood, enjoy pasta or have special seating preferences. The software is one step in a big-data process that can help you note trends about individual diners. So rather than lumping your regular customers into groups like "wine lover" or "pasta lover," you can see that a guest always orders a glass of Malbec or a $79 bottle of Cabernet Sauvignon. You can then begin to customize the dining experience for individual guests.

With new customer insight, Florida University's Mike Hampton says your managers and team members can optimize the impression of your brand through suggestive selling and greater customer loyalty.

For example, data tied to your reservation system can provide a sneak peak of which guests are arriving during upcoming shifts. It can alert chefs and servers to regular or VIP customers. Using guest profiles, your servers can subtly suggest menu choices, celebrate birthdays or special occasions, or run specials to drive more business.

The better systems also provide ample opportunities to follow up after the dining experience. For example, you could use email to solicit feedback about the meal and service or remind guests about upcoming events that might interest them. Or you might email guests who had positive dining experiences but hadn't returned in 60 days about a new special. The email can be combined with promotions to generate additional income.

THE BASICS OF BIG DATA

START SMALL. Don't let big data overwhelm you. Divide it into bite-sized pieces you can tackle one step at a time.

HAVE A GOAL IN MIND. What problems are you trying to solve? Are food costs too high? Are there scheduling problems? Do you want to know which menu items are the most popular? Collect the data that makes the most sense to solve these specific challenges.

DON'T GET TECHNOLOGY-TIED. Mobile apps, online ordering and table tablets are amazing tech-nologies, but think about what you're going to do with the data you collect from those channels.

NO "ONE-SIZE FITS ALL" SOLUTION. Many big data solu-tions are available, but no single one will solve all of your prob-lems. Identify your needs, then find a solution that fits.

APPOINT A CHIEF DATA OFFICER. Designate someone in your organization to be your data steward. It could be your IT di-rector or your marketing person, but the person needs to be a silo buster who has your permission to build cross-functional data-collection teams.

IT AND MARKETING ARE CONVERGING. Data-driven mar-keting is the new paradigm. Make sure your IT and marketing teams are working together to drive information-based decisions.

MAKE THE CASE FOR BIG DATA. Make sure your teams understand that big data has bottom-line impact on your operation. Buy-in is essential, especially if you are instituting new procedures.

Protecting guests' privacy

Big data comes with big responsibilities. If you collect data about your customers, you have a responsibility to protect that data so it can't later be used for identity theft or other fraud. You should only collect, use and store guest data in com-pliance with applicable laws, regulations and best practices.

Setting standards for protecting customers' privacy includes, but isn't limited to, letting your guests how their data is being used. You need to give customers a real choice about whether they want their data to be tracked, and let them know that the data you collect is stored and adequately protected.

Four steps to take as you set privacy standards:

• **Develop a privacy policy and privacy notice.** A **privacy policy** is your restaurant's internal gover-nance document, designed to guide the people who handle and manage data collection and analytics in your business. Your policy should outline the steps your company will take to respond to customer opt-out requests in a timely fashion, for example. It should spell out how you will inform guests about data breaches. A **privacy policy** is a public statement that discloses the information your company gathers, how it's gathered, how it's used, who has access, whether it's disclosed to third parties, and if so, for what purpose. It should be posted on your website, at a minimum. Your notice should describe how customers can opt out of having their infor-mation tracked and collected. The opt-out process should be easy, allowing guests to call a toll-free number or send an email.

• **Comply with the standards you've set.** Regularly audit and refine your privacy policy and notice.

• **Investigate third parties.** If you use third parties to collect or analyze guest data, be sure to ask them about their data-protection measures and whether they adhere to applicable laws, regulations and best practices.

• **Understand the law.** As data breaches grow more common, more states are regulating in this area. Make sure you know the laws and regulations about breaches that cover your customers.

Respect for customers' privacy isn't just good for your business and your reputation. Often, it's the law. Consulting with legal counsel about your obligations will protect both your business and your customers.

Loyalty programs yield new insight

Pairing loyalty-program data with other data is another powerful combination.

For example, Scott Shaw from Fishbowl notes that restaurant chains increasingly use their e-clubs as a jumping-off point for more sophisticated programs by appending payment and third-party data from providers such as Experian. The results are powerful and actionable guest insights tied to spend, demographics and menu preferences.

Loyalty programs are on the rise. A recent study by Technomic and American Express found that 44 percent of consumers participate in loyalty/rewards programs at limited-service restaurants, and about a third have signed up for programs at one or more full service restaurants. Eight of 10 participants said they were more likely to frequent a restaurant if they are part of its loyalty program. Sixty-three percent participated in a program that uses a plastic card that can

be entered into a POS system, and 29 percent participated in a program linked to their smart phones.

Restaurants can build loyalty programs by tapping into social media and leveraging online and in-store guest experiences. Reward programs, email clubs, gift programs, comp programs and data insights all drive incremental sales and create guest loyalty.

Starting from scratch? Begin by collecting email addresses. That information might be available from your online reservation system or OpenTable. You can leave comment cards at the table, collect business cards or simply ask guests if they would like to receive email about upcoming specials and events. You also can gather information from your website through signups and offers. There are many ways your marketing team can build an email database. You also might wish to collect birthdays and anniversaries for specials and promotions.

MARKETING GOES DIGITAL

Percentage of restaurant operators who planned to devote more of their resources to the following marketing methods in 2014

	FAMILY DINING	CASUAL DINING	FINE DINING	QUICKSERVICE	FAST CASUAL
Traditional marketing (such as direct mail or newspaper ads)	14%	19%	12%	14%	26%
Electronic marketing (such as email or text messages)	65%	64%	67%	57%	67%
Social marketing (such Facebook ads or special offers via Twitter and Foursquare)	62%	72%	74%	68%	73%

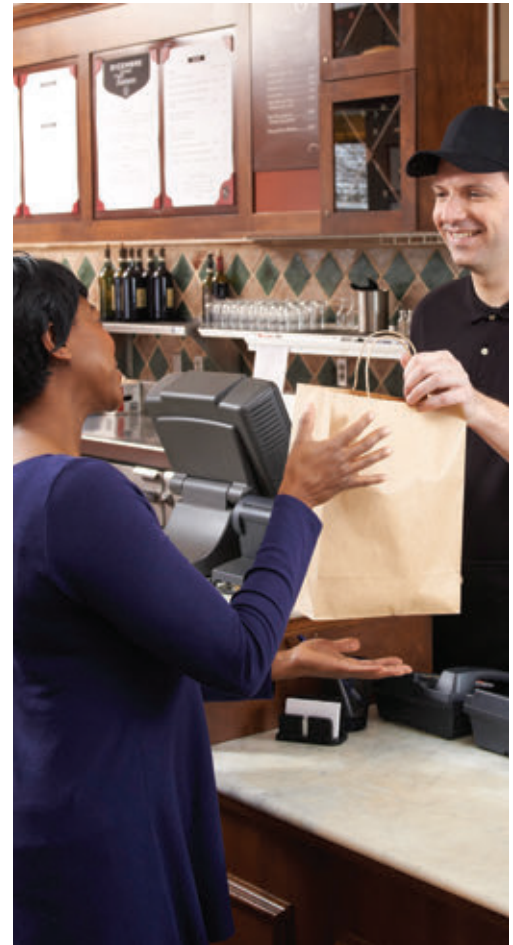*Source: National Restaurant Association, 2014 Restaurant Industry Forecast*

Mobile apps and tabletop technology unlock additional insights

Major chains are experimenting with table tablets that allow customers to view menus, order beverages and dessert, pay the check at the table, play games and provide real-time feedback. Buffalo Wild Wings is rolling out Buzztime's BEOND entertainment platform; Chili's has installed Android Ziosk tablets at all of its locations; and Applebee's is using E la Carte Presto tablets in its U.S. locations.

The primary benefits of these tabletop technologies are lower table turn times, higher tips for servers, higher check averages and a better customer experience. The added benefit of tabletop technology and mobile applications is the additional customer insight and data they can yield when deployed properly.

Digital ordering systems, such as Olo and EatStreet seamlessly sync with your POS, payment provider and loyalty program to allow customers to order and pay on mobile devices. Five Guys Burgers and Fries, Noodles & Company and Cold Stone Creamery are some of the companies that use Olo. Papa John's and The Pita Pit have deployed EatStreet.

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CASE STUDIES

The web and mobile ordering platform at FIVE GUYS has resulted in a 25 percent higher average order size than phone orders. The percentage of repeat users has more than quadrupled since the program's inception, with three of four customers returning to place new orders. The order-ahead program gives customers a better experience when they receive orders faster by skipping the line. And Five Guys uses the data gathered through the app to unlock a deeper understanding of its most loyal customers.

GROUCHO'S DELI, a 28-unit delicatessen, wanted to reach its full potential for operational throughput and increased sales. Crew members struggled with balancing in-store traffic of highly customized sandwich orders with incoming catering requests over the phone. The deli believed it could handle more volume and support after-hours catering sales by turning to digital ordering, while providing a better customer experience with a complete ordering and loyalty application.

Working with Heartland to implement the Heartland ToGo solution, Groucho's was able to implement a dynamic mobile and online solution fully integrated with the existing loyalty program. Deploying Heartland ToGo has given Groucho's a throughput boost, with a mobile app that now enables customers to personalize their orders ahead of time, freeing staff to focus on more in-store guests in the process. Early results have been impressive: In the first three months following the launch, the app download rate has increased by more than 400 percent.

In addition, the new platform provides Groucho's with greater access to a deeper level of customer information than with traditional orders. By combining loyalty and order convenience digitally, the company now has insight into a registered user's purchase history, visit patterns and demographics, making it easier to target segmented groups.

Limitations of big data

You might have heard the expression, "Garbage in, garbage out," with respect to computers. GIGO applies to big data as well. Muddled data in will mean muddled information out.

Data quality has become a growing issue, especially demographic data derived from surveys. For example, most restaurants don't ask their customers' age. Those that do say customers often leave that question blank. And if they do answer, there's no way to tell whether guests state their correct age. Paytronix found that parents often don't say whether they have children, yet they are a key demographic group with decidedly different needs and expectations than guests without children.

So be careful about verifying the quality of data you use. How trustworthy is it? Where does it come from? Are there intermediary steps before it arrives at your restaurant?

Understand, too, the difference between reporting and analyzing data. A simple spreadsheet report or data dump isn't the same as advanced analytics that allow data to be queried and sorted in ways not available in a table or report. Make sure you use your data to its fullest potential.

BIG DEALS MAKE BIG DATA HOT

Big data in the hospitality industry is hot right now. Priceline recently announced that it planned to purchase OpenTable for $2.6 billion. Why? It wanted more data on consumer behavior and to better understand what is driving purchasing decisions in the restaurant/hospitality space.

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An even bigger deal, at $5.3 billion, is Oracle's decision to buy Micros Systems, the sales, customer service and inventory software maker for restaurants, hotels and retail stores. Micros itself has shifted in recent years from producing computer-based sales systems to mobile systems that operate on the cloud, giving restaurants real-time access to data.

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What are you waiting for?

Big data isn't just for tech giants like Google and Amazon. Restaurants can take advantage of sophisticated analytical tools that just a few years ago were out of reach for all but the largest companies. With increased competition and growing demand for personalized service, you owe it to yourself and your operation to explore your big data options. At the very least, you'll discover a wealth of information to explore and draw insights from.

Big data checklist

Big data equals big opportunities for your restaurant. Ideally, this guide has given you some ideas and gotten your creative juices flowing. So now what? Here are some suggestions to delve deeper into big data:

✔ **TALK TO YOUR POS VENDOR.** Find out whether you're getting all the information readily available from the data you collect. Your POS system should be able to help you identify which menu items are most popular, which marketing efforts show positive results, and which guests use incentive and reward programs. Most systems also can store names, addresses, telephone numbers and emails that guests provide when ordering online.

✔ **TAKE THE TIME TO CAREFULLY CATEGORIZE** food and beverage items in your POS system. To get the most from your POS data, you'll need to properly assign your inventory to the correct departments and categories. Be as specific as possible.

✔ **EVALUATE WHAT YOUR PAYMENTS PROCESSOR MAY HAVE TO OFFER.** You may be surprised at the amount of data it has about your guests. Information may be available about purchases at other restaurants and retailers, as well as demographic data. For example, grocery chains long have mined customer data from loyalty cards to determine buying habits and trends.

✔ **FIND OUT WHETHER ALL YOUR SYSTEMS "TALK TO EACH OTHER."** Your restaurant is a complex ecosystem of software and networks. 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 that data. Matthew Joseph, director of technology and information systems at Fig & Olive, says that the "next big step" in data analytics for restaurants is to figure out how to bring together these disparate information sources. "What good is all that data if you can't make sense of it?" he asks.

✔ **AVOID DROWNING IN TOO MUCH DATA,** Rob Bailey, CEO of DataSift, cautions in a *Forbes* magazine blog. "Enterprises need to define a focused strategy and identify exactly the data they need, rather than trying to analyze everything. For those that are able to do this, valuable insights await," he says.

✔ **LOOK FOR SOFTWARE THAT CAN INTEGRATE UNSTRUCTURED DATA** with traditional, structured data sources. The ability to monitor customer review sites, blogs, forums and social media sites will give you insights about customers, products and competitors. From online surveys and feedback streams, you can determine if menu items need to be improved or changed.

✔ **DETERMINE YOUR GOALS,** and identify the type of data you need. Are you revenue-driven? Food-driven? If your goal is to reduce costs, streamline operations or better manage your staff, you might be interested in inventory control, supply chain management or scheduling solutions. If you're more interested in food trends, menu options and improving the customer experience, your focus probably will be on social media, customer demographics and dining-out trends. You might need to invest in different solutions, depending on your goals.

✔ **TAKE ADVANTAGE OF APPS LIKE FOOD GENIUS,** which track millions of menu items in different regions and identify dining trends to predict the popularity of a new dish.

✔ **RECOGNIZE THAT EVEN THE SMALLEST OPERATIONS** can benefit from big data solutions. But size them to fit your operation and budget. You might be able to do some analysis yourself or without spending a lot on new software.