



CHECKLIST REPORT

2017

Best Practices for Maximizing the Potential of Mobile BI and Analytics

How organizations can drive mobile
adoption and boost user satisfaction

By David Stodder

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Best Practices for Maximizing the Potential of Mobile BI and Analytics

How organizations can drive mobile adoption and boost user satisfaction

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FOREWORD

With mobile computing becoming ubiquitous, organizations need to maximize its potential for business decision making, from the executive level to operations. Mobile phones and tablets are more than just additional computing platforms; they accompany users wherever they go, which makes location the context for what they are trying to accomplish when using the devices.

Bringing together applications, services, and native functionality, mobile devices fuse together communication, computing, data discovery, multimedia content, and participation in transactions. Mobile computing offers an unusual opportunity for organizations to innovate with new ways of improving employee productivity, partner and customer relationships, sales and service, and business transactions.

Business intelligence (BI) and analytics are critical to this innovation because they can infuse mobile activity with data insights. At first, when users tried to employ mobile devices for BI and analytics projects, many organizations were wary of allowing it due to security and performance concerns. Indeed, mobile computing presents new challenges, security among them, which organizations need to address. However, technologies and practices have matured, giving organizations greater confidence in deploying secure BI and analytics applications on user devices.

As experience in addressing user requirements has grown, many organizations are moving forward with deploying applications that are fit specifically for the purposes of mobile computing rather than merely replicating desktop-based BI reports, dashboards, and analytics capabilities on mobile devices. Leading organizations today are focused on how to develop mobile applications that increase user adoption and embed data insights into more of their strategic decision making, operations, and customer and business relationships.

This TDWI Checklist discusses six best practices for maximizing the potential of mobile BI and analytics. The points cover a range of concerns such as application design, integration with enterprise data and security management, and using insights to innovate in operations.

With success in these areas, organizations can better adapt to new work environments where users are on the go and want to make data-informed decisions in complex, fast-paced work scenarios. With these practices, users will be able to apply data insights to improve efficiency, effectiveness, and agility in a range of scenarios including sales, service, and operational management.

NUMBER ONE

FOCUS MOBILE BI AND ANALYTICS DEVELOPMENT ON GAME-CHANGING OPPORTUNITIES

Mobility is expanding at the same time as interest grows among executives, line-of-business managers, and frontline personnel in using information effectively to inform daily decisions. Clearly, nearly all personnel in organizations would benefit if they had easier access to data and analysis capabilities at the point of decision while they are on the go with their mobile devices. However, most organizations need to focus investment on areas where such capabilities could bring the highest immediate value. Organizations should look for use cases where providing mobile data access and analytics functionality could fundamentally change users' abilities to achieve critical objectives.

Research finds that two key areas where most organizations should focus are improving operational efficiency and enabling personnel to increase customer and partner satisfaction.

Personnel in operations have long had to make do with limited access to information while away from the office. Frequently, most of the information they have had to work with has been paper-based, meaning that they have to carry large folders of printouts and documents with them while they inspect equipment or manage inventories and production lines. If users have laptops, they are dependent on a reliable network or Wi-Fi connection. Better mobile access to data, reports, and analytics can enable operational personnel to access current and relevant information so that they can be efficient in dealing with situations in front of them.

If their mobile platforms offer write-back capabilities, users can do more than just consume data; they can update databases so that teams are working with the most accurate information. Managers can use analytics to study patterns and trends based on multiple sources of data, enabling them to discover data relationships and make more informed decisions about how to remedy operational problems.

Mobile BI and analytics applications can give sales, service, and support personnel who regularly engage with customers or business partners a critical means of improving their satisfaction. Too often, these personnel are out in the field without the right information about their customers, including what they have purchased recently and any issues that they or segments of similar customers have had with a particular product or service.

Customers increasingly expect that personnel will know about all of their experiences with an organization, including those that have occurred across multiple channels. They are disappointed if personnel in the field lack this knowledge. Field sales personnel are also at a competitive disadvantage if they cannot readily

access analytics that might indicate the best cross-sell and up-sell opportunities for a particular customer.

Mobile platforms that enable data access, analytics, and visual reporting can help personnel have more informed engagements with customers. By utilizing mobile applications that are developed with these capabilities, executives, managers, and frontline personnel can fundamentally change engagements for the better.



NUMBER TWO

AIM FOR CLARITY AND EASE OF USE IN MOBILE APPLICATION DESIGN

Good design could not be more important to furthering the adoption of mobile BI and analytics. Designers of these applications have to compete with the polished aesthetics of consumer mobile applications, the best of which are nimble in responding to user activity and make excellent use of the mobile device's native functionality to enable users to do what they want to do. Second, compared to desktop and workstation screens, mobile devices offer less real estate for visualizations such as dashboards. This means that even as users' ambitions with BI and analytics grow more complex and the devices offer more computing power and space to hold data, visualizations must not become increasingly cluttered or the application's navigation harder to follow.

Given that most users will not be performing BI and analytics exclusively on mobile devices, the more that users can have a seamless experience across desktops and mobile systems, the better. Designers should implement mobile platform technologies, often along with cloud computing, to build applications that enable some of the same dashboard elements and data access to be available whether users are working on mobile devices, desktops, or workstations. At the same time, however, developers should consider the context: Users will have different needs when working remotely than they will when sitting in an office at a desktop or workstation system. For example, dashboard elements may need to be more actionable, with seamless integration with business, transaction, or process applications.

Clarity and ease of use should be top design priorities, particularly when the primary users are not analysts and are less experienced in working with data and analytics. Applications should help users focus on the most important elements, whether they are particular key performance indicators (KPIs), real-time alerts about analytics patterns or trends, or information that users need to know to perform a step in a business process. When user actions trigger data events that could take time, such as loading data or rendering visualizations, the application should tell users what is happening so that they do not become frustrated or confused.

Finally, it should be clear what users can or should do next; designs should employ the device's native and familiar swiping, pinching, and other functionality. Designs should be efficient, enabling users to get to results in as few screens as possible.

Designers should take advantage of platforms that offer open application programming interfaces (APIs) so that it is easier to integrate BI and analytics applications with other applications. APIs can help make BI and analytics functionality an integrated part of the user's total mobile environment. This is important because very few users will employ their device solely for BI and analytics. They will be viewing and analyzing data in the course of executing responsibilities such as sales or business transactions.

Collaboration should be an important consideration in design. Within the organization's governance rules, designs should enable users to share their work with partners, customers, or colleagues, including via email, approved social media, and internal collaborative platforms. These steps will help to embed BI and analytics functionality into users' experience so that working with data becomes integral to all of their activities.



NUMBER THREE

MONITOR AND ANALYZE USER EXPERIENCES TO IMPROVE SATISFACTION

To enhance user satisfaction and expand adoption, organizations need to continuously improve the performance, design, and relevance of mobile applications. If they are able to collect and analyze data generated by the application's use, organizations can make informed decisions about how to improve applications and upgrade user experiences. Organizations can integrate views from their usage sources with data from network and system performance to get a complete picture of how applications are performing and where to focus to correct issues users may be having.

The data is there: Users generate data every time they tap on the screen or perform an action. Mobile devices also supply geolocation data, which can provide contextual insights into both performance issues and application use.

For example, a salesperson trying to interact with an application at a particular location may have problems related to Wi-Fi access, the bandwidth available, the type of device being used, or other factors that are not specific to the application itself. If these are not the most significant issues, it could be that the user is having problems negotiating the design of the application. The difficulties could be happening at a location where the salesperson is meeting with customers or clients and doesn't have a reliable Wi-Fi or cellular connection. If that is the case, developers could change some of these features so that users could work offline more easily.

To better understand user adoption, organizations should monitor how often users access the application and what features they most often use—or rarely use. Administrators can look at statistics about what users do once they have consumed certain information, such as whether they attempt to drill down into the data to explore it at a deeper level. Organizations should monitor not only the experiences of individual users but also teams; by using cohort analysis filters and other features, they can examine application usage behavior within a sales team, line of business, or geographically located subsidiary.

Organizations should evaluate mobile platform technologies that enable them to track and analyze usage data. The technologies should ensure that developers, administrators, and other design personnel can apply data insights as they revise the application's functionality and how the application enables users to access and interact with data. Leading mobile application platforms enable organizations to monitor and track application usage across user populations for cohort analysis and to perform analysis of individual user experiences.



NUMBER FOUR

LEVERAGE NATIVE DEVICE FUNCTIONALITY TO ENHANCE USER EXPERIENCES

Although some organizations may choose to treat a mobile device as simply another Web access point into their data architecture, they should not lose sight of mobile's differentiation and why it is important to leverage the native capabilities of mobile devices to achieve the richest user experience.

People are excited about mobile; in many organizations, mobile BI application deployment is moving faster than it is on PCs and workstations. A major reason is that users like native functionality such as touch gesturing, photography, integration with voice, video, and text communication, hands-free voice command capabilities, and integration with geolocation functionality. Therefore, organizations want to incorporate these types of functions into their mobile BI and analytics applications.

"Native" mobile applications are those that are developed and designed to take advantage of device-specific functionality. Native applications are traditionally written specifically to run only with the device's operating system, such as Apple iOS or Google Android. This ensures that the applications are compatible with each respective device's OS, including new releases for all types of mobile devices implementing that OS, and that they can fully exploit the native OS's features. To increase user flexibility in choosing functionality and to relieve developer complexity, some leading mobile platforms provide code-free environments that enable users or developers to add application features via APIs and pre-populated components without additional coding.

The key point is that organizations should examine how their BI and analytics applications could benefit from fully leveraging native mobile device functionality. They need to think creatively about how such functionality as touch gesturing, easier integration with cameras, and different forms of communication could enhance the user experience and increase adoption.

For example, to improve alerts about trends, patterns discovered, or situations that require a user's attention, applications might take advantage of Apple's Push Notification Service. Another example would be to use the device GPS. Current location could be an important contextual element in determining what types of data or visualizations the user needs to see. Users may also want to perform quick queries or other geospatial analysis with location as a prominent variable.

Organizations should ensure that the application's critical native device functionality is available in offline mode—for example, during air travel or when users are in areas with poor network access. Designs should allow users to securely access cached reports and dashboards. Some mobile platforms enable administrators to set up automated caching and define what objects can be pre-cached in the event that users are offline.



NUMBER FIVE

ALIGN MOBILE APPLICATIONS WITH ENTERPRISE DATA AND SECURITY STRATEGIES

Mobile BI and analytics applications can help organizations realize the longstanding enterprise BI and analytics goal of enabling users to have easier access to the right information at the right time, whether they are in the office or on the go. With mobile applications, users have the freedom to interact with data wherever they are, including outside of firewalls. However, this means that it is important to address enterprise security concerns as mobile applications are deployed. Mobile user adoption will go more smoothly if organizations can align mobile expansion with their security procedures, including those for enterprise BI and data management.

Many organizations try to avoid complexity by simply treating mobile applications as new clients in their current data architectures. With this approach, access from mobile devices is limited to the same data warehouses or data marts that users can access from their desktop or workstation systems. Organizations that are rolling out mobile BI and analytics as part of larger enterprise strategies often prefer this approach because it allows them to use their existing data management, integration, metadata, and governance infrastructure. With centrally managed deployments, they can extend data quality and security procedures, as well as regulatory adherence, to the mobile realm.

However, organizations may need to be more flexible to accommodate users who are trying to do different things with data and analytics than they might do from stationary systems inside firewalls. Mobile users may need to work with a wider range of data, including geospatial data, text, customer-supplied information, and external data that is contextually important to their decision making and collaboration. They may be using data and analytics in the context of an ongoing transaction or customer engagement and need fresher data than existing systems are designed to deliver. Organizations should evaluate whether their enterprise architectures can offer the flexibility that mobile users are likely to demand or whether they need to establish a specialized environment, either on premises or in the cloud, that can more fully support mobile use cases.

Whether mobile is part of an existing or new architecture, security is a key concern. Mobile devices themselves have security, including at the OS level. Organizations need to ensure that sensitive data is protected during data transfer between the applications and databases and the mobile server accessed by users, which can be situated behind the firewall. Organizations should establish procedures to deal with a lost or stolen device to ensure data on the device is not compromised. Finally, organizations should examine whether their identity, authentication, and access management processes are properly set up so that functionality privileges and access permissions only go to designated mobile users.



NUMBER SIX

MOVE BEYOND SIMPLE ANALYTICS CONSUMPTION TO PUT INSIGHTS INTO ACTION

A key objective for many organizations is to act smarter—that is, to use analytics to transform business decisions, operations, and processes, including customer or partner self-service transactions performed on mobile devices and through websites. To realize this goal, organizations need to better integrate BI and analytics into all their activities, including but not limited to transactions. They need to encourage users to move beyond merely consuming data and analytics and toward “operationalizing” insights by putting them into action. Mobile platforms offer a unique opportunity to launch this transformation through a synergy of new types of applications that can enrich both analytics and operations.

People use mobile devices to engage in a variety of activities, from email, social media, and messaging to authoring and sharing multimedia, interacting with applications ranging from BI and visual analytics to project scheduling and mapping. If mobile BI and analytics platforms enable users to embed dashboards, visualizations, and other objects in email, social media, messaging, project management, and

other collaborative systems, they can share data insights more rapidly and effectively with internal teams, business partners, and customers. At the same time, BI and analytics applications themselves can deliver a richer view of subjects of interest if users can integrate multimedia, including pictures and videos authored on mobile devices, into BI and analytics dashboards, visualizations, reports, geospatial maps, or other artifacts.

One feature that can be useful for creating data-driven mobile applications is write-back functionality. This makes it possible for users, including customers and partners, to input data from mobile devices into business applications such as ERP, CRM, OLTP, or other system-of-record applications. Write-back functionality could be embedded in forms, documents, and dashboards. It can also involve images and multimedia, not just structured data; examples might be a photo of a receipt or a photo to go with an insurance claim.

A manager in sales, insurance, loan approvals, or other line of business could then be alerted about the update and determine whether to approve a request, customer order, insurance claim, new project plan, or other action. Organizations could use analytics on the newly input data for predictive modeling, risk analytics, resource and supply chain analytics, or other purposes.

Organizations can employ this and other types of mobile platform functionality to enable personnel to respond to updated situations. With the latest data, they could create on-demand reports and visualizations to share with colleagues so that the organization can determine correct strategies based on real-time views.

A FINAL WORD

Many organizations have barely scratched the surface with mobile BI and analytics. Yet their personnel are increasing their use of mobile devices, putting pressure on organizations to make faster progress toward enabling users to interact with data and apply insights for better business outcomes. This TDWI Checklist has offered best practices in six areas that organizations should address to maximize the potential of mobile BI and analytics. With industry practices and technologies maturing, the time is right for organizations to develop mobile applications that further their goals for data-informed decision making, smarter operations, and competitive advantages based on information innovation.

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