Operational determinants of caller satisfaction in the call center

Richard A. Feinberg, Ik-Suk Kim and Leigh Hokama
Purdue University, West Lafayette, Indiana, USA
Ko de Ruyter and Cherie Keen
Maastricht University, Maastricht, The Netherlands

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Abstract There has been, and will be, a spectacular growth in the number of call centers on both sides of the Atlantic. So far, however, empirical evidence is lacking as to the operational determinants of caller satisfaction in call centers, despite the multitude of call performance metrics registered in many call centers. Undertakes an empirical assessment of the relationship between caller satisfaction and a number of critical variables. The results are astonishing. Of all the critical operational determinants only “percentage of calls closed on first contact” and “average abandonment” have a significant, albeit weak, influence on caller satisfaction. Concludes, therefore, with a call for more research into reliable and valid predictors of caller satisfaction.

Introduction
Probably the most urgent questions facing most businesses that believe they care about their customers (after they have what the customer wants) revolve around:

• “What is great service?”
• “How can we provide it?”
• “How do we get better?”

Many companies have reached the conclusion that the relationship with the customer should not end at the store door. These companies believe that customer access after the sale adds value to the transaction (Marsico, 1996). Customer call centers have emerged as a leading weapon on this customer satisfaction battlefront (Anton, 1997; Dawson, 1998; Aksin and Harker, 1999). Call centers allow a company to build, maintain, and manage customer relationships by solving problems and resolving complaints quickly, having information, answering questions, and being available usually 24 hours a day, seven days a week, 365 days of the year (Prahabkar et al., 1997). Indeed, it appears that customers now expect and demand telephone access to companies and manufacturers (Cowles and Crosby, 1990; Dabholkar, 1994).

Companies that have call centers as a focus of their customer satisfaction strategy may look like they really care more (and maybe even actually care more), differentiate themselves from the competition, and thus are in a better competitive position than a business only available at a store between 8.00 a.m.
Call centers allow companies to achieve the promise established in the 1970s by the ground-breaking customer satisfaction research by TARP (1979) and supported by the growing customer satisfaction empirical and research literature of the 1980s and 1990s (see any issue of the *Journal of Satisfaction Dissatisfaction and Complaining Behavior*) that a satisfied customer is more likely to repurchase, purchase more, and promote positive word of mouth and that if you solve a customer’s problem, he/she is more likely to make a purchase than one who is simply satisfied (Walker, 1995; Dobbins, 1996).

Evidence of the growth in importance and ubiquitousness of call centers can be seen directly from the growth of the number of call centers (63,000 in 1996 to 115,000 projected in 2001) and the growth in their costs (34 billion in 1984 to over 81 billion in 1995). In Europe the growth of call centers is still in its infancy. Total spending on call centers is about 10 percent of what it is in the USA. According to a study by the Yankee Group (www.yankeegroup.com) there is reason to believe that the growth of call centers in Europe is about to explode because:

- companies have begun to offer pan-European services;
- public attitudes towards demanding greater customer satisfaction are beginning to shift closer to that of the US consumer;
- there are a number of models of call center excellence importable and imported from the USA; and
- executives with extensive international experience and multinational companies with US divisions now know about the strategic value of call centers.

Market studies by the Yankee Group (1997) and Datamonitor (1996) predict growth of European call centers to be 30 percent each year over the next five years (at least) accounting for 1 percent of all European employment.

Given that call centers are a fundamental weapon for customer relationship management, it appears prudent to illuminate the variables of consequence in call center excellence. To put it simply, if you are going to build them and run them you probably should know what makes them successful. Thus, the general scope of this study is in understanding what aspects of call center operations determine caller satisfaction.

**Hints from practice**

There is nothing in the call center research literature to suggest what variables are related to caller satisfaction. Some direction is provided from call center manuals (books that discuss call center operation and management) that indicate there are a set of common operational measures that these books claim should be monitored to achieve excellence (Tom *et al*., 1997). According to Anton (1997) one measures the quality of call center service by measuring and tracking:
Caller satisfaction

- ASA (average speed of answer);
- queue time (amount of time caller is in the line for answer);
- percentage of callers who have satisfactory resolution on the first call;
- abandonment rate (the percentage of callers who hang up or disconnect prior to answer);
- average talk time (total time caller was connected to telephone service representative);
- adherence (are agents in their seats as scheduled?);
- average work time after call (time needed to finish paper work, do research after the call itself has been completed);
- percentage of calls blocked (percentage of callers who receive a busy signal and could not even get in to the queue);
- time before abandoning (average time caller held on before giving up in queue);
- inbound calls per TSR eight-hour shift;
- TSR turnover (the number of telephone service representatives who left in a period of time usually annually);
- total calls; and
- service levels (calls answered in less than x seconds divided by number of total calls).

The importance of these measures is confirmed in a second leading call center management text by Cleveland and Mayben (1997) and operations research approaches to call center management (Sparrow, 1991).

Predicted relationships

The focus of this paper is to determine call center operational determinants of caller satisfaction. Which of the critical elements of a call center operation are related to caller satisfaction?

It is clear from the literature that we should expect the following relationships to exist:

- A negative relationship between average speed of answer and caller satisfaction – as the caller has to wait longer, satisfaction should decrease.
- A negative relationship between queue time (amount of time caller is in the line for answer) and caller satisfaction.
- A positive relationship between the percentage of callers who have satisfactory resolution on the first call and consumer caller satisfaction.
- A negative relationship between abandonment rate (the percentage of callers who hang up or disconnect prior to answer) and caller
satisfaction. As abandonment rate goes down the consumer is more likely to get through and this should be related to caller satisfaction.

- There should be a positive relationship between average talk time (total time caller was connected to telephone service representative) and caller satisfaction. It should be pointed out, however, that call center strategy tries to minimize talk time. The less talk time the greater the number of consumers that can be handled by a call center. This translates into greater productivity at lower costs.

- There should be positive relationship between adherence and caller satisfaction. As agents are in their seats as scheduled they are available to satisfy the callers. As more agents are not in adherence to their schedule there should be greater queue times, higher abandonment rates, etc.

- There should be a negative relationship between average work time after call (time needed to finish paper work, do research after the call itself has been completed) and caller satisfaction. Not only does higher work time mean that agents are unavailable to satisfy the caller but information for resolution is not at hand during the call leading to lower numbers satisfied after the first call.

- There should be a negative relationship between percent calls blocked and caller satisfaction. The greater the number of calls in a call center not taken the greater the caller dissatisfaction since they will have had to call multiple times to get through.

- There should be a positive relationship between time before abandonment and caller satisfaction. The more callers must hold the greater their dissatisfaction.

- There should be a negative relationship between the number of inbound calls and caller satisfaction. More calls mean more agents are needed. More agents needed means higher budgets. In an era of corporate belt tightening the need for more agents to handle high call levels will not be matched. Therefore, very busy centers may suffer in their ability to satisfy the caller. Agents will be pressured to rush.

- There should be a negative relationship between TSR (telephone service representative turnover) and caller satisfaction. High turnover means lower likelihood of trained and effective agents and therefore less caller satisfaction.

- There should be a positive relationship between service level and caller satisfaction. The greater the percentage of annual calls answered the greater the chance that the caller will be satisfied.

In addition to the specific relationships predicted (above), we will be able to determine which of the 13 critical variables actually determine caller satisfaction. There is nothing in the literature to guide this prediction. But
conceptually, consumers call for information or for problem resolution. As a result we would expect that percent closed on first call would be the most important determinant for caller satisfaction.

Testing relationships
The Purdue University Benchmark Study of US call centers provides the means to address these questions. This annual study of almost 514 call centers collects base information on almost 500 variables. The critical variables identified for this study are measured as part of the benchmark.

Data collection
Brochures and letters were sent to approximately 7,000 call centers picked from various mailing lists. Call center managers were encouraged to take part in the survey for a summary report of the data. Participation in the survey could occur through hard-copy survey or data entry into a Web site.

Survey development
The survey had 496 questions developed in consultation with sponsors of the benchmark study. The 13 independent variables were measured using operation definitions provided by Anton (1997). The dependent measurement of caller satisfaction was measured by asking call center managers the percentage of those who called who reported “top box” levels of satisfaction. “Top box” was described on the survey as the highest level of satisfaction that they measure in their caller satisfaction surveys.

Results
Description of sample
Usable data from 514 call centers were complete enough to use in the benchmark database. The data included 15 identifiable separate industries (see Table I). Table II presents some descriptive summaries of call center size and operations.

Caller satisfaction
Caller satisfaction levels were measured by asking call center managers the percentage of their callers surveyed following the call who report “top box” satisfaction. A total of 74 percent of call centers reported conducting at least annual caller satisfaction studies (51 percent mail survey, 44 percent telephone survey to callers). “Top box” satisfaction refers to callers who reported that they were “extremely satisfied” with the outcome of the call (or whatever the top score was on the question measuring caller satisfaction). Table III summarizes the percentage of callers so satisfied measured by industry. Overall caller satisfaction was 53 percent with variability from low satisfaction in the computer software call center (30 percent “top box” satisfaction) to highest satisfaction in the government call center (80 percent).
Hypothesis tests
The relationship between the critical variables (as well as the average values for these variables in the sample) and caller satisfaction was assessed using simple Pearson correlations and is reported in Table IV.

Seven of the proposed 13 critical variables were significantly (one marginally) related to caller satisfaction in the manner predicted. As predicted:

(1) As percentage of calls closed on first contact increased so did overall caller satisfaction.
(2) As average speed of answer decreased (calls were answered more quickly) caller satisfaction increased. This relationship was only at marginally significant levels.

(3) As average abandonment rate decreased caller satisfaction increased. As abandonment rate gets lower more calls are getting through and the probability of any one caller not having tried before decreases. Callers were therefore less likely to feel frustration by having to make another call to solve their problem.
(4) As after call work decreased caller satisfaction increased. Service representatives are therefore getting the problem resolved directly without additional work and that is creating more satisfied callers.

(5) As percentage of calls blocked decreased caller satisfaction increased. With fewer calls blocked callers have a greater chance of getting through and having their problems resolved. An individual caller has a greater chance of having to call only once to get through promptly.

(6) As service level increased so did caller satisfaction. Service level is a measure of how effective the center is in achieving call answer goals. As centers are more effective in answering a higher proportion of calls in \( x \) seconds caller satisfaction rates increase.

(7) As time in queue decreased satisfaction increased. The less consumers have to wait to get to an agent the greater their satisfaction.

Regression analysis allows us to take the relationships described above to the next level. The essential question is not how many variables are related to caller satisfaction but which of those variables are “determinant” causal variables. Of the seven which show statistically significant relationships with caller satisfaction which are really determinants of caller satisfaction? A stepwise regression was performed using the 13 critical factors as independent variables. Caller satisfaction was the dependent variable (see Table V).

Only two of the 13 variables predicted caller satisfaction (\( F(2,485) = 12.45, p < 0.05, r^2 = 0.05 \)). Percentage of calls closed on first contact and average abandonment rate were the only two factors that can be considered determinant causal agents for customer satisfaction. It should be noted that although the regression model was statistically significant only 5 percent of the variability could be accounted for making the relationship rather weak.

**Discussion and implications**

The purpose of the study was to understand the operational determinants of caller/customer satisfaction in a call center experience. The findings of this study are both confusing and obvious. Half of the critical call center operational variables were statistically significantly related to caller satisfaction. There is good news and bad news embedded in this finding. The fact that seven of the variables had relationships that could be predicted means that some of the variables that are commonly measured may be important in effectively operating a call center. That is the good news. The bad news is that the

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>T</th>
<th>Significance (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>37.72</td>
<td>4.92</td>
<td>766</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Percentage of calls closed on first contact</td>
<td>0.24</td>
<td>0.17</td>
<td>384</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Average abandonment</td>
<td>-0.48</td>
<td>-0.14</td>
<td>-3.15</td>
<td>&lt; 0.05</td>
</tr>
</tbody>
</table>

Note: \( r^2 = 0.05 \)
intensity of the relationship is low and when used as predictors of satisfaction only two of them were significant causal agents. The magnitude of the causation was extremely low. Thus none of the 13 critical operational variables could be concluded to be the variable of importance in creating and maintaining customer satisfaction with call experience.

There are two mitigating issues that need to be mentioned in order to understand the significance of this issue: number one is the manner in which satisfaction is measured in this study and by call centers. The second issue is how these critical variables have come to be considered critical.

Caller satisfaction in this study was measured by asking the people who participated in the benchmark study to reveal the percentage of callers who gave “top box” scores in their studies of call center satisfaction. The reason why the question was asked this way has to do with the many ways in which caller satisfaction is measured across all 500 call centers. Since none of the techniques, questions, procedures were equivalent yet all of the measures had a top box score some equivalence can be established by asking the question in this manner. It should be pointed out that attempts to get more in-depth information, copies of satisfaction studies, or do satisfaction studies ourselves with call back surveys to customers by our center were refused by the participants. So, in essence, this was the best we could do. The fact that operational variables were related in the manner predicted to caller satisfaction shows that the measure at least has some face and construct validity. Yet it is clearly a weak and imperfect measure of caller satisfaction and may be why the results of the regression are so weak.

The reason why these variables have come to represent call center operations and are central measures of any evaluation of a call center is quite interesting and revealing.

We make important what we can measure. The technological developments in the call center industry may be the driver of what we think is important for call centers. The truly outstanding switching and telephonic technology makes certain things really easy to measure. The ease of measurement leads to automatic reporting. The ease of measurement leading to automatic reporting leads to the apparent belief that these things that are measured are the important and motivating things (Silverman and Smith, 1995). What may have started as a simple artifact of the technology (the ACD switch automatically measures talk times so it is reported out to managers) comes to be believed as important. No one questions the assumption. Call centers have measured these things so long that everyone believes that they are measured because they are important when in fact they are measured only because it was an automatic measurement. It may be that in reality the things being measured in a center have little to do with caller satisfaction. The results of this study support the conclusion that some of the things being measured are important but only at low levels. There are other things that might be more important that we are not measuring (and will have to wait for future/further research).
The purpose of research is to uncover and test some fundamental assumptions. This study showed that some metrics that seem to be believed to be essential are not or are poor predictors of the important thing (caller satisfaction). The emperor may not be wearing clothes.

The sample of call centers used in this research is limited and biased in ways we cannot determine. This was not a systematic or random sample of the 23,000 or so call centers in the USA. This benchmark is a first step in attempting to understand the strategic role that call centers can and do play in developing long-term customer relationships. The call center is the best means of controlling customer satisfaction (now) after providing products and services that meet customer needs in an efficient, friendly, entertaining environment. The call center allows satisfaction recovery when a customer has a problem. The call center can keep customers, help a business do more with customers, and attract new customers. The rapid proliferation of better more affordable technology argues for a rapid increase in the research conducted to understand the operational variables of significance in creating and maintaining caller satisfaction.

If call centers are founded on the promise of making callers more satisfied with the product, service, or business than they would have been without them then measuring caller satisfaction must be a prime metric. Why build and maintain a costly and burdensome facility and operation if you are not going to measure the reason why the thing was created?

No amount of measuring speed of answer, abandonment rates etc. can take the place of knowing, tracking, and strategically considering how satisfied the callers were with their experience and outcome in the call center experience. This study shows that resolving the problem and answering the question the first time the customer calls and making certain that the customer gets through the first time are the two essential elements of the call center operation. If the findings were stronger and the relationships more convincing we would recommend that call center managers stop using their time by measuring and strategizing using metrics that are unrelated to caller satisfaction. If we were more certain of the relationships we would recommend that only the two “determinant” metrics be used and that all strategic design and implementation of call centers be organized around resolving the problem and answering the question and making certain they get through the first time. But we are not.

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