State of the Mobile Web

ENTERPRISE EDITION

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About Restive

Restive is a creator of software and services that help professionals build Responsive and Fast Websites. Our primary goal is to build tools and develop techniques that Web professionals and enthusiasts can use to create better Web experiences for end users.

For more information on how Restive can help you deliver on Responsive and Performance Enhancements for your Website, please visit www.restive.io

Terms and Conditions

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Author

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Executive Summary

Mobile devices like *Phones* and *Tablets* have smaller screens than traditional Desktop computers. As a result, websites need to adapt their layouts to provide a good user experience. Also, websites need to be optimized to ensure that they perform admirably when users access them over usually slower and more expensive mobile-wireless networks.

This report presents our assessment of the current state of Enterprise Websites. The Fortune® 1000 companies were considered a veritable bellwether to make this assessment. These are the top 1000 largest companies in the United States by revenue, and a thorough review of their websites provides a very plausible indicator of the overall state of Enterprise Websites and their readiness for an increasingly mobile future.

Key Findings

- 36% of all Websites are *Responsive*. 60% of these Responsive websites are hosted on dedicated mobile sub-domains, domains, or sub-folders. This means only about 15% of all Websites are fully Responsive without redirection
- Only about 6% of all Websites are considered *Fast* or High-Performance, with the rest being considered Slow or Low-Performance. Only about 3% of all Websites are both Responsive and Fast
- About 53% of all Websites are larger than 1 Mb (Megabyte) in size, and 57% require 40 or more HTTP Requests to load
- A Majority of Websites require significant performance optimization with 67% requiring GZip Compression and up to 83% requiring Minification of either Javascript, CSS, or HTML
- More time is spent on Responsive Websites than on Non-Responsive Websites; and more time is spent on Fast Websites than on Slow Websites

Recommendations

The benefits of having both a *Responsive* and *Fast* Website significantly outweigh the development and optimization efforts required. Indeed, this goes a long way in ensuring a great user experience across all major Web-enabled devices.

The relatively slow adoption of Responsive Web Design for these class of Websites might speak to bigger problems, especially regarding implementation. Therefore, there is an urgent need to simplify tools and techniques to ensure that they are more intuitive. In real terms, it will be considered ideal to attain an industry-standard where implementing *Responsive* enhancements on a Website is the default scenario.

In addition, a Unified, Multi-Device Content Strategy must become a top priority for Website owners. The habit of delivering less content and functionality to mobile devices should be replaced with a 'Content-First' approach with 'Goldilocks' thresholds; ensuring that content on Web pages is just enough to deliver the right message, and still be accessible and available on all devices.

Finally, mobile device equipment should consider joining forces to ensure ubiquity of Smartphones by the end of the decade. This will go a long way in enabling more people enjoy an enhanced Web experience.

Introduction

At the end of 2012, there were 77.5 million multi-page [consisting of more than one web page] websites that had either a .com or a .net domain name extension[1]. The World Wide Web continues to be a major force ever since it came to the fore in 1994 with the founding of the World Wide Web Consortium.

A lot of things have evolved since then from Internet Browsers to the HTML standards that should define their operation. However, 2007 marked a very significant turning point. The introduction of the iPhone by the late Steve Jobs [Apple's CEO at the time] marked the beginning of the mobile device revolution.

There have been many variations of these mobile devices since then, but the two device categories of *Phone* and *Tablet* have persisted. Their presence alone has disrupted the entire industry of Web Design as a profession and caused severe changes to workflows and to development budgets.

Today 25% of Global Web Traffic comes through Mobile Devices[1] (*Phones* and *Tablets*). In addition, worldwide combined shipments of Mobile Devices exceeded 1.9 billion units in 2013[2] (compared to 0.3 billion units for PCs). This trend makes the argument against Mobile-readiness seem foolhardy.

These mobile devices and their Internet operating environments are very different from a traditional Desktop environment on a number of fronts. Apart from the obvious differences in size, they also have less processing power than their Desktop counterpart. In addition, as the average mobile network connection speed is 526Kbps compared to 11.3 Mbps for fixed broadband[3], browsing is bound to be slower on Mobile Devices. Therefore, the traditional Web Design and Development approach has had to adapt to these unique circumstances, with the two main considerations being *Size* and *Performance*.

Responsive Web Design is one of many tactics that have evolved in the Web Design industry for dealing with the *Size* challenge. It does this by using a CSS (Cascading Style Sheets) Module called *Media Queries*, a W3C (World Wide Web Consortium) recommendation [or standard if you like] allowing Web designers to tailor specific style preferences to specific media types. This technique remains the cornerstone of Responsive Web Design today.

Website Performance is also of critical importance for mobile environments. As mobile broadband speeds are significantly less than those for fixed broadband, the mobile browsing experience is about one and a half times slower than on desktops[4]. Even as a sizable body of Best Practices is now easily accessible to the industry[5], *Website Performance Optimization* is a painstaking process as it is a much broader effort that goes beyond the sphere of the traditional Web Designer or Developer.

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[1] Verisign. The Domain Name Industry Brief 10, no. 1 (2013): 2 – 3. https://www.verisigninc.com/assets/domain-name-brief-april2013.pdf (accessed January 18, 2014)
[2] Gartner. "Gartner Says Worldwide Traditional PC, Tablet, Ultramobile and Mobile Phone Shipments On Pace to Grow 7.6 Percent in 2014." Gartner, Inc. http://www.gartner.com/newsroom/id/2645115 (accessed January 28, 2014)
[3] Cisco. "VNI Forecast Highlights". Cisco.com. http://www.cisco.com/web/solutions/sp/vni/vni_forecast_highlights/index.html (accessed December 25, 2013)
[4] Google. "Global Site Speed Overview: How Fast Are Websites Around The World?" Google Analytics Blog, April 19, 2012. http://analytics.blogspot.com/2012/04/global-site-speed-overview-how-fast-are.html (accessed December 27, 2013)
[5] Google. "Make the Web Faster." Google Developers. https://developers.google.com/speed/articles (accessed December 27, 2013)

The Business Case for a *Responsive* Website today is beyond compelling. There are examples of dramatically reduced bounce rates (percentage of visitors who enter the site and then leave the site shortly afterwards rather than continue viewing other pages within the same site) as a result of implementing a Responsive Web Design. A blogger, Robert Greiner, remarked on his eponymous blog that "the Bounce rate went from an embarrassingly high 86% to a much more favorable 1.5% in a matter of two days"[6]. Another blogger, Karen Goodman, also remarks about a significant drop in bounce rate and a significant increase in the average time visitors spend on her site[7].

Certainly, a *Fast* Website also represents a very strong business case. Even with the vast diversity of websites available today, having a website that loads quickly over less than ideal mobile internet conditions is essential. 34% of Smartphone users and 69% of Tablet users expect websites they visit via their devices to load in 2 seconds or less[8]. End users are unlikely to be concerned with the mobile access challenges and will expect websites to load quickly. A 1-second delay in Page Load times is equivalent to 11% fewer page views, 7% reduction in sales conversions, and 16% decrease in customer satisfaction[9].

All this data shows that there are negative implications for having a Website that is both *Non-Responsive* and *Slow*. Websites today – and for the future – need to be both *Responsive* and *Fast*. This report aims to establish the general State of Enterprise Websites with specific regard to their *Readiness* for Mobile Devices on these two important fronts.

In trying to ascertain this, we can't consider all 77.5 million Websites earlier mentioned, that is if we could gather all their domain names in the first instance. However, just as the *Dow Jones Industrial Average* (Dow 30) considers a few big companies as bellwethers, so too will this report. It is with that logic that we will embark on exclusive consideration of all the websites of the Fortune® 1000; the Top 1000 companies in the United States by revenue[10].

This report uses a proprietary set of criteria and methods to identify the *Responsive* status of each website. The report also uses public-domain and best-practice criteria and methods to identify the *Performance* characteristics of each website. It does not seek to establish the quality of each website from a Visual or Code standpoint, nor does it intend to cast aspersions on the earnest efforts being made by these companies to improve their websites. It also does not set out to be definitive about the impact of the status quo on future business revenues, but rather to provide a fair and accurate snapshot that will spark an informed discourse necessary for enabling ongoing improvement.

A business that uses the Web as a customer touchpoint needs to have a website that is *Responsive* and *Fast*, and this report aims to provide a fair and balanced overview of the extent to which businesses in general have implemented these enhancements.

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[6] Greiner, Robert. "Reduce Your Bounce Rate by Implementing a Responsive Design." robertgreiner.com. http://robertgreiner.com/2012/10/reduce-your-bounce-rate-by-implementing-a-responsive-design (accessed January 10, 2014)

[7] Karen Goodman. "Lower Your Website Bounce Rate with a Responsive Theme." Futureexpat.com. http://futureexpat.com/2013/09/lower-bounce-rate-responsive-theme (accessed February 10, 2014)

[8] Akamai. "How To Deliver Fast, Engaging Responsive Web Design Sites." http://www.akamai.com/dl/akamai/wp_responsive_web_design.pdf (accessed December 27, 2013)

[9] Akamai. "Slow Responsive Web Design Sites are Bad for Business." http://www.akamai.com/dl/akamai/slow_responsive_infographic_v7.pdf (accessed December 28, 2013)

[10] Wikipedia. "Fortune 1000." http://en.wikipedia.org/wiki/Fortune_1000 (accessed December 28, 2013)

Methodology

In an effort to gain insight about the general State of Enterprise Websites and their readiness for an increasingly mobile device landscape, *Restive* embarked on a research project to study a distinct subset of websites that would serve as a proper leading indicator.

The Fortune® 1000 companies were selected because of their diversity and also their direct and indirect impact on local and global economies, and also the logical expectation that these companies should be at the leading edge of forward-looking trends and best practices in the Enterprise space.

All 1000 websites were profiled for this study. All the required data on these Websites was gathered between January 4, 2014 and February 10, 2014.

Apparatus

We used only free and public domain tools to gather the data required for this study. The following tools were utilized:

A. Mobile Device Emulator powered by Google Chrome Web Browser[11] ('Version 32.0.1700.72 beta-m' with *iPhone 4* as selected mobile device)

B. Google PageSpeed Insights API[12]. This API analyzes web pages and provides performance insights and recommendations

C. Compete API[13]. This API provides traffic and demographic data on websites

D. Builtwith API[14]. This API provides a detailed profile of the technologies that power a specific website

Metrics

The two main metrics essential for our website assessment are *Responsiveness* and *Performance*.

Responsiveness

This is a measure of whether a web page [or website] is *Responsive* or *Non-Responsive*. If a web page is Responsive, it will adapt to different screen sizes.

The *Responsiveness* of a website is determined primarily by three specific rules:

1. Absence of any visible web page elements [of specific tag classification] within the <*body*> tag that are larger than the screen width of the device

2. The presence of a *viewport* meta tag

3. No Redirection to a Mobile-specific sub-domain, domain name, or subfolder e.g. m.domain.com, domain.mobi, domain.com/mobile, etc.

If a website meets these 3 criteria, it is said to be *Responsive* and is designated an 'A' Grade.

If a website meets only Criteria 1 and Criteria 2, it too is said to be *Responsive*, but it is designated a 'B' Grade on account of the mobile redirection.

[11] Google. "Chrome Browser." https://www.google.com/intl/en/chrome/browser/beta.html
[12] Google. "Pagespeed Insights." https://developers.google.com/speed/docs/insights/v1/getting_started
[13] Compete. "Compete API." https://developer.compete.com
[14] Builtwith. "Builtwith API." http://api.builtwith.com

If a website does not meet either Criteria 1 or Criteria 2, then is said to be *Non-Responsive*. Once a website is classified as *Non-Responsive* then it is given an 'F' Grade.

Performance

This is a measure of the overall performance of a website. The extent to which a website is high- or low-performance goes beyond merely the time it takes to load in a Web browser. There are performance best practices that should be active on a web page of said website to ensure that it meets high optimization standards.

Google PageSpeed Insights was used to assess the performance characteristics of each website's home page. The PageSpeed Score (0-100), which indicates how much faster a page could be, was considered. A high score indicates little room for improvement, while a lower score indicates more room for improvement. Note that this test was conducted using the *Mobile* context option of the API.

Based on the results of the Performance tests, each web page [or website] was graded and classified as follows:

- An alphabet-letter grading system very similar to academic grading was used to further qualify the Page Speed Score. The letters used were A (90 - 100), B (80 – 89), C (70 – 79), D (60 – 69), and F (59 and below)

- Each website was then broadly classified as either *Fast* or *Slow*. A Fast website is one with a Performance Grade of 'A' or 'B'. A Slow website is one with a Performance Grade of 'C', 'D', or 'F'.

Besides *Responsiveness* and *Performance*, it was necessary to consider additional metrics as a way of making meaningful correlations and ensuring a thorough and well-rounded assessment. As a result, two additional metrics were considered: *Traffic, Engagement, and Demographics;* and *Technology*.

Traffic, Engagement, and Demographics

The traffic, engagement, and demographic characteristics of each website is especially important when juxtaposed against *Responsiveness* and *Performance* metrics. This provides answers to questions such as "Do users spend more time on *Responsive* websites than on *Non-Responsive* websites?", for example.

The Compete API was used to obtain all the required data for this metric for each website (where available) in this study.

Technology

The technologies that websites require to deliver functionality to end users are myriad and diverse. From Web Servers that deliver content to the browser, to Analytics that measure important activity like Web visits, the overall technology profile tells an important story about each website.

The Builtwith API was used to obtain all the required data for this metric for each website (where available) in this study.

Exclusions

All metrics – excluding *Technology* – considered only the home page of the Websites under review. For *Technology*, this study considered all the relevant and distinct technologies associated with the domain name of the Website (including, but not limited to, subdomains).

An exhaustive explanation of all datapoints provided by each API is beyond the scope of this report. A more detailed explanation can be obtained from the respective websites of each API.

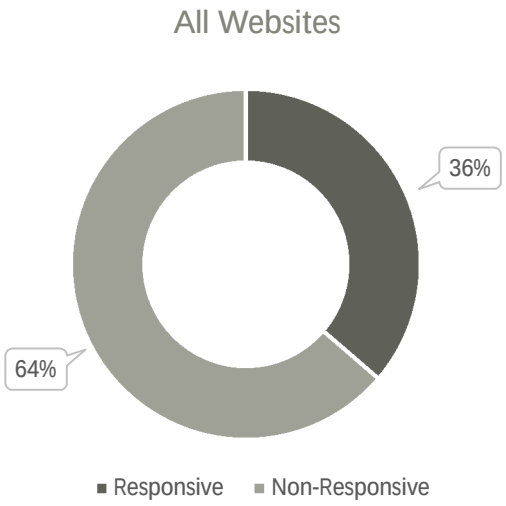
Responsive Websites still the Minority

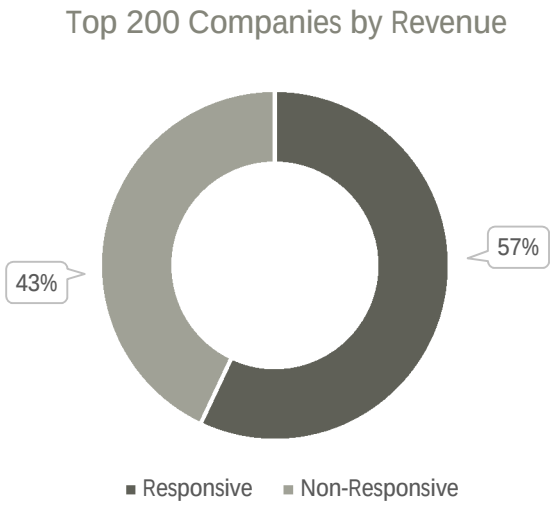
Responsive Web Deficit

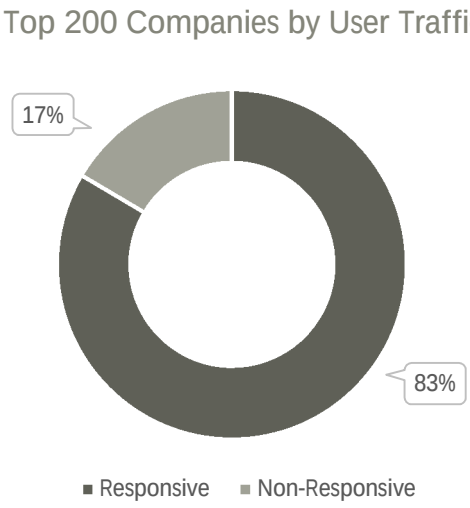
Approximately 36% of all the websites assessed in this study are *Responsive* with 64% being classified as *Non-Responsive* websites i.e. they do not adapt adequately to fit the screen sizes of mobile devices. This signals general low adoption across the Web after more than 3 years since the concept of Responsive Web Design came to the fore.

Of the Top 200 companies by revenue [Fortune® 200], 57% have websites that are considered Responsive. Also, of the Top 200 companies by *User Traffic*, 83% have Responsive websites. From this data, clearly increased traffic is as compelling a reason as any to have a Responsive website, and this seems to be a strong trend. On the other hand, pure revenues of the website owners are not a thoroughly convincing guarantee of a Responsive website, even though it is a safe assumption to expect that the Fortune® 200 possess the resources to implement such features onto their websites. Likewise, the apparent imperative to ensure an optimum user experience for a fast-growing mobile user population does not seem to be strong enough motivation.

In addition, of all the websites that were classified as Responsive, 60% of these sites redirected to a dedicated mobile domain name, sub-domain, or sub-folder. This practice runs counter to Google's recommended configuration of websites using the same Web page to serve content for multiple devices[15]. Plus, 57% of all websites assessed in this study do not have a *viewport* meta tag, which causes a mobile device to render a Web page the same as it would appear on a desktop browser.







[15] Google. "Building Smartphone-Optimized Websites." https://developers.google.com/webmasters/smartphone-sites/details (accessed January 8, 2014)

Rationale for Inertia

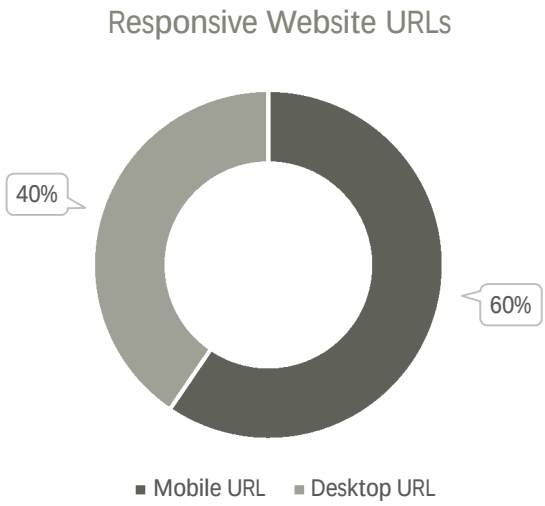
The general adoption of Responsive Web Design appears to be significantly low, especially when compared to the massive growth in adoption of Mobile Devices.

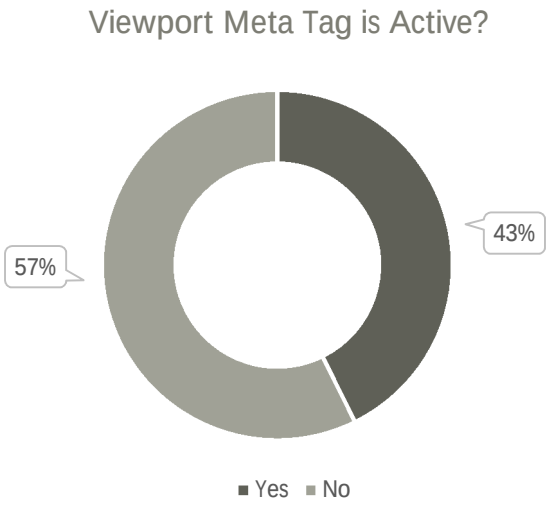
One of the reasons could be *Perception*. Perhaps the fact that Mobile now makes up 25% of all Web Traffic is not compelling enough to tip the scales in favor of Responsive Web Design. In a recent survey by Verisign, 3 out of 5 small businesses surveyed said that a website is critical for success[16]. However, for larger businesses, especially those in this study, legacy business processes could be seen as a more important driver for billion-dollar revenue than a website with rapidly changing technology dynamics. As such, the 'wait-and-see' approach might still be holding sway for the majority.

Another reason could be *Complexity*. There is no shortage of buzzwords in the Web Design industry concerning making websites mobile-friendly; 'Mobile First', 'One Web', 'Progressive Enhancement', 'Graceful Degradation', 'Breakpoints', et al. All of these concepts might have emerged with the best intentions, but may be further complicating Responsive website implementation as design teams struggle to find the best, least disruptive approach.

Yet another reason could be *Cost-effectiveness*. Significant time and cost implications remain, with certain estimates from 10% to 75% over and above traditional Web Design and Development costs.

All these challenges will need to be resolved prior to massive adoption of Responsive Web Design





Top 10 Companies with Responsive Websites

Rank	Name
1	Wal-Mart Stores
2	Exxon Mobil
5	Berkshire Hathaway
7	General Motors
8	General Electric
10	Ford Motor
11	AT&T
13	CVS Caremark
15	Hewlett-Packard
16	Verizon Communications

[16] Verisign. "Benefits and Barriers of Bringing a Small Business Online." 2013, 5. http://www.verisigninc.com/assets/Research-small-business-september2013.pdf

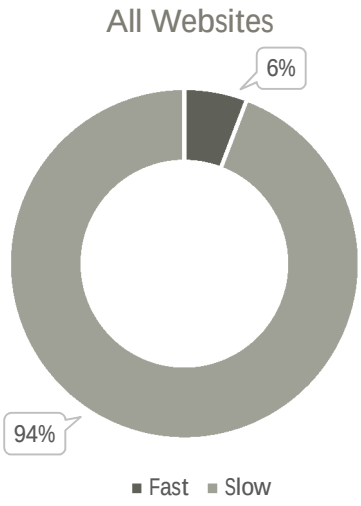
Fast Websites are a Rarity

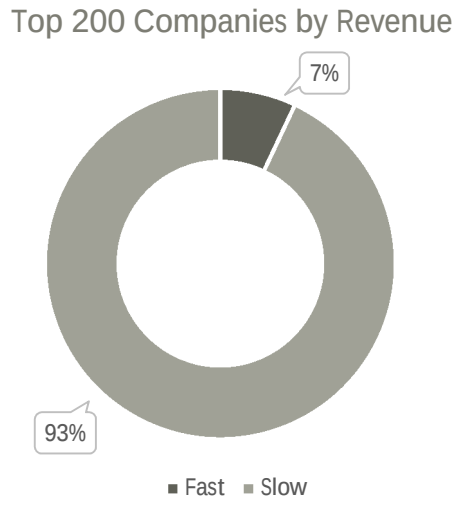
Need for Speed

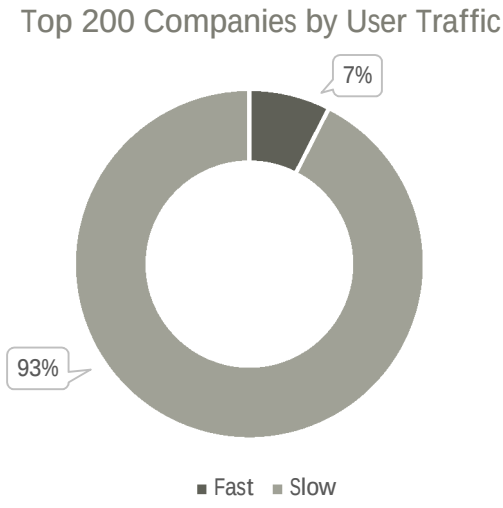
About 6% of all websites reviewed are considered *Fast*, while 94% are considered *Slow*. Drilling down further into the data, and looking at the actual performance grades, 2% of all websites have an 'A' Grade, and 4% a 'B' Grade; these represent the Fast websites. 16% of all websites have a 'C' Grade, 29% a 'D' Grade, and 49% an 'F' Grade; these represent the Slow websites. These results signal a general dearth in website performance optimization with virtually half of all websites having the lowest performance grade.

Of the Top 200 companies by revenue, only 7% have websites that are considered Fast. Juxtaposing this data with similar data from our Responsive website assessment, it appears that there are many more Slow Websites than there are Responsive websites among the Fortune® 200. Also, of the Top 200 companies by *User Traffic*, only 7% have Fast Websites. This is also very dissimilar to the case with Responsive websites.

Large Web pages also seem to be the norm with 53% of all Web pages assessed for this study weighing in at 1 MB (Megabyte) or more. Of this 1 Mb or more of page size, 49% of the total are images, 37% are Javascript files, and 9% are CSS. Also, at least 55% of all websites make 40 or more HTTP Requests when loading, with a little over 14% of all websites making over 80 Requests. In addition, 67% of all websites do not have GZip Compression, an optimization technique that could reduce the size of Web pages by up to 70%[17]. This signals a general state of low Web page optimization across the Enterprise.







[17] GTMetrix. "Page Speed: Enable GZIP Compression." http://gtmetrix.com/enable-gzip-compression.html (accessed January 13, 2013)

Reason for Slowdown

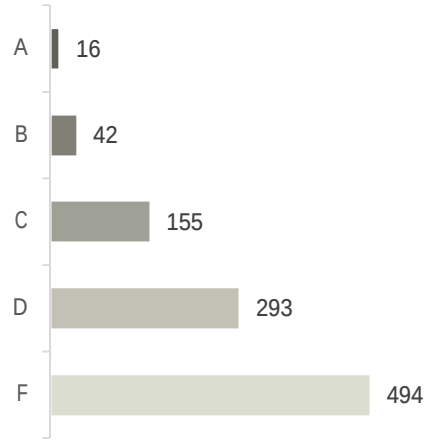
Looking at the evidence on site performance, it goes without saying that Fast websites are nowhere near pervasive. The general dearth of performance-tuned websites can only hurt user experience, but this slow motion is not without cause.

Websites are generally getting larger and larger over time as the need to deliver more content rises. Today, the web pages for the Top 1000 Websites are an average 1.5Mb[18] in size, compared to 1.1Mb in January 2013; this represents a 27% increase year-over-year, with most of the increase coming from images. For mobile-wireless networks, a web page of this size could take several seconds to load, causing frustration for end-users and putting websites at risk of losing users to their more nimble competitors.

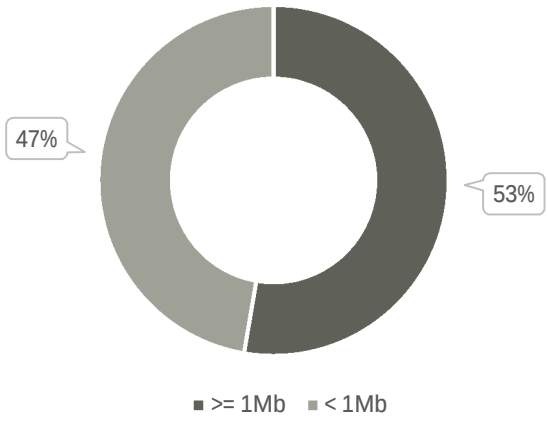
Another reason is the number of HTTP requests a Web page has to make to retrieve all the content required for it to load. The more requests a Web page has to make, the longer it takes to load. And, if the Web page has to make these requests to multiple unique hostnames, this further adds to the delay, because each request will require a separate DNS lookup, which then makes a website subject to varying degrees of network latency depending on where the user is accessing the website from.

There could also be bottlenecks brought about by third-party components that Websites leverage to enable added functionality; social connections, analytics, and advertising could slow down websites considerably, especially if other important resources that need to be loaded on a Web page have to wait for them to load first. All these militate against better performance.

Number of Websites and Performance Grades



Website Page Size



Top 10 Companies with Fast Websites

Rank	Name
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37	Walgreen
39	INTL FCStone
49	Amazon.com
52	Dow Chemical
55	Google
63	FedEx
102	DirecTV
103	Cigna
131	Xerox

[18] HTTP Archive. "Trends." Total Transfer Size and Total Requests. http://httparchive.org/trends.php?s=Top1000&minlabel=Jan+1+2013&maxlabel=Jan+1+2014 (accessed January 13, 2014)

A Smorgasbord of Insights

Responsiveness and Performance

26 websites – out of 1,000 – are both *Responsive* and *Fast*; this represents less than 3% of the entire sample size. Also, 45% of all Fast websites are Responsive (there are 58 Fast websites in all).

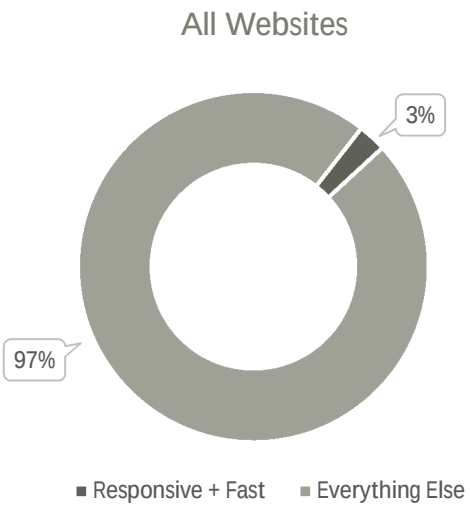
This is clearly indicative of a very low incidence of *Responsive Web Design* and *Website Performance Optimization* across-the-board, considering that these are [arguably] the two most important characteristics a website must possess today.

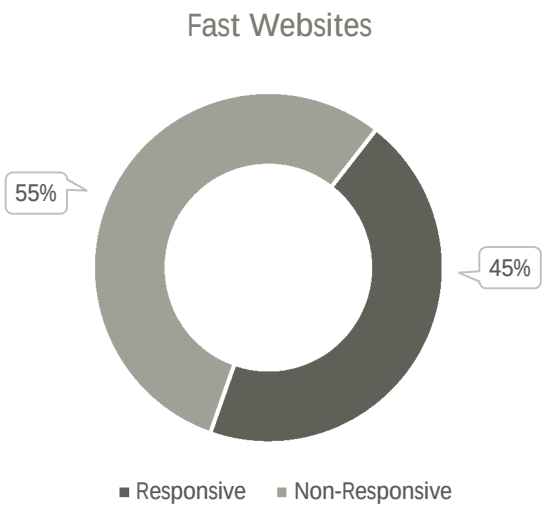
Also, 3.2% of all websites assessed in this study are both *Non-Responsive* and *Fast*, which represents 55% of all Fast websites. This is similar to the case with Responsive and Fast websites and further solidifies the scarcity status of high-performance websites.

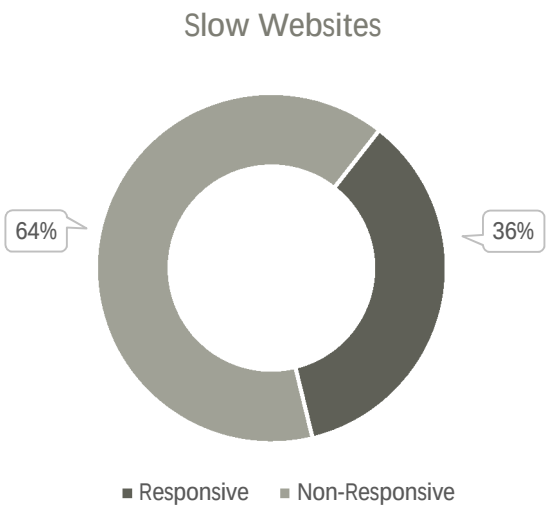
It is not so surprising that the number of Fast websites is almost evenly split [45% to 55%] across Responsive and Non-Responsive lines, especially considering that the same split across all websites is 36% to 64%. It is unlikely that this slight – but positive – disparity signals a deliberate optimization effort (as minimal as it may be) because the number of websites in this category is so small.

Responsive and *Slow* Websites number 337 (representing about 34% of all websites), while *Non-Responsive* and *Slow* websites number 606. This means that nearly two-thirds of all Websites are unready for mobile devices. It also means that 93% of all websites that are ready for mobile i.e. Responsive, are *Slow*.

This is quite an unbelievable statistic and shows just how much work still needs to be done on Enterprise Websites in general, both to add Responsive features and to optimize them for better performance.







Performance Dynamics

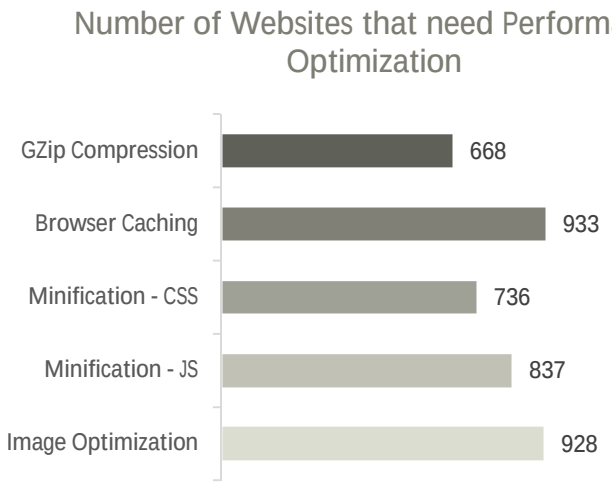
There are numerous techniques employed to optimize the performance of a website. However, the following four (4) techniques are arguably the most common.

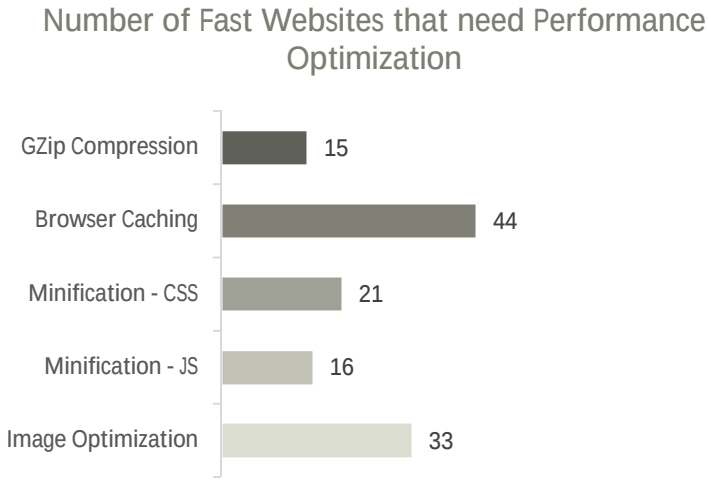
- GZip Compression: Compresses web pages at the server-side before sending them to the browser
- Browser Caching: Stores remote files locally on a user's device to reduce the number of requests a website needs to make to load files
- Minification: Removing unnecessary characters from text-based website files in a bid to reduce their size and speed up load time
- Image Optimization: Formatting and compressing images to reduce their size and speed up load time

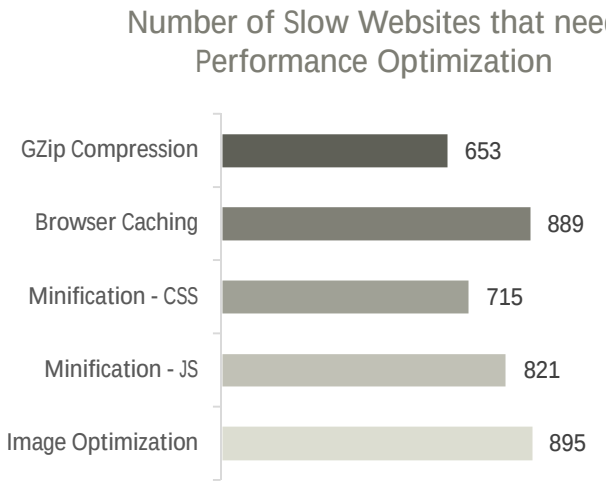
67% of all websites do not have *GZip Compression* enabled; 93% of all websites do not employ *Browser Caching*; At least 73% of all websites could benefit from *Minification* of some sort i.e., HTML, CSS, or Javascript; Also, 93% of all websites require *Image Optimization*.

Even though these are arguably the most fundamental optimization efforts most websites should have finalized, at least two-thirds of all the websites surveyed have not done so in a conclusive fashion.

What is also very interesting is how many websites have good performance metrics without this using these techniques. There are only 15 *Fast* websites not having *GZip Compression* enabled. The number is 44 and 33 for *Browser Caching* and *Image Optimization* respectively. In addition, there are a maximum of 23 *Fast* websites that require some *Minification*. It therefore seems quite an implausible scenario to have a high-performance website without employing at least all four techniques in the first instance.







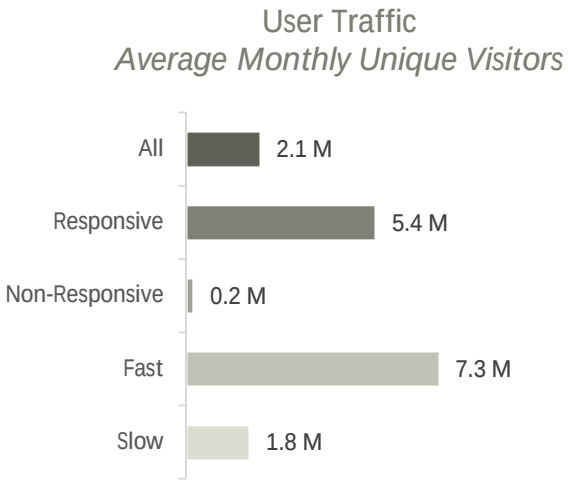
Traffic from Both Sides

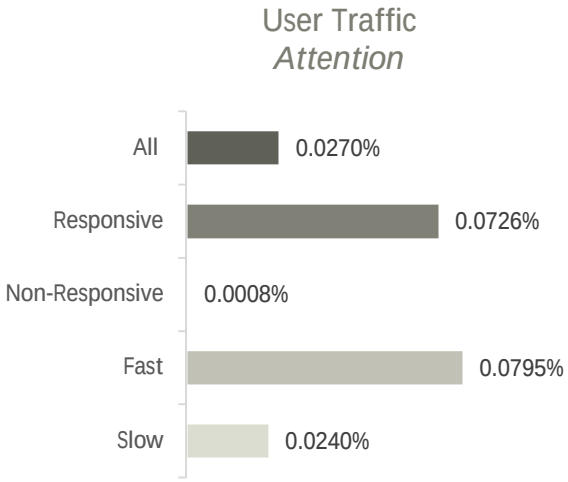
How does *User Traffic* correlate with *Responsiveness*? Can we really draw some kind of inference looking at a snapshot of *User Traffic* versus *Performance*? It is hard to be 100% certain as the data presented is merely a glimpse and not progressive or historical in any way. However, a snapshot could tell an equally powerful story.

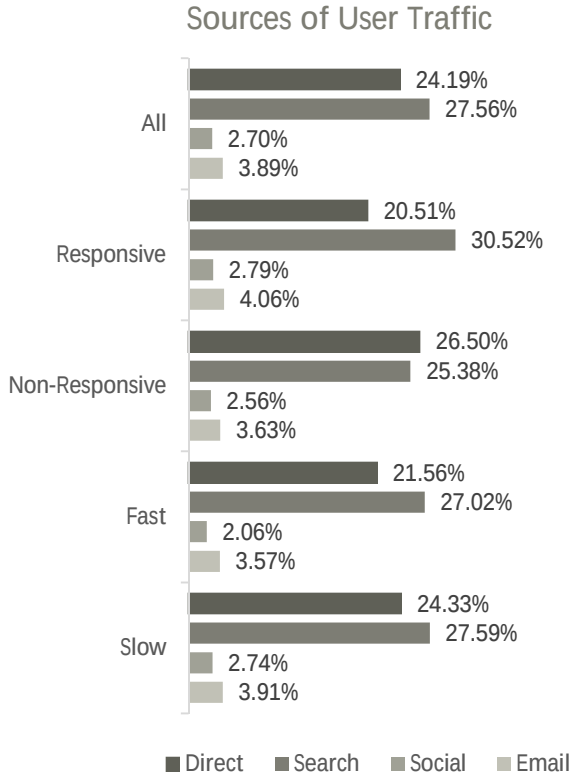
The Average Monthly Unique Visitors across all websites stands at 2.14 million. When looking at just *Responsive* websites, the figure shoots up 154% to 5.44 million. For *Fast* websites, the figure is even higher at 7.26 million (a 239% increase above average). These two stats dwarf corresponding figures for *Non-Responsive* (0.24 million) and *Slow* (1.84 million) websites. Again, this is a snapshot and does not necessarily mean that if a website becomes Responsive or Fast, or both, that *User Traffic* numbers will increase with similar alacrity. However, *Responsive* and *Fast* websites appear to be receiving more users.

Another important metric worth considering is *Attention*, which is the percent of total minutes spent by all users [within the U.S.] on the Internet on a particular website. The average *Attention* for all websites assessed in this study is 0.027% i.e. all the Internet users within the U.S. spent an average of 0.027% of their time online on each Fortune® 1000 website. For *Responsive* websites, they spent 0.072% of their time on each website. And for *Fast* websites, they spent 0.08% of their time. Compare this to 0.0008% and 0.024% for *Non-Responsive* and *Slow* websites respectively, and it is quite clear that online users spend more of their time on websites that are either *Responsive* or *Fast*.

It is hard to dispute the benefit of having a website that is *Responsive* and/or *Fast* being that these stats are representative of all users and not just mobile users. It is also very implausible to believe that mobile users would prefer a *Non-Responsive* and/or *Slow* website.







Technology in the Mix

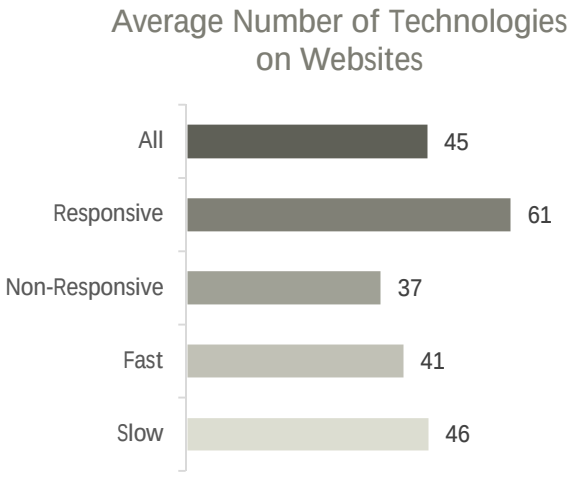
Does the *Technology* profile of a website have any bearing on Responsiveness? Does it have any bearing on Performance?

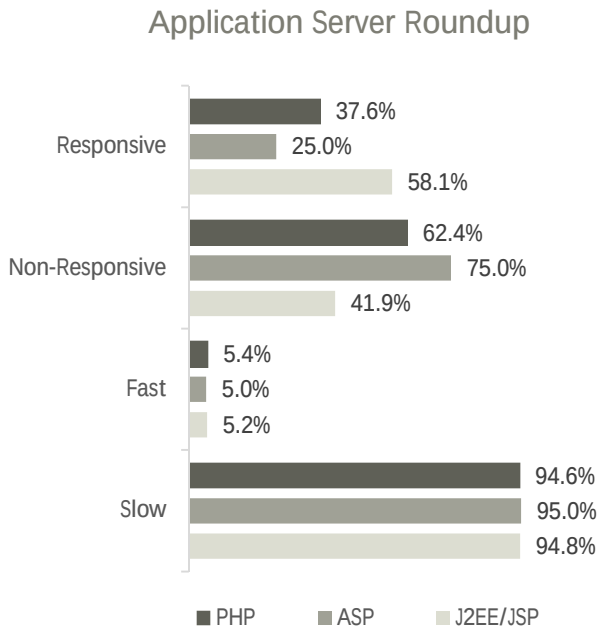
The average number of technologies tracked per website stands at 45; this basically means that the average website is powered by 45 different technology elements from web servers to application engines to frameworks. For *Responsive* websites, this number rises 35% to 61. And for *Non-Responsive* websites, it drops below average to 37. Looking at *Fast* and *Slow* websites, the number is 41 and 46.

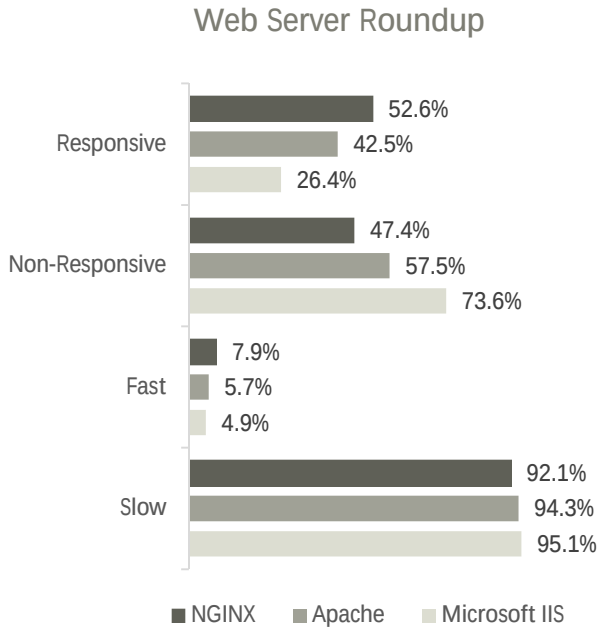
The Responsive websites in this study seem to be utilizing more technology than their alternates. It is expected that this will further add to the complexity of the website and may have an overall impact with implementation time and cost; it is very logical to posit that Responsive websites take longer to build than those that are Non-Responsive, and as a result will cost more. This complexity may be responsible for the sluggish adoption of Responsive Web Design in general.

Regarding *Performance*, there doesn't seem to be any real impact of technology; as there is only a 12% difference in the number of technologies tracked between *Fast* and *Slow* websites. Being that *Fast* websites are so rare (only 6% of all websites are *Fast*), and the impact of technology on *Performance* is minimal, *Performance* optimization should probably be a higher priority task than Responsive Web Design as it is something that can be tackled now with much lower implementation complexity.

There are specific technology elements like Application Engines e.g. PHP, ASP, JSP, etc. and Web Servers e.g. Apache, NGINX, IIS, etc., but since they are server-side components it is virtually impossible to make a definitive assertion that, say, websites with PHP have better *Performance* metrics than websites with ASP.







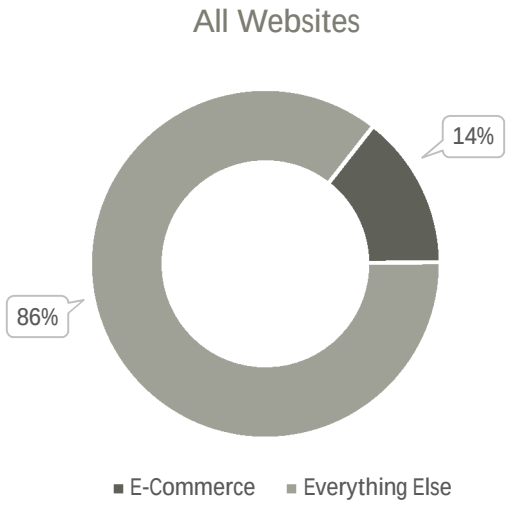
Business Impact of Status Quo

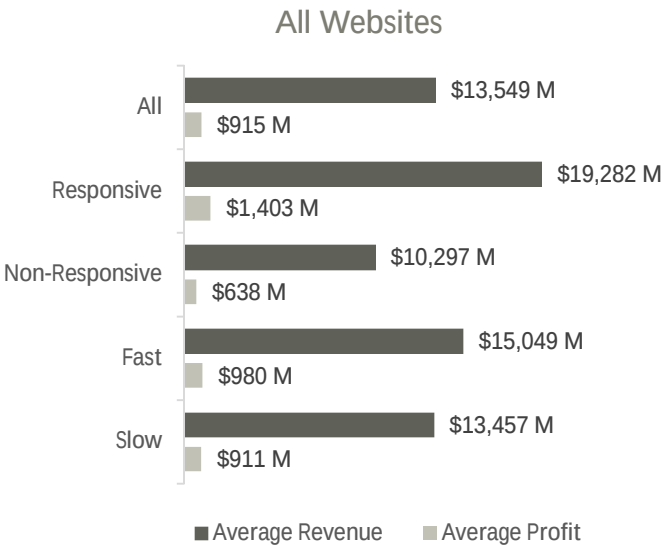
Being that there is a deep dearth in both *Responsive* and *Fast* websites, how does all this affect the overall bottomline of the Enterprise? Is there an appreciable impact on business if a company continues to operate with a website that is neither *Responsive* nor *Fast*?

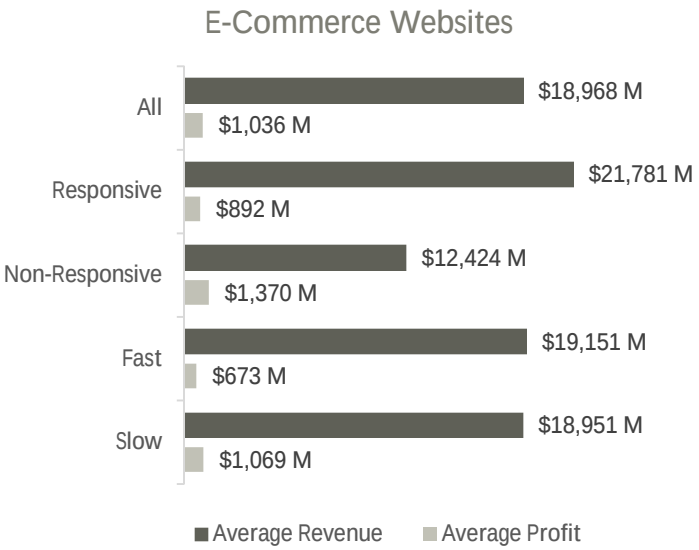
Recent data from the U.S. Census Bureau has E-Commerce Sales at 6% of Total Retail Sales[19]. From our study, we find that the *Average Revenue* of companies with websites identified as *E-Commerce* websites stand at $18.97 billion; which means that $1.14 billion comes from the *Online* sales channel. As online traffic is about 25% mobile, we can similarly postulate that $284 million dollars in revenue came from people using mobile devices. All tolled, businesses that disregard mobile users [i.e. by not having a *Responsive* website] could lose $284 million in revenue, and about $16 million in profit.

However, further losses are possible if you consider that retail consumers use mobile devices to aid in making purchasing decisions offline. 79% of all Smartphone owners are Smartphone shoppers[20]; and 90% of Smartphone shoppers use their phone for pre-shopping activities. And being that over half the U.S. population have smartphones, you don't need to extrapolate for too long to figure out that a website that does not aid a business in driving traffic – online and offline – to commerce touchpoints will experience revenue losses that could be quite significant.

Even if the impact to profit is just $16 million as aforementioned, it would probably cost less than that to build a *Responsive* + *Fast* website, which eliminates the *Opportunity Cost* argument for staying *Non-Responsive* + *Slow*.







[19] U.S. Census Bureau. "Quarterly Retail E-Commerce Sales – 4th Quarter 2013." U.S. Census Bureau News. https://www.census.gov/retail/mrts/www/data/pdf/ec_current.pdf (accessed February 19, 2014).
[20] Google. "How Mobile Is Transforming the Shopping Experience in Stores." Google Think Insights. http://ssl.gstatic.com/think/docs/mobile-in-store_research-studies.pdf (accessed February 12, 2014)

Conclusion and Recommendations

The global mobile growth trend seems to be much more than a passing fad. Total Web Traffic from mobile devices is approximately a quarter of all traffic, up from virtually zero less than a few years ago. It is still unclear just how much more Web share *mobile* as a category is going to usurp over the next few years, but it's very clear that *mobile* has crossed the threshold of relevance.

In some countries like Nigeria and India, millions of consumers have gone straight to Mobile Internet because of the slow and expensive progression of traditional *wireline* networks in the years before cellular technology attained relative ubiquity; It is likely that there will be many more countries and – by consequence – people accessing the internet via mobile-wireless networks than from traditional fixed-wired variants.

As a direct result, the new normal is for websites to be both *Responsive* and *Fast*; having one or the other is no longer sufficient, especially when we consider trends that predict mobile devices becoming the dominant tool for Web access.

The business implications of not being either of these two things are quite unfavorable. High abandonment rates, customer frustration and dissatisfaction, and lost business are just some of the outcomes when a website falls short of general user expectations. And these outcomes are not always recoverable.

Our analysis has identified the important characteristics of a meaningful sample of websites – as well as pertinent correlations between their distinct attributes – and provides a clear indication of the state of the greater Enterprise Website landscape, and in some respects the World Wide Web in general.

The overall conclusion therefore is that there is a significant shortage of Websites with the necessary characteristics [*Responsive* + *Fast*] to ensure a great *Mobile* user experience, and businesses need to look into cost-effective and time-efficient ways of enabling these essential enhancements into their Websites.

We therefore recommend that:

1. Businesses should fully exploit the range of options available for Responsive and Performance improvements, especially regarding *Content*. Simplifying Web Content for relevance and suitability, while still maintaining *functional harmony* across device platforms, will go a long way in reducing time-to-market

2. The Web Design community should be encouraged and empowered to create better tools and conceptualize better techniques that will enable website owners to develop Responsive + Fast Websites with relative ease. In addition, these techniques must pay particular attention to converting and optimizing existing websites that were built for the traditional desktop user environment

3. Mobile device stakeholders should collaborate on an industry-wide effort to phase out *Feature* phones, and usher in an era of *Smartphone Ubiquity*. Smartphones are much better devices for consuming Web content, but they remain elusive for many people in certain regions because of cost and availability. A "Smartphone for All by 2020" initiative could galvanize the industry to break price and production barriers, and still maintain the desired mobile device features

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