Innovative Restaurant Technology: Mobile Device Management (MDM)

by
Michael L. Kasavana, Ph.D., CHTP, CFTP
MSU/NAMA Professor, Emeritus
IFBTA Education
and
Cam Summerson
Director of Content
Esper.io

Executive Summary

Restaurant technology, primarily delivered through devices such as point of sale (POS) systems, digital signage, self-service kiosks, and kitchen display systems (KDS) has advanced significantly in recent years. Accompanying such advancements often is a set of challenges, including high initial costs, component integration, staff training and resistance, data analytics, cyber security, and balancing technology with human touch. Along with these potential issues, many operators find themselves confused by timely upgrades, particularly in the context of a changing mix of off-premises sales, rising labor costs, and evolving customer expectations. Despite these challenges, staying current comes with benefits such as improved efficiency, enhanced customer experience, and improved sustainability. While not all operators respond in the same way, when it comes to system elements, there needs to be a determination as to whether issues can be addressed locally or regionally.

With restaurant technologies, it is typically more efficient and cost effective to exercise remote control that enables immediate corrective action. In essence, mobile device management (MDM) software, which delivers the infrastructure between devices and operators is a powerful tool that can help restaurant operators stay robust in a rapidly evolving digital landscape.

Implementation Concerns

1. **High Initial Costs**: Implementing advanced technology solutions, such as AI-powered inventory systems or sophisticated POS systems, can be expensive.
2. **Integration with Existing Systems**: Integrating new technology with existing processes and networks can be complex. This often requires significant time and effort to ensure seamless operations.
3. **Staff Training and Resistance**: New technologies require staff to be (re)trained, which can lead to initial resistance and operational disruptions. Ensuring that all employees are comfortable and proficient with the new systems is crucial.

4. **Data Accuracy and Management**: The effectiveness of technologies like AI and machine learning depend on the quality of data processing. Poor data management can lead to inaccurate outcomes, predictions, and inefficiencies.
5. **Cybersecurity Concerns**: With the increasing reliance on digital systems, restaurants are more vulnerable to cyberattacks. Protecting customer data and ensuring the security of payment systems are major concerns.
6. **Keeping Up with Rapid Technological Changes**: The pace of technological advancement means that restaurants may need to continuously update their systems to stay competitive. This can be both time-consuming and costly.
7. **Balancing Automation with Human Touch**: While automation can improve efficiency, it's important to maintain a personal touch in customer interactions to ensure a positive dining experience.

MDM Technology

Restaurant technologies deliver customer and staff experiences across numerous diverse devices and a network of applications. Mobile device management (MDM) can be the connective tissue that orchestrates IT operations and allows for consistency and seamless integration. From simplifying device onboarding to enhancing control over device deployment, applications, configurations, and certificates, MDM oversees the entire device lifecycle. MDM increases device supportability, security, and organization functionality while maintaining user flexibility. Specifically, you can update software and device settings, monitor compliance with organizational policies, and remotely wipe or lock devices. It is important to recognize that, while each MDM offering may have its unique methods and workflows, MDM relies on enrollment and configuration profiles, supervision, payloads, and declarations to function properly.

MDM can be a transformative solution for restaurants, offering several key benefits that can significantly enhance operations and customer experience. Some of the ways MDM can make a difference include:

1. **Streamlined Operations**: MDM allows restaurants to manage all their mobile devices from a single platform. This includes POS systems, tablets for order taking, self-ordering kiosks, and digital menu boards. By ensuring these devices are always current and functioning properly, restaurants will operate more efficiently.
2. **Enhanced Customer Experience**: With MDM, restaurants can offer faster and more personalized services. For example, mobile ordering and payment systems can significantly reduce wait times with improved order accuracy. Additionally, digital signage managed through MDM can provide dynamic and engaging content to customers.
3. **Improved Security**: MDM solutions help protect sensitive customer data by ensuring that all devices are secure and compliant with industry standards. This process will reduce the risk of data breaches and cyberattacks, which is crucial for maintaining customer trust.
4. **Remote Management**: MDM allows remote monitoring and troubleshooting of devices. So issues can be quickly identified and resolved without the need for additional on-site support, thereby minimizing downtime and disruptions.

5. **Cost Efficiency**: By optimizing device usage and reducing downtime, MDM can help restaurants save on operational costs. MDM also simplifies the deployment of new devices and applications, making it easier to scale operations as needed.
6. **Staff Training and Productivity**: MDM can facilitate faster training for new staff by providing consistent and user-friendly interfaces across all devices. This helps new employees get up to speed quickly and improve overall productivity.

When devices are operating optimally, they are fast and integrate with the entire technical infrastructure. New staff can be trained faster while experienced staff benefit from continuously improving operations. Customer satisfaction tends to significantly improve as operations function more smoothly. The role of device management is to ensure devices, such as self-ordering kiosks, point of sale terminals, kitchen display systems, or digital menus are securely operational.

MDM Benefits

High level benefits of MDM include cost reductions, streamlined operations, stronger device security, and enhanced customer experiences. Given that mobile devices have become a hub of customer service, operators must adhere to security protocols. Regardless of whether a customer is placing an order online, or a server entering an order tableside, the proper sequencing of data between integrated devices is critical.

Industry practitioners advocate treating all devices (i.e. mounted or non-mounted) in a restaurant as mobile devices to ensure consistency of transmission and flow. The assumption being that with an MDM configuration, connected devices can be properly maintained. Transformative characteristics of MDM typically include:

- No-touch deployment
- Tooling for increased flexibility and the ability to deploy at scale
- Customized integration with other applications
- Remote viewing for debugging, troubleshooting, and training
- Support for custom hardware or applications

Basically, the right device management tools ensure devices are doing what they're supposed to be doing: enhancing customer experience, streamlining operations, maximizing hardware, and ensuring safety and security. The objective being for devices to deliver exceptional operational results with minimal downtime.

Technology Trends

The types of devices that restaurants use for daily operations are proliferating. In TD Bank's survey, thirty-six percent of respondents stated they expect restaurants will invest in digital platforms, mobile apps, and online ordering to improve customer experience. In addition to restaurants implementing standard POS and KDS devices to coordinate between front- and back-of-house, more consumer-facing technologies including self-ordering kiosks, on-table ordering devices, and dynamic (even interactive) digital menu boards are also being installed. Kiosks, for example, have proven to result in more favorable upsells than a human counterpart. Additionally, with kiosk implementation restaurant staff are able to focus on executing orders, managing special requests, and a more personalized experience.

Progressive restaurants are looking to add devices to gather more data and streamline operations, including IoT components like AI devices (gateway and edge), and robotics. The use case for these devices lies with an ability to align and integrate across the entire technology

stack. Restaurants need to rely on an MDM solution to bridge the gap to maintain operational reliability and efficiency.

Next-Gen Platform

Regardless of if a generational leap forward or continued incremental advancement is appropriate, the next-gen restaurant platform apparently is being driven by evolving customer expectations. To succeed in a competitive consumer environment, restaurants will need to deliver hyper-personalized guest experiences typically powered by AI. The restaurant's technology will need to predict what consumers most likely want (including multi-lingual capabilities) and identify what is likely to deliver instant gratification, such as via smart menus that anticipate current wants via seamlessly integrating new offerings and promotions. Innovative solutions may include predictive maintenance that helps staff mitigate kitchen issues before they become a major problem.

To deliver on a next-gen platform, operators will need to implement an ecosystem of technology and expertise. Selecting the right MDM platform to build upon is critical. Criteria includes:

- **Device proliferation:** tablets, kiosks, point of sale systems, digital menu boards, KDS, and others. To handle device proliferation, software infrastructure compatibility across device manufacturers (OEMs), operating systems, and applications are important to configure a best-of-breed solution. Business logic and strategy should dictate, not the tech stack.
- **Operational inefficiencies**: manual updates, device security, compliance enforcement, and downtime. Reducing manual IT tasks is another key consideration. It is unlikely that IT operations will scale at the same rate as expected device growth. As new devices are deployed operators may rely on MDM to automate workflows like device monitoring, policy management, compliance enforcement, and software testing.
- **Security risks**: data breaches, unpatched vulnerabilities, compliance, and enforcement challenges. More devices also mean a greater attack surface area. In addition to the policy management and compliance enforcement previously mentioned, operators will need to rely on more security software. When devices don't have any one device owner, it's easy for security vulnerabilities to arise. Modern MDM, built for dedicated devices, can automate software updates and enable code-based policy management and enforcement.
- **Cost balancing**: total cost of ownership (TCO) and return on investment (ROI) calculations. From growing manual IT tasks to the cost of a security breach, more devices can mean a higher total cost of ownership. With an effective MDM, TCO may actually decrease with hands-off automation.
- **Adoption**: workforce turnovers, labor shortages, and related concerns. Training and retention issues can be critical to ongoing success.

MDM Optimization

Mobile device management technology can trace its roots back to the early days of managing mobile devices for employees. The primary role of MDM was to keep all devices secure using a proper configuration and policies between business networks and non-business

networks. MDM relied on general policies that could be broadly applied to workers. Currently, MDM extends well beyond those devices to many diverse devices that are mission critical.

- **Quick Service Restaurant (QSR)**: price, convenience, and speed; point of sale, self-ordering kiosk, third-party delivery management tablets, kitchen display systems, dynamic menu signage, food safety monitoring, inventory management devices, drive-thru devices, line-busting tablets.
- **Fast Casual**: relatively quick yet, at the same time, healthier than fast food; point of sale, tabletop tablets, third-party delivery management tablets, kitchen display systems, food safety monitoring, inventory management devices
- **Fine Dining**: upscale meal experience often comprising several courses; point of sale, tabletop tablets, third-party delivery management tablets, kitchen display systems, food safety monitoring, inventory management devices
- **Popup/food truck**: a temporary retail location for limited operation; mobile point of sale, self-ordering kiosks, line-busting tablets, digital menu boards, kitchen display system, temperature monitoring devices, networking (e.g. mobile hotspot)

One of the key benefits of MDM is condensing front of house (FOH) and back of house (BOH) operations, ensuring all various apps and devices are connected and exchanging data with each other. This will help ensure seamless guest experiences with fast, reliable, and efficient service including convenient and secure mobile ordering and payments. This orchestration can lead to a powerful feedback loop that results in better customer experiences. MDM also ensures reliability across all mission-critical devices since it focuses on functionality and availability. Simply stated, MDM must work and be readily available.

MDM can be a crucial tool for streamlining restaurant operations, including front-of-house efficiency, communications, and back-of-house operations such as productivity, inventory management, and supply chain touch points. Managed device settings are the key to effective streamlined operations, IT policies, networking, content files, and remote capabilities. Rather than manually managing the state of each device, an operator can control when a device is working and in compliance. By focusing on devices that are out of compliance, IT teams can manage by exception thereby drastically reducing workload.

MDM can also enhance hardware usage by improving integration, compatibility, scaling, and futureproofing. The MDM decision is closely tied to hardware purchases or hardware refresh. Evaluating MDM software during a hardware strategy can accelerate time to market as well as reducing capital expenditures. Ensuring device availability is another key aspect for maximizing restaurant technology value and by using the tools within the MDM toolbox to monitor device health to maximize uptime and enhance customer experience. Security benefits of MDM can include data encryption, access control, device monitoring and remote wiping, and regular updates. It is important to ensure the overall strength of the security strategy of the provider.

MDM Partnerships

When devices on the network are operating optimally, applications should be engaging, fast, and integrating with the business infrastructure. Staff training will be accelerated and experienced staff will experience improved operations, customer satisfaction will improve, and tips earned will grow. The role of device management is to ensure components remain in

working order, are secure, enable remote control, and deliver great experiences. With the proper configuration, operators are able to manage, monitor, and troubleshoot devices from a centralized location. Criteria for selecting an effective technology partner includes dependable support and appropriate tools. A feasible technology partner should simplify operations, remain proactive, and boost profitability.

Choosing the Right Technology Partner		
Scalability	Ensure the technology can scale as your business grows, supporting multiple locations and points of sale.	☐
Innovation	Partner with a company that continuously enhances their offerings to stay ahead of industry trends.	☐
Partnership vs. Transaction	Seek a partner who provides long-term support, not just a one-time transaction.	☐
Hardware & Software Combination	Opt for a partner that offers both robust hardware and insightful software.	☐
Return on Investment	Choose a partner who prioritizes long-term ROI through operational efficiencies.	☐

Customer Support Essentials		
24/7 Technical Support	Confirm availability of a 24/7 support line for immediate issue resolution.	☐
Remote Monitoring & Diagnostics	Look for remote tools that proactively detect and resolve issues.	☐
Accessible Knowledge Base	Ensure the partner provides an easy-to-navigate knowledge base for troubleshooting and resources.	☐
Notifications	Confirm timely notifications for stockouts, system updates, or other alerts.	☐
Dedicated Account Manager	Verify if there is an assigned account manager familiar with your business needs. operational efficiencies.	☐

Operational Efficiency with Mobile Tools		
Real-Time Device Monitoring	Access real-time device status across locations to minimize downtime.	☐
Remote Device Management	Confirm capabilities for syncing, rebooting, and managing devices remotely.	☐
Diagnostics & Testing	Ensure you can perform remote diagnostics to keep devices functioning.	☐
Inventory Management	Utilize tools that enable mobile inventory updates to prevent stockouts.	☐
Sales Performance Tracking	Access sales data and daily revenue insights for each location.	☐

The above checklist should serve as a practical guide to strengthen operations.

MDM Impact

Restaurant operators support the claims that an MDM platform provides automated controls and high-level security of all mobile devices having network access. Additionally, an MDM solution is credited with increases in streamlined operational efficiency and ongoing maintenance protocols. As operators continue adding more devices, customers can experience dynamic content leading to increased revenue and decreased operating costs. The right MDM tools ensure devices are doing what they're supposed to be doing. This results in exceptional customer and staff experiences with rapid device updating with a minimum of device downtime and an emphasis on data privacy and compliance.

From a tools and technology perspective, MDM infrastructure enables remote support and management that is critical to reducing operating expenses. Device telemetry data can detect early issues enabling proactive deployment designed to correct a problem before it is noticed. Integrating device software with other business techniques can lead to more rapid automation. In addition, safety and security should always be kept top of mind. For example, applying kiosk mode will lock devices down to a single app, preventing misuse. Geofencing establishes a physical radius in which the device can operate, setting off an alarm if the device leaves the specified area. Such a capability discourages misuse or theft. It is also important that the MDM has software support at the OS and firmware levels to avoid unanticipated security vulnerabilities.

With POS, MPOS, KDS, and digital signage all combined with MDM software, operators gain an ability to remotely manage and monitor devices and content across the entire establishment. Additionally, MDM also enables app updates, remote troubleshooting, display confirmations, and screenshots.

Summary

MDM is powerful technology that can help operators remain competitive by enhancing guest experience, streamlining operations, maximizing hardware capabilities, and ensuring network security. With technology continuing to evolve, the advantages of an interactive and engaging MDM platform offer convenience for customers and staff members while streamlining operations.

Appendix A

How Mobile Device Management Boosts Efficiency and Satisfaction

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How can the right mobile device management enhance the restaurant customer experience?

Restaurants are continuing to bring more devices into the digital experience to engage customers with dynamic content, increase revenue, and decrease operating costs. But we all know that when devices don't work properly, the exact opposite happens. The right device management tools ensure devices are doing what they're supposed to be doing all the time. That's delivering exceptional customer experiences, simplifying staff experiences, updating devices rapidly, and minimizing device downtime.

Please speak to the benefits of streamlining operations, both front of house and back, with mobile device management.

When devices are operating optimally—they're engaging, fast, and integrating with your entire business infrastructure—everyone benefits. New staff is trained faster, experienced staff sees continuously improving operations, customer satisfaction goes up, and even tips go up. The role of device management is to ensure those devices—whether they are self-ordering kiosks, point of sale terminals, kitchen display systems, or digital menus—are always working, always secure, and always delivering the latest and greatest experiences.

And in the real world, technology is not perfect, so device management also must enable remote issue resolution. We see our restaurant customers getting tremendous value from being able to manage, monitor, and troubleshoot devices remotely from a centralized location.

Please speak to best practices for maximizing the value of restaurant technology hardware.

There are several things, from tools and technology to practices and philosophies, that you should be thinking about to get those benefits.

On the tools and technology side, device management infrastructure that enables remote management and remote support is critical to reducing OpEx since they help eliminate things like device downtime and onsite service calls. Second, use device telemetry data for early issue detection, so you can proactively deploy a fix before the customer even notices. Finally, look for ways to integrate your device software with your other business tools, so you can automate as much as possible. Customers are able to save hours per week of what would have otherwise been manual work.

On the practices and philosophies side, be cognizant of aligning your technology processes with your business processes. A pretty clear example would be to schedule updates to occur outside of business hours. You don't want a firmware upgrade to run while your restaurant is open, taking a POS terminal offline.

Safety and security are always top of mind. Please speak to critical considerations when implementing mobile device management.

There are some device management capabilities that you should consider as table stakes when it comes to safety and security. Controlling access and experience, along with geofencing, are effective ways to control usage. Kiosk mode locks the device down to a single app, preventing misuse. A good kiosk mode makes the device software virtually unbreakable via physical access. Geofencing sets a physical radius for where the device can operate. If a device, such as a line busting tablet, goes beyond the radius, you can set up an alarm or even brick the device, making it useless for whoever has it. Both of these capabilities disincentivize misuse and theft.

But probably even more importantly, your device management tools should ensure that you have software support down to the OS and firmware level. There inevitably will be security vulnerabilities, but if you're able to deploy regular security patches to your devices, you can ensure you're doing everything you can to protect your company and customer data.