1. **What is Fragmentation?**

   Fragmentation is the diversity of browsers, devices and platform versions in use at any given point of time.

2. **How does it affect you?**

   - Building responsive sites and customizing layouts for different screen sizes is no longer an option.
   - **67%** increase in likeliness of product use, if your website is responsive.

3. **How does it affect your users?**

   - 75% of customers judge a company’s credibility based on the website design.
   - 61% of users wouldn’t return to a site if they had issues on mobile, and 40% would visit a competitor instead.
   - 83% of mobile users gave high importance to a seamless experience across devices.

4. **How does it affect your organization?**

   - Bugs are expensive to fix.
   - **70%** of customers abandon their cart due to bad UX.
   - 40% of online transactions involve more than one device in the decision making phase.
How do I solve for this?

**STEP 1** Identify where your users are coming from

This is what the sample data could look like

- Geographies
  - Europe
  - US
  - Asia
  - Others

- Devices
  - Samsung Galaxy S8
  - Samsung Galaxy A8
  - Apple iPhone 8
  - Apple iPhone 6
  - Apple iPhone 7
  - Samsung Galaxy S7
  - Samsung Galaxy S9

<table>
<thead>
<tr>
<th>Device Model</th>
<th>% Traffic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Samsung Galaxy S8</td>
<td>10</td>
</tr>
<tr>
<td>Samsung Galaxy A8</td>
<td>8</td>
</tr>
<tr>
<td>Apple iPhone 8</td>
<td>6</td>
</tr>
<tr>
<td>Apple iPhone 6</td>
<td>4</td>
</tr>
<tr>
<td>Apple iPhone 7</td>
<td>4</td>
</tr>
<tr>
<td>Samsung Galaxy S7</td>
<td>2</td>
</tr>
<tr>
<td>Samsung Galaxy S9</td>
<td>2</td>
</tr>
</tbody>
</table>

You can use the following tools to get this data:

- Google Analytics
- SimilarWeb

**STEP 2** Prepare a list of device-browser combinations covering these aspects:

- Device-browser combinations with high test-fail rates and low conversion rates
- Flagship devices with high potential usage in the future
- Relevant devices and browsers depending on the selected geographies
- Type of tests to run in each device (Sanity, Regression, Integration, etc.)

**STEP 3** Use these 3Rs to come up with a final set of devices to test on

**REDUCE**

- It is never possible to test on all devices or browsers
  - Reduce the number of similar devices (Apple iPhone 7 & 8)
  - Remove devices with the same viewport/resolution
  - Remove devices that consistently pass all your tests

**REFINE**

- Consider aspects that might make more sense to your website
  - Look at browsers with a low conversion rate
  - Include devices that people will start using more in the future
  - Build a test strategy that attacks the high-risk areas for your UX

**RE-ADJUST**

- Do a cost-benefit analysis for additional testing
  - Cost of additional testing (set up, execution, and delay in release)
  - Revenue gains from reaching more users with a better UX
  - The gain in brand equity and customer goodwill
Test on the right browsers and devices

To help you get started, we have prepared a list of browsers you need to test on. This list has been prepared after considering the following parameters:

**FACTORS TO CONSIDER**

- Global traffic volume
- Market share and popularity
- OS and OS versions
- Screen sizes
- Usage statistics of BrowserStack customers
- Launch year
- Manufacturers
- Resolutions and Viewports
- Upcoming devices

**Recommended device-browser combinations**

**STARTING UP**
- Win 10 - Chrome 79
- Win 7 - Chrome 78
- macOS Catalina - Safari 13
- Samsung Galaxy S8 - Samsung Browser
- Google Pixel 3 - Chrome
- Apple iPhone 8 - Safari

**GROWING BUSINESS**
- Everything in Starting Up
- Win 10 - IE 11
- Win 10 - Edge 18
- Win 10 - Firefox 71
- macOS Mojave - Safari 13
- Samsung Galaxy S9 Plus - UC Browser
- Huawei P20 Lite - Chrome
- Apple iPhone XR - Chrome
- Apple iPad 6th - Safari

**ENTERPRISE**
- Everything in Growing
- Win 10 - Opera 65
- Win 7 - Firefox 70
- Win 8.1 - Chrome 77
- macOS Mojave - Chrome 78
- macOS High Sierra - Firefox 71
- Google Pixel 4 - UC Browser
- Samsung Galaxy J7 Prime - Opera
- Apple iPhone 6S - Chrome
- Apple iPhone 11 Pro - Safari
Countering fragmentation in Apple devices

Factors to consider

- Distribution

- Impact
  Testing on at least 1-2 versions preceding the latest versions is important.

- Impact
  Testing on old iPhones such as iPhone 6, 7 and iPhone SE is critical.

- Impact
  Adding a couple of iPads will give you a decent coverage.

- Impact
  40% of iPhone traffic in the US comes from devices that are more than 3 years old.
  63% of all tablet traffic comes from iPads.

Recommended devices to test on

- STARTING UP
  Apple iPhone 8
  Apple iPhone XR
  Apple iPad 6th

- GROWING BUSINESS
  Everything in Starting Up
  Apple iPhone 8 Plus
  Apple iPhone 6S
  Apple iPhone 11 Pro

- ENTERPRISE
  Everything in Growing
  Apple iPhone XS
  Apple iPhone SE
  Apple iPad Air 2019

(Fig: Global distribution of recent iOS versions)
Countering fragmentation in Android devices

Factors to consider

Impact

Testing on at least 4 different versions is critical for ensuring good coverage.

Impact

Include custom UIs in your test suite, stock android isn’t enough.

Impact

A good strategy for Android will improve the experience for a big chunk of users.

Recommended devices to test on

**STARTING UP**
- Samsung Galaxy S8
- Samsung Galaxy S9 Plus
- Google Pixel 3
- Huawei P20 Lite

**GROWING BUSINESS**
- Everything in Starting Up
- Samsung Galaxy J7 Prime
- Samsung Galaxy J5 Prime
- Samsung Galaxy A8
- Google Pixel 4
- Samsung Galaxy Tab S4

**ENTERPRISE**
- Everything in Growing
- Samsung Galaxy S6
- Xiaomi Redmi 6A
- Xiaomi Redmi Note 7
- Samsung Galaxy J2 Core
- One Plus 6T
- Samsung Galaxy A10

**Distribution**

( Fig: Global distribution of popular Android versions )

- 9 major custom implementations of stock Android (One UI, Oxygen OS, MIUI, etc.)

- 74.19% of global mobile traffic comes from Android devices.
Countering desktop browser fragmentation

Factors to consider

- Traffic share
  - Chrome 68.84%
  - Firefox 9.44%
  - Safari 9.03%
  - Edge 4.6%
  - IE 3.56%
  - Opera 2.49%

Impact

- Testing on remaining 5 browsers beyond Chrome will improve your coverage significantly.
- Testing on the major Windows and macOS versions will cover most of your users.
- Desktop traffic is still significant and has much higher conversion rates.

Recommended devices to test on

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About BrowserStack

BrowserStack is the world’s largest software testing platform powering over two million tests every day across 10 global data centers. We help Microsoft, Twitter, Barclays, Expedia and over 25,000 customers deliver quality software at speed by moving testing to our Cloud. Our platform provides instant access to 2,000+ real mobile devices and browsers on a highly reliable cloud infrastructure that effortlessly scales as testing needs grow. With BrowserStack, Dev and QA teams can move fast while delivering an amazing experience for every customer.

Founded in 2011, BrowserStack is a privately held company backed by Accel with offices in San Francisco, Mumbai and Dublin.

For more information, visit https://www.browserstack.com

2M+ developers and QAs
135 countries
60M+ tests per month
10 data centers

NEED HELP IN BUILDING YOUR TEST STRATEGY?

Read more about Fragmentation

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