INFO-TECH research group

Practical IT Research that Drives Measurable Results

# Develop a Mobile Application

# Introduction

- Given significant growth in smartphone adoption, organizations are under greater pressure to engage a growing mobile customer audience that will access, use and buy the enterprise's products/services via mobile devices.

- A mobile application represents an opportunity to improve customer engagement and brand awareness, and potentially drive new revenue. But even if objectives are unclear, most business leaders believe that a mobile presence is simply necessary from a competitive standpoint.

- Few organizations have experience with mobile development and most rely on third parties to help launch their first application. But even if the decision is made to outsource, mobile is an important strategic area and organizations must have a clear understanding of the market and technologies in order to realize the full potential of the opportunity.

- This solution set will help you:

# Executive Summary

- If the Web site is core to your business, you absolutely need to optimize mobile access and related services. Mobile browsing is no longer a niche use case.

- Although cross-platform Web apps will generally allow the organization to reach the broadest mobile audience, native smartphone apps still deliver a superior user experience and offer greater branding value and marketing potential.

- If a native app is justified, you must select and focus on a single target platform for initial release. Concurrent development across multiple platforms is wasteful until you have actually validated the application concept and features.

- Develop fast and release often by making an app that does one or two things really well. Getting the first release out to your audience, capturing feedback, and planning future iterations based on this data is much more important than trying to launch the perfect app at the outset.

- Most organizations should look to experienced third parties to aid in mobile app design and development. The organization's own efforts should be more focused on promoting the launch, generating awareness, and capturing customer feedback.

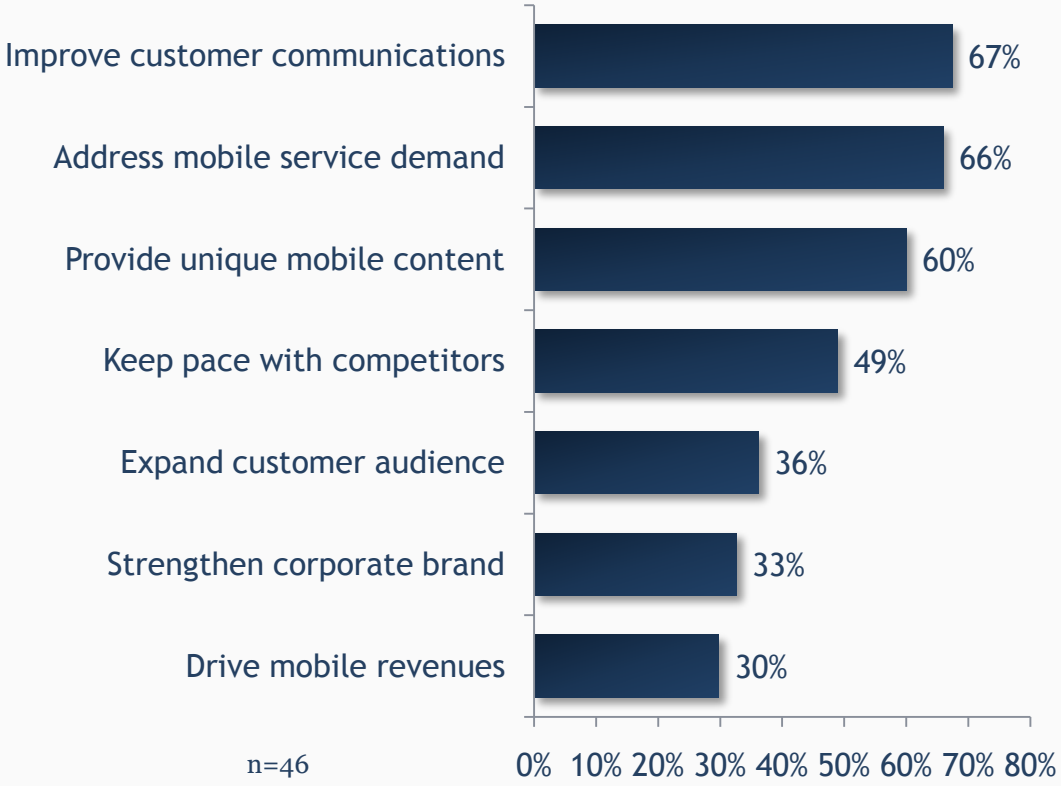
- Marketing should heavily utilize social media elements to generate early buzz and let your audience know the app is coming – the mobile app space is highly competitive and visibility is critical.

| | | | | |
|---|---|---|---|---|
| Gauge the Opportunity | Business Drivers | Mobile App Examples | Costs, Benefits, ROI | Build vs. Buy Decision |
| Compare Mobile Platforms | Mobile Market Overview | | Platform Analysis and Selection | |
| Focus Business Requirements | Goals and Objectives | Application Requirements | Security and Privacy | |
| Develop the Application | Keys to Success | Required Resources | Development and Testing | |
| Launch, Measure, Iterate | Launch and Promotion | Feedback and Metrics | Future Releases | |

# Drive improved customer communications and address mobile service demands with a mobile application

*Customer-facing mobile applications represent an opportunity to differentiate the organization's services and improve overall customer engagement.*

**Improving Customer Communications is Top Mobile App Driver**




## Examples

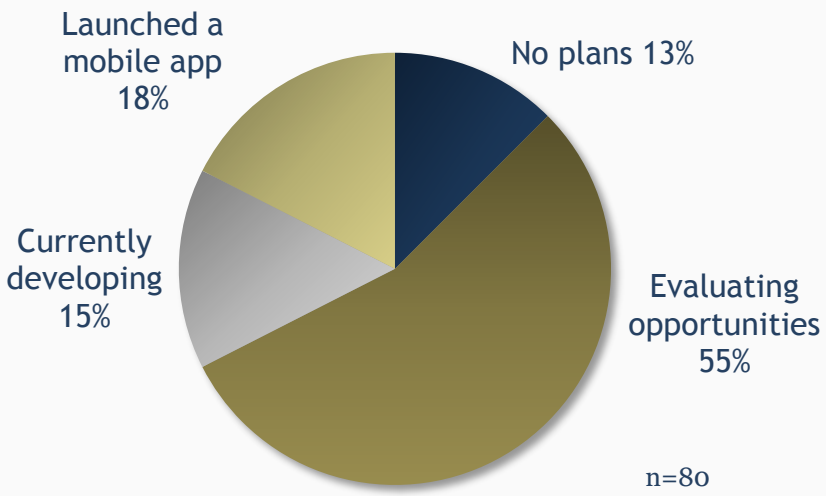
| | |
|---|---|
| 1 | **Improve customer communications** by offering an app that allows users to view the status of customer service requests in real-time via their mobile device. |
| 2 | **Address mobile service demand** by developing a version of the corporate Web site optimized for a growing audience of smartphone users. |
| 3 | **Provide unique mobile content** with an app that delivers customized product recommendations based on a user's current location. |

# Develop a mobile presence to support marketing and customer service efforts in today's business environment

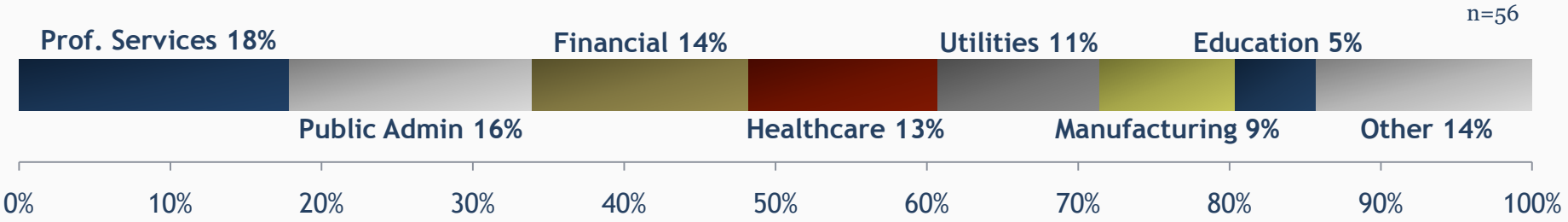
*Organizations across industries are pursuing mobile apps for multiple reasons but are united in the view that customer audiences are increasingly **mobile**.*

> *People are getting into the mobile app space because they feel it's something that they **have** to do.*
>
> *You couldn't be a significant business in 1998 without a Web site, now you can't be a business at all without a Web site. People are starting to think about mobile apps the same way.*
>
> *-Paul Hershenson, President*
> *Art & Logic, Inc.*

**Majority of Organizations Pursuing Mobile Apps**




**Respondents Evaluating, Developing Or Having Launched Mobile Apps**



# Focus your customer-facing mobile application to one of three functions: utility, content or entertainment

| Function | Description | Examples |
|---|---|---|
| **Utility** | • Applications that provide mobile user access to the organization's specific product/services<br>• Primarily designed and intended to improve the service experience for existing customers<br>• Can also be effective in extending the corporate brand – a useful and free download can help engage prospective customers | • **Banking.** The Bank of America Mobile Banking Applications for iPhone, BlackBerry and Android provide users with access to personal banking information and the ability to make bill payments.<br>• **Retail.** The IKEA Catalogue 2010 iPhone app offers the ability for customers to browse products, pricing and inventory status from their mobile device.<br>Bank of America IKEA |
| **Content** | • Applications that deliver unique content, analysis or knowledge to mobile device users –usability is critical<br>• Designed for existing customers but also commonly an opportunity to attract new prospects | • **Media.** The Wall Street Journal Mobile Readers (BlackBerry and iPhone) and The New York Times Mobile Apps (iPhone, iPad, Palm Pre, BlackBerry, Android) deliver daily articles and rich multimedia content to mobile device users.<br>THE WALL STREET JOURNAL. The New York Times |
| **Entertainment** | • Games are the most downloaded app type in all of the leading stores<br>• A fun or quirky corporate app may serve as a business branding opportunity (though results may be short-lived) | • **Branding.** Coca Cola Cheers for iPhone is a very simple but highly rated free app that allows users to virtually "share" a Coke with a friend and post status updates to Facebook and Twitter.<br>Coca-Cola |

# Example: City of Boston's mobile app helps constituents report and track service requests quickly and easily

- The City of Boston released its first mobile application, **Citizens Connect**, in mid-2009 for the Apple iPhone
- Citizens Connect complements the city's 24-hr hotline and Web self-service tools for reporting service requests – the app allows users to upload photos and notes to report issues such as graffiti or potholes
- The city is launching major updates this year, including Twitter integration and an Android version, and will open its work order management API to third party developers


| Key Figures | |
|---|---|
| 5000+ | **Total downloads** of Citizens Connect iPhone app via the iTunes App Store |
| 2,500+ | **Number of service requests** captured, roughly 16% of total since launch |
| $25k | **Approximate cost of development** through partnership with Connected Bits |

> *"You shouldn't have to come to City Hall if you see an issue on the street. You should be able to just grab your phone, press a few buttons, and send off a service request to the city. That was the idea."*
>
> *- Nigel Jacob, Co-Chair, Mayor's Office of New Urban Mechanics*

# Example: NextStop London Transit Guide mobile app gives riders real-time GPS visibility into current bus location

- London, Ontario-based developer Aaron McGowan launched the **NextStop - London Transit Guide** application in mid-2010 for BlackBerry, with sponsorship from Fanshawe College
- The NextStop mobile app pulls publicly available GPS data from the London Transit Commission (LTC) Web site to provide mobile users with a snapshot of current bus location and major stops for a particular route
- The LTC has stated that it does not have the resources to develop mobile apps but supports the efforts of entrepreneurs making use of open data


## Key Consideration: Open Data

In resource-constrained environments, consider opportunities associated with opening public access to specific data sources . The open data movement is particularly strong in government, where transparency is a key driver. With respect to mobile apps, this can be an opportunity to avoiding typical government IT project overhead by encouraging third party development.

Prominent examples include the US federal Data.gov site, the New York City Data Mine site, and Toronto's OpenTO initiative.

> *"Initially, I developed the app for my own use. Then I said, 'Wait a minute, this GPS data is public domain, it should be made available to everybody.' So I approached the individuals who could help me get the political pull to use that data."*
>
> *- Aaron McGowan, Developer*

# Most organizations realize benefits of increased Web site traffic and customer feedback after launching a mobile application

| Top Mobile App Benefits | | Description |
|---|---|---|
| 1 | Increased Web site traffic | • Mobile browsing is growing exponentially - streamlining mobile access to Web resources will improve the customer experience and increase visits. Services such as Google Analytics for Mobile are widely used to track mobile traffic. |
| 2 | Increased customer feedback | • Mobile apps commonly serve as an additional customer feedback mechanism; built-in feedback forms, quick polls, as well as tie-ins to social media services (e.g. Twitter and Facebook integration) can all support this purpose. |
| 3 | Increased sales/revenue | • Organizations may realize increased revenue via indirect (a location-aware app that helps customers find nearest store) or direct (an app that supports mobile browsing/shopping and includes a built-in payment facility) methods. |
| 4 | Improved customer data/analytics | • A mobile app can also potentially help capture important information about the customer and prospect base, including geography, site activity, and content preferences. |
| 5 | Reduced customer support requests | • Few organizations realize reduced customer support requests following a mobile app launch– in fact, some see increases. A mobile app may be an opportunity to better engage and service a "hidden" customer audience. |

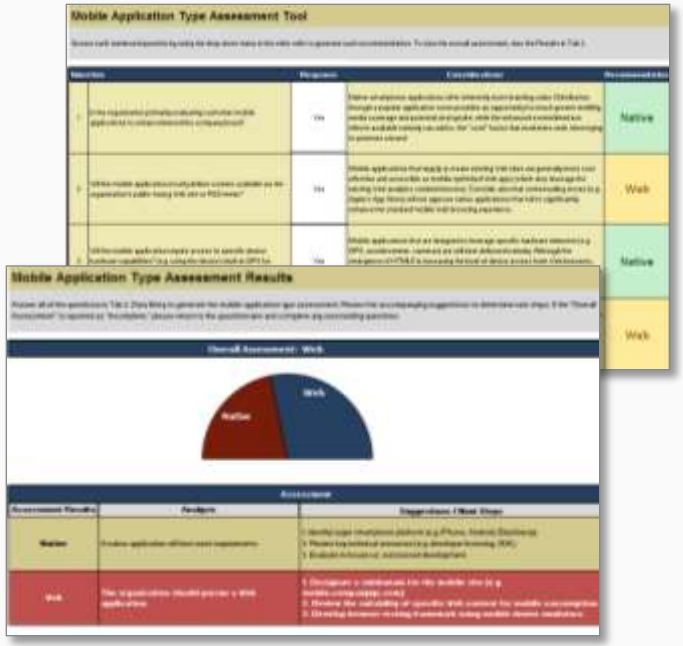
# Reach a decision on Native or Web app development using the Info-Tech "Mobile Application Type Assessment Tool"

*Is the organization aiming to deliver a **universal** service or a **unique** customer experience? Consider the criteria for native vs. web app development.*

- The "Mobile Application Type Assessment Tool" is designed to help organizations identify the most appropriate mobile application approach given key objectives:

**Native** (local install) or **Web** (browser-based)

- Use this tool to help determine whether the organization should pursue a native or Web app development strategy.




> *One idea that has traction is rewriting our public Web site. We sell condos and apartments, so we have floorplans and everything on our site. At this point, **over 5% of our Web traffic** is coming from mobile devices. But our site is not that mobile friendly.*
>
> *- IT Director, Real Estate*

# Look past conventional ROI analysis but set and communicate key mobile application objectives and metrics

*Organizations rarely embark on mobile application projects with a formal ROI target – either the idea has traction with the business or it doesn't.*

| Function | Objectives | Metrics |
|---|---|---|
| **Marketing** | Drive product/brand awareness | • # application downloads<br>• % increase in mobile Web traffic<br>• % increase in online media hits<br>• % increase in social media hits |
| **Customer Service** | Improve online customer service | • # new online customer service users<br>• # mobile customer service requests<br>• % decrease in traditional requests |
| **Sales** | Generate Web revenue | • # mobile site registrations<br>• # mobile site referrals<br>• % increase in monthly sales leads |


As with any development project, native mobile app costs and timeframes vary significantly based on scope and resources. Organizations should expect to budget a minimum of **$15k** for third party development.

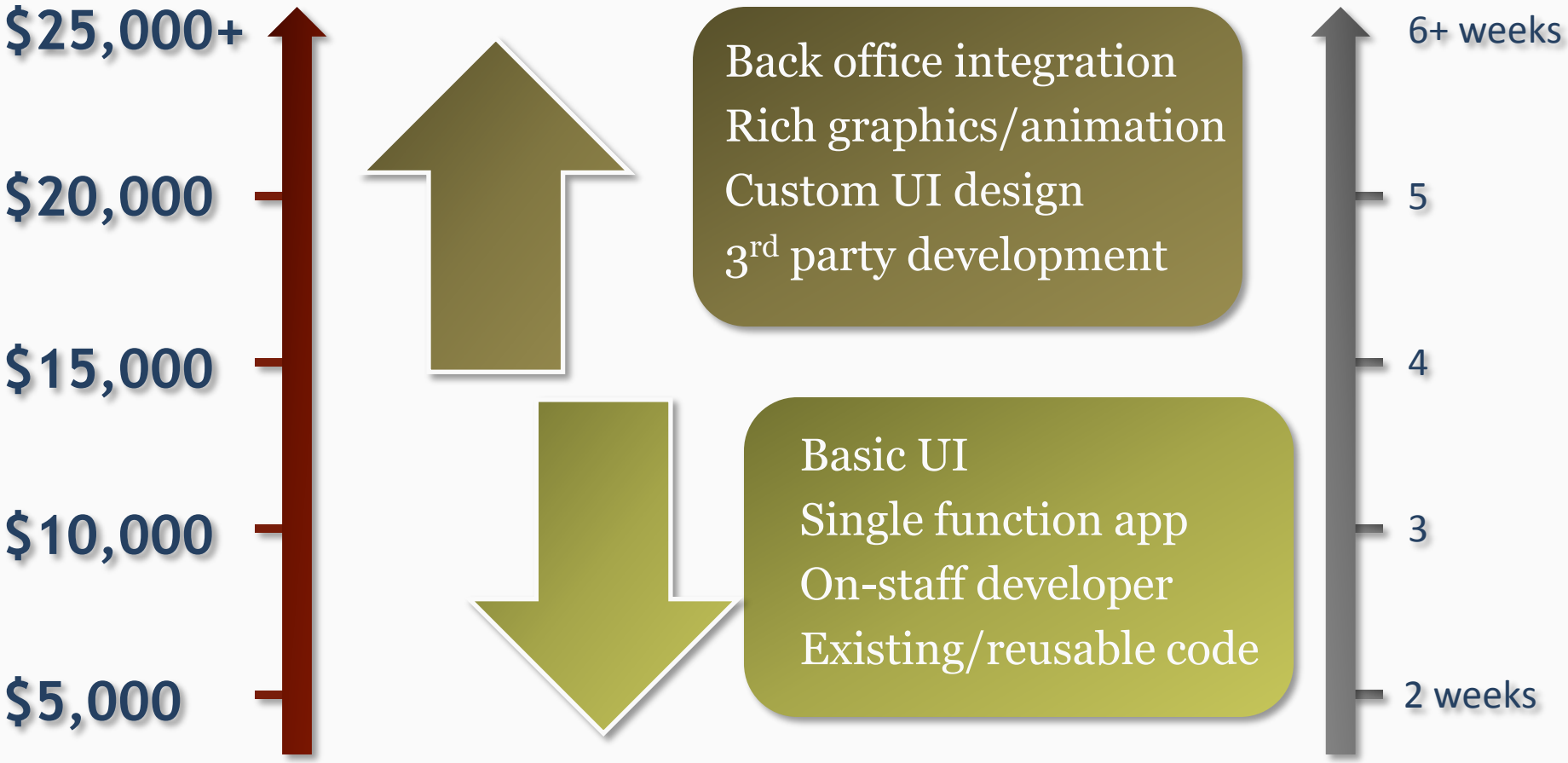
> *"The biggest thing is it has to solve a **specific pain point**. Too often within the technology sector there's a tendency to create something around a cool technology, and then wonder why it's never adopted. There has to be a specific pain point that you're trying to address, and that's where the value proposition is driven."*
>
> *- Krystal Kolodziejak, Director, IDnoodle at SaskTel*

# Engage a proven and experienced third party unless you already have existing mobile development expertise on-staff

*Very few organizations have experience developing for the leading consumer smartphone platforms – given key decision factors, over 60% elect to outsource.*

| Outsourcing Decision Factors | | |
|---|---|---|
| **Platform** | **Interface** | **Resources** |
| **Language.** The leading consumer app platform, the iPhone, requires coding in Objective-C – a foreign language to most enterprise developers. Competing platforms (e.g. BlackBerry) support Java, but available libraries may vary.<br><br>**Environment.** Smartphone vendors offer their own Software Development Kits (SDKs), which vary in maturity, completeness and documentation. Investing in training for a new platform can be costly if the acquired skills cannot be applied to other areas. | **Function.** Mobile represents a unique target platform, where interface, design and flow are even more critical than usual. Users require simple but powerful task-oriented interfaces – difficult to design as apps increase in sophistication.<br><br>**Usability.** Don't get caught in the trap of thinking that it's easy to design or translate apps from the desktop to a mobile device. Usability will make or break the mobile app - experts have prior experience with what works and doesn't. | **Staffing.** Given a strong preference and trend towards off-the-shelf *enterprise* apps, fewer organizations have basic application development expertise on-staff, let alone resources available to commit to mobile development and future releases.<br><br>**Time.** Most organizations embarking on mobile app projects have specific time frames for launch (often aligned with marketing targets) – a plan to ramp up an internal development team introduces considerable risk and potentially unplanned costs. |

# Budget a minimum of $15k for third party development




*Info-Tech Insight:*

Experienced iPhone OS developers range from $100-$150 hourly – the skillset is in very high demand. Do not expect to quickly and easily train/develop this expertise in-house.

# Customer apps require custom work – but pursue off-the-shelf tools first if a mobile **workforce** solution is needed

*Avoid duplicating effort – leading enterprise application vendors offer effective mobile solutions that deliver core features. Custom development projects must be scrutinized.*

| | Off-the-shelf mobile client | Custom mobile solution |
|---|---|---|
| **Objective** | Deliver off-the-shelf application functionality to mobile devices | Extend custom business application functionality to mobile devices |
| **Audience** | Mobile employees (e.g. outside sales, field services, executives) | |
| **Operation** | Local install (Native app) or Browser-based (Web app) | |
| **Distribution** | OTA (over-the-air) installation or Web interface | |
| **Examples** | • Cisco Unified Mobile Communicator<br>• Mobile Express for Microsoft CRM<br>• NetSuite for iPhone<br>• OpenText Everywhere<br>• QlikView for Mobile<br>• Salesforce.com Mobile Lite | • A GPS-enabled native mobile client for an internal work order system<br>• A mobile Web interface for central employee directory / contact list<br>• A mobile schedule and time keeping app for healthcare professionals |

*Info-Tech Insight:*

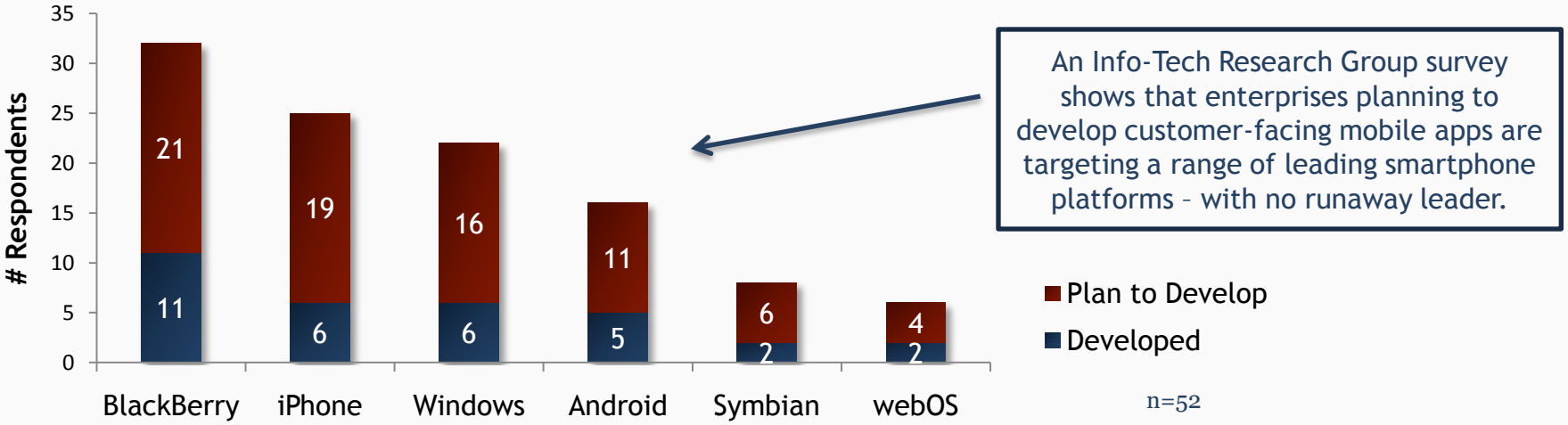
Recognize that mobile clients may already be available that meet business requirements. Developing an integrated internal mobile app will require substantial financial justification.

| | | | | |
|---|---|---|---|---|
| Gauge the Opportunity | Business Drivers | Mobile App Examples | Costs, Benefits, ROI | Build vs. Buy Decision |
| **Compare Mobile Platforms** | **Mobile Market Overview** | | **Platform Analysis and Selection** | |
| Focus Business Requirements | Goals and Objectives | Application Requirements | Security and Privacy | |
| Develop the Application | Keys to Success | Required Resources | Development and Testing | |
| Launch, Measure, Iterate | Launch and Promotion | Feedback and Metrics | Future Releases | |

# Competition in the fast-changing mobile landscape is increasingly driven by differentiated consumer apps

*There is tremendous competition in the smartphone market, with a number of major hardware manufacturers and software vendors in the mix – and all emphasize **apps**.*

- **Shifting mindshare.** Mobile device shipments vary significantly on a quarterly basis and leadership in one or more categories today does not ensure future success – new entrants can have a major impact in a short period. (e.g. Apple iPhone)
- **Regional market shares.** Some major vendors are only strong in certain geographies, due to carrier partnerships and strategic focus. (e.g. Nokia has minimal presence within North America, Motorola has minimal presence outside)
- **Emphasis on third party apps.** With narrowing gaps in hardware capabilities, leading vendors actively encourage third party app development, attracting talent with development resources and sales/distribution support via online application stores.




An Info-Tech Research Group survey shows that enterprises planning to develop customer-facing mobile apps are targeting a range of leading smartphone platforms – with no runaway leader.

# Apple iPhone OS and App Store:
# Leading overall target for customer-facing native applications

*Apple has established a commanding lead in the mobile app marketplace on its strengths of compelling devices, rich user interfaces and proven distribution channels.*

| Strengths | Challenges |
|---|---|
| ▪ **Customer audience.** Apple has amassed a vast and loyal following for the iPhone, which shares an OS with its iPod touch and iPad devices. The App Store also represents the largest and most popular mobile store in terms of total apps and downloads.<br><br>▪ **Development resources.** The iPhone SDK and development toolchain have been very well received and include a Graphical Interface Builder to streamline UI design and iPhone Simulator to test mobile operation. | ▪ **Developer requirements.** Development for the iPhone OS requires a Mac OS X machine, usage of the Xcode IDE, and coding in Objective-C – which may not be familiar tools or languages for many enterprise application developers.<br><br>▪ **Approval process.** The App Store is the only mechanism for getting apps onto the customer's device. Submitted apps and updates must meet Apple's approval criteria and are subject to its internal testing timelines. |


# RIM BlackBerry OS and App World:
## Dominant handset force but trailing in consumer applications

*RIM's BlackBerry lineup holds a very strong position in the smartphone landscape but the company's late entry into the consumer applications space has slowed its progress.*

| Strengths | Challenges |
|---|---|
| ▪ **Dominant platform.** RIM remains the overall smartphone sales leader in North America and continues to release new BlackBerry devices on a steady basis. Even with the success of new entrants, the vendor continues to grow its substantial base.<br><br>▪ **Developer familiarity.** Similar to Android, application development for BlackBerry OS is in the Java language, which can lessen the learning curve for enterprise developers new to the mobile space but experienced in Java (or the very similar C#). | ▪ **Interface design.** Compared to those of key competitors, the BlackBerry SDK lacks a more comprehensive set of UI elements and widgets, which may contribute to longer development timelines and an inconsistent look and feel.<br><br>▪ **Diverse devices.** The growing BlackBerry device lineup varies in terms of form factors, screen resolutions, user interfaces, and hardware capabilities. Developers lack a single obvious target and must test across multiple devices. |



# Android OS and Google Android Market:
## Fastest growing and highly flexible smartphone platform

*Google's efforts to promote Android have resulted in tremendous growth and the platform's fast broadening range of capabilities make it a versatile development target.*

| Strengths | Challenges |
|---|---|
| ▪ **Industry support.** The open source Android OS is, by most accounts, the fastest growing smartphone platform, with strong support across major manufacturers and carriers, many of which are also members of the Open Handset Alliance.<br><br>▪ **Development environment.** Although Android itself is a new platform, many developers have found that the ability to code in Java within the popular Eclipse IDE conveniently leverages existing expertise and reduces overall development time. | ▪ **Fragmentation.** Partly as a result of rapid iteration of the OS, multiple Android versions and devices currently occupy the market. Ensuring compatibility and user experience across multiple versions presents a development challenge.<br><br>▪ **Android Market.** Development of the online marketplace has lagged the OS itself; Android Market still lacks Web site search functionality and Google does not offer any ability to sync apps and media from desktop to device. |

# Symbian Platform and Nokia Ovi Store:
## Holds largest global base but a much lesser application presence

*Symbian-based devices dominate sales but the platform and Nokia's Ovi Store hold disproportionately small consumer mindshare – particularly in North America.*

| Strengths | Challenges |
|---|---|
| ▪ **Installed base.** The open source Symbian platform enjoys strong support across major carriers and dominates most markets (with the exception of North America). It remains the single largest smartphone target for developers.<br><br>▪ **Streamlined development.** Development for the Symbian platform is supported by the powerful Qt framework and widget toolkit, which can significantly streamline GUI design and cross-platform portability (desktop and mobile). | ▪ **Developer support.** Despite its massive installed base, Symbian has not captured the mindshare of leading developers and Nokia's Ovi Store still pales in size and growth compared to the application stores from Apple and Google.<br><br>▪ **Legacy versions.** The Symbian market is fragmented across multiple legacy (S60), current (Symbian^1) and, shortly, future (^2,^3,^4) versions. Devices and capabilities can vary significantly, which can complicate development. |

# Microsoft Windows Phone 7 and Marketplace:
## Late arrival of new smartphone platform presents uphill battle

*Its upcoming mobile operating system promises a richer user experience but Microsoft has now fallen significantly behind in the smartphone applications market.*

| Strengths | Challenges |
|---|---|
| ▪ **Development platform.** WP7 development leverages Microsoft Silverlight and the .NET Compact Framework. The platform will hold very strong cachet with developers versed in Windows and Microsoft Visual Studio environments. | ▪ **Late entry.** With WP7 launch set for late 2010 (after the 4th generation iPhone and at least 5 iterations of Android), Microsoft has lost major ground. Many developers will have already invested in better established consumer platforms. |
| ▪ **Standardization.** Unlike with its previous Windows Mobile platforms, Microsoft has set WP7 device standards for screen resolution, sensors, and hardware performance in order to deliver a more uniform development target and consistent UIs. | ▪ **Marketplace.** The existing base of Windows Mobile applications will not be supported on the new platform, forcing developers to rework or rewrite. As a result, Windows Phone Marketplace will significantly trail major app stores at launch. |

Microsoft Windows Phone

# Palm webOS and App Catalog:
## Lack of customer audience outweighs rich platform capabilities

*Palm's struggles prevented its highly touted webOS from capturing meaningful market share. HP may be able to save the platform, but for now it remains inconsequential.*

| Strengths | Challenges |
|---|---|
| ▪ **Development flexibility.** webOS is unique in that it leverages standard Web technologies (HTML, CSS, JavaScript) for native apps. The webOS SDK is also complemented by the Project Ares tool, a drag-and-drop development interface.<br><br>▪ **HP acquisition.** The IT giant's acquisition of Palm presents an opportunity to significantly grow the platform by expanding webOS across more mobile devices, including smartphone, netbook and tablet form factors. | ▪ **Market share.** webOS does not represent a top 3 target in any geography and is not well recognized among consumers. With only two handset models (Pre and Pixi) and the comparatively small App Catalog, HP will be pressed to grow market share.<br><br>▪ **Differentiation.** Beyond its Web foundations, webOS still lacks any meaningful differentiation from the end user perspective when compared to the more popular and established iPhone (soon to add multi-tasking) and Android platforms. |


palm webOS

# Focus distribution strategy on the major manufacturer application stores – any other mechanisms should be secondary

*Device manufacturer stores are the most effective means of distributing smartphone apps. Don't be swayed by the large audiences of alternative marketplaces.*

## Carrier Stores

- Potential to gain high visibility with customers in a specific region/geography
- Application purchases/payments are integrated with existing customer billing
- Potential audience is limited to carrier subscribers – can only be a secondary distribution option

## Manufacturer Stores

- Heavily promoted, and reviewed - globally – offering the greatest visibility for new consumer apps
- Stores are easily browsed directly from the device; streamlined install and payment processes
- For some platforms, the only mechanism through which to distribute an app (e.g. App Store)

## Independent Stores

- Flexible submission and review processes and broad smartphone application libraries
- Heavy emphasis on entertainment and media applications; business or customer utilities are rare
- Geared towards independent software developers; almost no focus on business customer apps

# Compare application development and customer audience specifics when selecting your target platform

*The three leading smartphone players in North America – Apple, Google, and RIM – present different customer audiences and different development toolsets.*

| | Apple | Google | RIM |
|---|---|---|---|
| OS | iPhone OS | Android OS | BlackBerry OS |
| Application Store | App Store | Android Market | BlackBerry App World |
| Royalty Rate | 30% | 30% | 20% |
| Developer Fee | $99/yr Standard<br>$299/yr Enterprise | Free<br>($25 for Android Market) | $200<br>(first 10 apps) |
| Language | Objective-C | Java (Dalvik VM) | Java (Java Micro Edition) |
| SDK | iPhone SDK | Android SDK | BlackBerry SDK |
| Standard IDE | Xcode | Eclipse w/ Android ADT Plugin | Eclipse w/ BlackBerry JDE Plugin |
| Differentiators | 1. Largest application audience<br>2. Single standard form factor<br>3. Requires Mac OS X to develop | 1. Open source environment<br>2. Option to distribute direct<br>3. More flexible hardware access | 1. Largest smartphone audience<br>2. Option to distribute direct<br>3. Business/security infrastructure |

*Info-Tech Insight:*

Apple's iPhone remains the most popular, visible and lucrative platform for consumer apps. But a close examination of your real audience (e.g. Web traffic by browser) is still necessary.

# Keep the focus on only one target smartphone platform for initial application launch

*Plans for concurrent development across multiple platforms are destined to fail. Identify your target platform for Version 1.0 and see it through.*

| Avoid concurrent platform development | |
|---|---|
| 1 | **You need to get usability right.** Designing and perfecting the interface and flow for a single platform is difficult enough. Ensuring a consistent look-and-feel across multiple distinct OSes takes critical attention away from user experience design and testing. |
| 2 | **You likely can't reuse your code base.** Competing platforms tend to leverage different languages and APIs – there is a strong likelihood that major components will need to be rewritten for a second platform, taking valuable time and additional resources. |
| 3 | **You need to prove the concept.** There is no assurance that the app will be successful or that the functionality initially planned will be most effective. Concurrently developing for multiple platforms will not hedge these risks. |

> *Never, **never**, if you can possibly avoid it, develop on two platforms at the same time. Writing software is hard, especially with the UI to worry about – you're changing things as you go. The best way to do it is to pick one platform and ship on it.*
>
> *When you move to different platforms, you want to make as few decisions as possible. You want to take the blueprint of something that's proven and works. Then you can do it in a fraction of the time.*
>
> *- Dave Mitchell, Co-founder, Connected Bits*

*Info-Tech Insight:*

Tools supporting cross-platform development (Appcelerator, Phonegap, Rhomobile) are still in their infancy and must be closely evaluated to ensure full compliance with app store guidelines.

| | | | | |
|---|---|---|---|---|
| Gauge the Opportunity | Business Drivers | Mobile App Examples | Costs, Benefits, ROI | Build vs. Buy Decision |
| Compare Mobile Platforms | Mobile Market Overview | | Platform Analysis and Selection | |
| **Focus Business Requirements** | **Goals and Objectives** | **Application Requirements** | **Security and Privacy** | |
| Develop the Application | Keys to Success | Required Resources | Development and Testing | |
| Launch, Measure, Iterate | Launch and Promotion | Feedback and Metrics | Future Releases | |

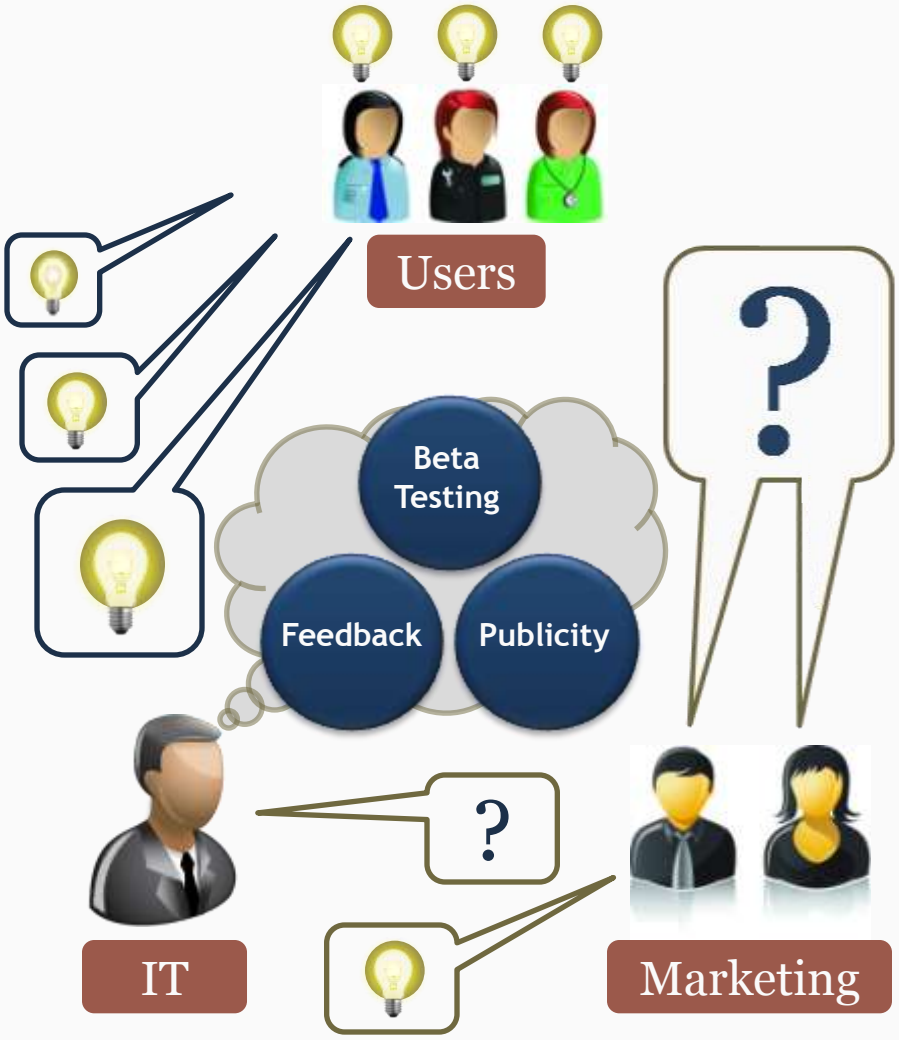
# Leverage key stakeholders and potential users to build out solid goals and objectives for the organization

## Discussion with marketing is a critical first step

- Use your marketing department to understand key business opportunities. A mobile app may be the perfect medium for existing campaigns using e-mail, Web or social media.
- The mobile app project can leverage marketing at almost every stage. Solicit user feedback during both planning and testing stages, and ultimately build a buzz for the app, using existing distribution channels.

## Often the best ideas come from the customer

- Let experts be experts. Your mobile app audience uses both their device and your services on a regular basis. Let them tell you how best to integrate them.
- Over 70% of organizations surveyed by Info-Tech Research Group that have launched a mobile application captured specific feedback/interest from their customers.
- Getting user feedback during planning was something most organizations Info-Tech interviewed said they would spend more time on if they were to develop another mobile app.



# Keep the project focus on one or two key application functions – and focus on doing them exceptionally well

*Don't get derailed. Adopt a tunnel vision mentality and get your core functionality rolled out before building in the bells and whistles.*

- Decide on core functionality early in the project and stick to it. Don't let scope creep prolong the development timeline – reserve new features and updates for Version 2.0.
- Successful apps serve a specific function. If users can't quickly get in, perform a task, and get out, they won't use it. Apps that are too feature intensive should be split into multiple releases.
- Fun, creative or novel functions may be attractive but if they're not useful, users will delete the app before the time comes to download the next update.

> *"Keep it simple and learn what works. Look for one simple idea that meets a need of your target audience."*
>
> *- CIO, Manufacturing*

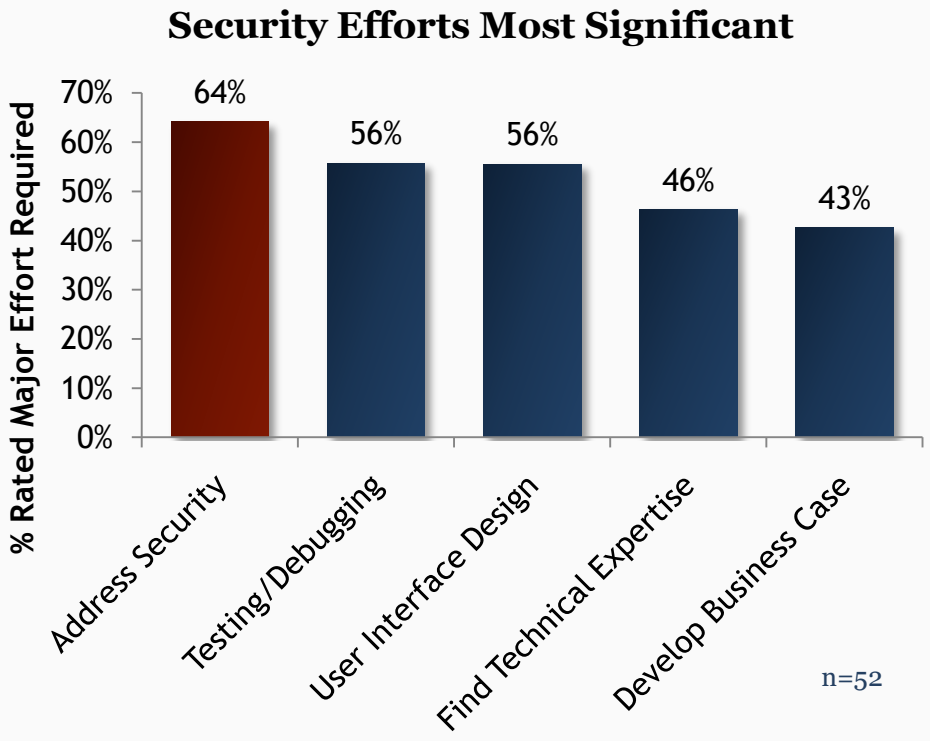
***Info-Tech Insight:***

Successful smartphone apps are highly task-oriented. Users will not spend much time in any given app – the apps that succeed are those that execute 1-2 key functions extremely well.

# Assess and address potential security risks and vulnerabilities

## From the company's perspective:

- Mobile application security and standard Web site security fundamentals are not all that different.
- The principles that your organization has applied to Web site security should also be applied to mobile app security – but you also must be aware of any platform-specific vulnerabilities (e.g. mobile browsers).




## From the user's perspective:

- The primary security risk to users comes from downloading mobile apps that contain malware or transmit unencrypted data.
- Use a trusted and reputable developer so that malware doesn't reach your users through your app.
- While many online app stores have a stringent submission and review process, it's impossible to catch everything given that thousands of apps are submitted daily.

# Do not overlook privacy and legal considerations and potential ramifications when dealing with third parties

*Outsourcing mobile application development comes with standard – but critical - legal concerns when engaging third party resources.*

**Respect user privacy boundaries**

- Many mobile applications will request access to GPS location information, calendars, e-mail or address books without leveraging this information in any meaningful way.
- Before building every available feature into your app, first consider whether access to specific user or device information will add significant functionality.
- If a user feels their information is being accessed without enabling a useful service or significantly improving user experience, it may be a hurdle to the app being used.

| | |
|---|---|
| **Intellectual Property** | • Ensure that your organization owns the code at the conclusion of the project. This will also provide flexibility in the event that an additional party is engaged for future maintenance or releases. |
| **Confidential Information** | • The third party may have access to your client data and internal data. The contract should be specific as to the supplier's responsibilities in terms of ownership, access, control and disposal of this information. |
| **Compliance** | • Be sure the contract outlines the legal and regulatory obligations of the enterprise that the outsourcer takes on when acting on behalf your organization. |

| | | | | |
|---|---|---|---|---|
| Gauge the Opportunity | Business Drivers | Mobile App Examples | Costs, Benefits, ROI | Build vs. Buy Decision |
| Compare Mobile Platforms | Mobile Market Overview | | Platform Analysis and Selection | |
| Focus Business Requirements | Goals and Objectives | Application Requirements | Security and Privacy | |
| **Develop the Application** | **Keys to Success** | **Required Resources** | **Development and Testing** | |
| Launch, Measure, Iterate | Launch and Promotion | Feedback and Metrics | Future Releases | |

# Focus on the keys to success and avoid common pitfalls


Build in analytics that help measure success or provide useful feedback regarding app functionality for Version 2.0.

Solicit feedback from customers to understand user pain points and opportunities first.
Don't make the mistake of jumping straight into planning.

Simply extending desktop or Web content to a mobile device is not sufficient.

A successful app improves user experience or targets a specific customer pain point.

Get out an initial release with core functions in a concise time frame and plan for future updates.

When outsourcing development to a third party, have a basic understanding of what functionality might be appropriate from a user perspective.

But don't constrain developers by getting over-technical or specific.

Leaving marketing until an app is published is a huge mistake.

Get the word out well before the app reaches an online store to maximize exposure at publication time.

# Apply the same principles to mobile app development as you would any application – with heavy emphasis on UI/UX

- Every developer Info-Tech interviewed said the process for developing a mobile app was like developing for any other application.
- Most utilize an agile framework to get core functionality to users in a timely manner.

*"For users who use these apps all day long, if they have to stop and figure out "what's the native layout of this app?", that's friction.*

*And in any UI designer's world, friction means they won't use the app."*

*- Dave Mitchell, Co-founder, Connected Bits*

*You only get one chance to impress. Make the app user friendly on users' first download.*

## User Interface/User Experience

- Violate user expectations and they will drop the app. Smooth user experience is the most critical design element of a mobile app. On any platform, consistent design elements allow a user to develop expectations of which they are often unaware.
- **Smaller display, fewer windows.** If your app is displaying a lot of information on the screen at once, split it into multiple windows and cut superfluous content. Avoid deep menu hierarchies, as browsing is not strong on most devices.
- **Window structure and layout.** Pay attention to menu, toolbar, and button location standards. Put objects where the user thinks they will be.
- **Stimulus and response.** As a user becomes proficient with their device, they develop subtle anticipatory reactions to the behavior of the UI. When you push a button here, it flies left, if you push one there it flies right; eyes and hands react to this behavior.

# Utilize device capabilities and hardware resources efficiently to avoid user frustration


## Input Capabilities

- **Avoid extensive text input.** Inputs range from physical keyboards to touch screens, but typing remains labor intensive on most devices. Provide auto-complete options when possible.
- **Different platforms bring different scope.** A strength of the iPhone OS is that millions of people use a common device. Developing for Android or BlackBerry necessitates testing across numerous devices.

## Device Resources

- **Optimize CPU/memory usage and storage access.** Successful apps allow the user to get in, perform a specific task, and get out. Slow performance and extended wait periods will result in rapid user drop-off. Process-heavy apps also drain battery life – and users know this.
- **Leverage measurement tools.** Tools, such as Apple Instruments, will help developers track CPU, memory, disk, and network activity and performance.

## Network Access

- **Manage wireless data usage.** Offline usage is a primary advantage of a native mobile application. However, an app that requires persistent wireless network access to deliver core functionality can lead to excessive pauses and reloads. Such apps may be quickly abandoned in favor of the mobile website or a competitor's app, particularly if the user is on an unreliable network or expensive data plan.

# Follow mobile app beta testing best practices to get the best feedback possible for your mobile app

| Best Practice | | Description |
|---|---|---|
| 1 | Consider every app feature | • When developing for most mobile platforms, there are numerous input devices and screen sizes to consider. Select a range of testers to target as many as possible and find all potential bugs. |
| 2 | Cover all your devices | • When utilizing specific hardware features, functionality must be tested under as many circumstances as possible. To test GPS, for example, recruit testers across different devices and geographies. |
| 3 | Test network performance | • Poor or unreliable network performance is one potential barrier to delivering an optimal user experience. Where possible, enlist testers across different wireless carriers in order to gauge performance and help determine whether or not issues are network-related. |
| 4 | Set a short but clear deadline | • All the hard work is done. Keep the testing phase short to get the app published in short order, but set clear deadline expectations so that useful input doesn't go to waste. |
| 5 | Restrict changes to UI | • While it will be tempting to add just one more thing, it's prudent to publish the application to your audience and gauge *their* feedback, with a plan to build new features in the next release. |

*Info-Tech Insight:*

Prior to App Store submission, Apple allows up to 100 app beta testers (iPhone, iPod Touch, iPad) through Ad Hoc distribution. iPhone developers must plan to leverage this capability.

| | | | | |
|---|---|---|---|---|
| Gauge the Opportunity | Business Drivers | Mobile App Examples | Costs, Benefits, ROI | Build vs. Buy Decision |
| Compare Mobile Platforms | Mobile Market Overview | | Platform Analysis and Selection | |
| Focus Business Requirements | Goals and Objectives | Application Requirements | Security and Privacy | |
| Develop the Application | Keys to Success | Required Resources | Development and Testing | |
| Launch, Measure, Iterate | Launch and Promotion | Feedback and Metrics | Future Releases | |

# Focus on promoting the new mobile app via your Web site and social media channels – and measure your progress

*Application store approval challenges are overblown – the majority of submissions see minimal delays. But published apps will be ignored without effective promotion.*

- **Web site.** Beyond prominent positioning for the new mobile app on the organization's main Web site, a dedicated microsite for the app itself is an effective way to communicate benefits in greater detail.
- **Social media.** The major social media services (e.g. Twitter, Facebook, YouTube) and blog sites are all rich targets for gaining visibility. Reach out with messaging that emphasizes the unique aspects of the mobile app to attract inquisitive users.
- **Marketing.** Incorporate the mobile app into existing marketing activities, including traditional and online promotions, storefront placement, and ongoing customer communications.

**Key Metrics to Capture**

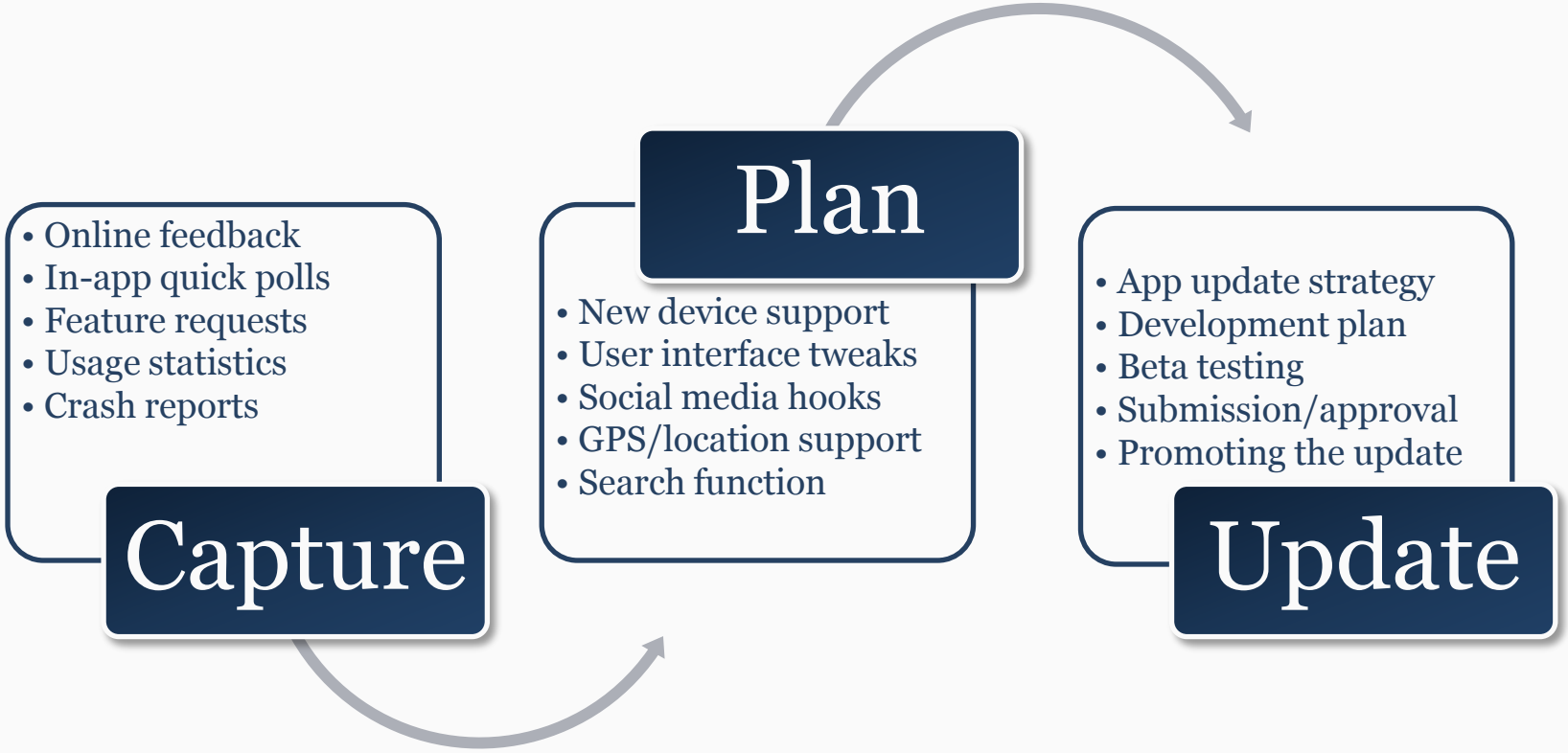
Mobile analytics tools work similar to standard Web analytics solutions – code is embedded in mobile Web pages or a lightweight agent is inserted into the application, capturing non-identifiable user statistics such as session frequency, duration, location, and device version.

**Mobile Analytics Providers**

Google Analytics
FLURRY
pinch media
motally mobile analytics
webtrends
OMNITURE
Localytics
admob
mobclix

# Actively solicit and capture customer feedback to inform future mobile application updates and new releases

*Recognize the importance of being responsive to mobile app consumers – this audience will provide you with valuable feedback and direction for future releases.*




*Info-Tech Insight:*

Develop fast and release often – don't overbuild. It's important get the first release out to your audience, capture user feedback, and then plan future iterations based on this data.

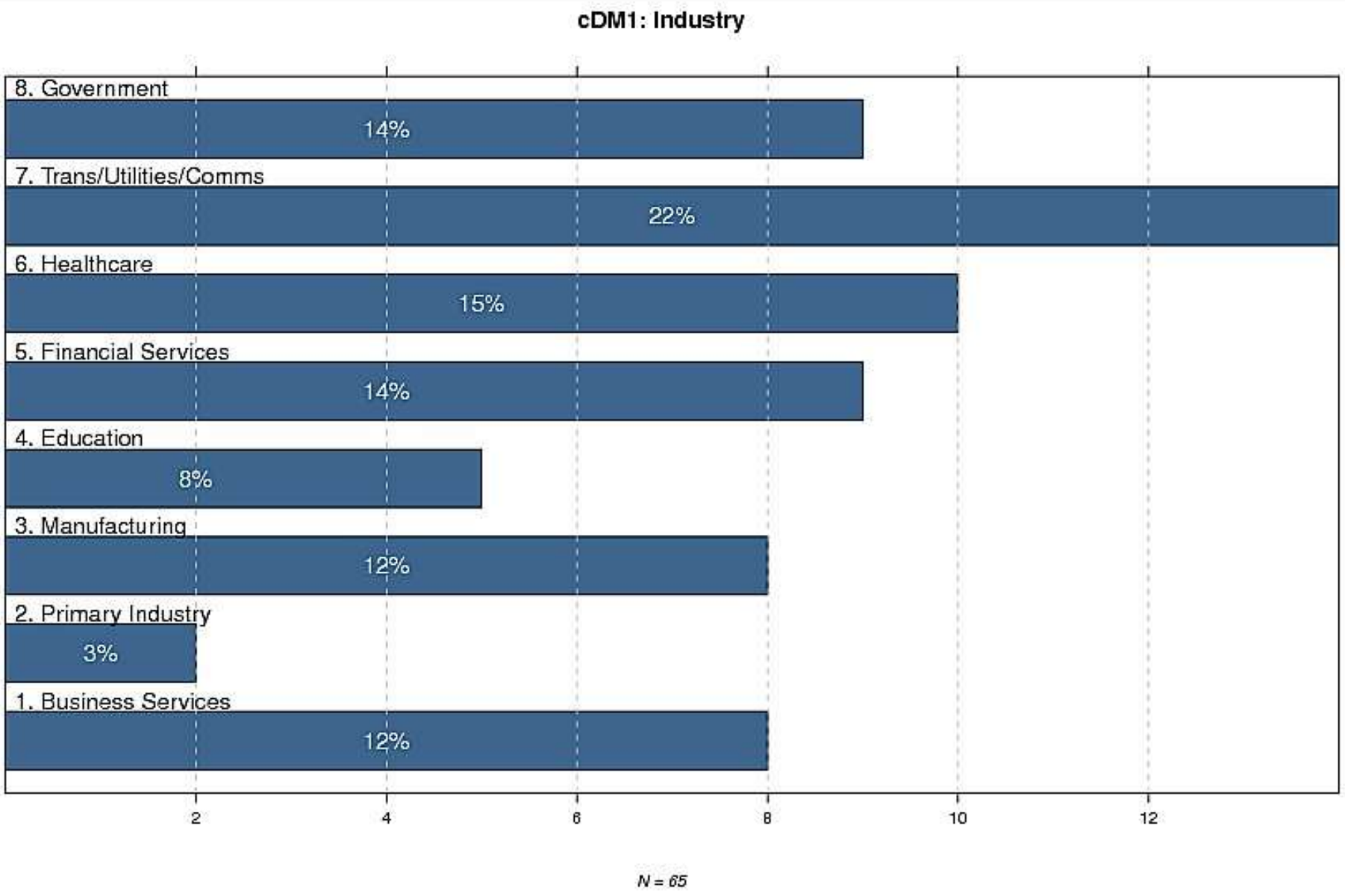
# Conclusion

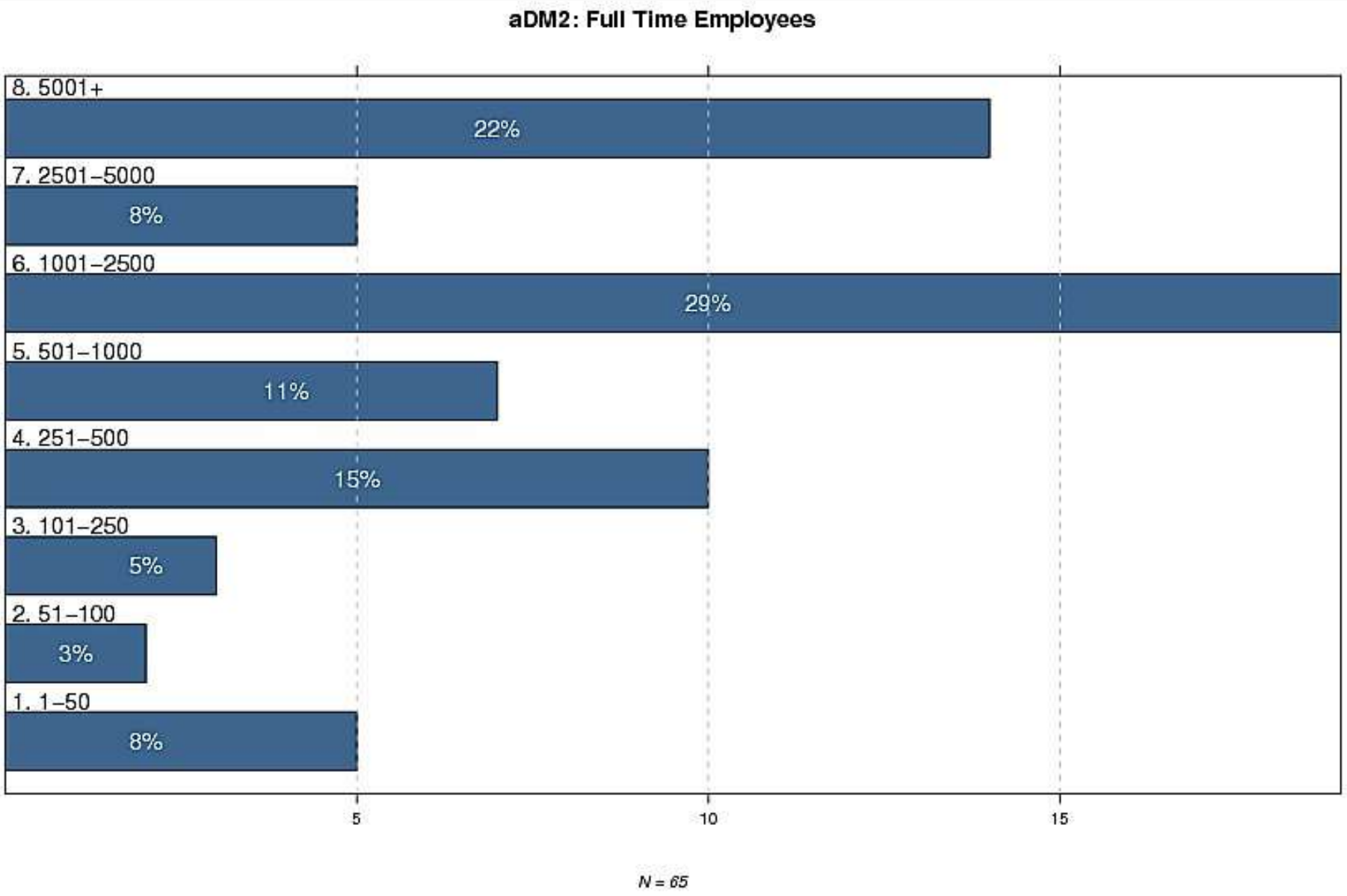
- Mobile applications represent a rich opportunity to differentiate the organization's product or services and improve overall customer engagement.
- Most organizations should look to experienced third parties to aid in mobile app design and development. Internal efforts should be more focused on promoting the launch, generating awareness, and capturing customer feedback.
- Marketing should heavily utilize social media elements to generate early buzz and let your audience know the app is coming – the mobile app space is highly competitive and visibility is critical.

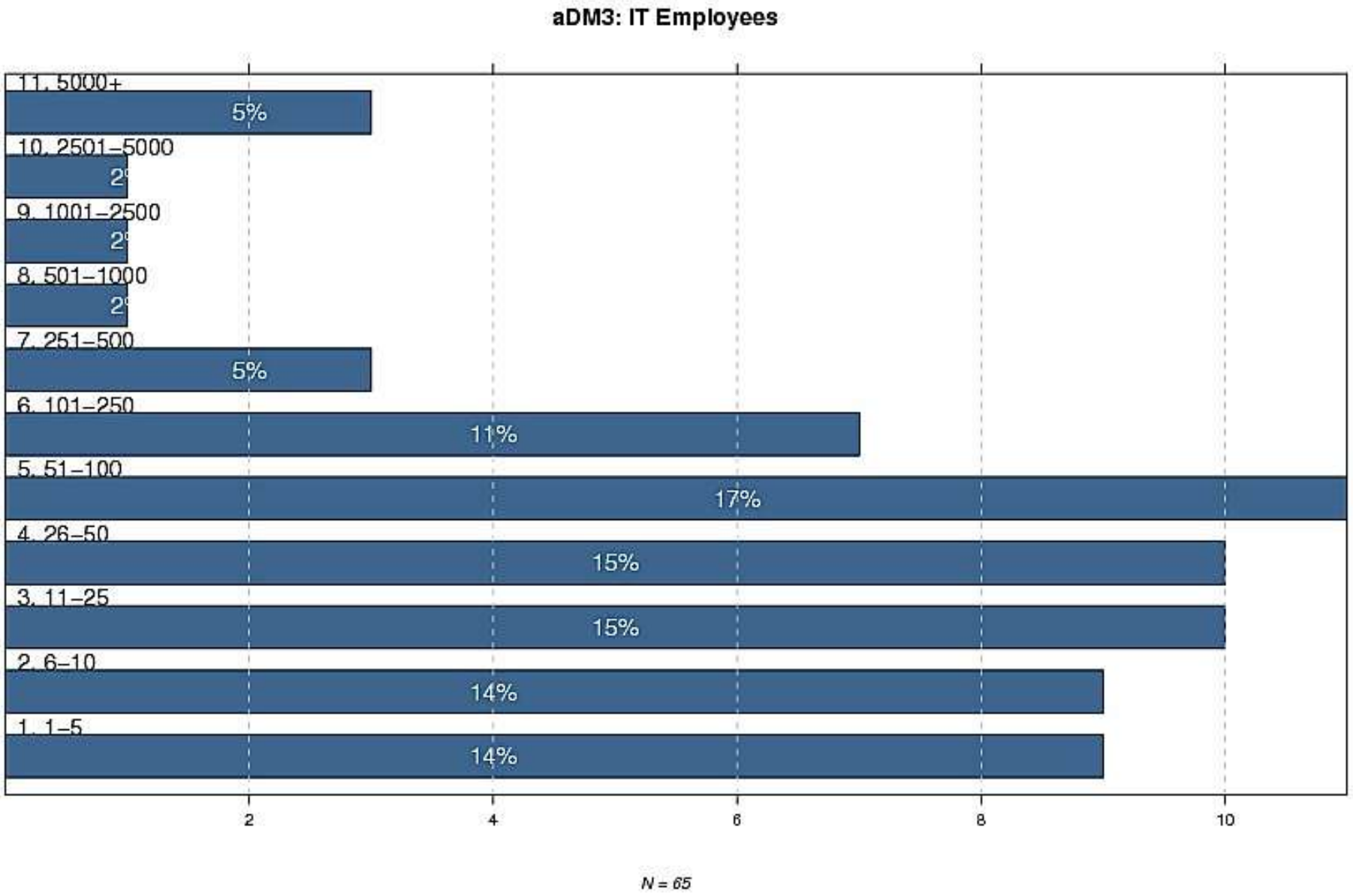
# Appendix – Leading Manufacturer Application Stores

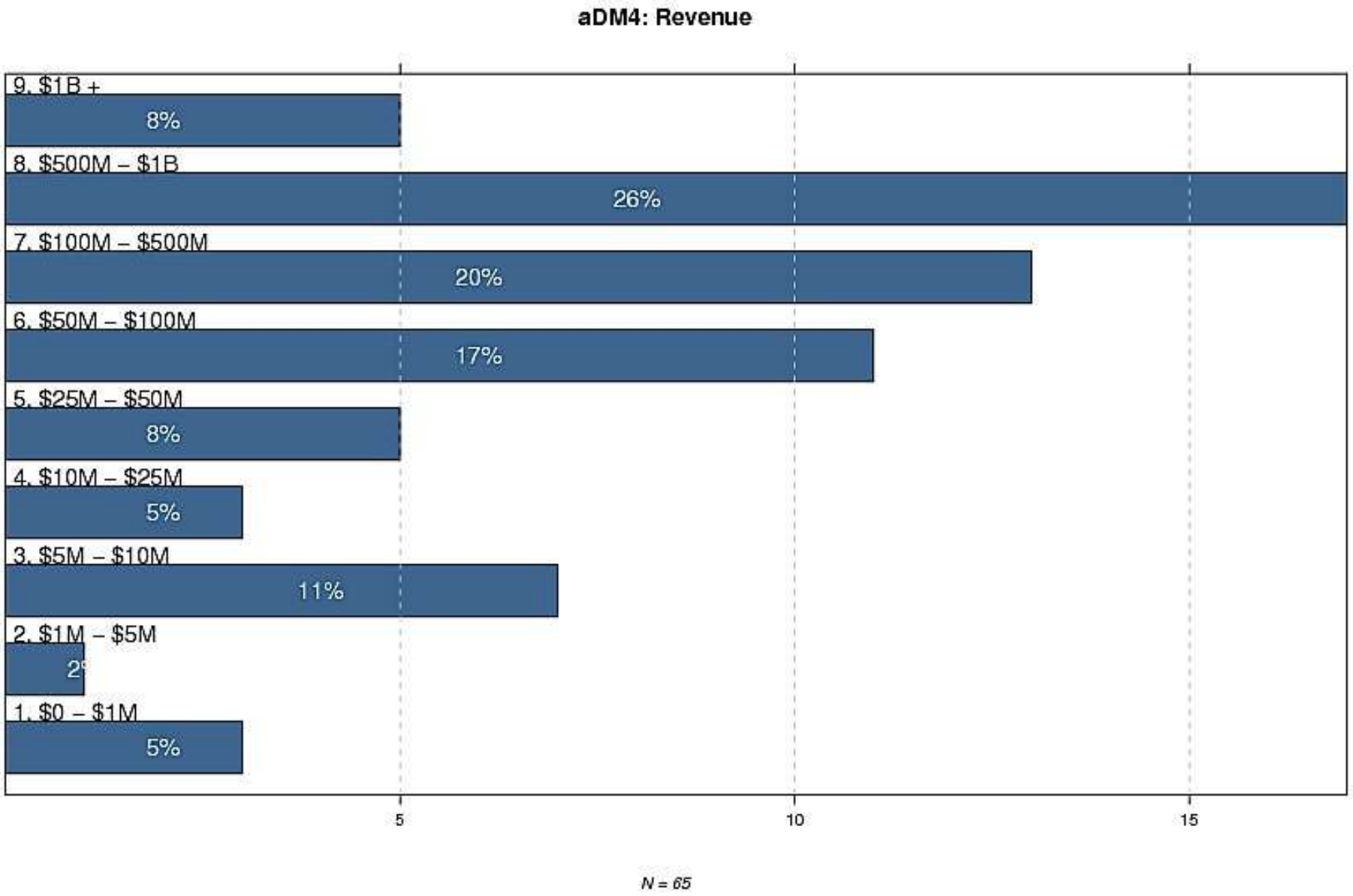
| Manufacturer | Store | Platforms | Launch | Royalty | Developer Fees |
|---|---|---|---|---|---|
| **Apple** | App Store | iPhone OS | July 2008 | 30% | $99/yr Standard<br>$299/yr Enterprise |
| **Google** | Android Market | Android OS | October 2008 | 30% | $25 |
| **HP/Palm** | App Catalog | webOS | June 2009 | 30% | Free |
| **Microsoft** | Marketplace for Mobile | Windows Mobile | October 2009 | 30% | $99/yr (first 5 apps) |
| **Nokia** | Ovi Store | Symbian, Java | May 2009 | 30% | 50 EUR |
| **RIM** | App World | BlackBerry OS | April 2009 | 20% | $200 USD (first 10 apps) |

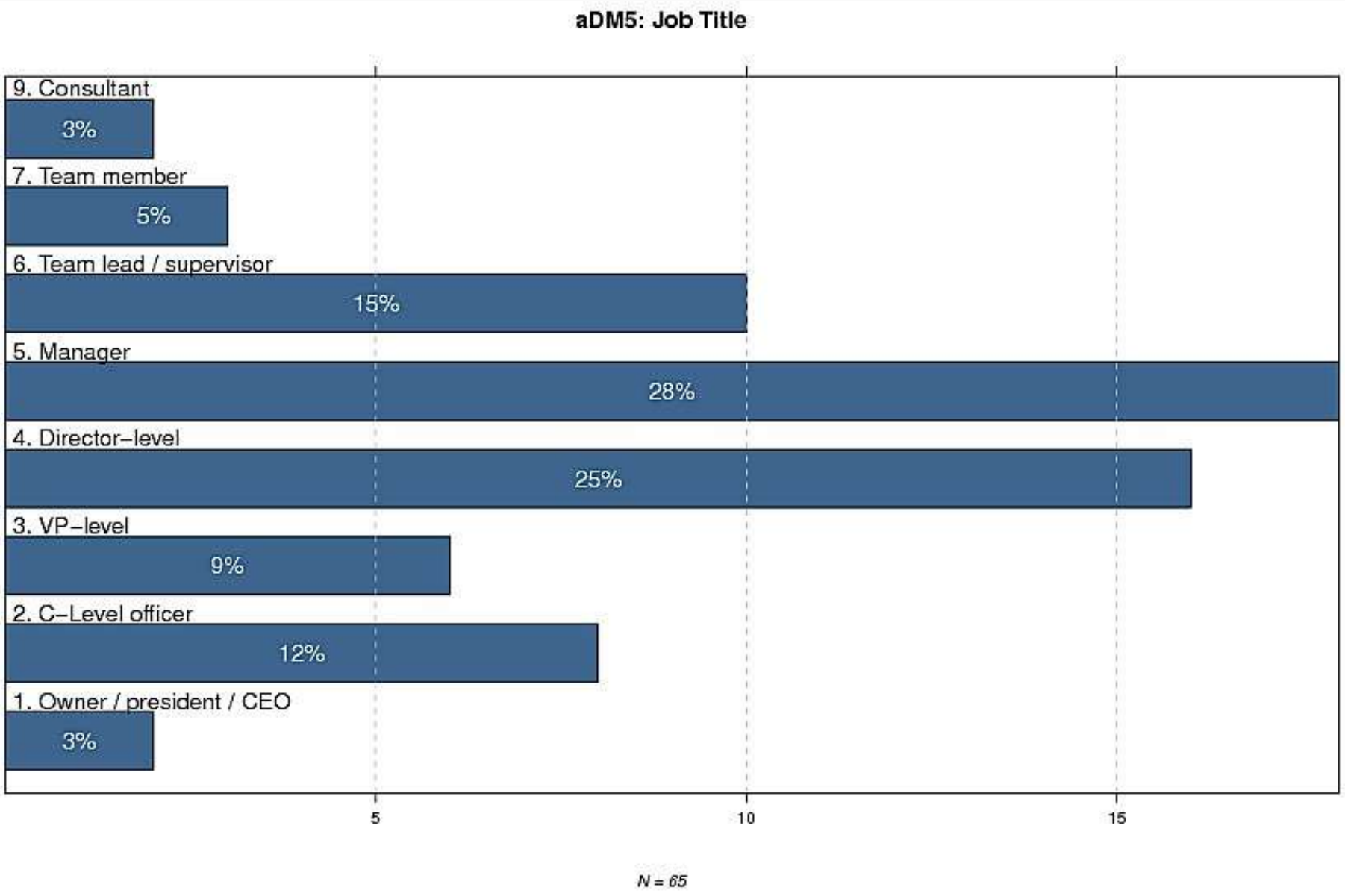
# Appendix – Survey Demographics


cDM1: Industry
8. Government
14%
7. Trans/Utilities/Comms
22%
6. Healthcare
15%
5. Financial Services
14%
4. Education
8%
3. Manufacturing
12%
2. Primary Industry
3%
1. Business Services
12%
2
4
6
8
10
12
N = 65


aDM2: Full Time Employees
8. 5001+
22%
7. 2501–5000
8%
6. 1001–2500
29%
5. 501–1000
11%
4. 251–500
15%
3. 101–250
5%
2. 51–100
3%
1. 1–50
8%
5
10
15
N = 65


aDM3: IT Employees
11. 5000+
5%
10. 2501–5000
2%
9. 1001–2500
2%
8. 501–1000
2%
7. 251–500
5%
6. 101–250
11%
5. 51–100
17%
4. 26–50
15%
3. 11–25
15%
2. 6–10
14%
1. 1–5
14%
2
4
6
8
10
N = 65


aDM4: Revenue
9. $1B +
8%
8. $500M – $1B
26%
7. $100M – $500M
20%
6. $50M – $100M
17%
5. $25M – $50M
8%
4. $10M – $25M
5%
3. $5M – $10M
11%
2. $1M – $5M
2
1. $0 – $1M
5%
5
10
15
N = 65


aDM5: Job Title
9. Consultant
3%
7. Team member
5%
6. Team lead / supervisor
15%
5. Manager
28%
4. Director–level
25%
3. VP–level
9%
2. C–Level officer
12%
1. Owner / president / CEO
3%
5
10
15
N = 65