the Availability Digest

Retail Web Sites Lose Millions to Slow Response Time
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The recent Black Friday and Cyber Monday brought grief to many retail sites. American Eagle was down intermittently for eight hours between Wednesday and Monday. Crutchfield, Brookstone, and Victoria's Secret were down for an hour or so. Toys"R"Us, Avon, and Crate and Barrel had approximately a half hour of downtime.

None of these companies identified the reason for their failures. But given the significantly increased shopping activity during this time, it is likely that many were caused by unanticipated, heavy website loading.

As serious as these outages were to brand loyalty and to revenues, they may be hiding an even more insidious problem – website performance. Site outages may make the headlines, but slow website response may be the silent enemy #1. No one talks about this, but as performance expert Lenny Rachitsky says:

> "Downtime is better for a B2C [business-to-consumer] web service than slowness. Slowness makes you hate using the service; downtime you just try again later."

The Impact of Website Responsiveness

Though not reaching the attention of the press, website performance has attracted a great deal of industry attention. Several important metrics have been developed from two areas of study:

- User experience research, which looks into how we use the web and why we react the way we do to specific online experiences.

- E-commerce research, which identifies the relationship between website performance and business metrics such as page views, cart size, conversion, and revenue.

A 2010 study by Akamai Technology found that 57% of site visitors will abandon the site after waiting three seconds for a page to load. Remaining visitors do less, download less, and spend less.

In a test, Microsoft slowed down its web site by two seconds. This led to a 4.3% loss in revenue.

Aberdeen Group interviewed 160 companies and found that a one-second increase in page load time resulted in a 7% reduction in conversions. For a site that earns $100,000 per day, this is $2.5 million per year in lost revenue.

Shopzilla reduced its website page load time from 6 seconds to 1.2 seconds. This resulted in a 25% increase in page views and a 12% increase in revenue. Amazon measured that for every 100 millisecond increase in page speed, revenues increased by 1%.

It seems from these studies that subpar performance might cost a company every bit as much as downtime – perhaps more since poor performance is an ongoing problem rather than an occasional, unlikely problem.

How Fast is Fast Enough?

Jakob Nielsen has spent seventeen years studying web usage. He argues that a fast user experience is better than a flashy one. People want to move quickly and focus on content rather than wait for entertaining pages to load.

He submits the following guidelines for page loading times:

- 0.1 second is fast enough to give the illusion of instantaneous response.
- One second allows a seamless flow of thought for the user.
- A ten-second delay barely keeps a user's attention.
- After ten seconds, people start thinking of other things, making it difficult to resume their tasks at hand.

A study by Forrester Research confirms these observations. It found that users could stretch their patience to two seconds. They suggest that this ought to be the goal for retail web sites.

Another study by Zona Research came to the same conclusion. Over the last decade, Zona has been testing the expectations of users. In 1999, they found that users would live with an eight-second page load time. In 2006, this expectation was reduced to four seconds. In 2009, users were uncomfortable if the page load time exceeded two seconds.

How Are the Major Retail Sites Doing?

During the 2010 holidays, several performance measurements were made of the top 500 and the top 2,000 retail web sites. The measurements showed a striking difference, with page load time ranging from two to thirty seconds.

Among the fastest retail web sites were:

Amazon	2.9 seconds
Wells Fargo	3.1 seconds
Best Buy	4.4 seconds
Netflix	4.4 seconds
eBay	5.0 seconds

In contrast, the slowest web sites included:

Nike	31.6 seconds
Barnes and Noble	24.9 seconds
Sears	22.6 seconds
Macy's	21.2 seconds
Lands' End	20.4 seconds

The best web sites were well within the one- to ten-second range of acceptable page load time, with many coming very close to the two-second ideal. Others were well outside of this range.

At the extreme, Google has said that it would like to be able to flick web pages as fast as one can flick book pages. They are setting a goal of a 100-millisecond page load time. This is in line with Nielsen's findings – page load time would appear instantaneous.

Where Are the Bottlenecks?

Joshua Bixby is president of Strangeloop, a company specializing in website performance optimization. He is also the publisher of *Web Performance Today*. He submits that most website performance problems exhibit one or more of the following bottlenecks:

- Front-end browser rendering time. He claims that this accounts for 80% of all performance problems.
- Back-end server capacity and overloading during peak times.
- Third-party content – ads and widgets that are optimized for visual appeal rather than for performance.

Summary

These insights into how poor website performance impacts revenues and customer loyalty raise some critical questions. Do retailers understand the cost of poor performance? Do they have a stated performance goal for their web sites? Do they have a clear sense of how to go about making their sites faster?

It seems that there may be hidden gold that is worth mining in a poorly performing web site.

Acknowledgements

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