



Principles of Mobile App Design:

Engage Users and Drive Conversions

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Introduction

Apps are now a mainstream, trusted way to deliver content and services. But in a crowded market, how does a mobile app become useful, relevant, and valued so it delights and retains users? Google's UX Research Lead Jenny Gove details 25 principles for building a great mobile app.

Mobile apps: Users can't get enough of them. Want proof? An estimated [200 billion apps are expected to be downloaded in 2017](#).¹ (That's billion with a "b.") Marketers are experimenting with their own app experiences and investing to ensure that they're discovered; they [spent around \\$3 billion on app install advertising](#) in 2015, an increase of 80% from 2014.²

Given this massive shift in consumer behavior, it is no surprise that marketers are keen to continuously improve the app experiences that they create. Apps provide opportunities to build around user needs and grow long-term and profitable relationships with loyal customers. It's become tougher for developers and brand marketers to get people to [find and download their apps](#), and once they do, stay engaged. As many as 25% of app users open an app once and never return.³

More than ever, people are engaging with their phones in crucial moments and for shorter periods of time. Their experiences need to be efficient and delightful. Plus, a well-designed app that provides utility has the power to cut through the clutter. It can deliver on people's many [I-want-to-know](#), [I-want-to-go](#), [I-want-to-buy](#), and [I-want-to-do](#) moments.

As many as 25% of app users open an app once and never return.

We know that following a simple, powerful set of principles helps. That was what we learned from our prior work on [mobile site design](#). It led brands to make changes and

remove barriers so they could give their customers truly helpful experiences. As with mobile websites, mobile apps need to help users complete their tasks and make it easy to convert.

With that in mind, we sought to uncover the key ingredients of a great mobile app. We partnered with AnswerLab to conduct a user study of more than 100 people on 100 different apps across a variety of verticals including e-commerce, insurance, travel, food ordering, ticket sales and services, and financial management. (Gaming apps, social networking apps and music services were not included in the study.)

Guide app users seamlessly through task completion

We looked at conversion-focused tasks, such as making a purchase, booking a reservation, and researching plans and prices, among other tasks.

We are excited to share insights to help you build brand engagement by providing guidance on useful and usable functionality—essential for creating an experience that delights. Apps can seamlessly guide users through task completion by providing great e-commerce facilities and integrating effective ordering and payment systems. Ultimately, the creation of an engaging app begins with attention to usability.

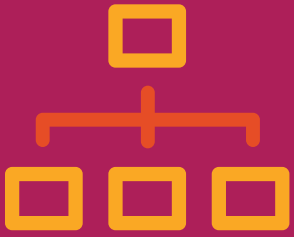
Many more useful insights were uncovered by the study. We've collated them to deliver the top 25 across six categories: app navigation and exploration, in-app search, commerce and conversions, registration, form entry, and usability and comprehension. Let's get started with Chapter 1, App Navigation.



Jenny Gove, UX Research Lead, Google

Sources

- 1 eMarketer "App Downloads Will Double in Next Four Years," February 3, 2014.
- 2 eMarketer "App Install Ads Help Marketers Cut Through the Clutter," July 17, 2015.
- 3 eMarketer "App Marketing 2015: Fighting for Downloads and Attention in a Crowded Market," July 2015.



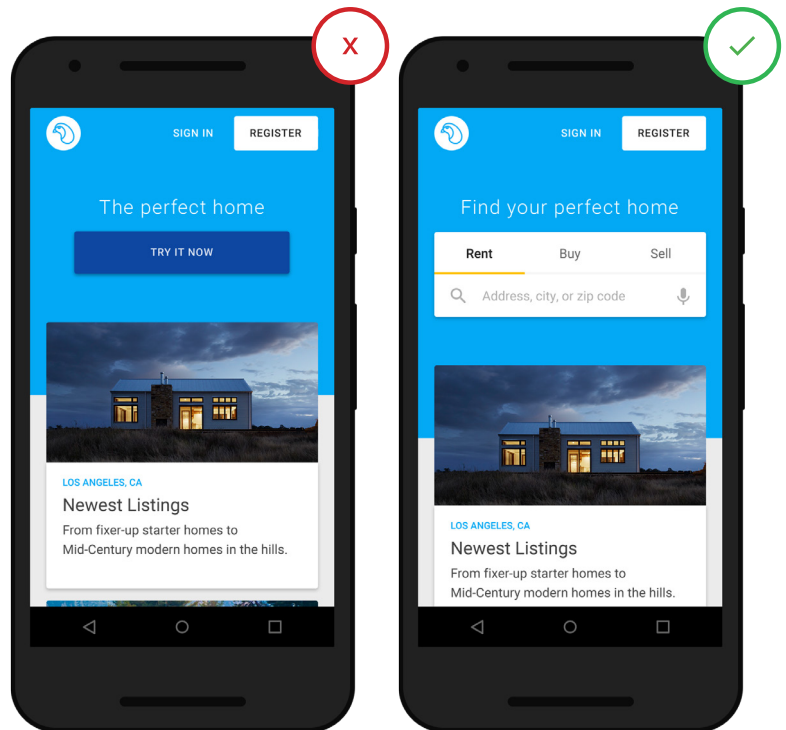
Chapter 1:

App Navigation and Exploration

Users should be guided to the content they're looking for, quickly. These key principles will help you design effective and delightful app navigation.

1 Show the value of your app upfront.

Engage users by addressing their tasks clearly, placing calls to action up front and center. Highlight your app's key and new features in context at the appropriate place in the app so they're a source of delight and interest rather than frustration and confusion.

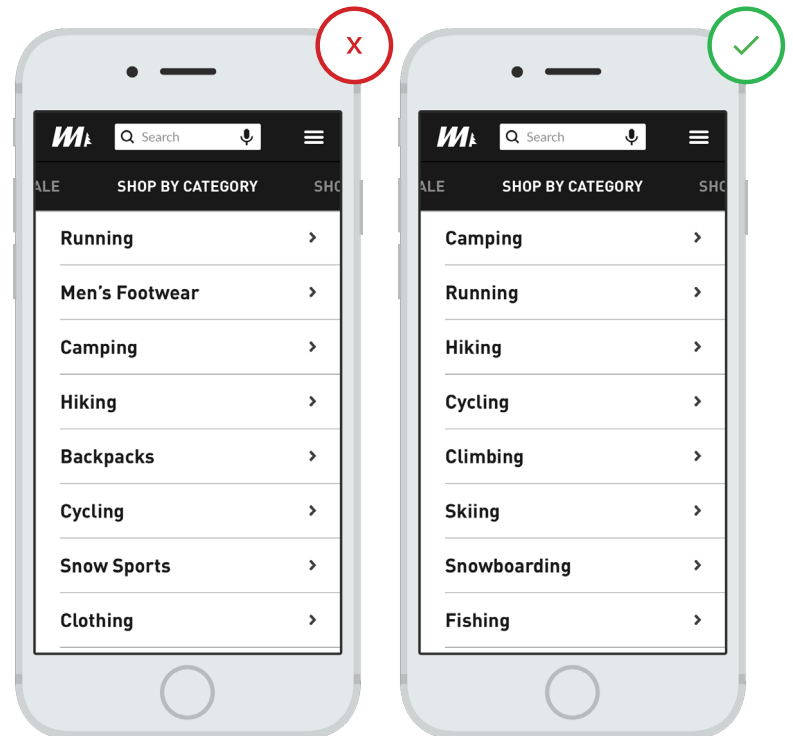


X The call to action, “Try it now,” is vague and isn’t geared toward action.

✓ “Rent,” “Buy,” and “Sell” provide clear calls to action.

2 Organize and label menu categories to be user-friendly.

Users struggle to interpret and distinguish menu categories that do not align with their mental models for categories. Menu categories should be clear with no overlap. This is particularly important when a user turns to a menu as a last resort after exhausting options through search.

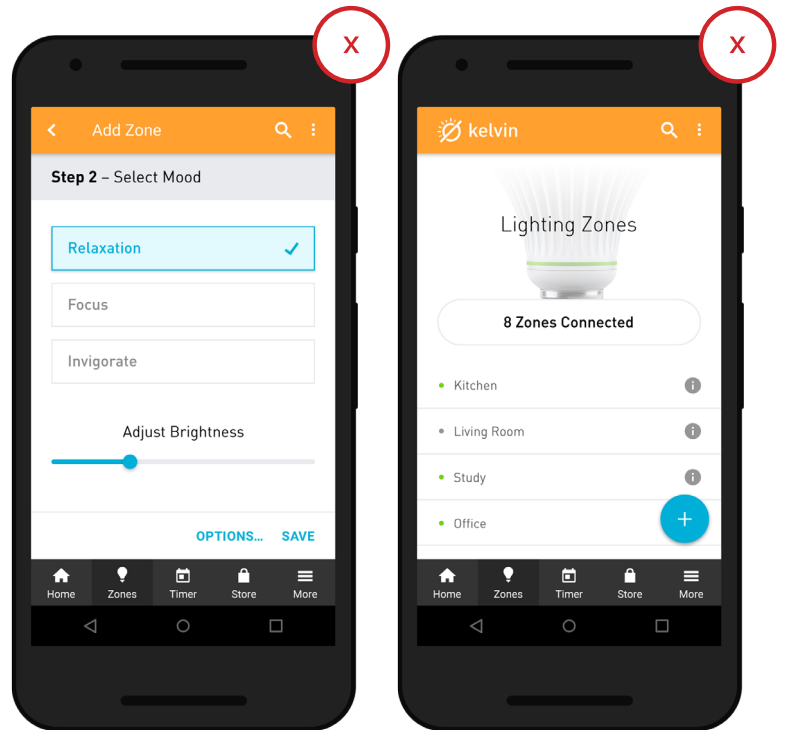


✗ Product categories shouldn't overlap in content (e.g., "men's footwear" and "hiking").

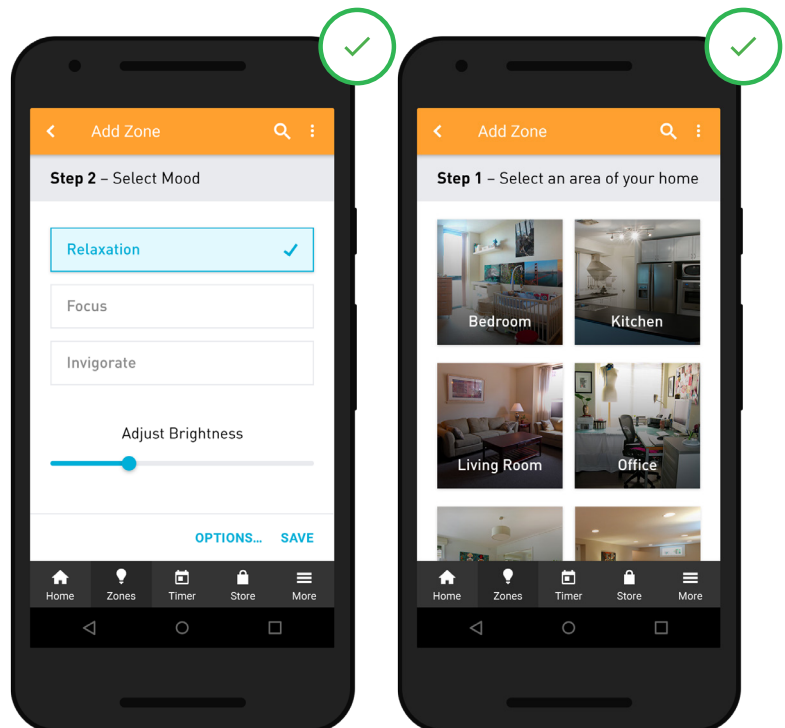
✓ Product categories are distinct to avoid confusion.

3 Allow users to “go back” easily in one step.

Users may only want to go back one step as they use the app. Apps should leverage back functionality so that users don't feel forced to have to start over from the home screen, which, in some cases, results in losing any unsaved data. Allowing users to go back one step eliminates this frustration and the need for any inadequate workarounds. Granular navigational controls are valuable in helping users convert.



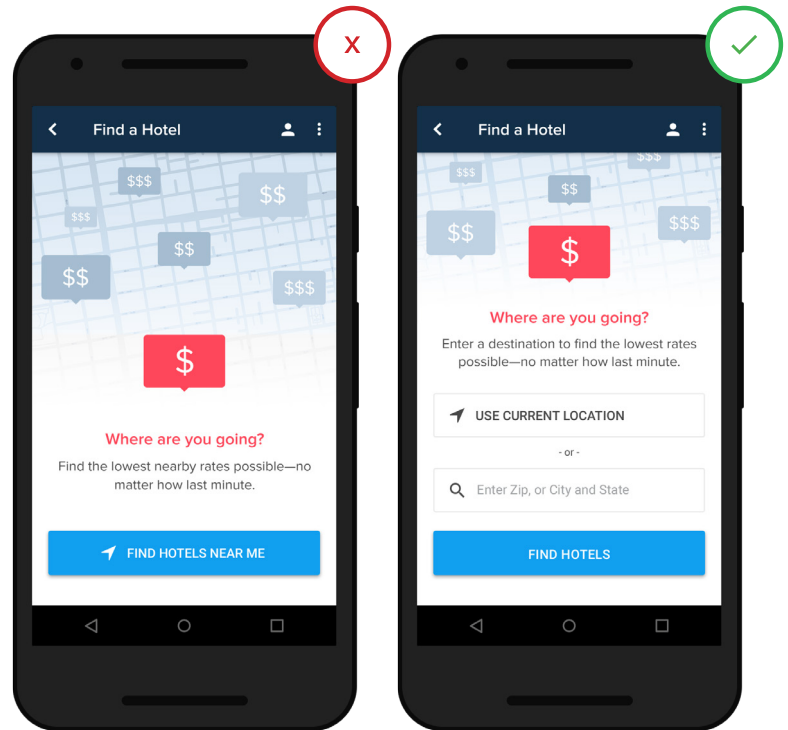
X The back button goes to the very first step in the flow, causing confusion for the user.



✓ The back button goes back just one step in the flow, as users expect.

4 Make it easy to manually change location.

Auto-detection of location can save users time. However, there are times when users need to find a store that's not located nearby. Make manual entry of location easy and straightforward.

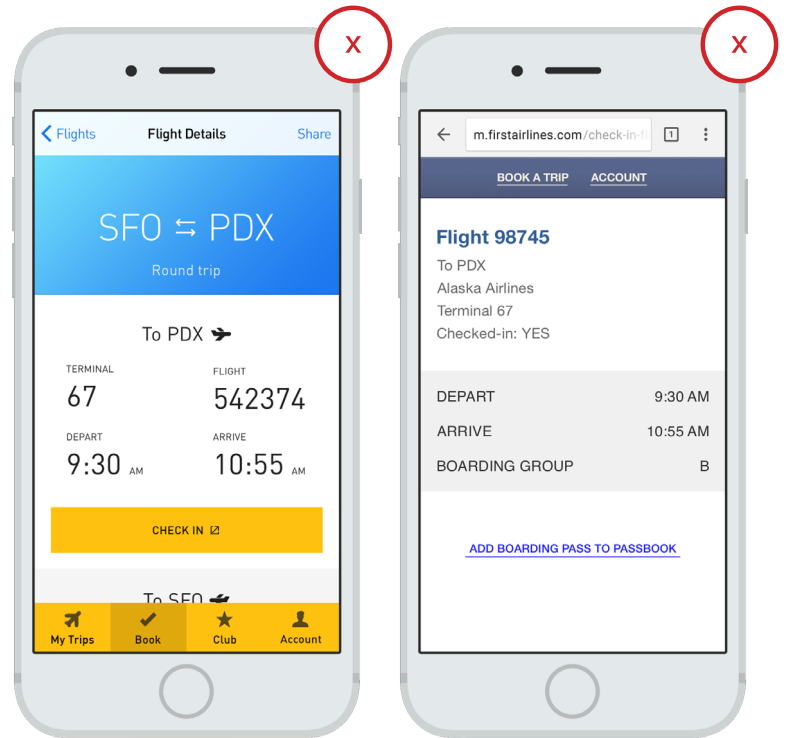


✗ There's no obvious way for the user to change locations.

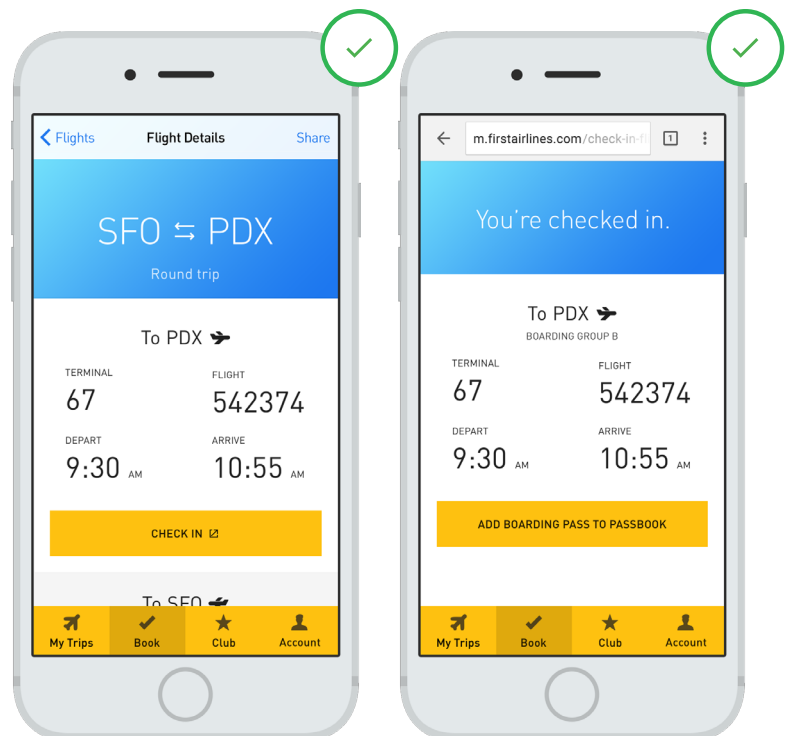
✓ The user is given upfront control to choose location.

5 Create frictionless transitions between mobile apps and the mobile web.

Users can get frustrated when an app takes them to the mobile web for more content or to complete a task. For instance, it can be confusing when the look and feel or design layout is different across the two platforms. It's also problematic when transition times are slow and the user is forced to wait for the web page to load. If it is necessary to transition the user to the mobile web, ensure a consistent design to support the transition. It's also a good idea to make sure the transition is speedy and the benefit—in contrast to any remaining friction—is worthwhile.



X The visual and interaction experience changes between the app and the site.



✓ The transition between the app and the site is frictionless due to design consistency and optimizations for speed.

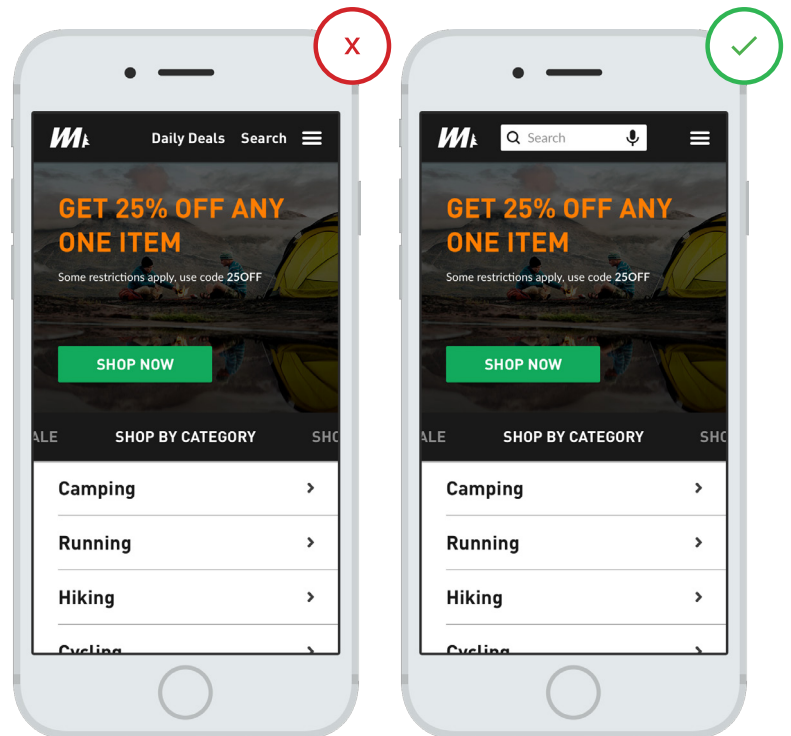


Chapter 2: In-App Search

Effective and useful app search is crucial for helping app users find what they need. Maximize the value of your app's search features using these principles.

6 Prominently display the search field.

Users with a specific task or need will typically look for a search field. They often prefer this to browsing. Apps that do not have a prominently placed search box can cause user frustration and slow the user down.

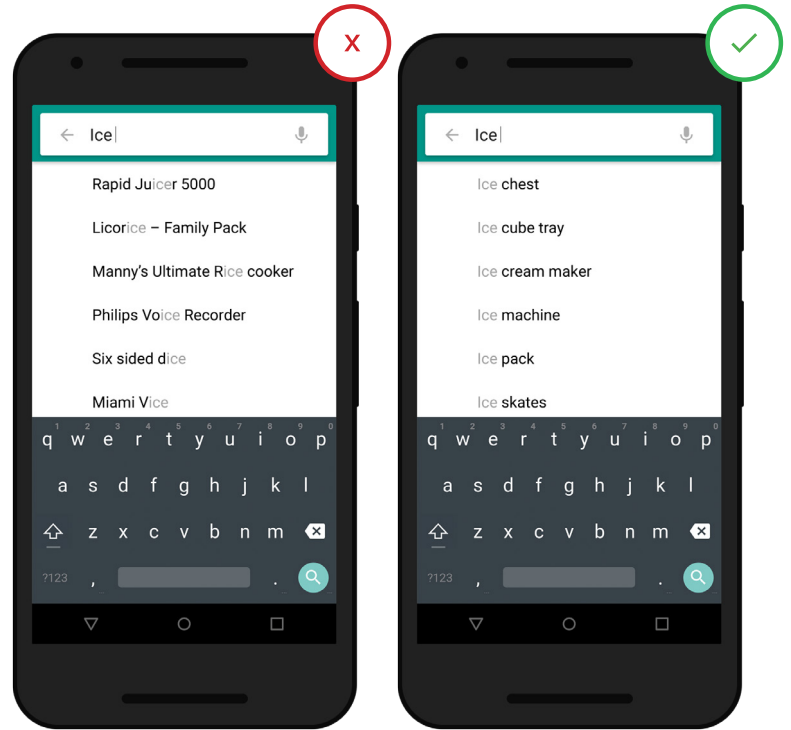


X The search functionality is hidden behind a menu option.

✓ An exposed search field is easily located.

7 Use effective search indexing.

Ensure that search results are useful. Given the frequency with which users rely on the search feature for specific tasks, they expect it to work as well as Google. Some helpful functions include spelling auto-corrections, recognition of root words, predictive text, and suggestions while the user enters text. These tools can reduce the likelihood of user errors. They will also help speed up the search process and keep users on-task toward conversion.

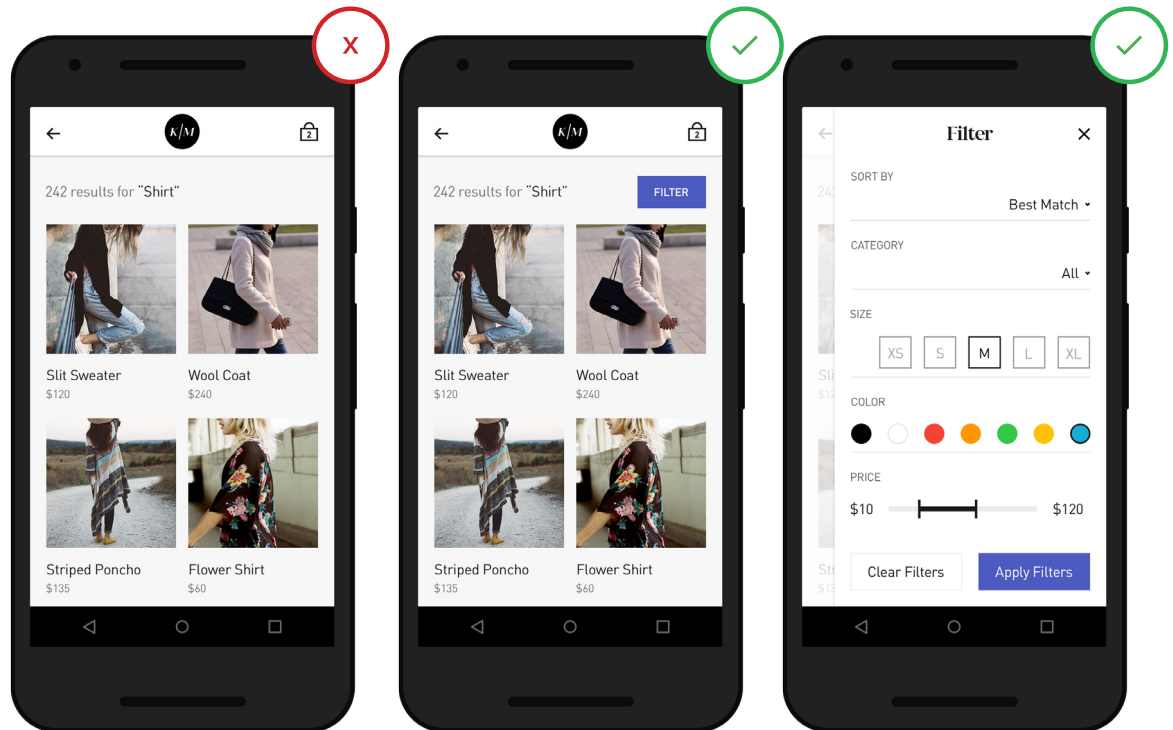


X Ineffective search indexing delivers a poor search experience.

✓ High-quality indexing gets users targeted, effective results.

8 Provide filter and sort options.

Users become overwhelmed when their search terms result in seemingly irrelevant and/or too many results. Filter and sort options can help users narrow and organize their results, which otherwise requires extensive (and excessive) scrolling or pagination on a small screen.



X Options for filtering or sorting results are excluded or hidden, requiring users to review too many items.

✓ Effective filters and sorting options are provided so search results can be narrowed.



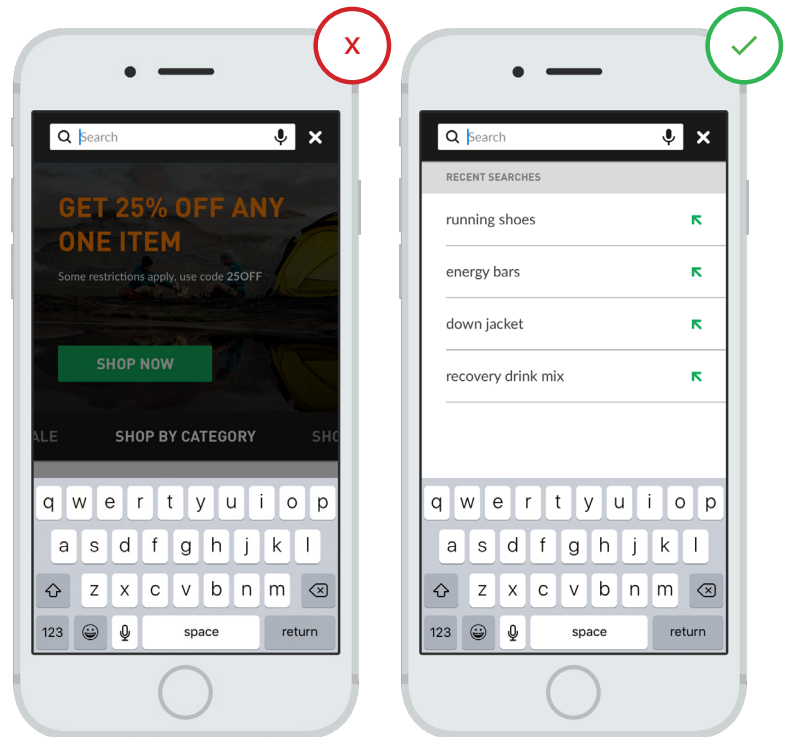
Chapter 3:

Commerce and Conversions

As the use of mobile commerce grows, users will increasingly expect smooth in-app experiences when finding, reviewing, learning about, and purchasing products. Here's how to create a seamless user experience to drive conversions.

9 Provide previous search and purchase information.

Save the user time and effort by making previous searches and recent purchases readily available. This is particularly important in frequently used apps where users conduct repeat searches or purchases.

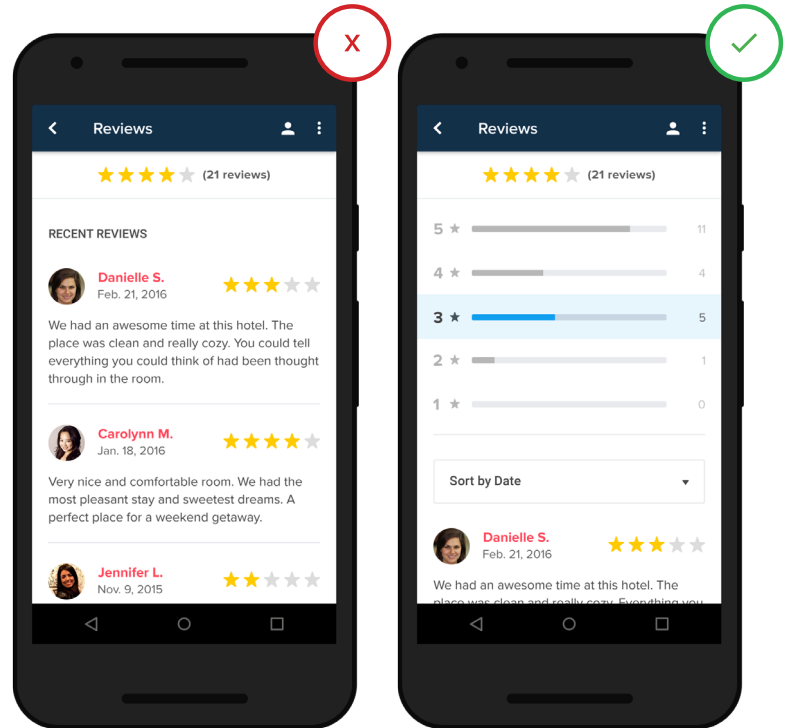


X Users are required to enter each search anew, even in the case of a repeated search.

✓ The user can conveniently check and use prior searches.

10 Allow user reviews to be viewed and filtered.

User reviews are an important component of purchase decision-making. A large number of reviews gives prospective buyers more confidence. Aggregate rating distributions and allow users to sort and filter so they can get the “real story” about an item. Let them browse the most recent, the most positive, and the most negative reviews to discover any common themes. Verified reviews from users who have purchased the item are also appreciated.

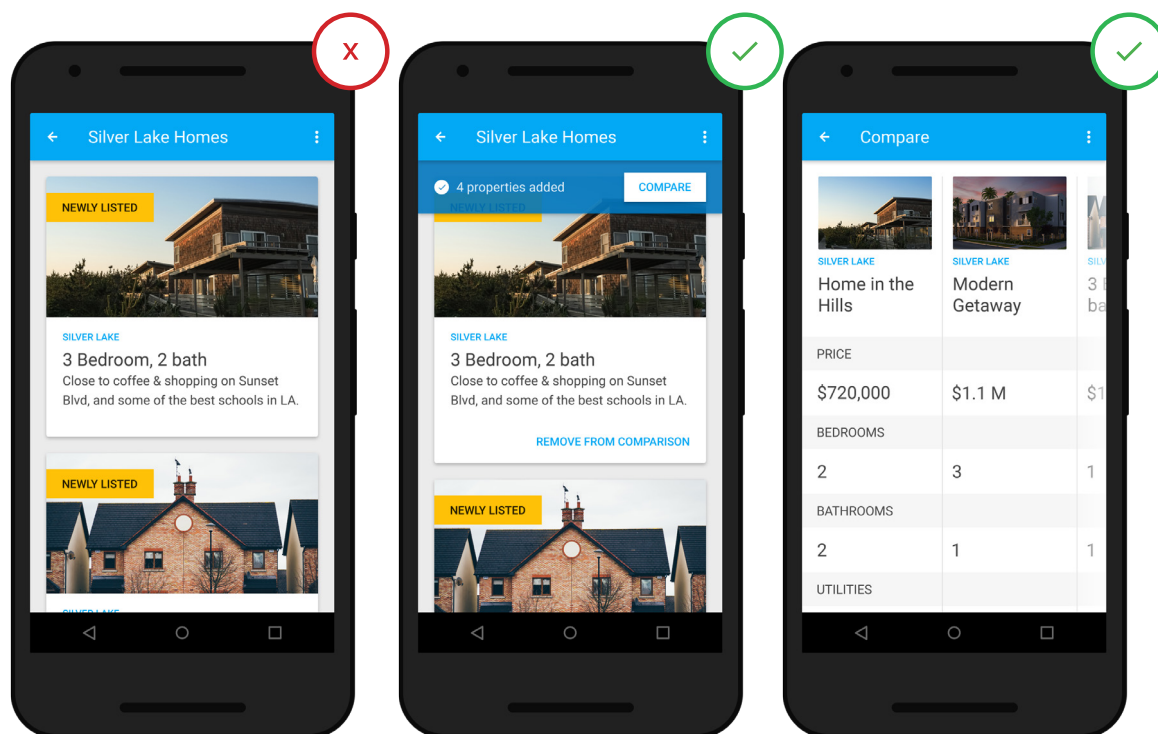


✗ Filtering options for customer reviews are excluded or hidden.

✓ Filters and sorting are enabled for consumer reviews.

11 Enable comparison shopping features.

When users shop, they want an easy way to compare items of interest. Without this capability, app users are forced to put items in their carts to compare or remember which items to go back to later. On the web, users can get around this by opening additional tabs to compare products. In-app comparison features can eliminate the need for these workarounds to help drive consumers' purchase decisions.

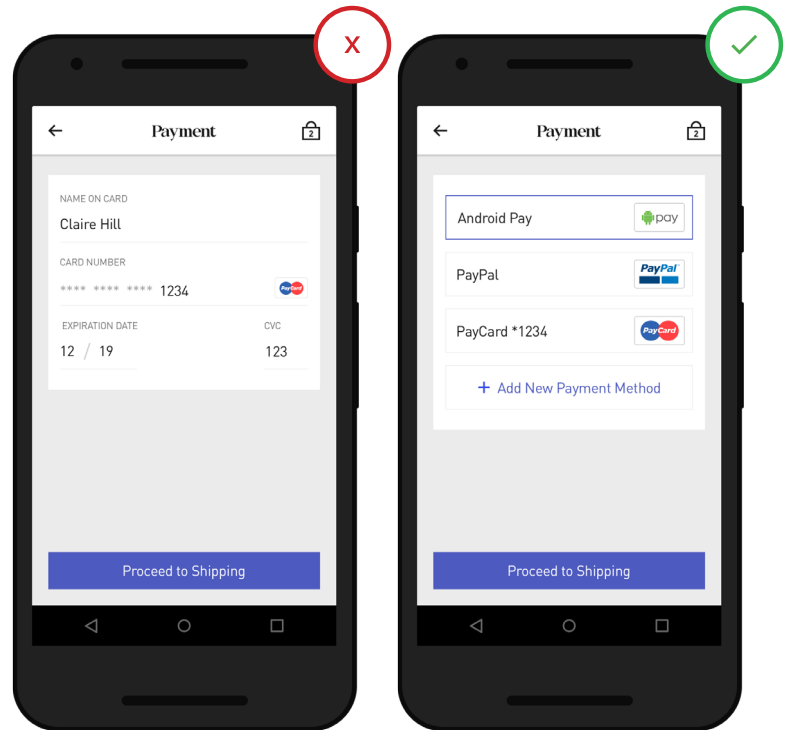


✗ Users need to remember items that they wish to compare.

✓ Users are able to make direct comparisons between homes via a comparison tool.

12 Provide multiple third-party payment options.

Users expect to see third-party payment systems as options. Apps that provide these payment options, such as PayPal, Apple Pay, and AndroidPay, relieve users from the pain point of filling out additional forms during checkout and can provide an increased sense of security.

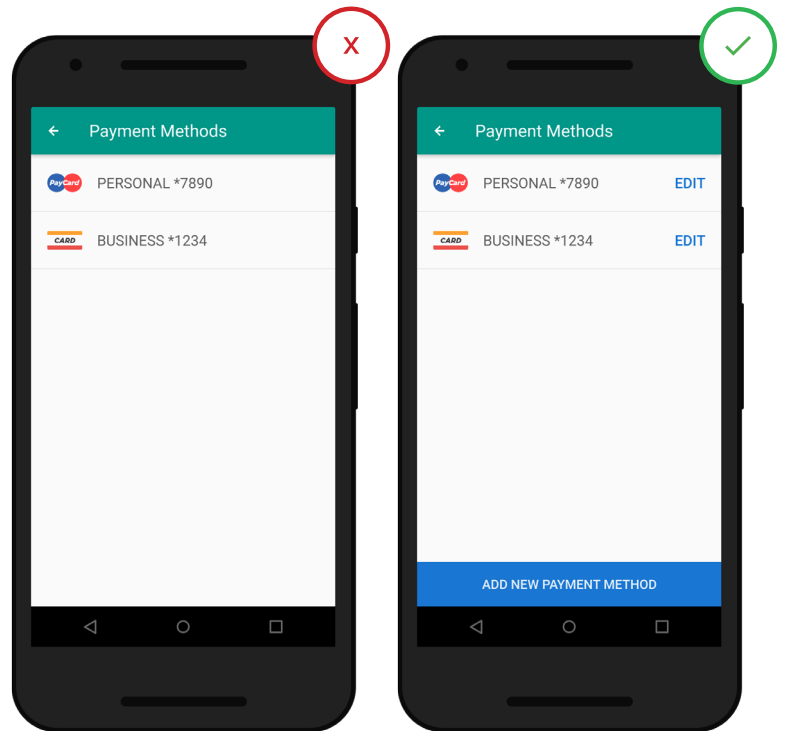


✗ Users are limited to a single payment option.

✓ Multiple payment methods are offered to give the user choice and control.

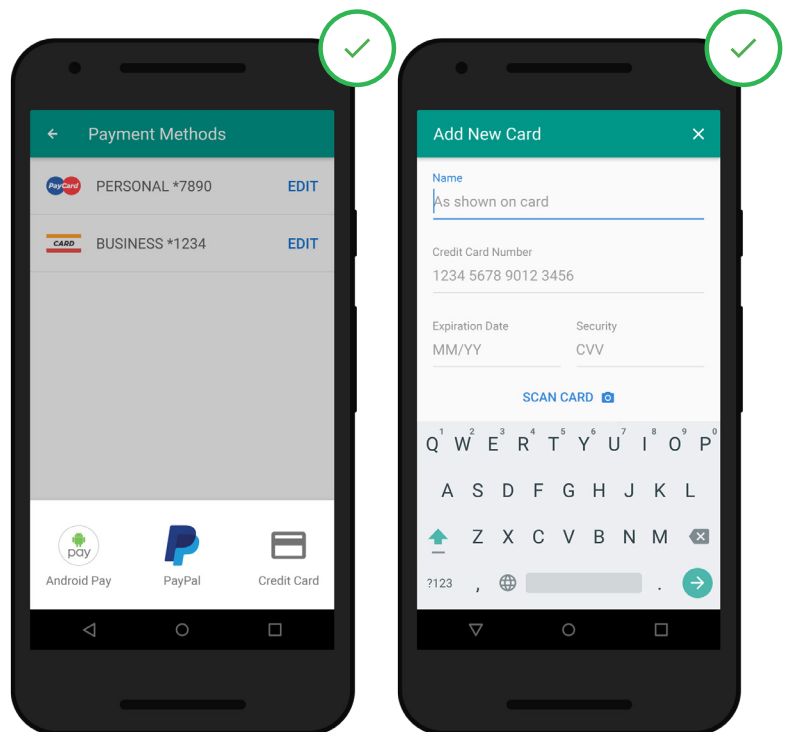
13 Make it easy to add and manage payment methods.

Keep users happy by simplifying payment storage and reducing the number of steps involved. Create a simple credit card entry page with options such as number pad entry and credit card scanning. Be sure to include the ability to add multiple cards and a function to toggle between them.



✗ The ability to edit payment methods or add new ones is missing.

✓ Users can edit existing stored payment methods and add new ones.



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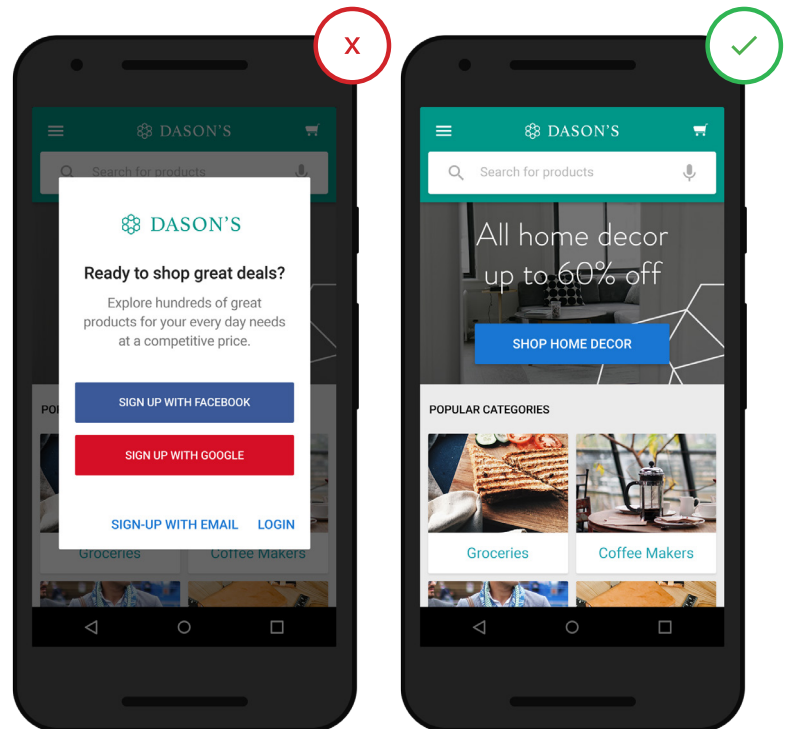
Chapter 4:

Registration

Registration is a way to connect with the user, expedite future conversion opportunities, and enrich the relationship moving forward. However, it's often a source of friction and can be a hindrance to conversion. We show you how to build a registration process that will get users to where they need to be faster.

14 Provide clear utility before asking users to register.

Users will abandon an app that asks them to provide personal information upfront unless there's some form of immediate payoff (ordering a car service or food delivery, for example). In particular, apps with low brand recognition—or those in which the value proposition is unclear—must clear a higher hurdle when they ask users to register at the start of the experience. Only ask a user to register if it's essential. One common way this principle is applied is by providing guest checkout at the point of conversion.

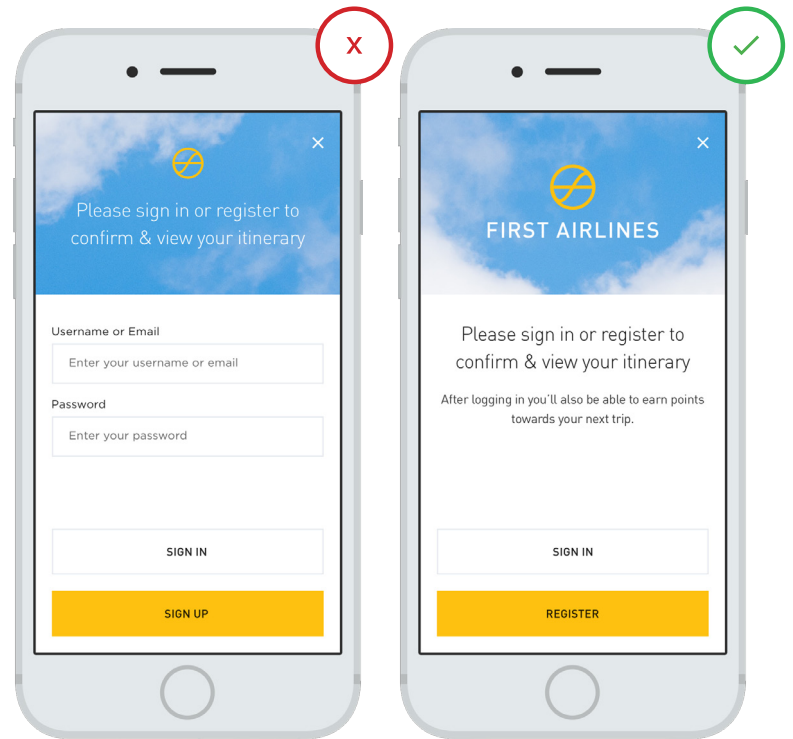


X Requiring upfront registration is a huge barrier to use.

✓ An engaging experience is provided upfront without forcing the user to input personal information.

15 Differentiate “sign in” from “sign up.”

Many users end up taking the wrong action when attempting to sign up for an account by tapping on the “sign in” button, which then prompts them for a password. This often happens because users scan the screen quickly and assume that the first call to action that catches their attention is the correct one. Design a “sign in” and a “sign up” that are easily distinguishable from each other so users can get to where they want to go quickly.

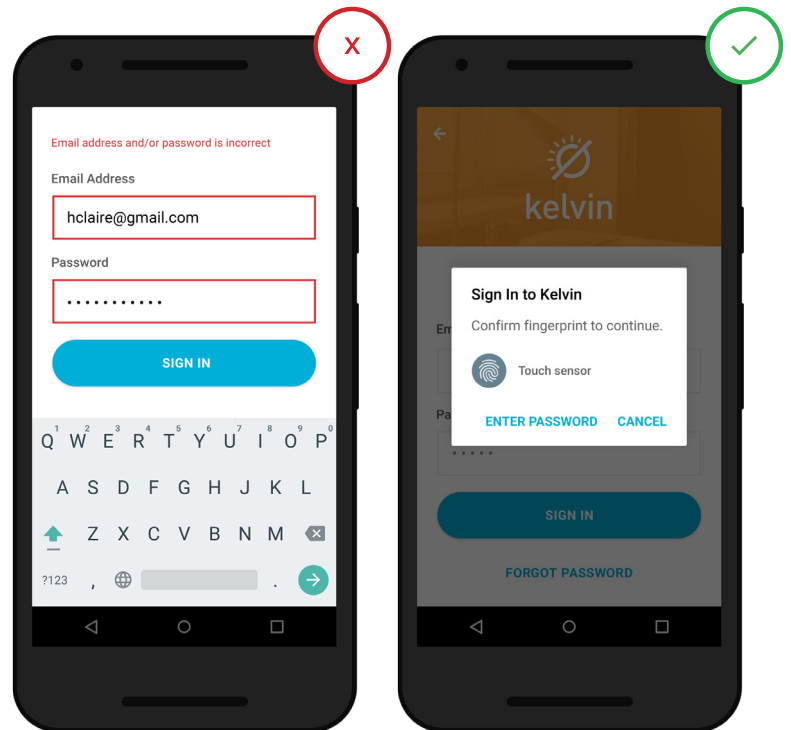


✗ Lack of distinction in calls to action can cause error.

✓ The interface is simple, and the calls to action are distinct.

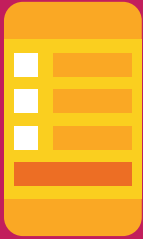
16 Make password authentication a frictionless experience.

Users get annoyed when they have to go through an arduous, multi-step task to set up or reset a password. Reduce the risk of abandonment by simplifying the authentication experience. Minimize the number of steps required or use different authentication methods such as a third-party login or fingerprint touch login.



✗ Text-based authentication is a common cause of error.

✓ Efficient authentication, such as fingerprint sign-in, supports a frictionless experience.

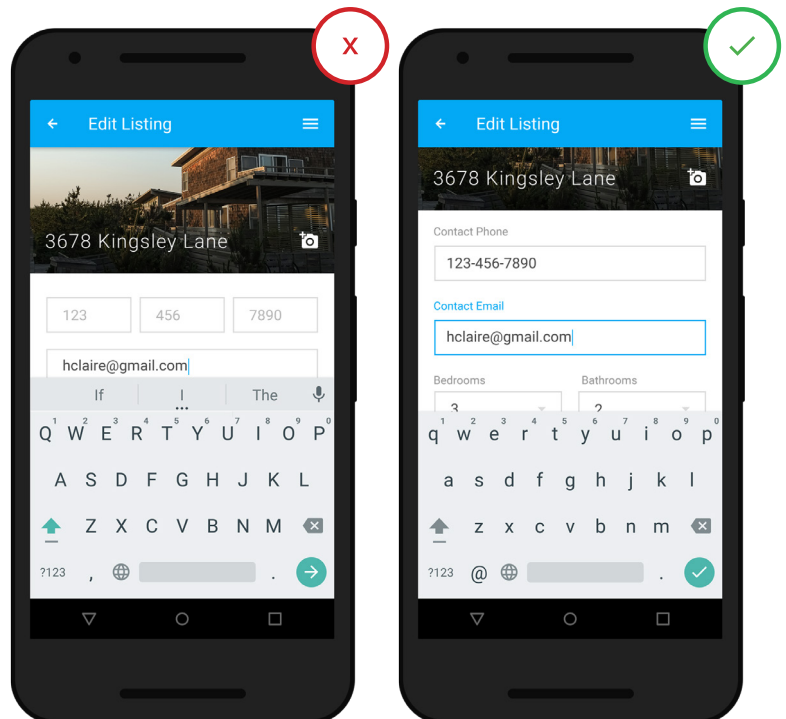


Chapter 5: Form Entry

Forms present themselves at the most critical moments. Make forms quick and easy to complete using these principles.

17 Build user-friendly forms.

Forms should be compatible with how users enter information. Design screens that can interpret multiple input formats rather than make the user adapt to the app's limitations. Also, ensure that form fields are not obstructed from view by interface elements such as the keyboard. As the user completes form fields, automatically advance each field up the screen. It's also a good idea to include efficiencies like auto-populate, auto-capitalization, and credit card scanning.

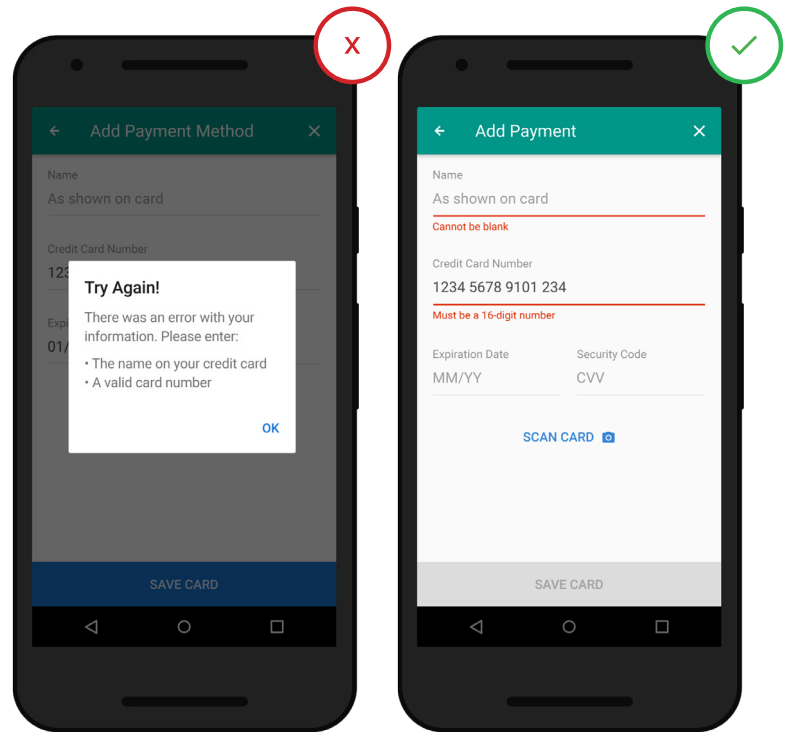


X The format for data entry is prescriptive (e.g., three fields for phone number), and upcoming form fields are hidden behind the keyboard.

✓ Form fields allow flexibility in the formatting of the information and the form is advanced upward as it is completed.

18 Communicate form errors in real time.

Users dislike when they go through the process of filling out a form only to find out at submission, that they've made an error. Provide real-time error information to alleviate this pain point and continuously clarify to the user when an area of a form is successfully completed or validated. Test the experience to ensure that the process is smooth, and the flow is not disrupted.

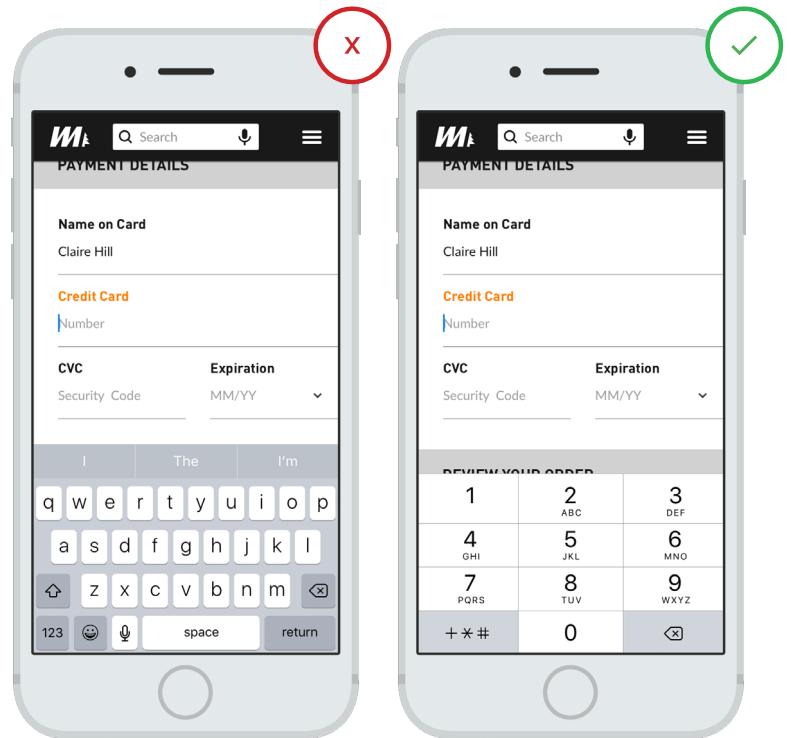


✗ Form entry is not validated until after submission and the error message provided is out of context without actionable recommendations.

✓ Actionable error messages are provided in context, in real-time, upon data entry.

19 Match the keyboard with the required text inputs.

App users appreciate apps that provide an appropriate keyboard for text entry. Ensure that this is implemented consistently throughout the app rather than only for certain tasks but not others.



X The user is required to tap the number key in the keyboard to enable number entry.

✓ An appropriate numeric keyboard is automatically provided for fields that require numeric entry.

20 Provide helpful information in context in forms.

Have relevant, in-context information ready to assist users to move through the form easily. For example, when scheduling dates, users appreciate context like a monthly calendar to identify days of the week, eliminating the need to leave the app to check the smartphone's calendar. It also reduces the risk of the user becoming distracted by another task.

The image shows two side-by-side smartphone screens displaying a 'Book a Room' form. The left screen is marked with a red 'X' in a circle, indicating a poor design. It features a form with fields for email, phone, check-in/out dates, number of adults, and room preference. The right screen is marked with a green checkmark in a circle, indicating a good design. It includes the same fields but adds helpful context: a calendar icon next to the date fields, a note about phone number confidentiality, and a summary of the stay duration.

Form Design	Features
Left (Red X)	Basic form fields: email, phone, check-in/out dates, number of adults, room preference.
Right (Green Checkmark)	Enhanced form with contextual help: calendar icons, confidentiality notice, stay duration summary.

X Users are not provided with appropriate data entry functionality or help text to support form completion.

✓ Helpful functionality, like calendar widgets, are available for data entry, and succinct explanatory information is provided.

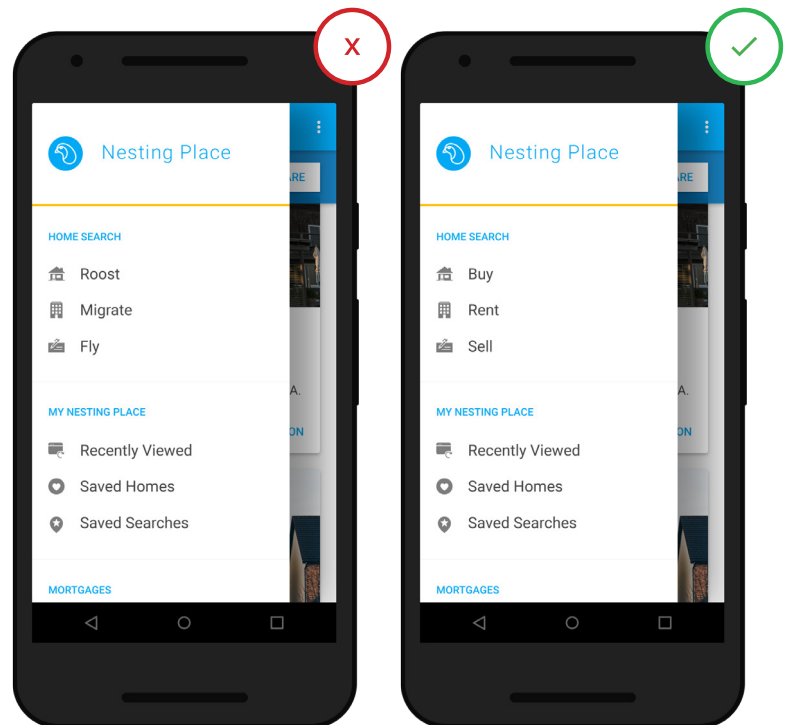


Chapter 6: Usability and Comprehension

Specific and app-wide design decisions can be critical for ensuring a good user experience. Use these principles to design an app that caters to users' needs.

21 Speak the same language as your users.

Unknown terms or phrases will increase cognitive load for the user. When calls to action are labeled with brand-specific terms, users may get confused. Clear communication and functionality should always take precedence over promoting the brand message.

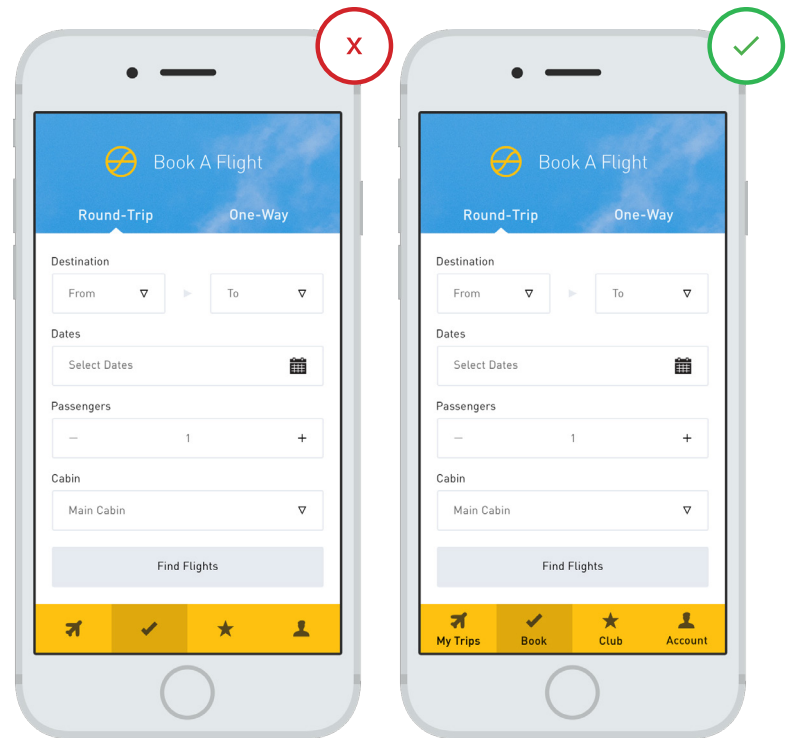


X Unconventional terminology (e.g., “Roost,” “Migrate,” or “Fly”) can confuse users, hindering discoverability and comprehension.

✓ Terminology (e.g., “Buy,” “Rent,” or “Sell”) is clear and free from unnecessary jargon or whimsy to avoid confusion.

22 Provide text labels and visual keys to clarify visual information.

Visuals and iconography need text labels for consistent and proper interpretation. In our research, we found that icons for a menu, cart, account, or store locator as well as for actions like filtering or sorting are not universal and not well understood across apps. Icons that are labeled are much more likely to be used. Also, apps that provide visual categorizations without a key require users to guess what they represent. Make sure to include a key to reduce confusion and keep users on task.

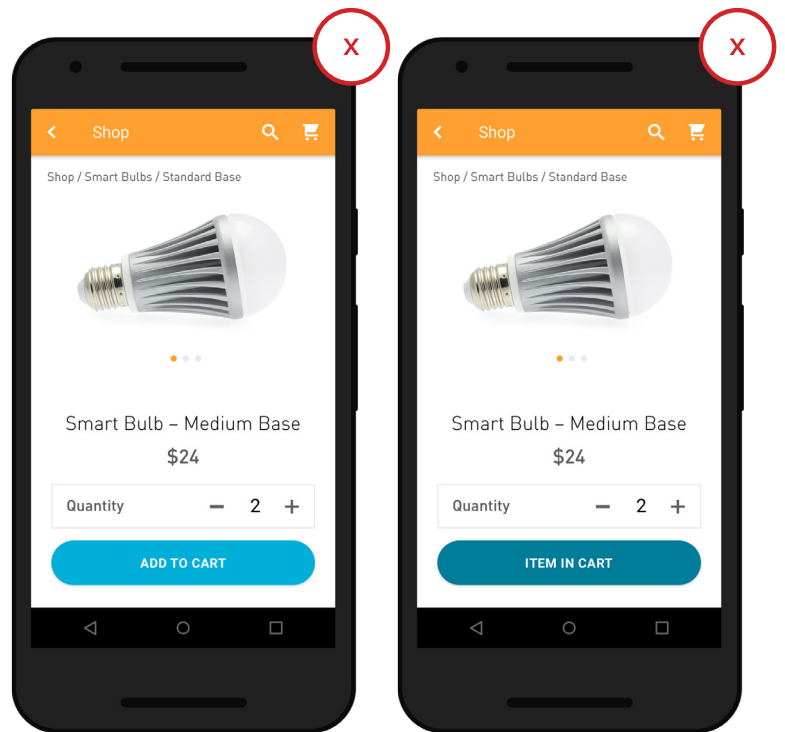


X Icons without labels are often misunderstood and cause confusion.

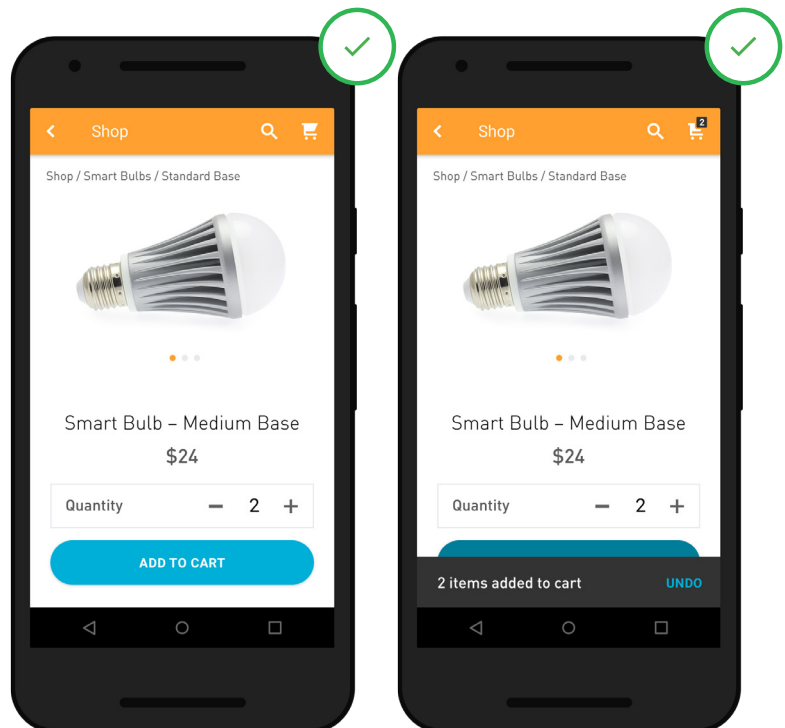
✓ Labeled icons ensure that meaning is conveyed easily and is consistently understood.

23 Be responsive with visual feedback after significant actions.

When users add an item to the cart or submit an order, lack of feedback can cause them to question whether the action has been processed. Apps that provide a visual animation or another type of visual eliminate this guesswork for the user.



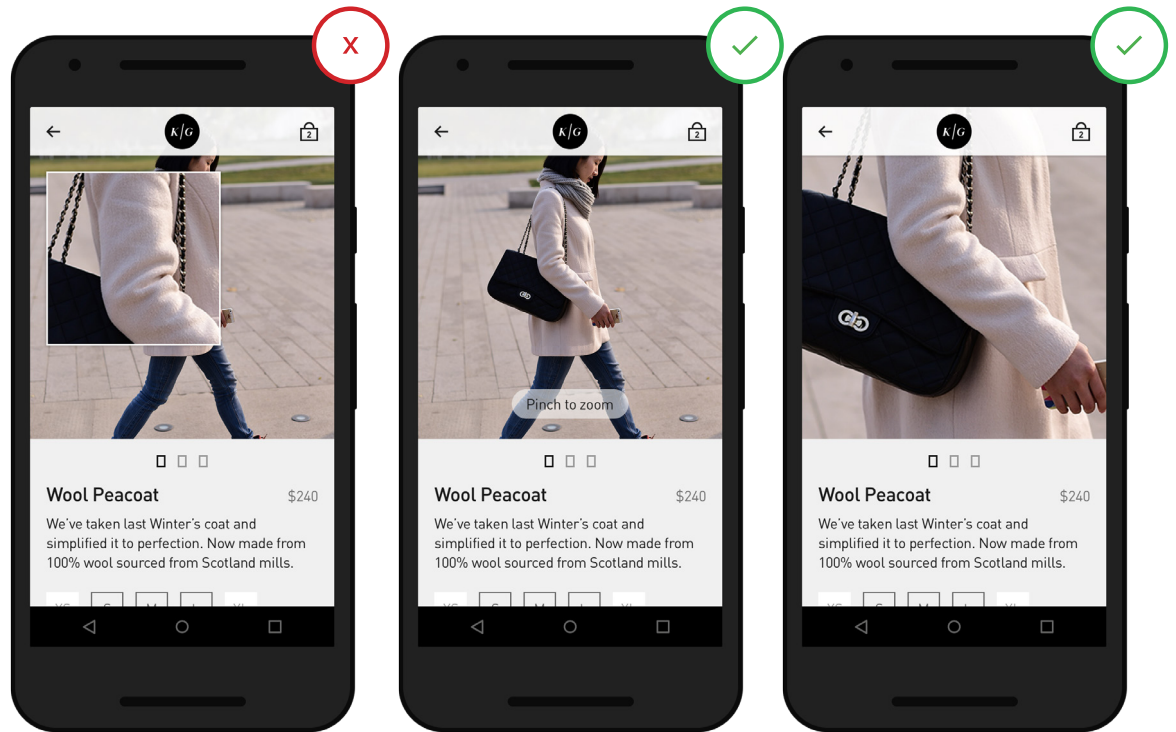
X No visual feedback after an action, such as adding to cart, leaves users guessing as to whether it happened.



✓ Clear visual feedback—here, in the form of a confirmation through a toast—provides assurance that an action has happened.

24 Let the user control the level of zoom.

Users want to be able to control the level of zoom when they view an image. They can become frustrated by apps that zoom in at a predetermined magnification level. In particular, we see instances of this when the zoomed-in view forces the user to look at a specific part of the item or takes the image partially off-screen. Put users in control by allowing them to zoom in as they prefer.

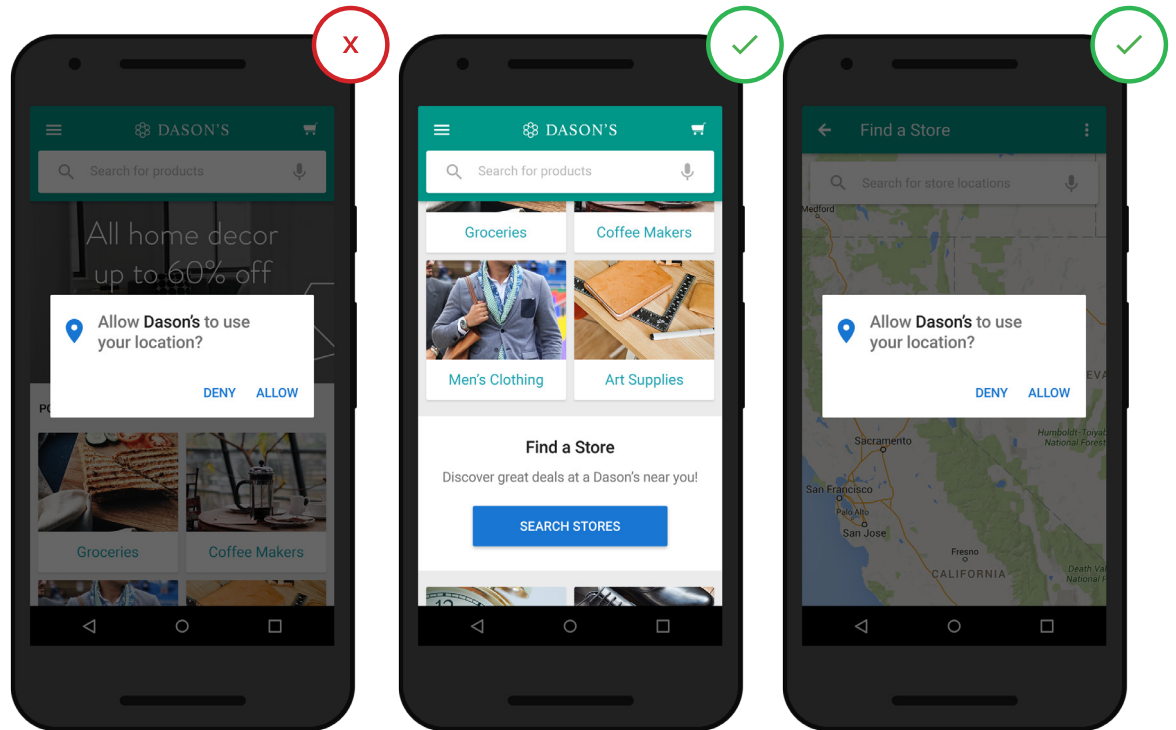


X Zoom capability is restricted to a specific level and location, leading to frustration.

✓ Depth and area of zoom is controlled by the user.

25 Ask for permissions in-context.

Users can get stuck in a task when they deny permissions integral to the app's proper functioning. To mitigate this, apps should ask for permissions in context and communicate the value the access will provide. Users are more likely to grant permission if asked during a relevant task.



✗ The user is asked to grant location permission without relevance to context or the current task.

✓ The user is asked to grant location permission in the context of a relevant task, after requesting to search store locations.



Tools to Take Action

Now that you've studied the 25 Principles of Mobile App Design, here are some helpful resources to grow your app and keep users coming back.

The 25 Principles of Mobile App Design we've taken you through offer new insights on how to optimize the user experience through streamlined navigation and exploration, in-app search, design tailored for commerce and conversions, registration, form entry, and usability. We recommend comparing your current app experience to each principle in our guide and prioritizing improvements to your app to remedy any gaps.

Now that your app design achieves its goals of delivering a great user experience, you're ready to ramp up your marketing. Your marketing needs to match the life cycle of your app, beyond just finding new users. You'll want to grow an active app user base by ensuring app users continue to engage with your app and invite others to share the experience.

Strategizing for app success

Here are some tools to help you strategize for success across the life cycle of your app:

1. Drive acquisition and discovery of your app by implementing a growth strategy for installs. Read about growth with Google in the [Guide to Driving Mobile App Downloads](#).
2. Welcome, ramp up, and engage your users with simple and reliable [messaging](#) no matter whether they're using Android, iOS, or Chrome.
3. Remember to create an engagement strategy to keep current users coming back. You can engage users using specific tools like [deep links](#) and advertising campaigns in [Mobile App Engagement](#).
4. Grow your user base further through user advocacy via [Google App Invites](#).



Principles of Mobile App Design Checklist



App Navigation and Exploration

- ☐ Show the value of your app upfront.
- ☐ Organize and label menu categories to be user-friendly.
- ☐ Allow users to “go back” easily in one step.
- ☐ Make it easy to manually change location.
- ☐ Create frictionless transitions between mobile apps and the mobile web.



In-App Search

- ☐ Prominently display the search field.
- ☐ Use effective search indexing.
- ☐ Provide filter and sort options.



Commerce and Conversions

- ☐ Provide previous search and purchase information.
- ☐ Allow user reviews to be viewed and filtered.
- ☐ Enable comparison shopping features.
- ☐ Provide multiple third-party payment options.
- ☐ Make it easy to add and manage payment methods.



Registration

- ☐ Provide clear utility before asking users to register.
- ☐ Differentiate “sign in” from “sign up.”
- ☐ Make password authentication a frictionless experience.



Form Entry

- ☐ Build user-friendly forms.
- ☐ Communicate form errors in real time.
- ☐ Match the keyboard with the required text inputs.
- ☐ Provide helpful information in context in forms.



Usability and Comprehension

- ☐ Speak the same language as your users.
- ☐ Provide text labels and visual keys to clarify visual information.
- ☐ Be responsive with visual feedback after significant actions.
- ☐ Let the user control the level of zoom.
- ☐ Ask for permissions in-context.