From Intuition to Data-Driven Analytics: The Case of Dig

BY DANIEL GUETTA[*]

Dig (formerly Dig Inn[1]) has built a winning concept: deliver a delicious vegetable-first menu sourced directly from farms, price each meal affordably, and have a team of skilled chefs prepare everything on-site, from charred chicken to roasted sweet potatoes. On a typical day, it's not unusual to see substantial queues form outside Dig's restaurants, thankfully kept moving rapidly by the well-trained staff behind the counter. With almost 30 restaurants in New York City, Rye Brook, and Boston as of the time this case was written, and healthy venture capital backing, Dig is poised for expansion.

Founded in 2011, Dig has been shepherded by its management team from a single restaurant to a brand with a multicity reach. This evolution has involved significant changes in Dig's menu, but also in its operations—for example, making its goods available on delivery apps, and launching a catering service, in some cases developing a delivery-specific menu.[2] As it grew, the company had collected data on every aspect of its operations and management, but the focus was on perfecting the product and defining Dig's identity. Analyses using data were often one-off and involved painstakingly piecing together disparate data sets to answer specific questions, rather than relying on more robust systems and reporting tools such as dashboards.

In June 2019, as Dig was ready for its next phase of expansion, the management team realized it would need to lean on its data more heavily than it had in the past. With new restaurants opening, each as different as the last, it became less and less sustainable to rely on management intuition to make decisions. The overarching challenge faced by Shereen Asmat, senior manager, data and operational products, and her team was how to support expansion beyond

the three cities in which Dig operated. She was aware that as Dig's restaurant footprint and customer base grew, careful attention needed to be paid to every part of its supply chain.

"We want to build our network in the best way possible," said Asmat. "As we grow, we will face increasing complexity: differences in demand, how much local produce and meat we can order, the supply of labor and shifting landscape of labor laws in the United States, and other factors which will have an impact on our business. My team's job will be to unlock the insights in our data to help us with these growing challenges."

From the Pump Energy Food to Dig Inn

After graduating from Brown University, Dig founder Adam Eskin worked for Wexford Capital, a Greenwich, CT-based private-equity firm. Tasked with searching for business concepts, Eskin came across the Pump Energy Food (the Pump), a chain of five Manhattan restaurants founded in 1997 by Steve and Elena Kapelonis.[3] The Pump was known for its menu of high-protein food targeted at fitness enthusiasts, with a menu that featured items such as egg white omelets, healthy oils, and salads. Eskin, an associate at Wexford, convinced his firm to purchase a majority stake in the Pump, and was subsequently put in charge of the investment in December 2006. He made improvements immediately, setting up an office and bringing on board a branding expert to refresh the Pump's logo, website, and the look and feel of its restaurants.

With a view to reducing complexity, Eskin pared the Pump's menu from 150 items to a focused selection of healthy foods.[4] As he continued to make changes to the Pump over the next four years, he saw an opportunity to make a major pivot for the chain.

He recalled: "I quickly realized, there was an untapped market for the way I personally like to eat: fresh, vegetable-driven food you can eat every day. So in 2011, I rebranded the business as Dig Inn with a completely new menu focused on local, seasonal produce at an accessible price point."[5]

Eskin noted that while the Pump's high-protein, low-fat foods were appealing to the bodybuilder crowd, there was a general perception that these healthy foods were "low-taste" for a broader audience. His key insight was that healthy food could be tasty. Dishes such as braised beef with fresh oregano and red wine vinegar, shaved red cabbage with mustard seed and Italian parsley, and apple-braised Swiss chard with walnuts could deliver nutrition deliciously. "People want more flavor—eating is an experience for all to enjoy," Eskin said.

Customer response to the rebranding of the Pump to Dig was great: "So far, the response has been fantastic," said Eskin. "People have become a lot more knowledgeable about food and health over the last decade, particularly when it comes to where their food comes from and how it is prepared—they seem to really appreciate the work that goes into our…philosophy."[6]

Dig's business model: delicious local food at an affordable price point

At the intersection between traditional full-service restaurants and fast-food joints, the fast-casual sector is small but rapidly growing. It comprises restaurants that typically feature over-the-counter service, but are more upscale than fast-food chains like McDonald's or Burger King, in terms of decor, service, and menu. Indeed, a fair share of the segment focuses on healthier ingredients than traditional fast food has, and the average fast-casual consumer is looking for healthier options.[7] As a result, the typical fast-casual meal costs $12, more than twice the average fast-food check size of $5.[8] The sector is still small, accounting for only 7.7% of the $780 billion in restaurant sales in 2016,[9] but it is growing meteorically. In 2018, within the top 500 chain restaurant groups in the United States, fast-casual chains generated $42.2 billion in revenue, up 8% from the year before.[10]

At first glance, Dig is similar to many restaurants in the fast-casual sector, but there are some key differences. "We don't think of ourselves as a fast-casual chain," remarked Asmat. Indeed, Dig's concept differs from that of other fast-casual restaurants in key ways. The company focuses on intentional sourcing – a process that focuses on real relationships with small and minority-owned farms, creating fair contracts and helping those farmers become more sustainable. Eskin described an early challenge: "One of our initial struggles was figuring out what types of dishes to serve on our menu—what our customers wanted, and what felt like 'us.' We tried juices, shakes, soups, sandwiches. After a lot of trial and error, we arrived at a menu that's perfect for Dig: choose-your-own bowls made from wholesome mains and sides that are way more sustaining than salad. We want to serve the kind of food you'd expect in a home-cooked meal—just made by our chefs!"[11]

To ensure the company could stay true to this mission while producing appealing menus, Dig hired a chief culinary officer, Matt Weingarten, who designed menus including gourmet mains and sides,[12] and decided to price its meals in the $10 range. Exhibit 1 shows the menu at Dig in September 2019. Staying profitable at this price point is a challenge, and it requires a finely-tuned value chain, from local farms where food is harvested and processed, to restaurants where it is cooked and served to customers.

The value chain—from farmers to chefs to consumers

At the very top of the value chain lie the local farmers from whom Dig sources its produce. Dig usually takes a collaborative approach to working with these farmers and sits down with them regularly to map out annual demand and place orders for fulfillment over the seasons. This allows the company to nurture its partners and be as efficient as possible in the way it procures its products. Each day, farmers and partners deliver produce to Dig's Supply Center and then send it out to the restaurants. Dig estimates that it can take as little as three days for produce to be picked, refrigerated, driven to Dig restaurants, and prepared by a team of chefs in a restaurant. In 2019, Dig is projected to purchase 9 million pounds of vegetables from over 130 farmers and partners and ranchers, including 100,000 from Dig Acres, Dig's Farm.

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A key part of Dig's value chain is its ability to work with and nurture these partners, and to balance customer needs and tastes with the changing availability of produce in every season. Considerable skill is required to take the pulse of customer's likes and translate these tastes into seasonal menus. In the words of Adam Eskin:

> Our chefs face a challenge when cooking with produce that varies with the seasons. It's not one-size-fits-all cooking in our restaurants—our chefs have to respond to the raw ingredients and adjust recipes based on what they receive fresh from the farm. This type of cooking takes more time to teach, especially for our chefs-in-training, many of whom have never cooked professionally before. We recognize this challenge and are committed to mentoring our trainees—from knife skills classes to trips to the Dig Farm.[13] We do this not only to maintain the quality of our food but to help our team members grow their culinary careers.[14]

When it comes to food preparation, Dig also does things differently. "Everything is cooked in the restaurant, and every Dig employee is given training in food preparation, with a special focus on knife skills," Asmat noted. This means every employee can, and does, step in to help with food preparation when required. "It's important for us that every employee have that experience with the food we serve, but it also means we need to hire more carefully than our competitors. The skill set required to work at Dig is broader than at an average fast-casual restaurant."

Preparing every item fresh in every restaurant considerably complicates the staffing challenge. Indeed, Dig has to make sure that every restaurant is adequately staffed not only to serve its customers but also to prepare the food. This task is made tougher by the fact that demand at Dig is very variable and can depend on the time of day, the time of year, the weather, local events, and many other factors.

Staffing is not the only aspect of a Dig restaurant that is structured with a food-first mentality. Each Dig restaurant is uniquely designed, and a significant part of the restaurant's space is fashioned to ensure fresh food can be prepared, stored, and served. Finished items are portioned into large steel bowls and stocked on shelves behind a long counter, designed to show off the items and serve customers efficiently.

The majority of orders at Dig include a bowl, comprising one base (chosen from three options), two market sides (chosen from around eight options), and a main (chosen from around six options), but customers can also order any of those items alone. Dig also sells a variety of drinks and snacks.

Food ordering and provision are the last crucial links in Dig's value chain. The bulk of Dig's orders happen in-store, as described above, but Dig quickly realized there was a lot of value to be captured from off-site orders too. In particular, customers can order food through Dig in three ways besides in-store. They can use the app to place an order for pickup in-store, they can place an order for delivery, and, finally, Dig has a catering menu for larger orders.

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Initially, these modalities relied heavily on Dig's existing infrastructure for in-store orders. Dig contracted with third-party services to deliver it items, and customers could use those services to order from Dig. These options were immediately successful; seven years after its opening, no less than 30% of sales at the East 52nd Street restaurant came from deliveries.[15] There were, however, some issues: Considering every possible option in constructing a Dig bowl, there are approximately 1500 possible Dig bowls customers might order, leaving ample room for errors, which are impossible to fix once the bowl has left the restaurant. Temperature is also an issue; in-store orders are consumed directly. Others might spend 15 to 60 minutes sitting and in transport before being consumed.

As Dig's fast casual business took off, the team was eager to continue to innovate and push the boundaries on how customers experienced Dig. As they pored over customer feedback and industry trends, it became evident that delivery was a major area of opportunity. Online food delivery was an $84.6 billion industry in 2018[16], but Dig's investigations revealed that customers were tolerating a sub-standard experience, from soggy food to delayed deliveries with minimal communication. To tackle this challenge, Dig beta launched Room Service in 2019 – a brand-new, reimagined delivery service, with an entirely new menu and platform, built and optimized specifically for delivery.

In April 2019, Eskin and his team were looking to expand Dig beyond its current three-city footprint. Another 24 units were envisioned, supported by an investment of $20 million, $15 million of which came from Danny Meyer's Enlightened Hospitality Investments equity fund. Dig had previously raised $30 million in a Series D fund led by Avalt, with Monogram Capital Partners and Bill Allen, the former CEO of OSI Restaurant Partners.[17]

As part of the strategy to expand, the Dig team wanted to ensure that it had visibility over every aspect of its value chain. Entering new markets such as Philadelphia, for example, would require piecing together a new supply chain that included local farmers, finding locations, hiring staff, and designing menus and work schedules.

The move to data-driven

Exciting as those expansion plans were, they would come with their own set of challenges. Intuition, skill, and experience are powerful tools. Unfortunately, they come with a downside: they cannot scale.

"We've historically had a measured approach to growth," said Asmat. "Being in New York and having restaurants in one place allowed us to have consistency in food and culture. Launching in Boston was our first take at seeing if we can maintain our standards outside the city. We needed to find local leadership that could represent the brand. We also needed to get used to reducing our reliance on geographic proximity without sacrificing our commitment to consistency."

In a new world with many more restaurants, Dig has found it more difficult to concurrently use intuition on every restaurant for every decision. Dig would have to start leaning more

heavily on its data to assist in decision making, and Asmat's team would have to figure out how to use data to inform decisions at every stage in the value chain.

In some sense, though, using data to make decisions would only be the last stage of this journey for Dig. Many accounts of data-driven decision making focus on the last mile: using insightful dashboards and complex predictive analytic models, for example. But these efforts need a foundation to rest on—a solid, unified, trustworthy data asset that can act as a source of truth for the entire company.

Dig is no exception, and Asmat was only too aware of this. "It's so easy to fool yourself into thinking collecting data is the same as collecting *useful* data, but as soon as you start analyzing it, you quickly realize how painful it can be. Take one example—our HR data. Out of necessity, we've gotten to a point where we use multiple systems to track our employees and their hours. So asking simple questions like 'on average, how many workers work at each restaurant?' can take one of my most talented analysts half a day. They first need to query each data set, combine the results, and then spend a significant amount of time to ensure their results are correct."

This is often a frustrating place to be for companies trying to make better use of their data, and it is tempting to think these growing pains can be avoided by being more rigorous with data from the start. But it's rarely so simple. "Looking back, I don't think I'd have done much differently." Asmat said. "It would have been foolish to spend valuable time and resources on this when we were trying to grow and find our identity. Frankly, I feel that the fact we even collected any data at all in our early days puts us ahead of the curve!" In fact, if Dig had wanted to focus on this earlier, it is unclear whether the company would have been able to. It is difficult to build a solid data foundation in a vacuum, without people to use it day to day and suggest incremental improvements. It's easy to think these issues only affect large legacy companies with huge amounts of data and lumbering infrastructures, but no one is immune.

This is only one example of the issues that can arise. Comparing simple metrics across data sets can be a challenge. For example, consider "net sales"—does that include online orders? What about returns, refunds, and credits? And of course, things get more complicated when you start to compare completely different data sets, for example, in assessing the impact of staffing on sales.

Before they could systematically use their data to assist decision making, Asmat's team had to create processes that would take these disparate data assets and combine them into a database that could be used to quickly and efficiently answer questions – a "source of truth". "Much of our work so far has been around getting our infrastructure ready to support these decisions," said Asmat, "and we've invested considerable resources into making this happen—including a team of data engineers that work closely with my team."

A key part of creating such a database is deciding what tools to use to host it. The scale of data at most companies today makes simple desktop tools such as Microsoft Excel or Microsoft Access inadequate. Thankfully, there is a veritable cottage industry of companies that provide

cloud-based solutions for precisely this purpose. Among others, Dig uses Google BigQuery and Looker. Exhibits 2 and 3 provide screenshots of these tools as used by Asmat's team at Dig.

Beyond the technical hurdles, culture can also get in the way of these efforts. Launching a project too early, based on a faulty data foundation, can backfire if it comes face to face with savvy executives who know their data inside out. As soon as they detect issues with initial results, their trust in the entire project is likely to vanish.

"We're so fortunate at Dig," Asmat said, "in that the whole company is on board with making the company more data driven, from our CEO Adam Eskin down. Everyone understands it's an incremental process, and that there will be hiccups along the way, and they're very supportive of our push to build a solid data foundation first. I've personally found we've built a lot of goodwill by being fully transparent with the entire company. Instead of going away and working in isolation, we focus on small, achievable goals like producing dashboards that will be immediately useful, and we keep everyone up to date on our progress."

This is often a winning strategy. From a theoretical perspective, it is tempting to attempt an ambitious top-down redesign of every system and every dataset from the start. Such approaches often fail for a number of reasons. First, it is easy to underestimate the amount of work that will be required from the outset, which can result in multiple costly delays. Second, a top-down redesign sometimes requires tearing up current systems and starting from scratch – this means there is little to show until the very end of the project, which can exacerbate the impact of delays. Third, a company's operations and corresponding data collection frameworks are rarely static – with a time-consuming top-down approach, the reality on the ground is likely to change before the project is complete, and by the time it is delivered, it is likely to be out of date. Finally, in implementing a top-down approach, it can be tempting to silo the efforts from the rest of the company after the initial project planning phase. This is invariably a bad idea – even the most thorough project plans are unlikely to capture every complexity in a business.

Dig's approach was designed to avoid these pitfalls. By focusing on specific, pressing goals, Asmat and her team would be forced to maintain tight contact with relevant teams, and to produce directly actionable work at every step. Of course, the overall project from start to finish might take longer, but the results are guaranteed to produce value every step of the way.

Asked for examples, Asmat's eyes lit up.

> For a start, one of our most important decisions is what to put on our menu. We love rolling with the seasons – we change our menu seasonally, and often run short specials driven by what our farmers produce. Historically, we've always relied on our sales data to issue a weekly report tracking each product's performance. Unfortunately, these were static reports produced by one-off analyses, and over the years they grew into a mess of spreadsheets and Google Docs. So when it came to making decisions for the future based on year-on-year data, we just had to rely on

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our intuition, which could be biased by our preferences. For example, we're a pretty healthy bunch at Dig, and there's a running joke in the office that we eat conspicuously less mac and cheese than the rest of America! Using our new data foundation, we can pull up historical product performance data, and I've lost track of all the times we've used this to make smarter decisions about what special to run (sometimes nixing things that sounded fun to us, but that the data revealed wouldn't perform very well). I can even think of one instance where what we discovered affected our marketing efforts – our customers *loved* our Thanksgiving special, and so we really leaned in to the concept.

Or here's another example, in a completely different area. One of our priorities at Dig is training our staff and helping them grow in their careers. One of the key indicators that a member of staff might be struggling is if they often fail to show up for their shifts. In the past, calculating the number of no-shows was a deeply laborious process, because it involved combining datasets from two sources – first, data from our scheduling system to check if the employee was *supposed* to show up, and then data from our payroll system to see if they *actually* showed up. Now that we've put the systems on the same footing, it's amazing how granular we can get. Not only can we identify individual employees of concern, we can also use a restaurant's performance as an indicator of the culture there and take remedial action if any location is lagging. Finally, we can provide valuable insights to our training team – if some specific roles tend to lead to more no-shows, perhaps we need to re-frame the role or how we train for it.

Oh, and how could I forget food waste? We obviously want to make sure we use every last bit of food we order, but figuring out how much food a restaurant is wasting used to be such a headache. We had to combine sales data from every ordering system – in-store, delivery, catering, etc… – use it to figure out how much we *should* have ordered and then compare it to data from our ordering system to figure out how much we *did* order (you won't be surprised to hear we have multiple ordering systems too). And don't even get me started on how hard it was to compare these metrics across restaurants. Now, we can quickly rank our restaurants in order of how wasteful they are, and help our struggling restaurants learn from our efficient ones.

Exhibit 4 shows an example of one of the dashboards Asmat's team built as part of this effort, to track the performance of Dig's supply chain over time. Before this latest effort, producing the dashboard might have taken an analyst the better part of a week. Now that the team has unified the datasets from which this dashboard feeds, it constantly updates and provides valuable insights to Dig's management team in real-time.

As Dig embarked upon its expansion, Asmat's eyes were firmly set on empowering everyone at Dig—from management to team members in restaurants—with the wealth of data she and her team had available. There was a lot of work left to do, but given the payoff so far, she was

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confident her approach of working hand-in-hand with the business would produce results that would be worth the effort. "Come back next year and let's have this conversation again; you won't be able to stop me after just three examples!"

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Exhibits

Exhibit 1: Dig Inn – menu

Source: https://www.diginn.com/menu/

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Exhibit 2: Screenshot of Dig's BigQuery environment

(Note: confidential details have been obscured)

Source: Dig

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Exhibit 3: Screenshot of Dig's Looker instance

(Note: confidential details have been obscured)

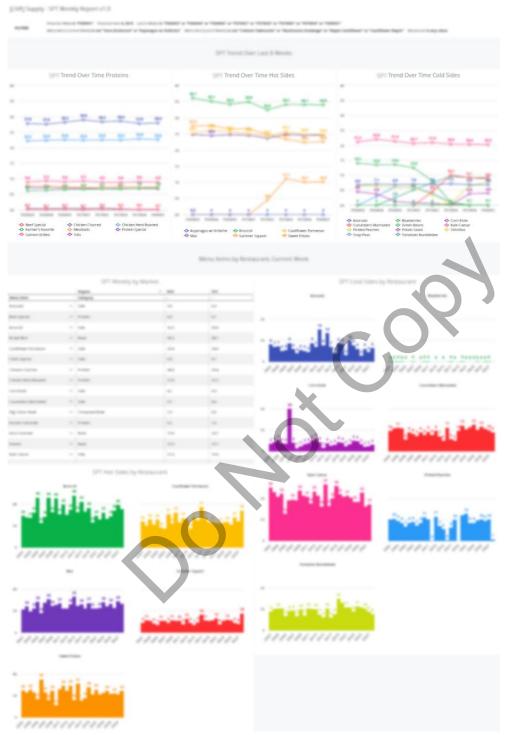*Source*: Dig

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Exhibit 4: Screenshot of Dig's Weekly Supply Chain Report

(Note: parts of the image have been blurred and units have been obscured to hide confidential information. These plots do *not* simply represent item demand)

Source: Dig

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Endnotes

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