Mobile Modernization in the Restaurant Industry

5 Defining Trends

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Introduction

The restaurant industry is riding a wave of digital transformation. Today's restaurant guests still seek quality food and friendly wait staff, but they also value the speed and simplicity of technology while dining. Digital transformation in the restaurant industry is critical to keeping pace with changes in customer preferences and behaviors. Diner expectations for seamless omni-channel experiences have grown to the point where mobile modernization is an imperative for restaurants to keep pace and drive customer satisfaction.

Restaurant spending hit a record $863 billion in 2019, a 4% increase over 2018. In the past four years, digital restaurant orders have experienced a double-digit compounded annual growth rate. Restaurants that embrace digital transformation have the opportunity to capture significant gains in revenue and guest loyalty, while driving more efficient and stable operations.

Such transformations in the restaurant industry were underway well before the COVID-19 pandemic. However, as the novel coronavirus—alongside social distance guidelines—forced restaurants to close or limit operations, it is estimated that the restaurant industry suffered losses of $120 billion between March and May 2020. With many restaurants open exclusively for delivery and takeout orders, digital ordering has become a critical part of ensuring cash flow. To meet growing demand for digital ordering, many restaurants, including fine dining establishments, have transitioned to online ordering and delivery apps.

While COVID-19 has accelerated digital transformation, changing digital consumer behaviors have contributed to the restaurant industry revolution. We've identified 5 key trends that are driving the current wave of technological change in the restaurant industry. These trends are:

Trend 1: Changing Guest Behaviors
Trend 2: The New Mobile Restaurant
Trend 3: Streamlining
Trend 4: Sophisticated Self-Service
Trend 5: Setting the Stage for the Future

Changing Diner Demographics & Behavior

Consumers of all age demographics are increasingly empowered to use mobile apps for loyalty and ordering. Millennials and Gen Z, in particular, expect digital ordering options. A recent study found that [28% of restaurant guests](#) had used a kiosk to place an order. 27% have ordered via tabletop tablet. This is a significant increase over 2015, when just 11% had ordered via mobile.

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Gen Z Gains Purchase Power

Gen Z, individuals born between 1996 and 2010, are a growing proportion of the restaurant consumer base. Gen Z members will have a growing influence on restaurants as they enter the consumer base in force. Restaurant consumption habits peak in individuals in their late 20s and early 30s, according to industry analyst David Portalatin. Today's restaurants need to cater to millennials and members of Gen Z.

Gen Z has unique expectations and preferences for the restaurant experience. They're excited by fast casual concept experiences and bold ethnic flavors. Speed, convenience, and mobile experiences are a must-have for younger diners. Free WiFi isn't optional.

Operational resilience, in the face of the COVID-19 pandemic, is more important than ever. In cities and towns where restaurants are open to partial or max capacity, developing new ways of accommodating guests is important. Curbside seating has become popular, as it allows guests to dine in open-air environments while maintaining social distancing. A Bluedot survey notes that 50% of Gen Z is willing to try a new restaurant if it offers curbside options.

Make Digital Frictionless

The growing influence of younger restaurant guests means increased demand for frictionless digital touch-points throughout the guest experience. Younger consumers expect seamless integration across consumer apps, loyalty programs, restaurant websites, and on-site kiosks for a personalized experience at every possible restaurant touchpoint. Personalized, omni-channel interactions aren't just a way to add value, it's what these youngest diners expect restaurant brands to offer.

"If you think about it, this is the generation that knows how to FaceTime their friends, text their moms and order a pizza all at the same time," says Portalatin.

Restaurants are Lifestyle Brands

The lines between restaurant and lifestyle brands have become increasingly blurred. Restaurants are capturing the loyalty and Instagram feeds of Gen Z and millennial customers by delving into wacky merchandise, like Popeyes' ugly Christmas sweater or the hot sauce packet-branded swimsuits offered by Taco Bell.

The trend will likely continue among casual dining chains and QSRs in 2020, according to Miranda Lambert, an industry analyst. Eye-catching merchandise can drive social media buzz around restaurant brands, but more importantly, it's a lever for customer loyalty.

Today there are 86.5 million Millennial's, or those between ages of 18-34, in the United States. By 2020 there will be 89 million to 90 million Millennial's between the ages of 25 and 44, partly due to immigration. Younger consumers will be more diverse. The non-Hispanic white population is expected to peak in 2024 at 199.6 million. Then the group is expected to shrink slowly. By 2060 the non-Hispanic white population will still be the largest single group, but no group will be in the majority.

Demographic Diversity Among Young Diners

22% Hispanic

14% Asian-American

54%
White
Non-Hispanic

46%
Multicultural

7% Asian

3% Multiethnic
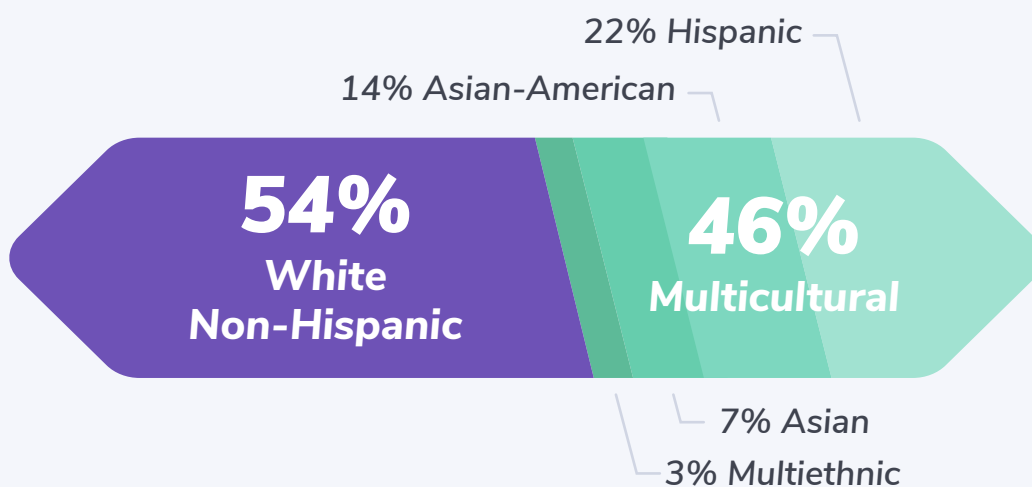
The New Mobile Restaurant

The new mobile restaurant has multiple dedicated devices at points of customer and employee interaction. Guests who walk into a restaurant are greeted by a host, who uses a tablet to manage seating arrangements. Wait staff use a mobile PoS to capture guest orders and cash out customers at the tableside. And for an increasing number of restaurant operators and chefs operating out of ghost kitchens, the path ahead is mobile-first and delivery-only.

In some restaurants, a tabletop kiosk system can serve as a portal for self-service ordering or customer loyalty sign-ins. Kitchen Display Systems (KDS) and digital signage are also common in the restaurant. And of course kiosks for QSRs and digital signage for menus, promotion, and vibe are proliferating.

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Ghost Kitchens

Some of the hottest new restaurants have no seating or decor. Ghost kitchens are akin to co-working spaces for food, where multiple chefs can operate concept restaurants out of commercial kitchens for a delivery only business model. Even aside from social distanceing mandates, the climate is right. The food delivery industry is expected to be worth $24 billion by 2021. And, digital orders for delivery have grown 20% year-over-year while on-site dining demand has remained relatively flat.

The ghost kitchen concept is an attractive idea to both restaurant operators and diners in 2020. The delivery-only model "introduces restaurants to new customers without having to open an entire dining area," writes Forbes' Blake Morgan. It also removes the need for a large, dedicated dining area or front-of-house staff. And, it offers today's most adventurous diners the convenience of flexibility and control via delivery on-demand.

Mobility is mandatory for ghost kitchens, who operate a bit like lean startups within the restaurant industry sphere. In the past year, former Uber CEO Travis Kalanick has raised $400 million in venture capital funds for his Cloud Kitchens startup, which competes with Deliveroo Editions, Virtual Kitchen, and Kitchen United. Analysts predict the ghost kitchen model is here to stay, and it's lean operating style may influence the standard approach for brick-and-mortar dining establishments.

Digital Signage

According to OptiSign, localized content such as weather or news items can keep customers engaged and reduce perception of wait time. Studies confirm that 84% of customers felt wait times passed more quickly when watching digital signage.

Digital signage can also upsell guests by influencing customers to try new promotions or food combinations. Android SBC devices can also operate as digital signage in restaurants.

Dedicated digital signage can be used for infotainment or promotional purposes. While it may elicit customer engagement via social media, it's generally distinct from kiosks or tabletop tablets since there's no touchscreen functionality.

Digital signage now plays an even greater role in the age of COVID-19. Since the start of the pandemic, most restaurants have transitioned to delivery and takeout models. In a survey, Fast Casual found that 92% of restaurant business now takes place off-premise. As more customers opt for delivery or takeout orders, dedicated digital signage can be used to display order status and wait times, with the added benefit of upholding social distancing guidelines.

Use cases for restaurants include:

1. Scheduled promotional menus
2. Order status for take-out & delivery
3. Social media posts
4. Google reviews
5. Weather forecasts
6. News items
7. Announcing happy hour & last call
8. Inviting customers to leave an online review
9. Share brand story and values

Android Dedicated Devices

Android has emerged as the key solution for corporate-owned single-use (COSU), or single-purpose, devices. Android has become the dominant mobile operating system worldwide and is experiencing steady growth in enterprise adoption. Android in combination with the right management platform offers a superior set of features enabling devices to be configured for:

Front-of-House Devices
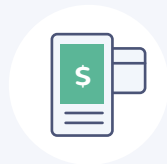
Mobile Point of Sale (mPoS)

Back-of-House Devices

Tabletop Tablets

Kiosks

Digital Signage

Dedicated devices are generally locked to a single app, or sometimes, a set of apps. Android 6.0+ offers granular control over key device features such as device lock screen, status bar and keyboard to prevent customers and employees from enabling non-authorized apps or performing disallowed actions on dedicated devices.

Additional evidence for the industry's rush to adopt Android restaurant technologies is presented later in this whitepaper.

Streamlining Everything

Restaurant operators are weathering the digital transformation tides by streamlining everything — from menus to technology, strategies, operations and more. The belief behind streamlining is that it can enable quality above quantity, and create a more connected experience for both guests and employees.

Streamlined Menus

2019 was the year in which both QSRs and Casual Dining chains slashed their menus to reduce operational strain and diner decision paralysis. McDonald's said goodbye to their Signature Crafted Recipe menu line last April, after CFO Kevin Orzan said these premium menu items were slowing down drive-thru lines. In the case of this QSR, sacrificing premium menu items meant improving overall guest time-to-service.

Last year's QSR and casual dining food trends were relatively simple menu items, including the Popeyes Chicken sandwich that took the restaurant by storm. Restaurants need to balance diner choice with simplicity and operational efficiency, and perhaps take a cue from restaurants like Chick-Fil-A and In-N-Out that do high volume with a simple menu. Kiosks can balance the individual diner's need for customization with the move towards simpler menus.

Consolidating Technology

Demand for online food delivery is booming among consumers. There's no shortage of third-party restaurant delivery services to fill the growing demand for door-to-door service. DoorDash currently has [38% market share,](#) but they face significant competition. Currently, many restaurants in large cities have an active presence on 4-5 different apps, and in some cases, form exclusive menu item agreements with one or more delivery services.

5 tablets have become commonplace in the restaurant expo and kitchen. A single tablet is dedicated to each service app to avoid having to shuffle between third-party and proprietary app order screens. It's difficult to keep eyes on 5

tablets at once, and it's easy for restaurants to miss orders on low-volume apps.

The API economy is starting to recognize the need for easy centralization of multiple ordering services. Instead of a single app for each service, solutions like Ordermark are creating a centralized portal for

receiving and filling orders via Door Dash, Postmates, UberEats, Caviar, and more.

Smart, Flexible Tech Upgrades

Old Windows and Linux terminals have previously been the de facto standard for PoS, KDS, and front-of-house systems. These options are quickly being replaced by Android due to a more modern user-experience and better cloud analytical capabilities. Android is more flexible, and it's a baseline for streamlined technology both today and tomorrow.

By 2022, 75% of CIOs who don't transition their organization to flexible IT products will fall behind the curve. According to IDC, Android mobility is key to building a connected and agile workforce — especially in industries

like hospitality that are subject to rapid change.

IDC research sees Android as a strategic platform that addresses each of the three critical pillars of mobile technology for modernization; diverse hardware, strong security, and a balance between IT management and user experience.

The Three Pillars of Mobile Modernization

Phil Hochmuth, Program Director of IDC Mobility, said that businesses must address key challenges around mobile risk, hardware and selection, as well as mobile provisioning and management.

The Three Pillars of Enterprise Mobile Technology

2 Solution breadth

1 Overall security

3 IT Management capabilities balanced with user experience

Android is the only mobile platform that can connect every person involved in the restaurant experience:

Restaurant Guests	Front of House Staff	Store Management	Executive Leadership	Kitchen Staff

Android provides both unique and innovative capabilities, according to IDC, while offering a range of device solutions for specific, dedicated use cases. It's also the only platform that's seamless and comprehensive enough for IT to secure and manage.

The true value of restaurant mobile transformation is gauged by what a device can do. In the case of a restaurant, devices interact with guests and staff, while providing a rich stream of analytics for executive decision-making.

4

Sophisticated Self-Service

For [96% of consumers](#) worldwide, customer experience is a huge factor in making decisions about where they'll dine and brand loyalty. The restaurant industry is a service-focused industry. Knowing your customers' preferences to create frictionless opportunities for self-service is key to win in 2020 and beyond.

Anytime, Anyplace Ordering

US restaurant guests have spent approximately $27 billion ordering food for dine-in and take-out off premises through mobile apps, web apps, or text messages. Creating a streamlined, user friendly presence in both proprietary and third ordering apps can ramp up your sales and create the opportunity for customer's to order on their own terms — whether they plan to dine at home, in the restaurant, or on-the-go.

Early adopters of online ordering have benefited during the pandemic. As restaurants adjusted to social distancing guidelines, 92% of restaurant traffic is now off-premise. And, on average, online order totals are 23% greater than in-store orders.

Digital Companions

By the end of 2020, 85% of customer interactions between brands will take place using a digital companion, including mobile apps, kiosks, or chat bots. Restaurants are increasingly adding digital companions to the diner experience. Self-service ordering kiosks and tabletop tablets can create an immersive customer experience on the restaurant guest's terms.

Personalized Self-Service

71% of consumers get frustrated if their experience with a brand isn't personalized. If you're collecting email addresses and other data for your loyalty program, personalized communications and offers are critical. Restaurant operators need to know their target audiences' preferences and capitalize on these insights for mobile experiences — including both one-to-one promotional offers for guests and kiosks that are targeted to region, demographics, and restaurant guest behavior.

Health-Conscious Self Service

Over 60% of millennial eaters think their generation is more health-conscious than older generations, and behavioral data supports this belief. Millennials and members of Gen Z are more likely than older counterparts to follow a vegan, vegetarian, paleo, gluten-free diet, and many filter their need for convenient dining through a lens of environmental sustainability.

Kiosks and tablets can be an opportunity to cater to guests' special diets, including letting guests customize their dishes. Digital signage can build loyalty among health-conscious consumers by providing education on health practices and ingredient sourcing.

Setting the Stage for the Future

Restaurant operators can achieve happier customers and more efficient business with analytics. Insights can fuel better operational planning and even open the door to personalized customer communications via mobile apps or self-serve kiosks.
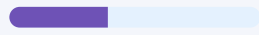
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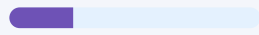# Restaurant Operators are Looking Ahead

Percentage of restaurant operators who would implement the following emerging technologies today if it was possible.
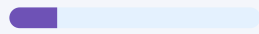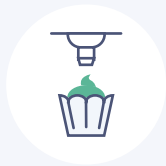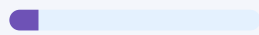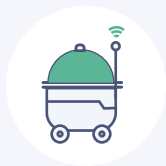
53% Predictive Ordering

36% Automatic Price-Adjustment Based on Analytics

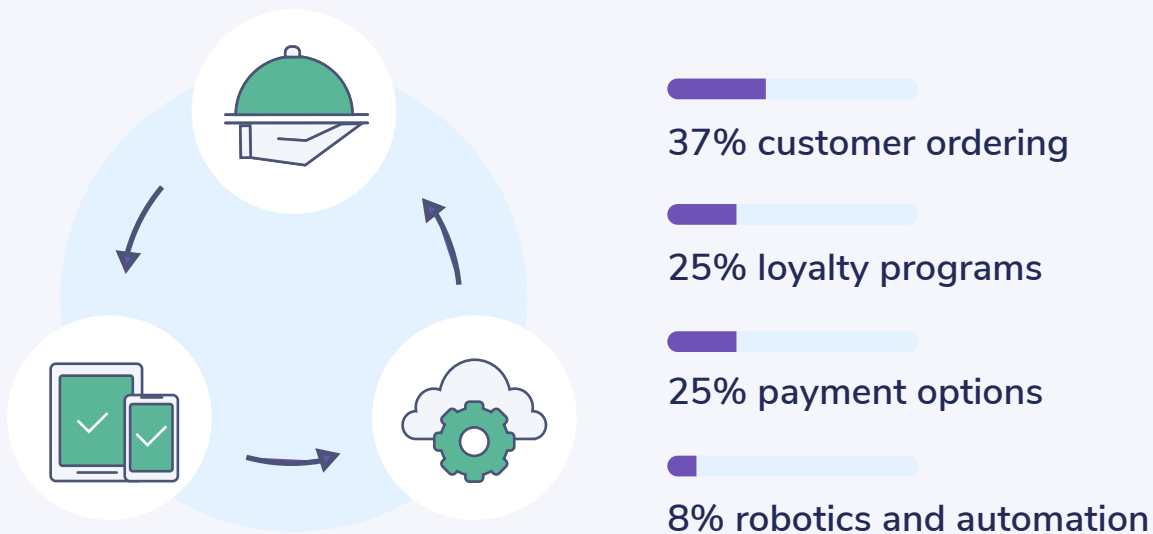16% Drone Delivery Off-Premises

13% Automated Food Preparation System

9% Automated Food or Drink Delivery

source: https://restaurant.org/

Tomorrow's Defining Technology

Restaurant operators [believe](#) the following areas will be the most important part of tomorrow's digital transformation initiatives.

37% customer ordering

25% loyalty programs

25% payment options

8% robotics and automation

source: https://restaurant.org/

The restaurant experience is about to become big data-driven. Your transformation roadmaps should begin to consider these analytics use cases. Today's hardware and apps should support tomorrow's product initiatives.

Key Recommendations

Critical Capabilities for Restaurant Technology

The new mobile restaurant has unique considerations for suitably durable devices at every stage of the guest journey. Oftentimes devices should offer a hardwired connection and full-functionality during offline mode to ensure restaurants can operate without disruption. For other use cases solid and secure wireless connectivity is paramount.

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Physical Durability

Physical durability is another important point of consideration. Both restaurant staff and guests can expose devices to liquid spills, dropping, and temperature changes on tabletops and in the kitchen.

Security by Design

Any Android or alternative device should be commercial-grade and engineered for lifecycle security. This includes easy firmware updates to maintain operating system security and PCI compliance, as well as taking control of the device's apps and configuration.

When tablets are integrated with card-readers for payments, EMV-capable card readers are a necessity to improve payment security and verification.

Hardware Monitoring

Remote monitoring capabilities are necessary for security. Devices should lock down in real-time based on emerging insight into vulnerabilities or nefarious activities.

Alerts

Instant alerts (with lock down capabilities) are a necessity to respond to critical issues like devices which suddenly go offline, have component problems such as battery issues, or sudden security vulnerabilities.

Remote Diagnostics

If an app or hardware component fails, IT technicians need the ability to remotely initiate secure sessions to view, control, or debug and resolve issues as if they're interacting with the screen and directly with the Android OS, with zero on-site intervention and low risk of intrusion.

Wipe, Reset, and Geofencing

Hardware should be integrated with a device management capability that allows devices to be remotely locked and wiped in response to risks such as device theft or loss. Geofencing should be employed when appropriate to take (or queue up) action when devices move beyond their designated usage zone.

App Agility

Hardware is nothing without robust, effective apps. In the age of digital transformation in the restaurant industry the path to optimizing the customer experience is unclear and will be iterative. The implication is agile app development driven by telemetry and analytics. The requirement is a means to effectively roll-out and manage increasingly complex arrays of app permutations at a device fleet level.

Companies that pursue the historic waterfall development model with infrequent updates will quickly fall behind competitors executing agile methodologies with a DevOps approach. A means to manage the roll-out (and at times roll-back) of apps and device configurations is paramount for success, enabled by state-of-the-art techniques such as pipelining.

Considerations for Picking the Right Restaurant Hardware

1. Cost

Cost is a primary consideration when selecting new hardware for the digital restaurant. A traditional PoS can cost upwards of $15,000. The average capital expenditure (CapEx) for traditional PoS is $1,000 per year. Average lifespan varies by manufacturer, but 5-7 years is typical. $22,000 is a common lifespan CapEX cost. Traditional PoS are incredibly expensive investments when you run Total Cost of Ownership (TCO) analyses which consider operational expenditures (OpEx) like on-site visits by IT techs.

Purpose-built, enterprise-grade tablets are significantly cheaper than traditional PoS. Mobile transformation can drive at least tens of thousands of dollars in cost savings on hardware.

It's essential to consider the total life-cycle ownership costs. Remote debugging and update capabilities lead to lower maintenance costs. Also, there's a potential for long-term savings with flexible hardware, like Android tablets that support removable EMV card readers.

2. Training

Mobile-first restaurant workers generally require minimal training to use Android-based PoS systems and assist guests with tabletop tablets or kiosks.

85% of the American population now owns a smartphone, per Pew Research. Your staff universally know how to use Android mobile apps. Training new hires on mobile PoS basics typically takes one hour or less.

Training and talent are some of the toughest issues facing the hospitality industry in 2020. According to the National Restaurant Association, it costs an average of $2,000-$15,000 to train a new employee. Traditional PoS hardware is often confusing to new hires, especially compared to an intuitive mobile PoS.

Traditional PoS systems are linked to an average [5% rate of employee errors.](#) This adds up fast when you consider the average $30 price tag of a single PoS mistake. A 20-table restaurant with 6,000 monthly tickets absorbs $108,000 each year due to PoS errors.

A simpler, user-friendly mobile PoS can lead to lower training costs and fewer avoidable mistakes. Usability should play a major role in the process of evaluating new hardware. An easy-to-use, error-proof mobile PoS could significantly reduce operating costs.

3. Security

The restaurant industry has been a visible target of cybercrime. 93% of restaurant cybersecurity incidents followed just three common threat patterns including POS hacking, according to the [2019 DBIR.](#) Sophisticated cyber criminal collectives are often behind PoS malware sprees. Typically, hackers target the hospitality industry with industry-specific PoS malware like TinyPoS or DMSniff. Once the malware takes hold, cybercriminals can spend months continuously stealing customer payment card data (PCI).

PoS malware is an easy payday for cybercrime collectives, because traditional restaurant PoS systems often have poor security controls. Weak credentials and unpatched vulnerabilities make it easy for hackers to gain entry. Malware often goes unnoticed for over 6 months — in 2019, it took the average organization [203 days](#) to detect a data breach.

Security is a key consideration for restaurant hardware selection. Consider the ease of secure deployment at scale. This is the first step for basic cyber hygiene controls such as strong credentials. Evaluate the ease of remote, real-time security updates to the OS, firmware, and apps. Consistent updates protect customer payment card data from unpatched vulnerabilities. Finally, evaluate intelligent alerts into security risks. Restaurants need remote security response capabilities to immediately quarantine threats.

4. Physical Portability

Traditional PoS hardware is pretty static. It is heavy and clunky, so it generally remains in a single spot for the entire device lifecycle. If an old-school restaurant PoS malfunctioned, it would continue taking up room until it was fixed. Staff has to share a working PoS until the broken hardware is restored.

Hardware portability adds value for everyone. Lightweight devices can be replaced or upgraded without disrupting operations. Mobile restaurant hardware can move with staff from the host station to table-side.

40% of customers have a preference for brands that offer convenient mobile PoS or self-pay functionality.

Hardware portability can increase the value of investments at a fraction of the cost of a traditional PoS system. A single Android tablet can be locked to a variety of single-purpose device use cases for wait staff, kitchen staff, and customers. A portable device can be a mobile PoS, kitchen display or tabletop tablet taken to the back office for PoS reporting activities.

5. Analytics

An Android restaurant ecosystem provides a foundation for sophisticated analytics. Each swipe, click, and sale creates a trail of insight. Mobile devices can lead to a richer understanding of guest behaviors per location, region, and segment. This opens up many new analytics use cases such as:

- *Forecasting sales & foot traffic patterns*
- *Predictive staffing & hiring*
- *Employee performance review & reward*
- *Profiles of customer demographics & behavior*
- *Marketing campaign attribution*

Restaurant operators can achieve happier customers and more efficient business with analytics. Insights can fuel better operational planning and even open the door to personalized customer communications via mobile app or self-serve kiosks.

53% of restaurants want to use analytics to fuel predictive ordering tools, according to a 2020 National Restaurant Association survey. 36%

hope to adopt dynamic menu pricing tools that respond to customer demand.

The restaurant experience is about to become big data-driven. Your transformation roadmaps should begin to consider these analytics use cases. Today's hardware and apps should support tomorrow's analytics initiatives by setting the scene for predictive insight in the cloud and at the edge.

How Esper is Elevating Android Restaurant Mobility

Esper is the industry's most powerful solution for restaurant Android modernization. Leading fast casual and quick-service restaurant (QSR) brands rely on Esper to manage rapidly-grow-ing fleets of self-service kiosks, digital signage, mPoS, tabletop tablets, and more. As the first-ever complete tool-chain for development, deployment, and monitoring, Esper is a trusted choice to rapidly scale up the

mobile customer and employee experience. Esper has also teamed-up with some of the fastest-growing virtual   restaurant innovators to accelerate ghost kitchen development. Whether your restaurant is mobile-first or mobile-by-necessity, Esper is a proven choice to accelerate transformation without sacrificing security.

Why Esper for Restaurants

As an Android DevOps solution, Esper offers much more than traditional mobile device management (MDM). Some top reasons why restaurants choose Esper include:

Scale: Esper's cloud tools help restaurants rapidly scale from fleets of 10,000 to 100,000 devices without sacrificing uptime or operating efficiency. Our cloud tools include streamlined provisioning templates, content management capabilities, and group commands for fleets of any size.

Centralization: As the only solution that is compatible with virtually all Android, Esper supports OS versions 4.4 / 6.0+, and both GMS and AOSP devices. Restaurant operators choose Esper to support Windows-to-Android migration or mixed fleets of off-the-shelf and purpose-built Android devices.

OpEx Savings: Restaurants worldwide trust Esper to deliver powerful cloud tools for fully-remote device and app management, including remote provisioning, debugging, and device updates. Over-the-air OS and security updates are available for some supported devices. Esper's customers save 60% or more with our cloud tools compared to alternatives, thanks to streamlined workflows and far fewer on-site visits.

Accelerate Restaurant Innovation with Esper

Speed is more than an advantage for restaurant operators. In a rapidly changing industry, speed is an imperative. Regardless of whether your restaurant brand is mobile-first or mobile-by-necessity, operators can't afford to wait months or even years to deploy new kitchen display systems or self-ordering kiosks.

Esper offers industry-leading implementation timelines for projects of any size or scale, including proof-of-concept delivery in a week or less. We also offer a wide range of enhanced

validated hardware from some of the world's most beloved Android device brands, including Lenovo, Samsung, Zebra, Honeywell, and more.

Our enhanced, validated, and custom devices pass some of the industry's most rigorous testing for cloud tool interoperability and exceptional performance in restaurants.

Customer Experience

Esper customers rate us 5 out of 5 stars on Capterra, Software Advice, and G2 for quality of product, ease-of-use, and support. Our industry-leading and

implementation timelines and advanced features for Android are backed by world-class customer support and pricing.
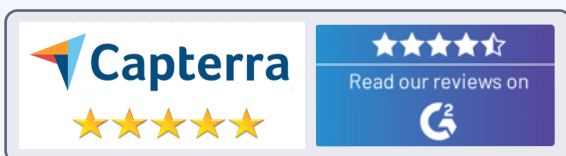
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See Esper in Action

You're invited to try Esper's cloud tools for yourself, free-of-charge. Our product is forever free for fleets up to 100 Android devices to support extended tests and POCs. **Sign up today.**

Or, **book an Esper demo** to learn about secure restaurant hardware and lifecycle management.