



HFI User Experience Design Newsletter

Wherefore art thou O Usability?—Cognitive lock-in to the rescue

Message from the CEO, Dr. Eric Schaffer

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Human Factors
International

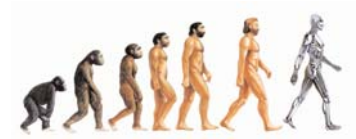
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Where is a good chart when you need it?



I've enjoyed teaching HFI's CUA Certification Courses for many years now. Over 20 years of teaching, I got to meet a lot of people who were serious about usability—their organizations paid good money to get them trained. The organizations were “in love” with usability, so to speak. O usability, O usability.

But when I asked the class what their most serious issues were, their replies surprised me. The problem was more “political” than “operational”. Their problem was convincing managers that usability offered true value—and should be incorporated into the design life cycle as a routine activity.

Yes, organizations send people to classes. Yes, organizations employ usability specialists. But NO, usability often has no priority and (surprisingly) remains ignored amidst the other pressures of business.

Are you in that boat? Are you astonished? For many of our readers this is no surprise.

How did this tragedy of love happen? Why do some organizations see usability as their future, but others can't find room to put it on a serious agenda? O Usability, wherefore art thou?

The missing link between usability and profitability

Turns out we can overcome some of these relationship prejudices. I'll share some research that shows a direct link between usability and site purchases across the e-commerce venues of travel, music and books.

For those of us developing our professional vocabulary, this research area covers the concept of “cognitive lock-in.” Cognitive lock-in represents consumers whose shopping habits bring them back to a site enough to return again and again—they have “locked-in” to the ease of use of that site and make repeated purchases over time. (For example, are you an Amazon shopper, yet?)

That is, customers are *motivated* by *usability* (albeit unconsciously). These customers want to avoid the cognitive effort of learning how to shop at an alternative site. They have “cognitive lock-in” with your site. Perhaps you have the experience of cognitive lock-in yourself.

We can adopt an evolution metaphor to chart the steps of increasing management support for usability. That is, some managers miss seeing the link between your usability efforts and increased profitability for their web site. However, the following discussion on cognitive lock-in can support your claims that usability indeed contributes directly to greater profitability.

You now have “the missing link” to show your team.

Cognitive “lock-in” creates site loyalty

Although this phrase sounds academic, cognitive lock-in shows that you can obtain web site loyalty without using extrinsic rewards like frequent flyer points or discounted prices. Furthermore, cognitive lock-in gets you customer loyalty without requiring a positive attitude towards the product, trust in the product, or even superior functioning of the product.

Three marketing professors found that customers return to e-commerce web sites because they have already learned how to use the site and that it was easy to learn.

Going to a different site incurs greater effort (greater “cognitive costs”) than re-using the site they already know. The outcome of liking a site and disliking change is called “cognitive lock-in”.

The authors, Eric Johnson, Steven Bellman, and Gerald Lohse (2003) obtained a gold-mine of data from Media Metrix (now www.comscore.com) that covered internet usage for about 20,000 end-users (age 18-70) over a 12 month period in July, 1997-June, 1998. Although this is early in “internet time,” the findings represent fundamental psychological processes that continue to hold true. Subsequent research by Murray and Häubl (2007) supports the original findings.

These authors suggest that the experience of “cognitive lock-in” provides significant competitive advantage for e-commerce.

Shoppers ahoy

The authors looked at the top selling sites of books (2 sites), music (4 sites), and travel (30 sites) because these market venues have the highest number of repeat visitors and repeat online purchases. This strategy enabled the authors to see

how repeated visits affected both the visit time and the number of purchases made by a given site visitor.

When a gap of page views exceeded 15 minutes, the researchers assumed it was a separate visit. The median time between repeat visits was 6.2 days for books, and 4.2 days for music and travel. (Were these intense shoppers?) The authors examined the amount of time spent on each subsequent visit to the same site. What did they find?

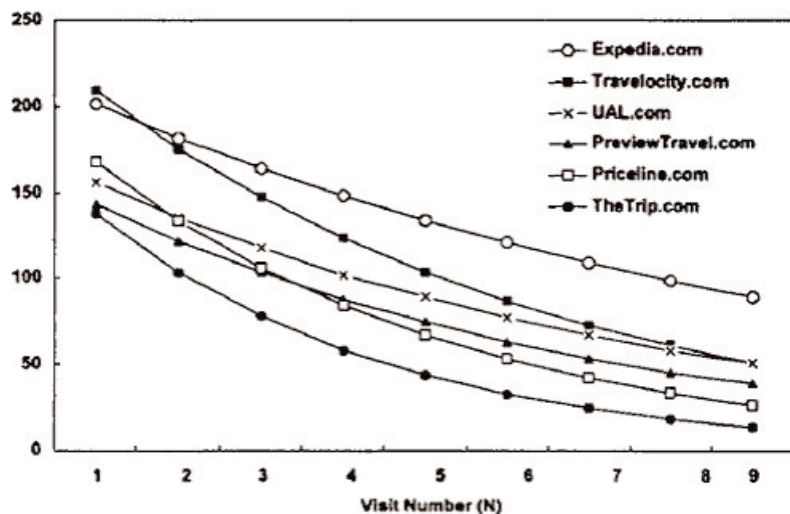
Site visits shorter over time = end-user “learning”

The data across all three shopping categories showed declines in visit duration times. This indicates that site visitors “learned” as they re-visited sites.

This practice phenomenon is well known as the “power law of learning”, “learning curve” or the “experience curve effect”. This decline in visit duration contradicts an oft-cited goal of web design called “sticky content”. The latter probably has value in an advertising-model for generating web revenue. However, for e-commerce, shorter visits imply more productive use of time.

A: Travel

Visit Duration in Seconds (T)



Notice that these curves are somewhat uniform. The regular decrease in duration of site visits supports the interpretation that return visitors were faster because of their prior exposure to the site. This represents the “learning curve”.

“Show me the money”—faster learning rates pay off

This phrase from the popular movie “Jerry McGuire” sums up a lot of business goals. Where is the money in decreased visit duration?

Indeed, the researchers found for all three categories—books, music, and travel—that the learning rate (decrease in time on site) correlated with purchases. In fact, the *faster* the rate of learning (the steeper the curve), the *greater* the probability of purchasing the product.

Need we say more in defense of ease-of-use?

For the record, subsequent research by Murray and Häubl who we had mentioned early as supporting this theory, showed that decreased error rates played the biggest role in elevating “perceived usability”. Thus, usability testing plays an important role in profit-making by detecting errors and improving designs before release to the public.

The benefit of initial ease of use

The researchers looked for other reasons for “cognitive lock-in” such as the initial experience with the web site. For two categories, music and travel, they found that the shorter the duration for the initial experience, the greater the probability of purchase.

This clearly indicates how ease-of-use improves earning power for those web sites.

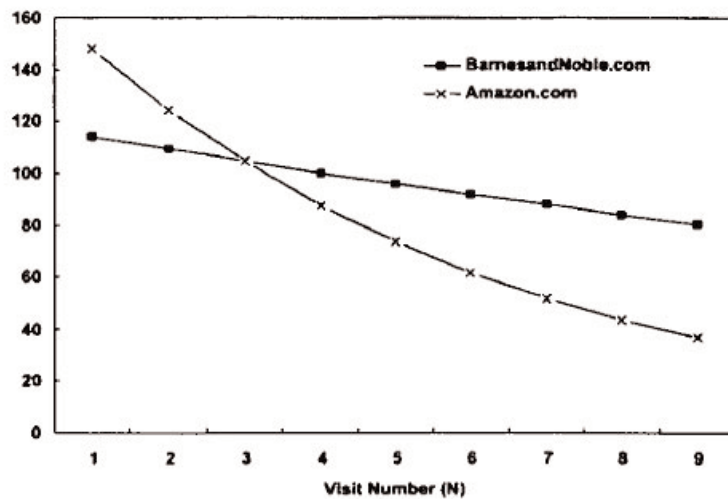
All of these findings show that e-commerce site visitors remain motivated by the speed with which they achieve their purchase goal. Thus, both rapid learning and fast initial interaction constitute the “missing link” between persuasion and usability.

Interestingly, a comparison chart (below) of Amazon versus Barnes and Noble shows that although Barnes and Noble had a shorter duration initially, the overall learning curve for Amazon was far more efficient.

The authors indicate that the steep reduction in usage duration over several site visits supported Amazon's superiority in contemporary reviews at the time. Amazon put effort into making interaction efficient. For example, the "one-click" shopping method of Amazon ultimately caused Barnes and Noble to license that technique as well.

C: Books

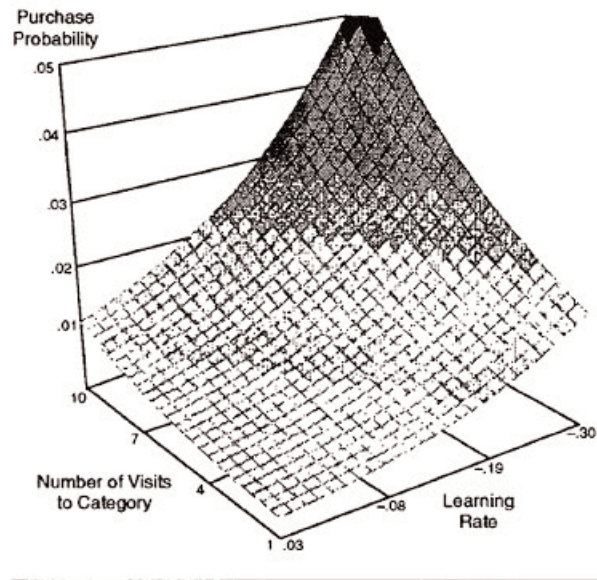
Visit Duration in Seconds (T)



The full story in a single picture

The authors wrap all these findings into a single graphic that tells a compelling story. The chart below shows purchasing relates strongly to the rate of learning ("Learning Rate") for music site. Similar results also hold true for travel. (See chart on next page.)

FIGURE 2
Probability of Purchase: Variation Over the
Observed Range for Learning Rate (α) and Num-
ber of Visits to the Product Category (N) for Music
Sites



How to read “learning rate”. Each number, like .08, show how much the visit time is reduced when compared with the time required for some prior visit. For example, if the first visit required 100 seconds, and the learning rate is -.08, then the second subsequent visit will be 8 seconds less (that is, 8% less) than the preceding visit. If the learning rate is -.1, then the subsequent, 2nd visit requires 10% less time. After numerous visits, these savings get less and less (called “going asymptotic”).

This chart shows that faster learning rates offer greater impact on purchases than the increases in number of visits. For example, on the fourth visit, increasing the learning rate from -.1 to -.2 (10% faster learning) doubles the probability of purchase from 1 percent to 2 percent. That’s the power of usability.

Cognitive lock-in sells Is this a picture worth showing your management? I think it may go a long way towards justifying your usability work. Give it a try. Let us know how it worked.

Our authors suggest that the greater the ease-of-use in a web site, the faster the rate of learning. They use the phrase “cognitive lock-in” to describe how

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end-users appreciate the faster rate of learning. That experience causes end-users to avoid going to other sites that offer the same product. End-users want to avoid using different navigation or different look and feel because it puts them back on the high-end of the learning curve.

The authors suggest that content can be refreshed often, but changes in site design and navigation should be reviewed carefully. Even copying the design features of a competitor may help—because it reinforces the familiarity that constitutes our collective “learning curve”. This builds “cognitive lock-in” which in turn implies a base of loyal customers.

Therein lies the story of Barnes and Noble licensing the one-click method of Amazon. Barnes and Noble wanted to reduce the learning curve and share in Amazon’s cognitive lock-in.

What is your key to speeding up cognitive lock-in? O usability, O usability, wherefore art thou, O usability?

References

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Murray, Kyle B., Häubl, Gerald, 2007. Explaining cognitive lock-in: the role of skill-based habits of use in consumer choice. *Journal of Consumer Research*, 34 (1), 77-88.

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This research has to help with the core insight that usability is well worthwhile. It is amazing how many executives understand that customer-centricity is a core business objective, yet fail to do more than provide rousing speeches about being customer-centric.

So while this study illustrates the value of usability, we also need to bring home the need for a professional and “industrial strength” approach. Pithy speeches about customer centricity are inspirational. But we see *real* progress when our clients work on executive sponsorship, governance, organizational design, cultural change, staffing, training, certification, methods, standards, tools... and a plan that puts all this in place efficiently and systematically.



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