Black Box Software Testing (Professional Seminar)

Cem Kaner, J.D., Ph.D.
Professor of Computer Sciences
Florida Institute of Technology

Section:34
Legal Issues

Summer, 2002
Contact Information:
kaner@kaner.com
www.kaner.com (testing website)
www.badsoftware.com (legal website)

Legal and Social Issues:
Software Customer Dissatisfaction and Quality Related Costs

Why should <u>testers</u> care about customer dissatisfaction? Because:

- They are unhappy about the products that our companies released to the public. We should be aware of this.
- Their responses to bad products cost our companies money. ***If we can track some of the money that we blow on dissatisfied customers, we can argue much more effectively spending more on making the product better in the first place.***

Customer Dissatisfaction

The Canadian government recently completed a study of the claims made on the packaging of consumer software:

- ***Incorrect (and "potentially false or misleading") claims were made by 65% of all the software titles tested.***

Study by Industry Canada's Competition Bureau. For the full study, go to http://strategis.ic.gc.ca/FBP and search for "software".

- ***Computer-related complaints made Better Business Bureau's top 10 for 1995, even higher than used car dealers. We did worse in 1996.***

(The BBB's data for 1997 merged computing with consumer electronics, making comparisons with the 1995 and 1996 data difficult. The combined totals yield higher ranks (more complaints), of course.)

Sophisticated Customers Have Trouble Too

Albert Stark lays out problems that *software support staff* encounter when *they* try to buy and install problem management systems. Support staff provide an interesting example, because they're usually pretty talented at making things work.

Stark points out that:

- "The system will not do everything promised."
- "System functionality is typically overstated."
- "You'll need to purchase additional modules to get the functionality you need."
- "Features you need are scheduled for a future release."
- "The out-of-box reality is less than expected."
- "You'll need to purchase additional hardware."
- "The software will be more complex than it appeared during the sales cycle."
- "System customization will not go smoothly" even though "Vendors can make customization look easy."

In a parallel session at the same conference, speaker asked an audience of publishers' technical support staff how many of them would trade in their problem management system if they could. Over half the attendees raised their hands.

Dissatisfaction Costs Publishers Money

- 1996--200 million calls to tech support.
- The industry spends about $25 per call.
- Software companies spend about $3 per minute providing support for PC-based products, and $5 per minute (or more) for UNIX and mainframe products.
- In companies that have pushed many complainers to the internet, handling the issues raised by live calls cost as much as $150 to $400 per incident (averages reported at a 1999 Support Services Conference).
- Customer complaints have skyrocketed. Over 7 years, ratio of support to total employees in computer-related companies has gone from 1 in 12 to 1 in 6.

For references and additional data, see Kaner & Pels, Bad Software: What To Do When Software Fails, Wiley, 1998.

Customers Have Legitimate Problems

- In those 200 million calls for support, software customers spent over 3 billion minutes on hold.
- This is tip of the iceberg because most American customers don't complain.
- Cross-industry study: Complaining software customers left on hold for longer than any other industry studied, even airlines and gov't offices.
- At peak times, 85% of calls into tech support get busy signals.
- 58% of support staff get less than 1 week of training before independently handling phone calls.
- Complaints involving software / hardware from more than one vendor take 3 to 18 times as long to resolve.
- Business' cost of ownership of a PC is often estimated at $8000 to $11,000 per year.

More Support Data

Despite the trend toward web-based support, 84% of survey respondents in the Software Support Professionals Association's 1998 Support Practices Survey reported increasing telephone call volumes.[1] According to the International Data Corporation, information technology companies spent $2 billion building electronic support infrastructure in 1998, with an expected increase to $14 billion in 2003.[2] This is just infrastructure spending, not the cost of support operations.

I haven't found good summary data for recent operations costs associated with web support. The picture that I get at support-related conferences is inconsistent. The cost of supporting a technical support web site seems to run around $2 per call-equivalent, but there are many more visits.[3] The cost of calls (per call) has risen dramatically, with reported averages as high as $150 or $400 per incident, probably because the simple issues have been siphoned off to the web. For our purposes, it suffices to say that software companies spend a lot of money on customer support infrastructure and operations.

[1]. Software Support Professionals Association, *1998 Support Practices Survey*,<www.supportgate.com>.

More Support Data (references)

[2]. International Data Corporation, *IDC Declares Spending to Build eSupport Operations will Cash In at Over $14 Billion by 2003* (Dec. 8, 1999) <www.supportindustry.com at member archives>.

[3]. According to data from Microsoft, they are able to handle web "transactions" at 8.5 cents apiece, and it takes 8 to 10 transactions to replace a telephone call. Association of Support Professionals, *Web Support Economics* (1999) <www.asponline.com/websupport.html>. In contrast, estimates of cost per incident ("total web costs by total Web [problem] resolutions") are $58.33 (median), but drop to an average of $2.20 for companies that do more than 50% of their support online. Soft-Letter & The Association of Support Professionals, *The Economics of Web-Based Support* (Nov. 1999) <http://www.asponline.com/economics.html >. To compare this to cost-per-call, some calls have multiple incidents (people complain about 3 or 4 things sometimes) but more incidents take multiple calls to resolve. As a very rough approximation, think of a cost-per-call as equivalent to a cost-per-incident. Across companies, the average cost per call or per incident is thus usually somewhere between $1 and $400, lower per call when the company gets lots and lots of calls.

--- SOFTWARE ENGINEERING & UCITA, Cem Kaner, John Marshall Journal of Computer & Information Law, 2000.

We Don't Recognize Our Costs

- At 1997 ASP Customer Support Conference, 90% of attendees said they believe they are delivering a reasonable level of customer service & support.

  How can their perceptions differ so much from their customers?

- 1994 study by Help Desk Institute, 82% of responding support organizations said that they didn't know their cost-per-call (what they spend per complaint).
- Few companies have problem resolution systems that report support cost for a given bug in the field.

Many of us Don't Look at Long-Term Costs

Customer dissatisfaction with quality significantly reduces a company's sales, but several (in my experience, most) companies ignore the dissatisfaction-associated revenue risks because they don't know how to estimate their magnitude.

The degree to which people underestimate long-term effects is illustrated by the following example.

- Microsoft spent $500,000,000 bringing its customer support from blecch to world class. But customer perceptions still ranked MS near average as a support provider. Therefore, there might not be an obvious immediate payoff in sales volume. Result--a leading magazine said,

  "Despite lots of wishful thinking to the contrary, spending money to upgrade a company's service reputation remains a lousy investment."

  But it was in the same period that MS took over leadership in the office applications market, typically in competition with publishers that were intent on cost-reducing their technical support. I don't think that MS would have had a chance of stealing its competitors' customers if they had paid more attention to preserving their customers' loyalty.

We Aren't Collecting Data.

Capers Jones, Patterns of Software Systems Failure & Success:

> The number one root cause of cancellations, schedule slippages, and cost overruns is the chronic failure of the software industry to collect accurate historical data from ongoing and completed projects. This failure means that the vast majority of major software projects are begun without anyone having a solid notion of how much time will be required.
>
> Software is perhaps the only technical industry where neither clients, managers, nor technical staff have any accurate quantitative data available to them from similar projects when beginning major construction activities. . . .
>
> A result that is initially surprising but quite common across the industry is to discover that the software management community within a company knows so little about the technology of software planning and estimating that they do not even know of the kinds of tools that are commercially available.

Some Customers Sue

- There have been several recent lawsuits involving bad software and / or bad support.
- Many software products are sold with disclaimers that purport to deny all possible liability for defective products. Sometimes these are cited by customer support staff to complaining customers. Sometimes they are cited in project team meetings to reassure testers or customer service staff that shipping the product with an awful bug will result in a manageable state of affairs.
- Every court in America (except for one recent case) that has ruled on the shrink-wrapped warranty disclaimer (in software or in hard goods) has said it is ineffective. If your software is seriously flawed, you release it at your company's non-trivial risk.

Notes