

McDonald's: Give me a value meal and hold the AI*

Sitting on the set of Squawk Box at the Paris Olympics,¹ McDonald's CEO Chris Kempczinski lamented the pull-back of the global consumer. With the Eiffel Tower as the show's backdrop, he noted that 2024 had been challenging. Starting in the US and spreading throughout McDonald's international markets, inflation was impacting consumers, particularly those with low incomes. The trend began during COVID-19 and escalated, driving costs up 40% since 2019 with corresponding price increases. U.S. same-store sales in the quarter ending in June 2024 were down nearly 1%, the first such decline since 2020.²

The company had found some traction over the summer in its new value meal bundles—a \$5 meal that included four-piece Chicken McNuggets, a small fries, a small drink, and a choice of a McDouble or McChicken sandwich. Kempczinski noted that they planned to extend the value pricing into the fall, calling it the first chapter in a multi-chapter value playbook. But the company also faced social challenges around the world, from Muslim boycotts arising from franchiser actions in Israel to controversies over cheese alternatives in India.^{3,4} Closer to home in the US, McDonald's faced increased labor costs from inflation and regulatory actions like California's mandated \$20/hour for large quick-serve restaurants (QSR). McDonald's had also just pulled the plug on a partnership with IBM to roll out an AI ordering platform in its drive-throughs, although Kempczinski made it clear that such technologies would likely be part of McDonald's future.⁵

Making smiles

After seven decades of growth, McDonald's had become an American icon and the world's most ubiquitous restaurant. Starting as a hot dog stand, the McDonald brothers' first restaurant in 1954 had no play area, no Happy Meals, and didn't even serve hamburgers. Ray Kroc transformed that concept into a fast-food machine, starting with hamburgers and fries and changing with American tastes and culture. In 2024, nearly 70 million⁶ people visited one of over 41,000 restaurants in over 100 countries daily. That translates to more than 25 billion customer visits a year with system-wide sales[†] of over \$130 billion.^{7, 8}

From the earliest McDonald's kitchens of the 1950s, the production system was designed around efficiency and consistent quality. Restaurants uniformly aimed for high-quality, low-cost food that was served quickly in a friendly, clean environment. For the first 50 years, fast-food restaurants focused primarily on *fast*. For McDonald's, that meant a carefully managed make-to-stock system where kitchens were focused on delivering batches of sandwiches to replenish

* This case was written by M. Eric Johnson for class discussion rather than to illustrate effective or ineffective managerial decisions. © M. Eric Johnson. 4/22/25

† Systemwide sales include sales at all restaurants, whether owned and operated by the Company or by franchisees.

inventory that waited in a warmer (called the chute) for arriving customers (see Exhibit 1). The benefit of this system was speed (see Exhibit 2a for a detailed process description). A 1980 side-by-side comparison of McDonald's and Burger King stores in similar markets showed that McDonald's was the speed king, with service times (including waiting) averaging 2 minutes and 3 seconds⁹ compared with over 4 minutes at Burger King¹⁰. However, speed came at the expense of customization and freshness. This was a significant comparison that Burger King exploited through its made-to-order system (see Exhibit 2b).

With a very similar menu, Burger King created a distinct niche among fast food diners due to both the taste of its food and its flexibility. It developed an assembly-line process that allowed quick *customized* service and promoted this distinction with the well-known advertising jingle:

Hold the pickles, hold the lettuce
Special orders don't upset us
All we ask is that you let us
Serve it your way.

Over time, McDonald's felt increasing pressure from Burger King to provide more customization. So, in 2000, McDonald's rolled out new kitchen technology that allowed them to make-to-order (see Exhibit 2c for a description of *Made-For-You*). Made-for-you was well received by customers but came at the expense of customer service time. That change, along with many menu additions from pizza and veggie burgers to popcorn and pasta (all flops), narrowed the speed difference between McDonald's and Burger King (see Exhibit 3).

Accelerating the Arches

After years of flat revenue growth, Kempczinski excited Wall Street with a bold growth strategy launched in 2020 called *Accelerating the Arches*, based on three pillars (see Exhibit 4):

Maximize Marketing impact through a strong connection to value and affordability, feel-good moments, and culture. Overall, McDonald's hoped to build brand value and trust by clearly articulating their mission to feed and foster communities.

Commit to the Core meant focusing on familiar favorites like fries, Chicken McNuggets, and 17 key "brand equities" that each represented over a billion dollars in sales, like McMac and McMuffin. McDonald's also strove to build "equities" in chicken, like the McCrispy.

Double Down on the 4 Ds operating strategy, including Digital, Delivery, Drive Thru, and Development. Digital involved several initiatives, including a mobile app, order kiosk, and dynamic order boards in both the drive-thru and restaurant. Delivery was an emerging delivery option for orders placed through the mobile app. Drive-Thru included continued innovation in speed and volume, including AI voice ordering and digital order boards. Development was a plan to open 10,000 new stores, reaching 50,000 restaurants by the end of 2027.

Doubling Down on the 4 Ds

Digital

A key thrust of McDonald's strategy was digital transformation. The initiatives started inside the stores when McDonald's began rolling out self-ordering kiosks in 2015 (see Exhibit 5). The kiosks were widespread by 2020 (just in time for COVID, which closed in-store dining).

However, as customers returned, the order kiosks grew in popularity. Customers could place a customized order and pay with a credit card. However, they still had to go to the counter to finalize the transaction if they wanted to pay with cash. In the fall of 2024, McDonald's began experimenting¹¹ with kiosks that accepted cash and provided change. Given the push towards value, cash customers were an essential value market segment.

At the same time as the kiosk rollout (2015), McDonald's introduced a mobile app, initially allowing users to browse the menu and save or redeem coupons (early franchisee app experiments in the San Francisco Bay Area showed the potential¹²). In 2017, new features were added, enabling customers to customize their orders and quickly reorder past items. In 2019, McDonald's took an equity stake in mobile app developer Plexure,¹³ which supported ongoing app development.¹⁴ By 2021, the company expanded the app by launching its first loyalty program, MyMcDonald's Rewards.¹⁵ In 2022, the McDonald's app was downloaded by 127 million people worldwide, including 40 million in the U.S., making it the most downloaded food app globally. In comparison, the next most downloaded apps were UberEats, with 60 million downloads, and DoorDash, with 42 million—combined, still fell short of McDonald's. In the U.S., the McDonald's app had more downloads than the next three most popular fast-food apps combined: Starbucks (13.6 million), Domino's (10.6 million), and Taco Bell (10.4 million). By the end of 2023, McDonald's was connecting with 150 million active loyalty users across 50 markets, with a four-year goal of reaching 250 million active loyalty users by 2027.¹⁶

Delivery

McDonald's offered delivery service in many markets. Orders placed on the App could be delivered to your home or office for a delivery fee. Small orders below a certain threshold also incurred an additional cost. Long-term partners like DoorDash, Uber Eats, and Delivero handled the delivery.

Drive-Thru Service (and more digital)

Many customers in the 1960s-1970s dined inside the restaurants, and even those taking food away often came inside the restaurant to order food. Over time, take-out and drive-through consumption became steadily more popular. That trend accelerated in the 1980s, with off-premise consumption increasing from 23% in 1982 to 62% in 1990.¹⁷ The shifting preference towards drive-through consumption continued through the 2000s, hitting another major inflection point in 2020 during COVID-19 when dine-in service was closed.¹⁸ McDonald's was well-positioned for the change, with 95% of its US restaurants having a drive-through (65% of global restaurants). While post-COVID dine-in service returned, many customers had forever changed to drive-thru patrons, shifting competition to speed at the take-out window.

From its earliest days as a single window on the store's side to order and pick up food, McDonald's continually innovated to capture customers who wanted to stay in their cars. By 2024, a typical drive-thru configuration included two order lanes at the back of the restaurant. Customers would pull up, view the menu board, and place an order through a speaker connected to a worker inside the restaurant. Customers would then merge into a single lane of traffic that followed the side of the restaurant, having two or three windows spaced along the length of the building. The first window was used to pay for the order, and the second was used to pick it up. With just two windows, if an order wasn't ready when the car reached the second window, the car would have to wait, blocking the customers behind it. Some stores would direct the waiting vehicle to pull into a parking spot near the front of the store, and a worker would bring the food out when it was ready. In stores with a third window, cars could pull ahead to the third window to wait (see Exhibit 6a). This allowed cars behind to continue being served, and protected both the guest and the employee "running" the food outside.

Besides the physical drive-thru configuration, McDonald's spent years improving the speaker system and menu board to smooth the order process. One significant breakthrough was the order confirmation screen. Verbally confirming the order had long been the final step in the order process, and visually projecting the order as it was placed increased order accuracy. McDonald's worked with long-time technology partners like Coats¹⁹ to develop digital order boards supported by content management systems that allowed them to dynamically update the menu board and digitally interact with the customer (see Exhibit 6b).

Both inside and outside the stores, McDonald's was working on digital order boards that were smart and dynamic. To accelerate McDonald's digital strategy, it acquired a technology firm called Dynamic Yield in 2019 for more than \$300 million, making it the largest acquisition in over a decade.²⁰ Dynamic Yield used machine learning on customer and operations data to personalize digital promotions. The software was integrated into McDonald's digital order board, allowing it to customize messaging and highlight popular items based on the time of day, store workload, location, and learning from the customer decision logic. For example, based on past ordering patterns, customers were presented with items that paired well with their existing selections. These suggested additions helped increase sales (Exhibit 7). After a wide-scale rollout, McDonald's surprisingly sold Dynamic Yield three years later to Mastercard for roughly the original purchase price, yet remained an active customer.

In 2019, McDonald's acquired voice-ordering technology company Apprente,²¹ the company's third technology acquisition that year. McDonald's had already begun experimenting with voice ordering as part of a strategy to use more technology to reduce cost, speed up service, and increase sales. Mountain View (CA) based Apprente was founded in 2017 to develop voice-activated ordering systems capable of processing orders in various languages and accents. The Apprente team was integrated into a newly created group called McD Tech Labs. Pilot tests of the technology were promising. Speaking at a June 2021 Alliance Bernstein's Strategic Decisions conference, Kempczinski reported that ten restaurants in Chicago using the voice-ordering technology were achieving nearly 85% order accuracy, and only about 20% of orders required human intervention.²² A few months later, McDonald's sold McD Tech Labs to IBM to

accelerate the development of voice order technology. The move reflected the challenges of developing the technology in-house. While the initial pilot had shown “substantial benefits” to customers and crew, Kempczinski noted that integrating the technology into its many restaurants, each with varying menus and language needs, “is beyond the scale of our core competencies.”²³ McDonald's signaled that it planned to work with IBM on a larger-scale test and noted in a joint statement that “IBM and McDonald’s are both committed to adopting AI responsibly by embedding ethical principles into AI applications and processes to build systems based on trust and transparency.”

Over the next two years, the two companies developed and tested the drive-thru AI ordering platform in nearly 100 restaurants. Throughout 2023-24, TikTok posts highlighted some funny outcomes, including customers receiving multiple butter packs with their burger, ice cream topped with bacon, and many quantity errors, like a single order with hundreds of chicken nuggets.²⁴ In June 2024, McDonald’s discontinued the pilot and canceled its partnership with IBM. Even with the challenges, a McDonald’s statement made it clear that “a voice ordering solution for drive-thru will be part of our restaurants’ future,” and it hoped to “make an informed decision on a future voice ordering solution by the end of the year.” Throughout 2024, other fast-food companies like Wendy’s, Dunkin’, and Taco Bell continued to push their AI ordering pilots forward.

McDonald’s was also working to integrate orders on the App with the drive-thru. App orders could be delivered, picked up inside the store, or curbside, or at the drive-thru. The drive-thru was often the customer-preferred method as it was less expensive than delivery and generally faster than parking for curbside or counter pickup. An app user would place an order and receive a code on their phone. They would announce the code when they arrived at the drive-thru order board. The worker would direct them to the pay window, where they would receive a receipt (since they already paid in the app) and then pull forward to the next window to pick up their order. While it was simple and benefited from the app's personalization, it wasn’t much faster than placing the order at the order board.

Even with the many incremental innovations, the shift to drive-thru service was challenging McDonald’s speed. QSR Magazine's annual speed comparison showed that McDonald's 2023 time was at the bottom of the pack (see Exhibit 8), with about 2 minutes waiting to reach the order board and nearly another 5 minutes to pay and receive the order. Best in class was Taco Bell, which got customers on their way in about 4.5 minutes (waiting plus service time). McDonald’s scored near the top of quick service restaurants for order accuracy, coming in at 88%, which was behind Chick-fil-A at 95% and above many others, including Arby’s at the bottom with 82%.

Motivated to reduce time, McDonald’s launched initiatives to redesign the drive-thru configuration to facilitate app purchases. It opened a pilot store in Texas in 2023 with a unique automated pickup lane for customers who ordered ahead.²⁵ Taco Bell and Chick-fil-A were examining similar order-ahead concepts with multiple lanes and even lofted kitchens above the cars (see Exhibit 9).

Development

McDonald's operated only about 5% of its restaurants. The other 95% were locally owned franchises operating under three different models. Conventional licensees (55%) paid rent and royalties to McDonald's based on a percentage of sales, with minimum rent payments. Developmental license holders (20%) paid royalties based on a percentage of sales, and licensees provided the capital to develop restaurants. Foreign affiliated restaurants (20%) paid royalties based on a percentage of sales and equity in earnings, representing McDonald's ownership stake.

McDonald's had allocated over \$1B in 2024 to new restaurant expansion across the U.S. and internationally, with the goal of opening more than 2,100 restaurants. About 500 of those restaurants would be in the U.S., with developmental licensees and affiliates contributing capital towards more than 1,600 international locations.

Looking Ahead

Even with the 2024 economic headwind and setback with AI ordering, Kempczinski's summer success with value meals and his aggressive store growth plan momentarily satisfied investors. In September, McDonald's announced that it would extend the \$5 value meal through the rest of the year.²⁶ But many wondered if *Accelerating the Arches* and executing the *4 D strategy* would deliver the 2027 goals for growth and profitability.

Exhibit 1: McDonald's 1950s.²⁷



Exhibit 2: Hamburger production.²⁸

Exhibit 2a: The traditional McDonald's way

Prior to 2000, the worldwide kitchen at McDonald's was based on a simple general layout. Depending on how busy the store was, as few as one person or as many as five people operated the McDonald's grill area. These workers grilled the hamburger patties, caramelized the buns, and dressed the sandwiches.

There were separate grills for regular-sized and quarter-pound patties. The former accommodated up to 48 standard patties, although batches of one to two dozen were usually cooked at a time. The quarter-pound grill operated at a higher temperature and held up to 20 larger patties. All patties were manually seared on both sides and removed in pairs when the light and buzzer system signaled a completed cooking cycle. After each batch, the grills were scraped clean.

Buns were heated by placing them on a hot platen, one side at a time. The crown was toasted or caramelized first, put on a tray, and dressed while the heel was caramelized. A worker in the grill area applied condiments to the crown in premeasured doses from dispensers at the dressing table and added pickles and onions by hand. Then, the trays of buns were moved to the grill, where patties were added, and the sandwiches were capped. Completed sandwiches were then placed atop the warming bin for wrapping.

Bin workers wrapped the sandwiches and interfaced between production and counter workers, ensuring the bin had enough of each sandwich type to satisfy the current demand. Additionally, bin workers monitored product freshness by numbering the batches of sandwiches and tossing out any that were more than 10 minutes old. Bin workers were typically the most experienced and understood the business flow during the day. Watching the incoming traffic and the bin inventories, they decided when to build sandwich supplies before rush periods to avoid backlogs that caused customer waits. The best bin workers even knew the effect of local events or the weather on customer demand and were always watching the parking lot for arrivals of big groups. The position was reserved for heavy traffic times; during slow periods, floating managers and counter personnel kept an eye on the inventory and called orders as needed to production staff.

Special orders were handled as an exception to the production and customer-service flow. When a customer requested a burger without onions, for example, the order was logged by the counter person and passed to the grill worker, who waited until the next batch of patties was removed from the grill. The sandwich was then assembled according to the customer's order and delivered to the counter. Since this typically entailed a delay, special-request customers were asked to step aside while their order was being assembled, allowing counter personnel to wait on the next customer in line.

Frozen fries were partially thawed in wire baskets before they were dropped into one of three deep fryers in the production area. A beeper signaled the end of the cooking cycle—just over two minutes. The fries were then drained, deposited under heat lamps, salted, and, during busy times,

scooped into bags. Fries not bagged within seven minutes were discarded. During heavy traffic, one person was assigned to handle this duty; otherwise, a grill worker or a “floater” handled it.[‡]

Counter service personnel poured hot beverages and shakes, but customers who ordered soft drinks were given empty cups that they filled themselves from a self-service unit. This dispenser, which offered a variety of soft drinks (including Coke Classic, Diet Coke, flavored tea, Sprite, Barq’s root beer, water, and ice), was perpendicular to, but visible from, the counter.

McDonald’s believed that training was critical to the overall consistency of the dining experience. All new employees were required to watch a series of training tapes and go through a multi-stage training course devised by the manager. New workers started during slow periods, working with veteran employees for a few shifts before they were assigned to run a customer service or fry station on their own. Generally, it took two to four weeks to become proficient at any particular station. Workers were encouraged, but not required, to learn all facets of the operation.

Instructions posted on the equipment at each station specified how long each task should take to complete and how to do it properly. These instructions reinforced the corporation’s training process. If a trainee forgot what to do, she had only to read the sign in front of her.

Exhibit 2b: Made for You

In 2000, McDonald’s started transitioning the US stores to the *Made for You* production process, a natural extension of McDonald’s process automation and a radical departure from the make-to-stock philosophy. That transition followed slowly throughout the world, although you can still see some traditional layouts in some countries. Under *Made for You*, the key kitchen positions included at least one person on “batch” cooking meats, one “initiator” beginning the sandwich assembly process, and one “assembler” completing it. A fourth person cooked fries.

The batch person placed burger patties on four two-sided clamshell grills (so-called because they closed like a clamshell)—two designated 10:1 for “regular” burgers (10 patties to one pound of meat) and two designated 4:1, specifically for quarter-pounders. Actually, only nine burgers fit on the 10:1 grill at any one time, so the maximum simultaneous output of a batch person was 30 patties (18 on 10:1 and 12 on 4:1 grills). Cooking was automatically timed; the clamshell popped open when the meat was cooked. Patties were then placed on trays and stored inside universal heating cabinets (or steamers), known as UHCs—covered units heated to 200 degrees that kept the patties hot. Trays were timed to remain in the UHC for only 20 minutes. After this time, the patties were discarded. Only enough patties were cooked to meet the current sales or volume pattern level for each hour.

Once a customer ordered a burger, the counter person punched the request into the computerized register, and the order appeared on an overhead monitor in the assembly or prep area. The predominant feature in this section was a two-sided prep table, affixed with a top-loading toaster at one end, condiment guns in the middle, and UHCs at the other end; wrappers and boxes were stored underneath. Two monitors were stationed overhead at both extremes. Generally, two people—an initiator and an assembler—worked this table, although their number doubled during peak hours.

[‡] Breakfast items were deep fried or cooked on the same equipment used for hamburgers.

When an order appeared on screen, the initiator took a split bun from the bun cart and dropped it into a high-efficiency toaster, removing the toasted halves that slid out, placed them on the correct wrapper (color-coded and clearly labeled), and applied condiments in pre-measured doses from an automatic dispenser. The bun was then passed to the assembler, who added appropriate toppings, such as pickles, lettuce, and cheese, to one half and placed a meat patty from the UHC on the other, wrapped the sandwich securely, and put it on the heated landing zone—a heated table within the counter service area—where it remained warm until it was passed to the customer who ordered it. The initiator and assembler worked together, so the division of labor was not always strictly observed. During peak times, however, a third staff member—the UHC person—was added, and roles were more narrowly confined: The initiator cooked the buns, the assembler dressed them, and the UHC person added the patties, wrapped the sandwiches, and placed them on the landing zone.

Fries were cooked separately by another staff member on a robotic automatic machine (RAM) dispenser. Six-pound bags of frozen fries were loaded into the RAM's hopper, which was calibrated to dispense one and a half pounds of fries at a time into a fryer basket. The baskets were dropped into wells filled with hot cooking oil and, although automatically timed, were manually removed from the oil.

Exhibit 2c: Burger King hamburger production

When an order was recorded at the point of sale, it appeared on overhead monitors in the kitchen area. In many older Burger King restaurants, the order was also spoken into a microphone that broadcast the request to the kitchen. All sandwiches—burgers, chicken, and fish—were assembled at one prep table, and Burger King separated the burger assembly from the other sandwich prep.

It took at least two people to prepare a Burger King burger—one to cook, or “catch,” and one to dress. The first person fed frozen burger patties and fresh bun halves into a combination broiler/toaster. The patties moved along an automatic broiler rack where they were “flame-broiled” and emerged 80 seconds later fully cooked on the other side. Hamburgers, and the larger Whopper, could use the same automatic broiler because they were the same thickness. Toasted buns, which cooked faster than the meat, rolled off the continuous-chain toasting unit beneath the broiler. The “catch” person then matched bun halves, inserted a patty, and stored the sandwich in an adjacent steamer bin that kept it warm until it was dressed.

The steamer bin adjoined the “board,” a stainless steel prep table that could be worked from both sides. When a hamburger order appeared on the overhead screen, the second staff person—the assembler—plucked the sandwich from the steamer bin and placed it on a labeled wrapper (stored below), squirted on condiments from individual squeeze bottles, and added desired toppings, such as lettuce or tomato. Then he wrapped the sandwich, heated it in a microwave for several seconds, and sent it down a chute facing the counter station. These chutes separated products by category, allowing counter personnel to identify and separate the products quickly and easily. Because prepared sandwiches were discarded if not sold after 10 minutes, the discard time was marked on the wrapper, as was any customer special request. During busy periods, sandwich assemblers were responsible for ensuring that the chutes were stocked with an adequate number of assembled standard sandwiches (as specified in a chart above the chutes), while the “catch” person oversaw inventory in the steam bin. When times were slow, fewer

burgers were stored in the bin, and all sandwiches were assembled when ordered. Special orders were always assembled when the order was placed.

Nearby, the fry cook filled wire baskets with fries (and onion rings) and deep-fried them in computer-controlled fry vats, pulling them from the hot oil when the buzzer sounded, indicating the cooking time was complete. The fries were drained briefly, deposited in heated wells close to the landing table, and salted. They were discarded if they weren't scooped into bags within seven minutes. Once bagged, however, fries were held only two minutes before being tossed.

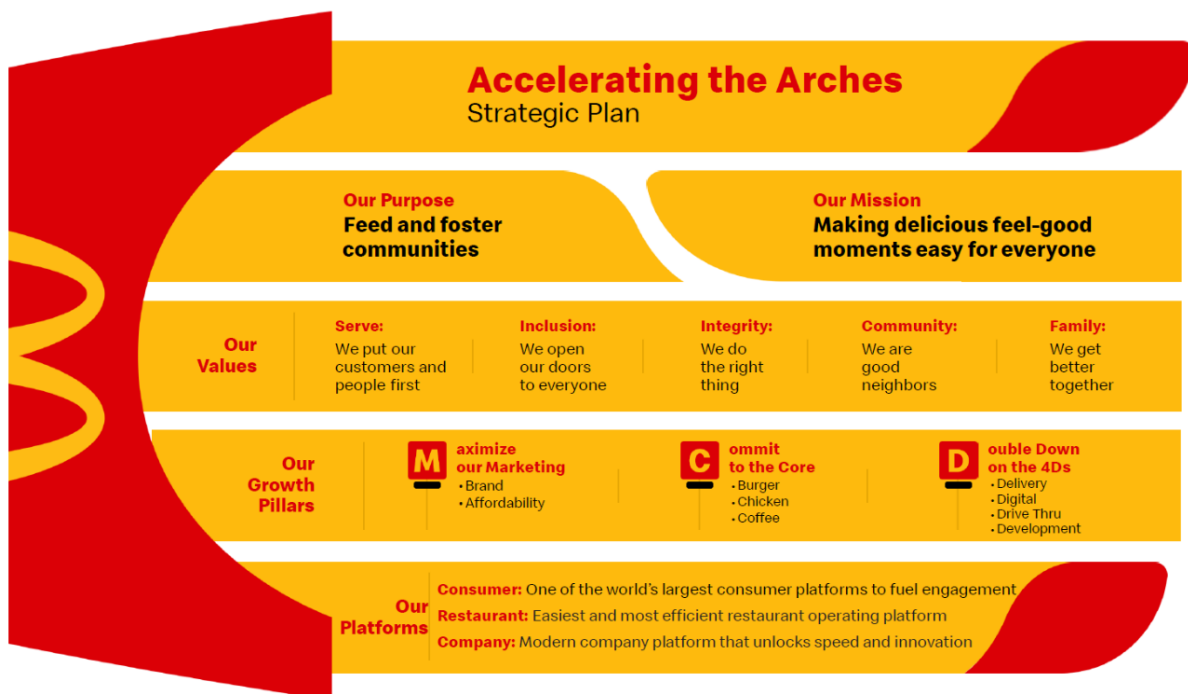
At the counter, a second staffer shoveled the fries from the wells into various-sized bags, added the sandwich of choice and a cup for self-dispensed soft drinks, or poured the drink itself (for coffee and shake orders) and either bagged the items for take-out or placed them on a tray with a copy of the receipt and passed it to the customer. This individual wore a headphone unit to maintain voice contact with kitchen personnel, alerting the staff to special orders and ensuring production kept up with demand.[§]

[§] Breakfast items presented a challenge for Burger King when they were first introduced. Eggs were cooked on grills that were heated by the oil in a frying vat.

Exhibit 3: Average Counter Service Speed (2000).^{**}

Wendy's	2 minutes, 30 seconds
McDonald's	2 minutes, 47 seconds ^{††}
Checkers	2 minutes, 49 seconds
Burger King	2 minutes, 51 seconds
Long John Silver's	2 minutes, 52 seconds

Exhibit 4: Accelerating the Arches.²⁹



^{**} Source: *Wall Street Journal*, Sparagowski & Associates, May 18, 2000.

^{††} Reflects McDonald's Made for You adoption.

Exhibit 5: Order kiosks.



Exhibit 6a: Pick-up windows (three-window configuration).³⁰



Exhibit 6b: Drive-thru with digital order boards.

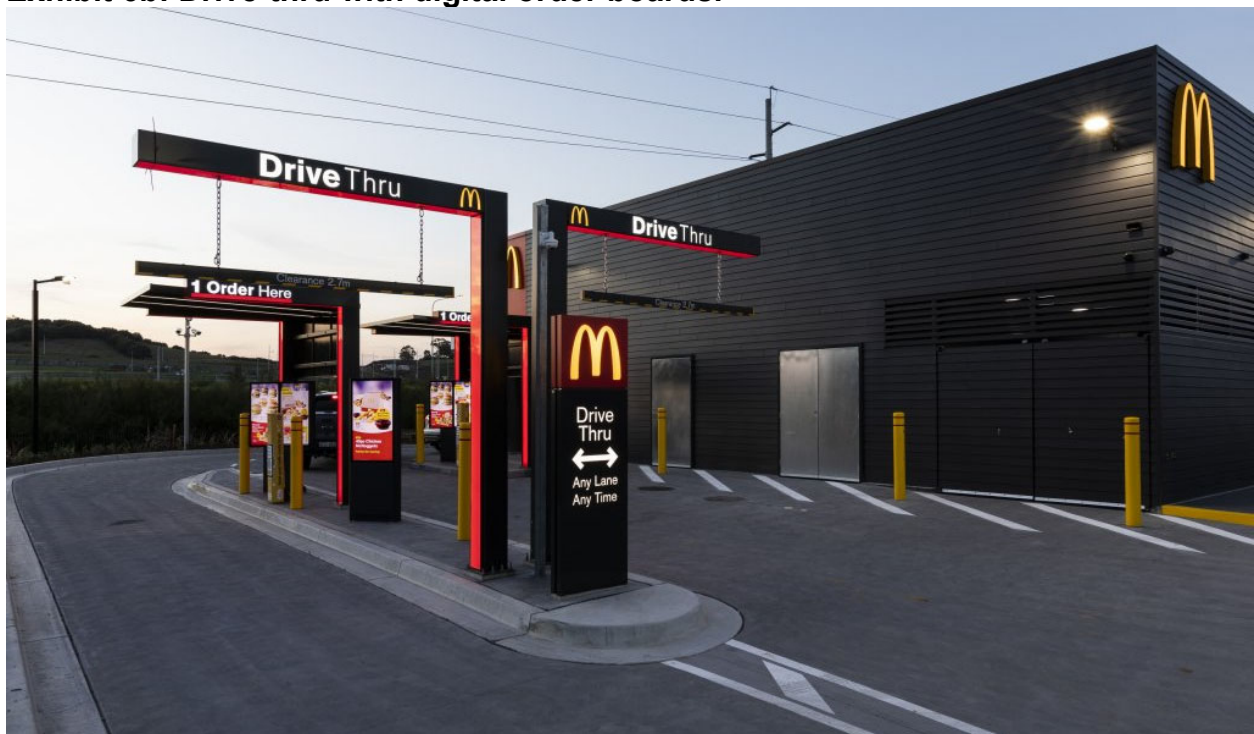


Exhibit 7: Dynamic Yield order board suggestions³¹

Beverages:

- Coffee \$1.00 | 0 Cal.
- Iced Caramel Macchiato* \$3.39 | 250 Cal.
- Frappé caramel \$3.49 | 500 Cal.
- Smoothie strawberry banana \$3.49 | 240 Cal.
- Iced Latte* french vanilla \$3.39 | 200 Cal.
- Minute Maid® Premium Orange Juice \$2.59 | 200 Cal.

*With whole milk. Nonfat milk subtract 50-140 Cal. © 2018 The Coca-Cola Company. "Coca-Cola" and "Minute Maid" are registered trademarks of The Coca-Cola Company.

Add something delicious

Minute Maid Orange Juice
\$2.59 | 200 Cal.
Additional charges may apply.

Bacon Egg & Cheese Biscuit
\$3.49 | 450 Cal.
Additional charges may apply.

Sausage Egg McMuffin Meal
\$5.19 | 630-800 Cal.
Additional charges may apply.

Exhibit 8: QSR 2023 Average Speed and Accuracy Comparison.³²

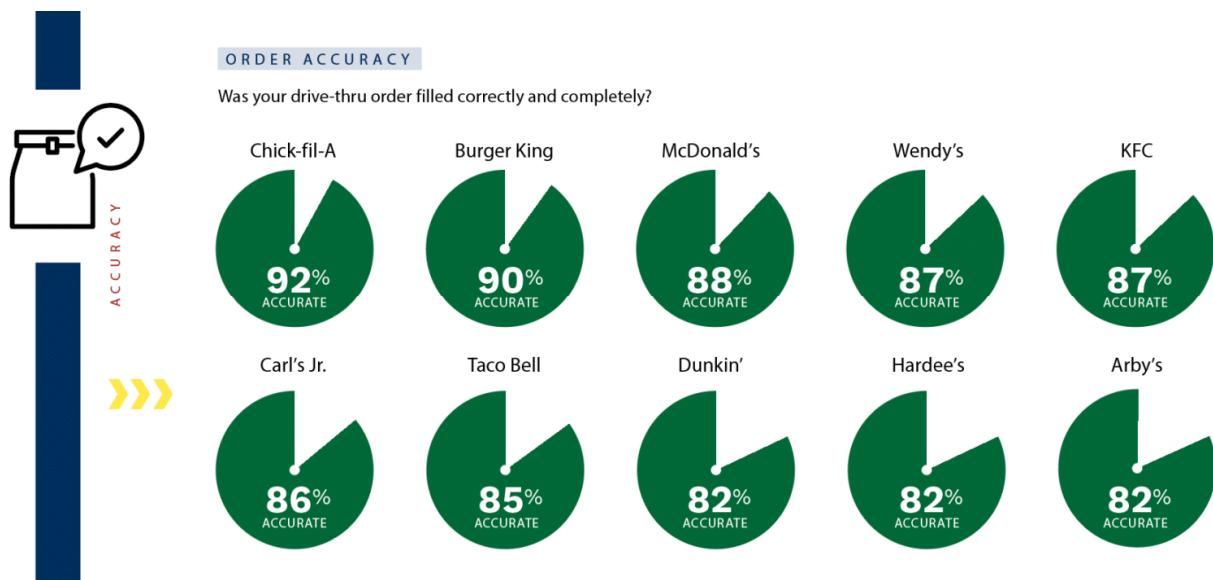
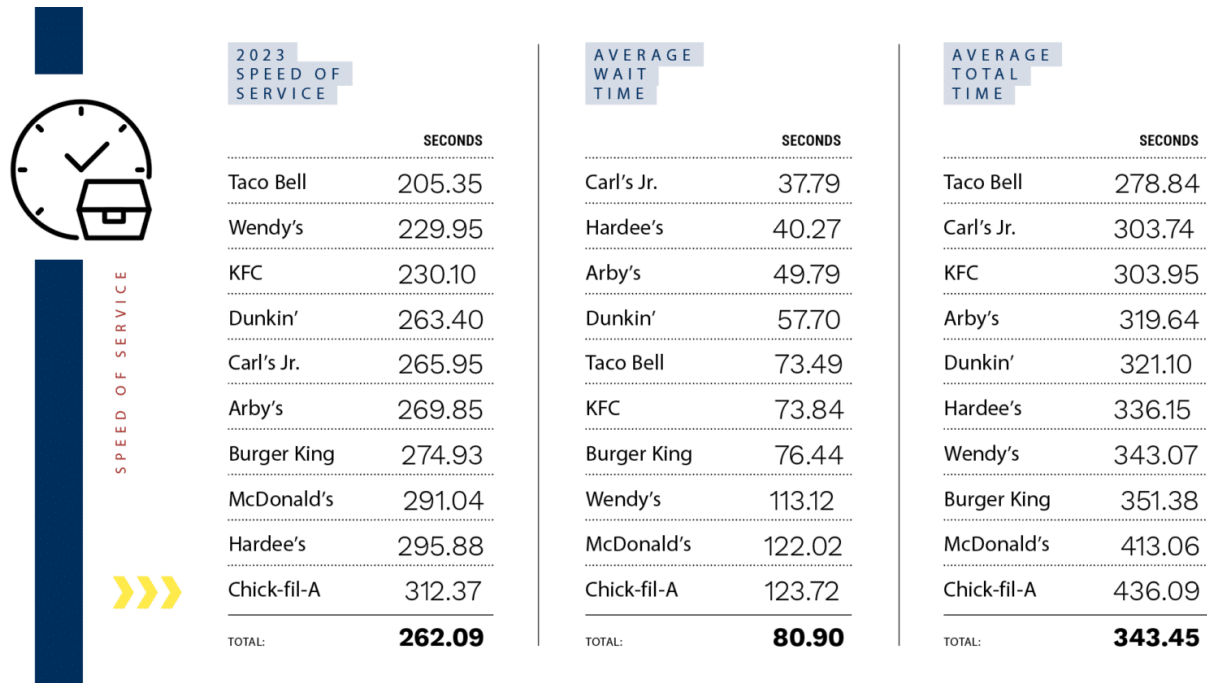


Exhibit 9: McDonald's³³ and Taco Bell³⁴ pilot drive-thru concepts, both in Texas.



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- ²⁸ Exhibit 2 relies heavily on “Food Fight: The Day McDonald’s Blinkered” (2001) {with David F. Pyke}, Tuck School of Business teaching case.
- ²⁹ <https://corporate.mcdonalds.com/corpmcd/our-company/who-we-are/accelerating-the-arches.html>
- ³⁰ https://www.tripadvisor.com/LocationPhotoDirectLink-g36141-d13929690-i309903745-McDonald_s-Hoffman_Estates_Illinois.html
- ³¹ <https://www.prnewswire.com/il/news-releases/mcdonalds-to-acquire-dynamic-yield-will-use-decision-technology-to-increase-personalization-and-improve-customer-experience-300818098.html>
- ³² <https://www.qsrjournal.com/reports/the-2023-qsr-drive-thru-report/>
- ³³ <https://kioskindustry.org/mcdonalds-drive-thru-designs-deployed>
- ³⁴ <https://www.fox26houston.com/news/taco-bell-opens-first-restaurant-with-high-tech-drive-thru-experience>