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Using Total Effort to Optimize the Delivery of Customer Service

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Abstract

Customer service interactions that require multiple touch points frustrate customers and drive up business cost. Improving customer service comprehensively therefore requires understanding complete customer journeys. Because those journeys increasingly involve multiple channels (websites and mobile apps in addition to the call center), tools that provide visibility into the end-to-end experience are needed. This paper describes a tool for capturing end-to-end caller experiences, a benchmark of total caller effort, and a method for drilling to root cause of increased effort. Linking the measurement of effort-increasing events to actual experiences facilitates the analysis of root cause. Case studies illustrate how end-to-end visibility empowers analysts to drill to drivers of increased effort and extract actionable insight for improving the customer experience while reducing cost at the same time. While our work has been focused on dialog systems in the call center, the paper also outlines how the methods can be extended to customer journeys involving other communication channels.

Keywords

Customer journey, caller experience, total effort, multi-channel, user-centric design, usability re-engineering, cost benefit analysis.

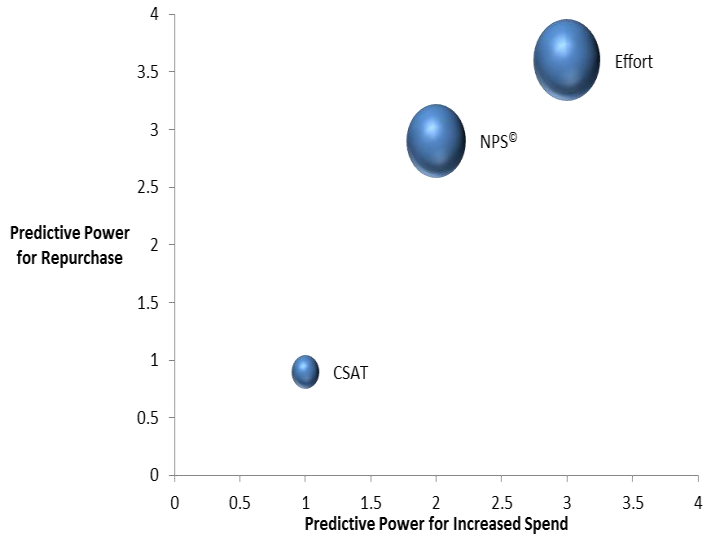
Introduction

If it's fast and easy to do business with a company, customers will be more likely to increase spending, repurchase, and speak positively about that company, a combination of outcomes that can be called loyalty (Dixon & Freeman, 2010). Optimizing the delivery of customer service to maintain or increase loyalty while reducing cost remains a challenge for customer service organizations. We propose that visibility into complete caller journeys is critical for improving the delivery of customer service in a comprehensive fashion, and that a total effort metric should be used to optimize customer service because it is a strong predictor of loyalty that also captures cost.

Customer Effort as Predictor of Loyalty and Cost

Common methods for measuring customer satisfaction include satisfaction ratings (CSAT) and "Net Promoter Score" (NPS) (Reichheld, 2003), which is based on asking customers whether they would recommend your product or company to a friend. Both metrics are typically based on customer feedback from post contact surveys that may be solicited via an outbound call to the phone number on record, an email request, or by asking customers to fill out an online survey.

More recent research (Dixon & Freeman, 2010) suggests that customer effort, based on simply asking customers how much effort they put forth to handle their request, is actually a better predictor of loyalty than either satisfaction ratings or NPS. Figure 1 illustrates how the three metrics compare in predicting the two financial components of loyalty: repurchase and increased spend. This finding is consistent with the notion that first and foremost, customers want their issues addressed quickly, without the need to expend much effort.



Source: Corporate Executive Board

Figure 1. Effort is a better predictor of increased spend and repurchase than NPS or CSAT. (Reprinted with permission)

In addition to being a better predictor of increased customer spend and repurchase, effort is particularly suitable for optimizing the delivery of customer service because it correlates with business cost. High effort not only decreases customer loyalty, but it increases the cost of delivering customer service. For example, when it takes a longer call or multiple interactions to resolve an issue, both effort and cost are impacted. Therefore, focusing on reducing total effort can drive additional revenue from increased loyalty, while also reducing the operational cost of delivering customer service.

Connection to Dialog Design and Speech Recognition

Dialog designers and speech recognition professionals should consider total effort as an important metric for optimizing the performance of speech enabled systems. When dialog designers gain a better understanding of the total effort to navigate menus, provide identifying information, and engage with self-service applications, they gain actionable insight to increase caller engagement by simplifying the interaction. Additionally, optimal designs increasingly need to consider the full context of a customer journey, both before the customer decides to pick up the phone, as well as experiences on the phone that follow automated interactions.

Dialog system tuning often focuses on module-level data and not the end-to-end sequence of interactions between caller and dialog system. The end-to-end sequence reveals usability issues that are not visible in module-level data. As some of the examples later in this paper illustrate, journey analytics can outperform standard tuning methods in optimizing self-service utilization and in delivering calls to the right agent skill.

Analyzing Customer Journeys End-to-End

Optimizing total effort requires visibility into complete customer journeys, including interactions with self-service, agents, and other channels such as websites. This section describes methods that are available today for capturing calls end-to-end, and outlines ways for re-constructing customer journeys using data from separated stages or multiple channels.

Raytheon BBN's AVOKE group has developed a proprietary system that captures calls end-to-end and analyzes them using various automated methods (Suhm & Peterson, 2009), shown in Figure 2. The system works as a passive listener and everything, including caller interactions with menus and system prompts, is reconstructed from audio recordings. Automated analysis methods reconstruct metadata such as caller behavior in the menus, success of accessing information in self-service applications, and time spent in IVR, queues, and agent-caller dialogs. This information reveals caller choice at menus, whether the automated system delivered useful information, and if the caller was identified prior to an agent transfer. When linked to what happens downstream during the agent-caller dialog, the end-to-end record of customer service interactions delivers actionable insight for optimizing IVRs and call-handling by live agents to minimize total caller and agent effort. These insights are especially valuable because they are often hidden to common methods for optimizing self-service such as expert reviews, log-based analyses, and recordings of caller-IVR interactions only.

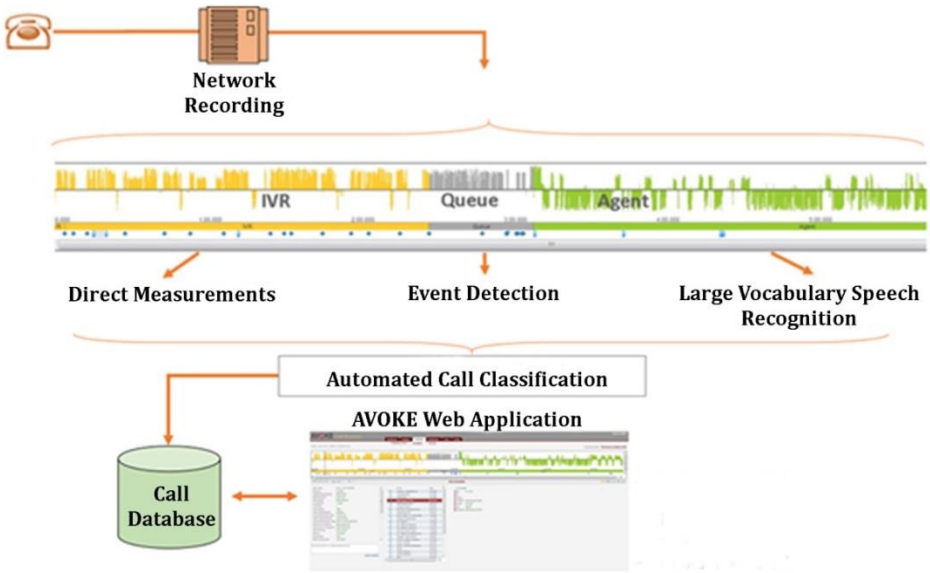


Figure 2. Overview of a whole call analytics system

Analyzing complete journeys becomes more difficult when customers switch between channels in their interactions. In such cross-channel journeys, customer data is spread across disparate systems and a common identifier is needed to stitch together the sequence of interactions.

For website interactions, web analytics tools are widely available, many of them at little or no cost, and they provide insight by aggregating single touch point data across many customers. Google's "Customer Journey to Online Purchase" (Google, 2009) provides a first-level journey analysis by aggregating multiple touch points in the purchase process, across many customers and companies. The challenge is that current web analytics tools do not effectively support root cause analysis. They do not make it easy for analysts to drill down to actual experiences of individual users on a particular website. Further, none of the available web analytics tools support analyses of cross-channel journeys.

Nevertheless, even without integrated cross-channel analytics tools, preliminary analyses of cross-channel journeys can be conducted by:

- **Analyzing a sample.** Implementing journey analytics in a big data context can be intimidating. Overcome this by stitching together parts of journeys where shared identifiers make the linkage easy, even if the sample is somewhat biased (which may not matter to the business question you are answering).
- **Finding evidence of interactions with other channels in the call center**. Recordings of call center interactions contain a lot of valuable information about customer interactions with other channels, in particular those interactions where problems occurred and the customer ended up calling customer service. In today's "multi-channel" interactions, even though an increasing number of consumers choose to try the website or mobile app first, the phone is the last resort for customers who fail in other channels. Speech analytics, or even simple key word searches, will identify calls where other channels have been mentioned, such as website, email or chat interactions.
- **Analyzing multiple website sessions**. Multiple visits to a website can be stitched together easily for the same login, which will cover a fair amount of website interaction. This is facilitated by the fact that many consumers create accounts for companies they regularly do business with.

Measuring Total Customer Effort

The surging need for analyzing complete customer experiences, and the renewed appreciation of effort as a good predictor of business outcomes, are well aligned with the journey analytics solutions above that provide efficient and automated capture of increased effort in multi-leg and multi-channel customer interactions. This section outlines how effort can be quantified using automated methods, and it describes a benchmark of total customer effort for customer service interactions.

Automated Effort Metrics

Based on a deep understanding of the call center space, the delivery of customer service using various channels, and the types of information available from customer interactions in various channels, automated metrics can represent increased effort in obtaining customer service. Figure 3 illustrates the automated capture process for some example metrics such as "Multiple Reprompts," "Asked for ID Again," and "Multi-channel Mentions."

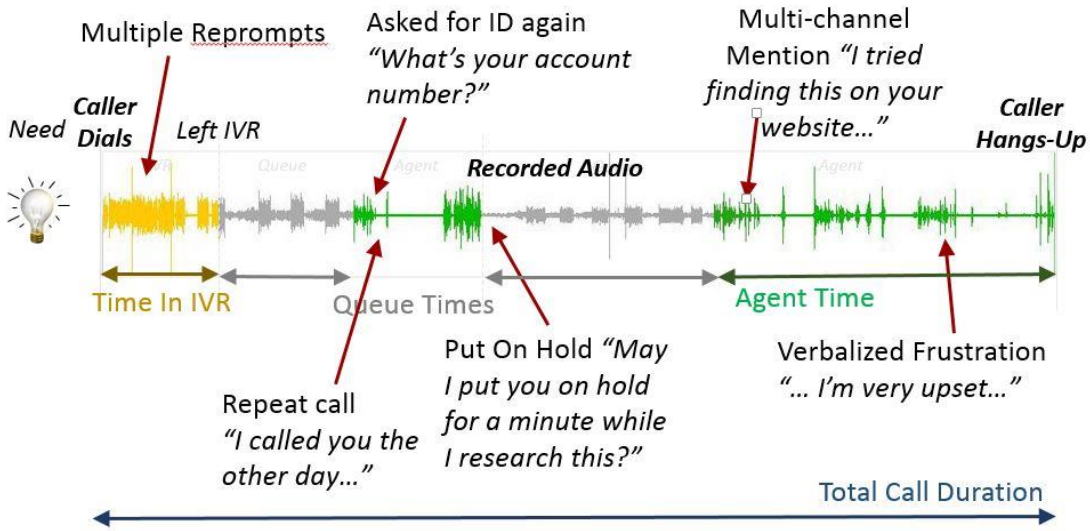


Figure 3. Capturing effort-increasing events using whole call analytics

The starting point is a complete sequence of events, including IVR prompts, indications of queue wait times, and a full text transcript of the caller-agent dialog. This complete sequence of events is something that whole call analytics can provide, or that skilled analysts can tie together from IVR logs, switch logs, and a recording solution with speech analytics. Time-related effort metrics include time spent in the IVR, waiting in queue, or speaking with an agent. These times are available in IVR or switch logs, or they can be inferred based on an automatic segmentation of the audio recording. "Multiple Reprompts" can refer to instances where the IVR had to prompt the caller for a piece of information more than once. Other metrics such as ""Multi-channel Mentions" track instances of callers having trouble on the website or other channels and can be derived from keyword searches in the full text transcript. Finally, by combining IVR analytics with keyword searches it is possible to assess effort-increasing events such as the agent asking for identifying information that the caller already provided in the IVR.

Although it is impossible to capture all effort-increasing events automatically, it is only necessary to capture enough important effort-related metrics to help identify the major problems in providing efficient customer journeys.

A Benchmark of Total Customer Effort Metrics

To use whole call analytics to optimize inbound customer service inquiries, AVOKE defined a benchmark of total caller effort. This benchmark is comprised of different metrics that are then grouped into five categories based on the functions within a typical call center organization. These different groups and some of the effort metrics they might be interested in are defined below and depicted in Figure 4.

IVR Team – This team is concerned with the performance of the automated system and their overarching goal is driving calls to self-service. Abandons and/or opt-outs can be good indicators of high effort and caller frustration with the automated system. Tuning tools offered by speech recognition vendors typically drill into modules of the automated system with high counts of timeout or nomatch retries, where many callers abandon before obtaining self-service information, and where callers attempt to opt out. These common VUI optimization metrics are represented in the IVR category of the customer effort benchmark.

Call Center Operations – Call Center Operations manages the agent work force. Among its goals are empowering agents to follow call handling guidelines, and keeping queue wait times low in order to avoid queue abandons. From an operations viewpoint, both incoming and outgoing transfers from or to other skills put pressure on accurate staffing levels and should be minimized. Since transfers also waste both agent and caller time, and are among the top complaints consumers have about call centers,

transfers represents an impactful metric that is also critical to the work of Customer Experience and Business Process teams.

Business Processes – Business Process teams seek to improve call handling and the customer experience by reducing escalations and repeat calls, which waste both agent and caller time and reduce customer loyalty. They also look for systematic issues in handling calls, such as excessive hold times or indications of communication issues.

Customer Experience - This team takes an even broader approach to the caller experience and looks for improvements that span multiple business functions in the call center environment. For example, one practice that consumers complain about consistently is the need to repeat information in the IVR and with an agent. The customer experience team seeks to streamline the overall experience by understanding where improvements may be needed.

Network - The metrics classified as "Network" represent issues in the telephone network and call routing infrastructure that fall into the responsibility of an IT or Telco team. Only whole call analytics can capture these issues and as a result, most call centers do not have visibility into them.

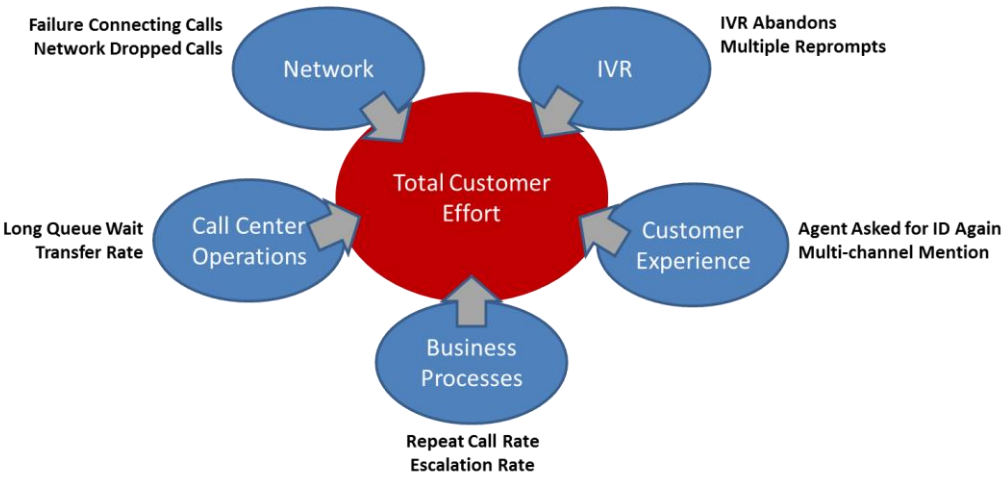


Figure 4. Grouping of example effort metrics that can be captured with whole call analytics into functions that represent a typical customer service organization: Network, IVR, Customer Experience, Business Processes, and Call Center Operations

The frequency of effort-increasing events like the ones illustrated in Figure 4 can be effectively estimated using a whole call analytics solution or journey analytics tools. If your analytics infrastructure captures other effort indicators you may create your own custom effort benchmark by adding those metrics to the mix, and dropping any that you are unable to capture. Regardless of which set of metrics you decide to track, the actual customer effort score can be as simple as the average number of effort increasing events per 100 calls, essentially the sum of the relative frequency of each effort-increasing event. Combining many metrics into a total score is helpful from a practical viewpoint because it provides focus for discussions among stakeholders who have to agree on the interpretation of data.

Figure 5 shows a sample score card from a benchmark of customer effort. The total score is a weighted sum of the percentages for each of the metrics in the customer effort benchmark, and totals 346 in this example. Note that the higher the benchmark score, the higher the effort involved so the goal is to achieve a lower score.

In this particular example, effort metrics highlight a number of areas where improvement is needed. For example, it is revealed that more than a quarter of callers attempt to opt-out. This

suggests that the automated system (IVR) may be cumbersome and exceeding many callers' patience. Also, it is evident that transfers are a problem, as almost a quarter of callers speak with a second agent. Finally, a high percentage of callers need to repeat identifying information when the agent comes on the line and 14% of callers verbalize frustration with an agent. These two metrics indicate a high degree of customer dissatisfaction with the identification experience.

Analysts can take next steps by analyzing a sample of calls that experienced these and other types of high effort, determining root cause, and identifying ways to streamline the caller experience and improve business processes.

	Problematic Metrics	**Next Step**
Total Score	346	Understand which metrics are driving the total score and where improvements are needed.
Network	9% calls reached "Closed" center - more often than with peers	Consider keeping the centers open an hour longer.
IVR	28% unsolicited Opt-Outs is high	Look for ways to streamline the IVR experience.
Operations	22% Transfer Mentions is high	Analyze root cause
Overall Experience	38% callers are asked for identifying information repeatedly, 14% callers verbalize frustration with the agent	Coach agents to verify caller using different information than provided in IVR.

Figure 5. Sample Customer Effort score card

Optimizing the Delivery of Customer Service

With a comprehensive automated measurement of total customer effort in place, it can be used to drive effort-reducing action and to facilitate tracking progress with regular benchmarking.

Driving Effort Reducing Action from Analyzing Complete Journeys

Measures of effort that are linked to actual caller experience empower analysts to determine the root causes of issues, and infer actionable recommendations. Figure 6 illustrates an example of drilling from effort metrics to actionable recommendations.

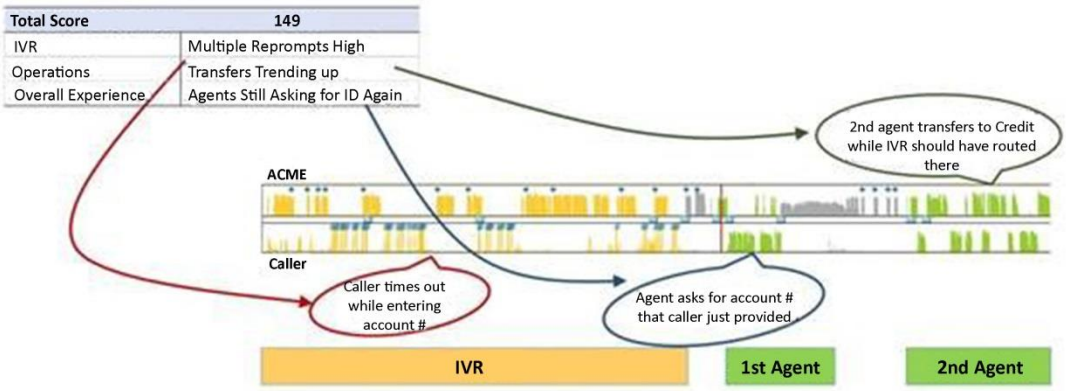


Figure 6. Drilling from effort metrics to actionable insight

The table in the upper left of Figure 6 provides an example customer effort measurement for a utility company. While a total score of 149 compares favorably to the benchmark, a deeper analysis of specific call examples reveals several opportunities for improvement.

Multiple Reprompts

Observations: Callers attempt to provide the account number in the automated system, but the system interrupts callers if they pause for more than two seconds. Often, customers do not know their account number by heart and are likely to hesitate while reading the number off their bill.

Possible Solutions: Increasing the inter-digit timeout from three to at least five seconds would alleviate the issue, giving callers some time to look up the account number. Better yet, the customer's phone number could be matched against accounts. Implementing these recommendations would not only reduce the rate of "Multiple Reprompts", but more importantly, get additional callers to successfully identify in the automated system, and potentially self-serve downstream.

Transfer Rate

Observation: In this example, the second agent transfers the caller to the "Credit" department, which handles accounts that are on payment plans. This scenario begs the question why the caller was not routed to the credit department in the first place, provided the automated system successfully identified the caller.

Possible Solutions: Routing accounts that are in "collections" status directly to the agent skill handling such accounts could solve this issue. Alternatively, coaching floor agents to recognize such accounts could lead to a reduction in mistransfers.

Repeatedly Asking for Identifying Information

Observation: First agents often ask callers for their account number, even though callers may provide it in the automated system.

Possible Solutions: The root cause may be that the call center does not have Computer Telephony Integration (CTI) implemented, which is fairly typical for small call centers. Data like the customer effort index may provide a business case to justify the purchase of this technology, or it may represent an opportunity to instruct agents to make better use of the screen pop, or verify callers using a different piece of information.

Analyzing a representative sample of calls that experienced certain types of effort-increasing events leads to actionable insight for improving the handling of calls, not only in a touch-tone or speech-enabled automated system, but also in later stages of call handling. By analyzing a representative sample of calls, the frequency of each issue can be estimated, allowing decision makers to prioritize changes based on estimated impact.

Tracking Progress using a Benchmark of Customer Effort

The systematic measurement of effort empowers customer service organizations to track the impact of actions they implement. Once changes are made to the IVR or business processes, companies can compare metrics before and after to assess the impact of changes on pertinent effort metrics.

For example, Figure 7 illustrates how one particular company used effort metrics to track changes to their call center environment. The retention department noticed an increase in their transfer rate from one time frame to another. Journey analysis revealed that a recent rate increase was driving customers to call for an explanation of the bill increase. Customers who insisted on keeping the same rates threatened to cancel service and were transferred to retention. Thus a rate increase had the unintended consequence of driving additional transfers from billing to retention.

Similarly, this company also noticed that the number of calls about password resets had increased. Upon further analysis, it was discovered that the IT department had recently initiated a change in password requirements which was driving an upsurge in password reset requests.

Finally, as an example of customer effort metrics driving continuous improvement, another company has been using effort metrics to track mentions of website problems and to drill down to specific problems on individual calls. There are, of course, many problems, such as items missing from online orders, problems making online payments, and problems with online product activation. With specific examples in hand, however, the company can fix website problems to reduce Website Mentions. At the same time, they are steadily pushing more activities to the web and generating new problems, which will increase Website Mentions before being identified and fixed in turn. The net result is that, over a two-year time period, the quarterly website customer effort metric has held constant while website functionality has increased substantially and the number of calls into the call center has been reduced.

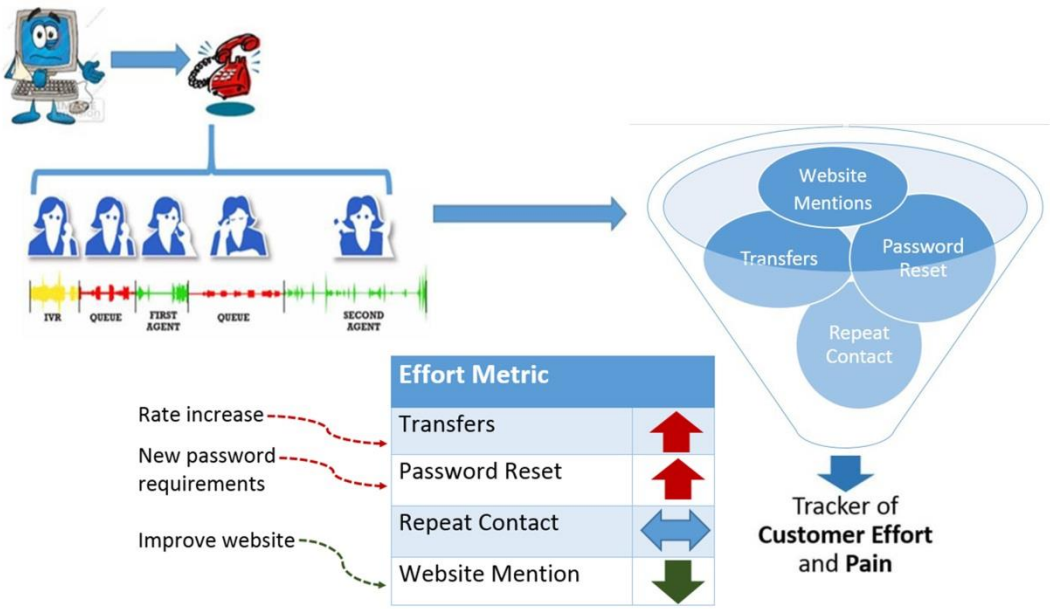


Figure 7. Tracking Impact of changes using effort metrics

Findings from Early Adopters of Journey Analytics

Companies who adopt journey analytics have the potential to identify significant opportunities to improve customer loyalty and reduce service cost based on analysis of total customer effort over the complete, cross-channel journey. The following example illustrates how this can work:

Offloading routine appointment inquiries deteriorated provider communication

A regional healthcare provider wanted to relieve its patient clinics and provider offices from handling too many patient calls by offloading appointment inquiries and patient callbacks to a centralized call center. While it made perfect sense to offload scheduling and rescheduling appointments, the changes deteriorated the patient experience and wasted agent time in several ways that weren't anticipated.

First, the IT organization failed to appropriately provision capacity for the automated telephone system. The vast majority of appointment-related calls occurred between 7 and 8 AM local time, in an early morning rush to get a same-day appointment. Whole call analytics revealed that 10% of calls during that 1 hour time window (or 2% of total daily call volume) weren't answered and had to call back later.

Second, due to flaws in the design of the menu system, more than half of callers who selected the option designed to "leave a message" for their physicians were actually calling about an appointment. Thus many of the appointment-related calls that were supposed to be handled by the centralized call center routed back to provider offices.

Finally, the practice of relaying patient callbacks to providers via the centralized call center put the call center agents in the middle of patient-provider communication. When providers did not reach a patient, the voice mail instructed the patient to call the centralized call center, closing a loop of inefficient communication. An analysis of end-to-end calls revealed that relaying patient-provider communication via the call center wasted 15% of call center agent (and caller) time, without effectively shielding providers from interruptions. Figure 10 illustrates the corresponding patient journeys and communication paths.

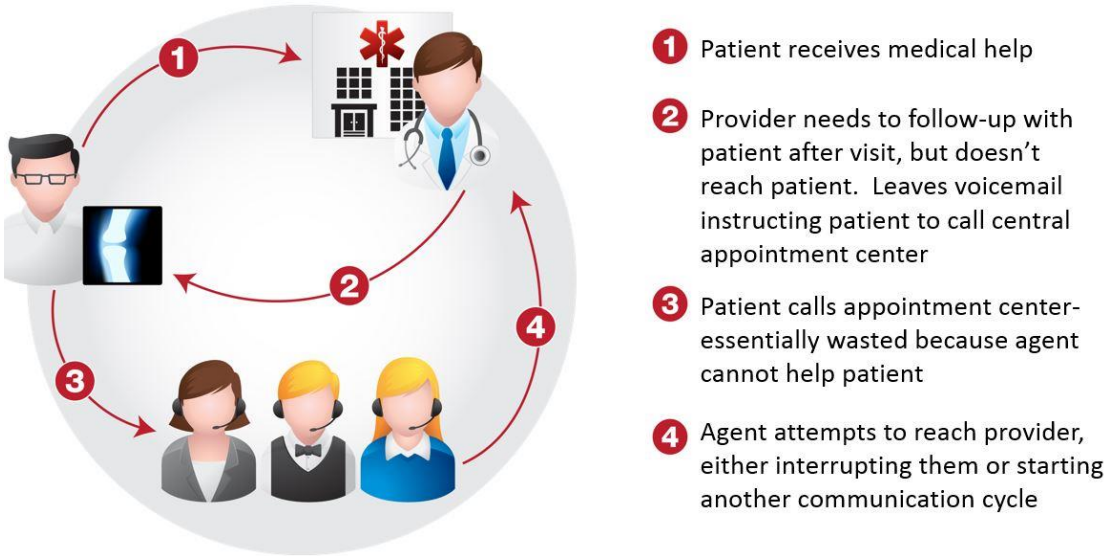


Figure 10. Understanding the impact of relaying patient inquiries via a centralized call center

Conclusion

Understanding complete journeys is critical for any customer service organization to deliver good experiences in a cost effective way. Whole call analytics systems that capture and analyze calls end-to-end are available commercially and yield significant benefit above and beyond traditional methods and tools for optimizing call handling. Specifically, dialog designers and speech recognition professionals can leverage end-to-end recording and identify additional ways to improve the performance of dialog systems by analyzing why routine calls ended up being handled by an agent, and by drilling to root cause of transfers.

Similarly, linking metrics to actual customer experiences bridges the gap between data and actionable insight. Specifically, customer effort is a valuable metric that can reduce cost while improving customer loyalty. By focusing on high effort interactions and leveraging the linkage to actual customer experiences, companies can get to root cause and actionable insight for reducing customer effort.

For these reasons, dialog designers should look beyond caller interactions with the IVR to the entire customer experience in order to effectively optimize dialog design. And since capturing and analyzing journeys that involve other channels such as websites or mobile applications is considerably more difficult, those responsible for web and mobile self-service should consider the call center a resource where they can identify improvement opportunities for their applications.

Tips for Practitioners

Comprehensive journey analytics tools that represent customer interactions in all channels may require significant additional research and investments but the following guidelines can empower practitioners to get started with journey analyses:

- **Start analyzing customer journeys where you can**. Call recordings are available in most call centers and can be stitched together to construct a record of the end-to-end experience for the voice channel. When interactions in other channels are recorded and indexed by customer, they can also be included in the journey.
- **Derive action from indicators of customer effort**. Journey analytics reveal the root cause of customer effort better than most single touch point approaches by empowering analysts to go back to the actual experience. Testimonials of customer frustration can have a powerful effect on leadership, and motivate the team to take action, even if that means overcoming traditional cross-departmental barriers.
- **Make visibility into customer journeys a goal of your IT roadmap**. In deciding on how to build out your IT infrastructure, make it easy to link customer journeys. Ask your partners and outsourcers to provide visibility into the legs of customer journeys that they control. You may find synergy with efforts aimed at overcoming increasingly fractured data and understanding the true customer experience.

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Laura Moresco manages the AVOKE group's most important programs at Raytheon BBN Technologies. She has been instrumental in developing and applying AVOKE's customer effort metrics on behalf of a diverse set of clients.