NAQC Issue Paper

NAQC's Issue Papers aim to provide critical knowledge on important quitline topics and guidance for decision making.

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Call Center Metrics:
Fundamentals of Call Center Staffing and Technologies

OVERVIEW

This paper is designed to outline the staffing structure of call centers including steps for forecasting workload, staffing for inbound telephone calls, and performance management. Additionally, this paper provides an introduction to the standard technology structure of today's call center and is intended to complement the content and recommendations found in "Call Center Metrics: Best Practices in Performance Measurement and Management to Maximize Quitline Efficiency and Quality."

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SECTION 1: FUNDAMENTALS OF CALL CENTER STAFFING

Introduction

Deciding how to staff a quitline is the first and most important operational step. The staffing plan will drive all other decisions about facilities, technology, and processes. Organizing the staff into a cohesive team will set the stage for a successful operation.

Staffing Alternatives

About three-fourths of call center costs are related to labor, so decisions about how to staff a call center are fundamental to the operation of the business. How a quitline chooses to get people in place to handle the incoming calls will have an impact on every other function within the center.

The main options for call center staffing are:

- *Outsourcing*

- *In-House Staffing*

- *Telecommuting*

Each of these options is explored further in the sections that follow.

Outsourcing

Outsourcing is the practice of contracting out some or all of a business function to a company that specializes in that particular function. In call center outsourcing, businesses contract with service providers to answer some or all of their calls or other types of contacts rather than handling those contacts in-house.

The main reason that businesses outsource call center functions is to avoid the resource drain and costs associated with the initial set-up and ongoing operation of a function that is typically not the core competency of the business. Developing and running a call center is expensive, and many companies find they can accomplish the call-handling operation more cost-effectively by outsourcing it than doing it in-house.

Outsourcing can be an alternative to building a dedicated in-house call center, or it can be used to supplement a company's call center operation. It can be a particularly attractive option for start-up companies or for businesses unsure of what their call center needs will be. Outsourcing allows the company to buy call center services as needed without investing in expensive equipment, software, facilities, or labor. The benefits are the same for established companies that may choose to focus on their core businesses and outsource the handling of calls to the experts, or for companies that have one call center but do not wish to open another to meet growth requirements.

Outsourcing Benefits

There are many benefits to outsourcing that should be considered when determining whether to contract for call center services. These benefits include:

Reduced Costs

While an in-house call center must bear the cost of site selection, building, operating, staffing, and maintaining technologies and facilities, outsourcers can amortize these costs over many clients. The client benefits by paying for only the services directly needed. Outsourcers are able to reduce labor costs by sharing programs with different companies, so clients do not pay for idle time. Known as a "shared-agent" arrangement, this model enables companies to benefit from the high occupancy in an outsourced call center and brings down the staff-to-workload ratios in the center, resulting in a lower cost-per-call rate that can be passed along to the client.

While the shared-agent arrangement helps to drive up occupancy and drive down costs, some companies prefer a

"dedicated-agent" contract. In this model, agents are assigned to one contract only and specialize in that company's products and services. This arrangement is often preferred when calls are more complex and difficult to handle, such as in a technical support environment.

Flexibility

Inbound calls arrive in peaks and valleys, and traditional call centers are, therefore, by nature inefficient. During periods of low call volumes, agents and equipment may be idle. In an outsourced call center, multiple clients' calls tend to smooth out the peaks and valleys, resulting in a greater utilization of equipment and staff. Given the large size of most outsourcing operations, there are typically more staff and phone lines available to handle even the biggest of spikes in call volume due to marketing or advertising campaigns. An in-house center may have difficulty dealing with unanticipated increases in volume because of insufficient telecommunications capacity or labor resources.

Outsourcers can also be used to handle just the peaks of calling that an internal center cannot handle. Businesses can contract just for disaster recovery purposes, for peak-time overflow situations, for after-hours, for certain types of calls, or for seasonal increases, for example. They provide the flexibility for a company to send only what it is not prepared to handle to the outsourcer. In some unusual cases, the outsourcer is contracted to handle a guaranteed load of calls each day and the company handles the peaks.

Well-Trained Staff

In-house call centers tend to focus most of their training on specific products and services with less emphasis on general call-handling skills or knowledge of call center operations. Outsourcers spend much more time training agents to be generalists who are prepared to adapt quickly to a particular customer's needs. The more comprehensive training may result in a better call-handling process.

Management Expertise

Running a call center means having a management and supervisory staff with essential knowledge and skills about call center operations. Large centers need skilled support staff, such as workforce planners and schedulers, quality specialists, trainers, and technology specialists. Many internal call centers find hiring or developing this expertise difficult. Ensuring that everyone stays up to speed on the best practices, skills, and knowledge is also challenging. Outsourcers have these specialists on staff and perform these various functions on a daily basis, which keeps skills and knowledge finely tuned.

Data Collection Expertise

Outsourcers are equipped to capture and manipulate many different types of information related to customer calls. Experience in working with multiple businesses and campaigns helps equip the outsourcer with the expertise and technology to convert raw data more easily into useful information.

Cost Tracking

Outsourcers can detail costs per transaction and costs per hour because their billing procedures are set up that way. Profitability for most outsourcers depends on their ability to manage the margin between their costs and the price to the client. Thus, understanding their costs is a core capability. The total cost of the operation shows on the outsourcer's bill each month and can be tracked easily. In-house operations tend to have hidden costs, making it difficult to track and manage the financial aspects of the operation and evaluate profitability and overall effectiveness.

Specialized Expertise

Because many outsourcers specialize in providing services to certain industries, a company may find a high level of focused expertise in an outsourcer. The outsourcer may bring years of collective experience in a specific industry to a customer that could benefit from a broader perspective and understanding of the competitive environment.

Quality Monitoring

Because of the nature of most service level agreements, rigorous call monitoring is typically done to ensure the customer's calls are being handled in a professional, quality manner. The most sophisticated equipment is typically in place, and supervisors and quality specialists are highly trained in monitoring and coaching techniques. Daily performance assessment is part of the agreement with most clients and is, therefore, done more often and more thoroughly than in an in-house center where supervisors may not devote sufficient time and attention to it.

State-of-the-Art Technology

Most outsourcers invest in state-of-the-art technology to meet their many customers' demands. Investment in the latest technology is an expensive option for in-house call centers; outsourcing centers are able to spread the cost of the technology investment across multiple projects and customers.

Round-the-Clock Operations

Despite growing customer expectations, many companies cannot afford to operate their call center seven days a week, 24 hours a day. The small number of calls that arrive in no peak hours make operating at those hours prohibitively expensive. Therefore, many call centers can provide only self-service options to customers during those times. An outsourcer can provide service at a much lower cost per call and help the business maintain round-the-clock availability.

In-House Staffing

If a business decides to handle contacts with its own employees, the traditional model is to hire and train agents to work in the company's call center(s). Building and staffing one's own call center involves finding a site, putting in place the appropriate call center systems and technology, and recruiting, hiring, and managing the call center employees.

The primary operational activity when running one's own call center is forecasting and scheduling the call center workforce. Getting the right number of people in place at the right times to handle the contact workload is the most critical function of call center management because up to three-fourths of call center operating costs are related to staffing. A systematic approach to forecasting workload, calculating staff requirements, and creating staff schedules must be in place for the call center to reach service goals and operate efficiently.

The in-house staffing plan affects every other function of the call center.

Facilities Management

A site will be needed to house the call center and its employees. Ongoing effort is required to design and maintain an effective workplace including attention to engineering concepts, such as lighting, climate, and noise, as well as human factor components, such as ergonomics.

Human Resources Administration

Recruiting and hiring will typically be done as a joint effort by the call center and the human resources department. A detailed job task analysis is performed by the call center personnel, who work with HR personnel to recruit qualified candidates, screen and interview, and then manage compensation and personnel issues.

Technology Management

Deciding to staff for internal handling of contacts has implications for technology decisions. Voice and data telecommunications services must be provided, and automatic call distribution equipment and other related technologies must be selected and implemented. This equipment may require a significant capital investment as well as ongoing maintenance.

Quality Management

The call center will need a customer satisfaction assessment process that regularly assesses retention and satisfaction.

Quality-monitoring procedures and technologies must be implemented, and call center managers and supervisors held directly responsible for performance and satisfaction.

Reporting and Communications

A system of metrics must be put in place to regularly measure and report on performance, both of the individual agent and the call center as a whole. Call center personnel must develop a strategy for assimilating and distributing business intelligence throughout the organization.

Financial Management

Call center management will be responsible for creating and adhering to capital and operating budgets. If the call center is a revenue-generating entity, generating profit-and-loss statements will be a critical function of ongoing operations.

Risk Management

When running an in-house call center, the business must continually assess various risks to the call center operation and evaluate their potential impacts on service and profitability. Contingency plans must be developed that include reviews of facilities, staffing, call center systems, telecommunications networks, information systems, and access channels to prevent problems from occurring as well as recovery plans if a disaster does happen.

Telecommuting

Another option to consider when setting up a call center operation is hiring employees to handle customer contacts and having some or all of these employees work offsite.

The practice of telecommuting for office workers is growing rapidly and across all sectors of business: business and legal services, health care, banking and finance, and others. The International Telework Association and Council (ITAC), based in Washington, D.C., forecasts that over 40 million workers will telecommute by 2010. The call center, with its "knowledge worker" population, is well positioned to take advantage of this work option.

The technology exists today to allow agents to log in from home or any other remote site and receive calls in the same way they would if they were sitting in the call center. They can receive calls just like the other agents in the center, and the same data that would appear on their screens in the call center can be sent to their screens at home. The remote agents' statistics can be tracked and reported just like the statistics of in-house agents. Supervisors can also monitor and record their calls on a real-time or scheduled basis. There are many advantages to a telecommuting arrangement.

Schedule Flexibility

The main advantage of using remote workers as all or part of the call center workforce is the flexibility gained in scheduling. Covering the peaks and valleys of calls throughout the day with traditional staff is very difficult. The call center may have a two-hour peak of calls in the morning and another in the afternoon. While the call center can't expect someone to come into the center and work a split shift to handle those periods, it may be reasonable to expect an employee working from home to do so.

Covering night and weekend hours may also be easier to accomplish with telecommuters. Many people do not like to commute to work at night when crime and traffic risks go up. These same people may be willing to work those hours if they can do so from their home.

Real Estate Savings

Another benefit of telecommuting is the savings accomplished by not needing to house the agent in the physical call center. Assuming that an agent occupies 50 square feet of call center space and the lease cost of this space is $20 per square foot per month, the savings per agent would be $1,000 per month, or $12,000 per year. Add to that the one-

time and ongoing costs of building and maintaining workstations, furniture, lunchrooms, conference spaces and other amenities, along with the cost of additional utilities, and the cost savings could easily double.

Expanded Labor Pool

Another strong reason to consider a remote workforce is the potential to attract workers from additional labor sources. This expanded labor pool may include highly qualified workers who are handicapped or physically challenged and unable to commute daily into the business site. Other potential workers are homebound caregivers, such as the growing population of baby boomers who take care of their elderly parents.

A telecommuting option may also simply bring in a bigger pool of qualified candidates attracted to the prospect of working at home and avoiding the hassles of getting to their job every day. Companies not only find their candidate pool increasing but also find that people are willing to work for less money if telecommuting is an option. In addition to avoiding the travel time of a long commute, employees can save money on transportation costs, food costs, and a work wardrobe. These factors all translate to significant benefits to employees.

Staff Retention

Businesses generally find that their remote employees have much higher job satisfaction and retention rates than traditional in-house employees. In addition to the "hard dollar" employee benefits listed above, the additional time employees recover in their day is a big factor in overall satisfaction and quality of life.

Another benefit is that trained employees can be retained even if they move to another city or area of the country. Many call centers lose valuable employees when a spouse's job takes them to a new place. As a remote agent, a high-quality agent can remain employed, and the company avoids the recruiting, hiring, and training costs for new staff while retaining the employee's valuable skills and knowledge.

Increased Productivity

Many studies of telecommuting workers versus traditional office workers suggest that telecommuters are more productive. The main reason for this higher productivity may be that there are fewer interruptions to distract the employee. Their comfort and increased satisfaction resulting from working at home may also be contributing factors to the increased productivity.

Disaster Recovery

All sorts of disasters and emergencies can happen that disable normal call center functions. Having a pool of remote workers can assist the call center in carrying out its work in these situations. A flu epidemic or icy roads may prevent staff from coming into the center, but work can still be carried out in remote sites. A flood or power outage at the site can damage workstations, but assuming connectivity is still possible to the main switch, agents at home can continue to process calls.

Environmental Impact

Having fewer people driving into the call center every day can certainly reduce auto emissions and pollution. This may help some companies comply with governmental regulations, such as the Clean Air Act, which requires companies with more than 100 employees in high-pollution areas to design and implement programs to reduce air pollution. Setting up a telecommuting program is one option for complying with this rule.

Telecommuting Disadvantages

Telecommuting is not for everyone, however, and there are disadvantages to this staffing alternative. The major obstacle preventing many companies from using remote workers is equipping agents to work at home. While the voice part of the technology is easy to accomplish and phone calls can be seamlessly made and answered, the bigger

stumbling block is the delivery of the data portion of the call. Delivering the data portion of the call to the agent's desktop at home requires the proper equipment and sufficient bandwidth to enable the customer interactions. The delivery of private or confidential information to an agent's home, where friends and family members may have access to it, is also a concern.

Social needs should also be considered. Those team members who work from home may not feel as connected to the team as their on-site counterparts. Additionally, keeping remote agents "in the loop" of office communications and new procedures may be more difficult. Many companies address this gap by having remote employees work in the office at least one day a week.

Finally, many employees are not good candidates for telecommuting. Some may lack the experience or discipline to work without supervision. Others long for the camaraderie of a social workplace. It is important to define how remote agents will be selected, and to make sure a process is in place to continually monitor and coach those employees to ensure they effectively contribute to the goals and objectives of the center and of the overall business.

SECTION 2: WORKFORCE PLANNING AND MANAGEMENT

Introduction

Perhaps the most critical operational function in the call center is making sure enough people are on the phones to respond to callers with a minimum of delay. The process of making this happen is called workforce management. It is defined as the art and science of getting the "just right" number of staff in place every period of the day to meet service levels while minimizing cost. The goal is to have the precise number needed every single half-hour of the day—not too many and not too few.

The process of workforce management is complicated by the fact that the incoming call center workload is out of the call center's control. The telephone call workload arrives whenever customers decide to place a call. While the call center does have control over workload in an outbound center, that work is also influenced by the customer because the center works to call at the best time to find the customer available and willing to take a call.

The workforce management process is both an art and a science. It is an art because it is, after all, predicting the future. The accuracy of any staffing plan will be due in some part to judgment and experience. But workforce management is also a science—a step-by-step mathematical process that uses historical data to predict future events. A working knowledge of these specialized statistical techniques is critical for every call center manager. And organizations that have workforce management software that automates the forecasting and scheduling process must understand these calculations to verify the accuracy of results and, perhaps more importantly, to explain the numbers to management.

Workforce management is critical to the success of every call center. Here are the basic steps of the workforce management process:
1. Gather and analyze historical data.
2. Forecast call workload.
3. Calculate staff requirements.
4. Create staff schedules.
5. Track and manage daily performance.

Data Gathering and Analysis

The first assumption behind workforce management is that history is the best predictor of the future in most call centers. Therefore, gathering this history is the first task. The most obvious source of this information will be historical

reports from the automatic call distributor (ACD), specifically the number of calls offered and handle time information by half-hour.

It is critical to gather representative samples from sources that are accurate. The basis of any good staffing plan is accurate input data. Without a precise forecast of the expected work, the most sophisticated effort to calculate staff numbers and create intricate schedule plans is wasted effort. The old adage of "garbage in, garbage out" is especially true when applied to call center workforce management. Accurate data to feed into the forecasting process is the most important step of the process. Two years of historical data is ideal, if it is available and relevant. Less than two years may suffice but will not provide the most accurate tracking of trends and monthly/seasonal patterns that 24 months will clearly show.

The two numbers to look for by half-hour are call volume and average handle time (AHT). Call volume information from the ACD is typically assumed to accurately portray the workload for which a center needs to staff. This assumption is valid as long as all calls get in and none are blocked at the network level by insufficient telephone trunks. Validate this assumption by requesting periodic "busy studies" from local and long-distance carriers. In situations where the queue is very long and a significant number of callers abandon the queue and call back later, the number of calls may also be somewhat inflated by these multiple attempts to reach an agent.

Forecasting Workload

The next stage in the process translates the raw data into a prediction of what is coming for a future month. There are several approaches to get to this forecast:

Point Estimate

This is the simplest approach and assumes that any point in the future will match the corresponding point in the past (i.e., the first Monday in April next year will be the same as the first Monday in April of this year). This approach has obvious shortcomings in that it does not account for any upward or downward trends in calling patterns, increases in promotion, or a changing tobacco control-related policy landscape.

Averaging Approach

There are a variety of methods that incorporate simple mathematical averaging, ranging from a simple average of several past numbers to a moving average that drops out older data when new numbers are available. The most accurate averaging approach involves weighted averaging, which gives more weight to recent events than to older events. While the weighted-average approach is probably the closest to what an actual forecast would be, it still misses the upward trend that occurs in most call center data that simply cannot be identified and incorporated by averaging together old numbers.

Time Series Analysis

The recommended approach for call center forecasting involves a process called time series analysis. This approach takes historical information and allows for the isolation of the effects of trends (the rate of change) as well as seasonal or monthly differences. Most call centers use this approach, and it serves as the basis for most of the automated workforce management forecasting models. The basic assumption is that call volume is influenced by a variety of factors over time, and that each of the factors can be isolated and used to predict the future.

There are many internal and external factors that influence the call center's workload, and the smart workforce planner will use a process that considers all of them. The workforce planning process must incorporate all of the various influences on call center workload in preparing and fine-tuning the forecast.

Calculating Staff Requirements

Once the forecast is in place, the next step is calculating staff requirements to meet service goals. Bearing in mind the call volume forecasts and some assumptions about AHT, workload is calculated by multiplying the number of forecasted calls for an hour by the AHT of a call.

The workload number is then used to determine how many base staffers are needed to handle the calls. What makes staffing for a call center different from any other kind of staffing situation is that this workload does not represent typical work patterns. In an incoming call center, the work does not arrive in a back-to-back fashion. Rather, the work arrives whenever customers decide to place calls. The workload is *random* instead of sequential. This leads to the most important rule of call center staffing: *You must have more staff hours in place than hours of actual work to do.* How many extra staff are needed? The number of staff needed depends on the speed-of-answer goal that the call center wishes to reach. Obviously, the more staff available, the shorter the delay will be. The fewer the staff, the longer the caller will wait.

Determining what happens with a given number of resources in place to accomplish a defined amount of workload requires a mathematical model that replicates the situation. There are several telephone traffic engineering models available, and one of these is particularly suited to the world of incoming call centers. Most call centers use a model called Erlang C that takes into account the randomness of the arriving workload as well as the queuing behavior (holding for the first available agent) of the calls.

Relationship of Staffing and Service

Delay times increase as agents are subtracted and service improves as bodies in chairs are added. However, service is not affected to the same degree each way. This is a critically important phenomenon to understand about call center staffing.

Imagine that a center needs to have 24 staffers in place to handle 20 hours of telephone workload and meet an 80%-in-20-seconds service level goal. If the staff numbers are adjusted up or down, there are two very different results. First, if a person or two is added, the average speed of answer (ASA) improves from 13 seconds to 8 seconds with 25 staffers and then to 4 seconds with 26 staffers. The first person added yielded a 5-second improvement, and the next person produced only a 4-second improvement. A third person would result in an ASA of 2 seconds, only a 2-second improvement. Adding staffers results in diminishing returns with less and less impact as the staff numbers get higher. The effect of subtracting staff is notable to review as well. When subtracting one, two, and three persons, the ASA increases to 25 seconds, 51 seconds, and 137 seconds, respectively. Dropping the first person resulted in an increase of 12 seconds, the second in another 26-second increase, and the third a loss of another 86 seconds! Taking staff away decreases service, and it does so dramatically at some point. There are especially dramatic declines as the staff number gets closer and closer to the hours of workload.

This impact on service can be viewed as both good news and bad news. The good news is that centers delivering poor service can improve it dramatically by adding just one more person. On the other hand, when service levels are mediocre to bad, dropping one more person can send service into such a downhill slide that it is nearly impossible to recover.

Shrinkage

The numbers discussed so far are purely "bodies in chairs" numbers. These numbers assume that all agents are always available to handle calls. But agents are not available much of the time. Factoring in this unavailability when scheduling is critical to ensure that the center ends up with enough staff to actually answer the phones.

In calculating staff requirements, a final adjustment needs to be made to factor in all the activities and situations that make staff "unproductive." This unproductive time is referred to as staff shrinkage and is defined as any time for which employees are being paid but are not available to handle calls. Staff shrinkage includes breaks, meetings, training sessions, off-phone work, and general unproductive or "where the heck are they?" time. Look at one example below of a sample call center's shrinkage amounts and the impact on staff availability.

Shrinkage Category	Sample Calculation	Annual Hours
Paid Breaks	½ hour/day x 5 days x 50 weeks	125 hours
Paid Time Off	8 hours x 11 days/year	88 hours
Meetings/Training	3 hours/week x 50 weeks	150 hours
Off-Phone Time	1 hour/day x 5 days x 50 weeks	250 hours
Unexplained Time	¼ hour/day x 5 days x 50 weeks	62 hours
	TOTAL SHRINKAGE	675 hours
	Potential Hours	2,080 hours
	PERCENT SHRINKAGE	**32%**

In most centers, staff shrinkage ranges from 20% to 35%. The shrinkage factor when predicting staffing requirements can be accounted for by dividing the Erlang staff requirement by the productive staff percentage (or 1 minus the shrinkage percentage). In this example, if 24 agents are needed and the shrinkage factor is 32%, then 24/.68 yields a requirement of 35 people in the staffing pool who could be scheduled.

Some of the people in the staffing pool will be unavailable because of planned absences, such as vacations or training classes. These are generally known well ahead of time. However, some of these absences will occur at the last minute and will not be known when the schedule for that day is developed. Part of the shrinkage factor will be replaced by known absences as the plan develops while another part of the shrinkage factor will remain unknown as the day or week begins. If extra staffers are not in the schedule, these last-minute absences will result in poor service.

Staffing Tradeoffs
Group Size and Economies of Scale
Another factor that has a major impact on staffing is the size of the center or the agent group. Centers handling large volumes of calls will naturally be more efficient than smaller groups. This is due to the economies of scale of large groups.

As highlighted in the example below, doubling the call volume does not require two times the number of staff to meet the same service goal of 80% in 20 seconds. When call volume increases eight times, only about six times the number of staffers is needed. As the volume grows, the staff-to-workload ratio gets smaller and smaller.

The reason for these increased efficiencies and the lower staff-to-workload ratio is simply that with a higher volume of calls, there is a greater likelihood that when an agent is finished with a call, there is another call for that agent to handle. With a bigger volume, each person has the opportunity to process more calls each hour. Each person spends less time in the available state, waiting for a call to arrive, and not as many agents are needed because each person handles more calls.

Calls per Hour	Workload Hours	Staff Required	Staff:Work Ratio	Staff Occupancy (workload/staff)
100	8.33	12	1.44	.69
200	16.67	21	1.26	.79
400	33.33	39	1.17	.85
800	66.67	74	1.10	.90
1600	133.33	142	1.06	.94

Staff Occupancy

If a higher volume of calls means that each person is busier, then one might assume that bigger is always better. After all, if agents are being paid to sit and handle calls, wouldn't call centers want them busy all the time, doing just that? The answer is yes … and no. While call center management wants staff to be busy processing calls, having them too busy (no available time or "breathers" between calls) is not such a good idea, either.

The measure of how busy agents are is called agent occupancy. It is the percentage of logged-in time that an agent is actually busy in talk or wrap-up time. Agent occupancy is calculated by dividing the amount of workload by the staff hours in place. In the previous table, with 12 staffers handling 8.33 hours of workload, agent occupancy is only 69%. At double the call volume, with 21 staffers in place, twice the workload is being handled without doubling the workforce so each person is busier. In this case, occupancy has increased to 79%.

As the volume of calls grows, increased efficiencies and economies of scale come into effect, meaning occupancy goes higher and higher. While call centers want staff to be productive and busy, asking staff to stay occupied at a 94% rate is not realistic. Most call centers aim for the 85% to 90% range since occupancy rates higher than that lead to undesirable call-handling behaviors as well as high turnover rates.

Telecommunications Tradeoffs

Another staffing tradeoff has to do with the relationship of staff to service and cost. When call centers are asked to cut costs and to do more with fewer resources, the first strategy proposed may be to cut staff. Before doing so, understanding the implications of staff reductions is critical.

Take the example of a fairly small call center with fewer than 50 agent seats. (A larger center can view these numbers as representative of a specialized agent group within the bigger call center structure.) Most days, the center meets a service goal of 70% in 30 seconds. The snapshot below indicates the staffing picture with varying numbers of staffers during a half-hour in which the center is getting 175 calls.

Number of Staff	Avg Delay (ASA)	Service Level (in 30 sec)	Staff Occupancy
30	298 sec	24%	97%
31	107 sec	46%	94%
32	54 sec	62%	91%
33	**30 sec**	**74%**	**88%**
34	18 sec	82%	86%
35	11 sec	88%	83%

As seen in the table, staffing with 33 "bodies in chairs" would enable the center to meet service-level goals fairly consistently. However, the loss of one person would drop the service level from 74% to 62% (or ASA from 30 seconds to 54 seconds). Eliminating another person would drop the service level to 46% and the average delay would double to 107

seconds. Reducing staffing levels by three would reduce the service level to only 24%, resulting in an average delay of 298 seconds. Callers accustomed to waiting for only half a minute in queue would now be waiting nearly 5 minutes! Service is not the only thing that suffers in this example. With 33 staffers in place to handle the call workload, the agent occupancy rate (the measure of how busy agents are during the period of time they are logged in and available) is good at 88%. Taking one body away raises occupancy levels to 91%, taking two away results in 94% occupancy, and taking three away means staff would be busy 97% of the time during the hour. In other words, there would be only 3% (or 108 seconds) of "breathing room" between calls. Such a high level of occupancy cannot be maintained for long. The likely result will be longer handle times, longer periods spent in after-call work to "catch their breath," burnout, and turnover. An additional potential effect to consider is that the reduction in staff might be outweighed by the increased telephone costs associated with the longer delay times. Since telephone charges are not always included in the call center's budget, this tradeoff may not be as obvious as it should be. However, a joint analysis by the IT/Telecom staff and the call center can reveal the overall impact of these staffing decisions. What is very clear is that a simple staff reduction may not save a call center any money. In fact, it may cost more in terms of poor service, reduced revenues, excessive occupancy levels, and increased telephone costs.

Staff Scheduling

After reviewing the factors that affect the number of staffers needed to handle the contacts half-hour by half-hour, the next step is figuring out how to schedule in order to get the right number of people in place at the right times.

For example, if a call center is staffing for 450 calls between 10:30 a.m. and 11 a.m., AHT is 270 seconds (or 67.5 erlangs of workload), and it has a service objective of 70% of calls answered in 30 seconds, the center would need 72 staffers to meet its service goals. If 72 people are needed for the peak calling time between 10:30 a.m. and 11 a.m., does that mean the call center should schedule 72 people to work the 8 a.m. – 5 p.m. shift?

No. Agents who started at 8 a.m. will naturally want to take a break around 10:30 a.m. A few will call in sick. Perhaps another group is in a training session. And don't forget that agents need time to do off-phone work. This shrinkage (discussed in the previous section) must be accounted for when calculating how many people to schedule on certain shifts. The call center must schedule enough staffers so that when the workforce shrinks, there will still be enough bodies in chairs to handle the calls.

While shrinkage is low in some centers, at about 20%, it can be extremely high (over 50%) in others. Shrinkage should be measured regularly. Also be aware that the shrinkage percentage changes by month, day of week, and time of day, just like call volume and handle time. For example, most centers do not train on their busiest calling day, and absenteeism is generally higher on Mondays and Fridays than it is on Wednesdays.

Defining Schedules

Once a schedule count has been determined for each half-hour, the next step is deciding how to define the actual schedules. In this step, the lengths of shifts are defined as well as the scheme of days on and off. Call centers will need to determine if mostly eight-hour/five-day schedules will be used with each person working five consecutive days versus trying some variations, such as four 10-hour days or even three 13-hour days. Think about varying the full-time definition further and try out three 10-hour days and two five-hour days. Split the days off so they do not have to come together. There are dozens of possible schedule definitions, even within the restriction of full-time schedules.

Expanding the schedule mix further to include part-time schedules will have tremendous payback in terms of increased schedule flexibility to meet the fluctuating workload. Four-hour or six-hour schedules give a center so much more flexibility in matching the workforce to the workload that it's typically well worth the extra effort it takes to employ a part-time workforce. While part-time staff generally have higher turnover and are more expensive to train

(since the same training effort is expended on more employees), the part-timers may be less expensive in terms of benefit costs and may actually be more productive employees, given their shorter exposure each day. The greatest tradeoff to consider is how much better a call center can fit staff schedules to its workload requirements with part-time staff.

Another definition in creating work schedules is the start-time interval. Some call centers have staff start "on the hour," while others have staff starting every half-hour. These start-time intervals are another factor in determining the best fit of schedules to workload. By staggering start times to the half-hour or quarter-hour, the call center will naturally be staggering break times and other activities throughout the day. And for centers willing to split staff into four starting intervals within the hour and use 15-minute start times, the savings can be substantial.

Managing Daily Staffing and Service

Now that the many factors that go into assigning workforce schedules have been defined, the next step is managing the schedules on a daily basis and making needed adjustments. After gathering and analyzing mounds of historical information to arrive at a call forecast, calculating the number of staff needed by half-hour to meet speed-of-answer goals, and juggling schedules to arrive at a reasonable mix of efficiency and acceptability, the center must make sure the plan is working.

There are three steps in the daily performance tracking process: tracking and analysis, communications, and reaction. Tracking performance means tracking the three elements that affect service: call volume, AHT, and staffing levels. These three components should be tracked throughout the day to see what the impact is on net staffing. Tracking should start early in the day and the numbers should be watched for significant patterns. As soon as a trend is spotted, reforecast based on the new numbers and predict what net staffing will be for the remainder of the day. If the problem is caught in time, it can be fixed before it is too late to meet service goals.

While all three numbers should be tracked against one another and used to calculate net staffing, there are single numbers of half-hour performance that may provide a quicker indication that a call center is in trouble. These measures of call center performance can indicate if all is well or about to get out of hand.

For this snapshot of performance, some call centers use a measure of the number of calls in queue. They may set a threshold so that as soon as a certain number of waiting calls exists in the queue, a reactive process occurs. Others define a limit on the age or length of the oldest call in queue. When the wait time exceeds that limit, a reaction is imminent.

These two measures are useful as warning signals, but using them to initiate adjustments may be ill advised. Think instead of setting and meeting service objectives as one half-hour race, rather than six five-minute sprints. While an exceedingly high number of calls in queue at any given time might be alarming, this number is likely to go back to normal within five or 10 minutes as breaks overlap or the natural ebb and flow of random calls happens. The call center should evaluate carefully before using these real-time measures to drive changes and adjustments.

Summary

Workforce management—the art and science of getting the "just right" number of staff in place to respond to customer contacts, meet service goals, and minimize costs—is one of the most critical functions in the call center. Nothing more directly affects the service provided to customers or the bottom line of the operation. Everything hinges on developing an accurate forecast of the workload to be handled. With an accurate forecast, staffing needs can be determined and staff schedules created. Once the plan is in place, the focus of the daily management process is to execute the plan and adjust for unforeseen changes that occur. The overall result should be a consistently acceptable speed of answer for callers and a fair and reasonable workload for the staff.

SECTION 3: PERFORMANCE MANAGEMENT

This section will discuss the overall performance management process and focus on how performance expectations are defined and how actual performance is measured at an individual level, with attention given to the various aspects of the quality-monitoring process.

Performance management begins with defining performance goals and expectations. There are many quantitative performance expectations, such as schedule adherence percentage, AHT, call transfer rate, conversion rate, and so on. Other expectations will be defined around qualitative goals, such as portrayal of positive image, display of active listening skills, or use of proper pacing and voice quality. Many of these need to be defined at a behavioral level for employees to fully understand what is expected, and to measure their performance fairly and objectively.

Once these goals and expectations have been set, the next step is to gather information about actual performance versus desired performance to identify performance gaps and problems. There are many sources of quantitative information from which to draw, while qualitative information will likely come from observation and monitoring to ensure adherence to the proper behaviors and actions.

Steps of Performance Management

By definition, performance management is the application of scientific behavior analysis to the workplace. It is not a one-time management solution to a single problem with one employee. Done correctly, performance management provides a precise way of defining the work to be done, analyzing results, and implementing solutions that will not only deal with inadequate performance but will provide practical ways to maximize performance by every individual on the team.

To explain how the performance management process works, we can use the metaphor of a visit to the doctor and an attempt to diagnose a medical problem. There are many similarities between the performance management process and the medical diagnostic process, including:

- Symptoms alert someone to the possibility of a problem.
- A process is used to analyze symptoms and determine the cause of the problem.
- The diagnostic procedure begins with small tests and builds to more complex (and expensive) ones, depending upon the severity of the problem.
- A plan or method of treatment is established.
- Intervention is planned and executed once the cause of the problem is determined.
- Progress is monitored, and corrections or adjustments in treatment are made when necessary.

Step 1: Defining Healthy Performance
The first step in the diagnostic procedure is to define what is "healthy." In the medical world, the "norms" are determined by scientific research and might include normal ranges for body temperature, blood pressure, heart rate, cholesterol levels, and so on. Individual doctors have the same basic definitions about what constitutes "good health" versus a medical variation or abnormality.

Within the call center, "healthy" is determined by management strategy and goals and not the opinions of individual supervisors or team leaders. The management team's performance standards should be translated into workable behavioral standards for the frontline staff.

Knowing what the "healthy" or ideal performance looks like enables a manager to identify when an agent's performance is "unhealthy" and needs some type of intervention to facilitate improvement. Defining these specific standards and behaviors will be discussed in more detail later in this paper.

Step 2: Measuring Current Performance

Doctors do not treat symptoms without diagnosing their cause. They know the presenting problem is not always the cause of the ailment. Doctors first analyze the symptoms and conduct tests to make an accurate diagnosis or to establish a baseline. And in some cases, symptoms may not be present. For example, before beginning a new exercise program, a patient might check with a doctor to determine the health of his or her heart. In other words, not all diagnoses are driven by presenting problems; some are precautionary and preventative.

In the call center, managers should analyze performance information to see if symptoms of performance problems exist. In some cases, performance will be reviewed based on a certain incident or a concern, but in other situations, the "check-up" is merely a routine one that assesses performance on a regularly scheduled basis.

The process of comparing what is "healthy" or "what you want" versus "what you have" is sometimes referred to as a performance gap analysis. Performance will be in the acceptable range, exceptional, or below expectations. Performance below expectations is then evaluated and analyzed to determine a root cause for the problem.

Step 3: Diagnosing the Problem

Doctors use a systematic diagnostic process to correctly determine the cause of symptoms or to assess general health. When a presenting problem arises, there is a diagnostic system in place that employs various types of tests (examination, blood tests, X-rays, etc.) to obtain information to correctly identify the cause of the problem. The severity of the symptoms dictates the complexity of the test administered.

The process in the call center is similar. Instead of relying on a "gut" feeling, a systematic process to guide diagnosis and decision-making should be used. Some presenting problems are simple and do not require sophisticated analysis to identify or correct. Others are more complicated. Having a performance management model allows managers to get to the root cause of a problem.

Step 4: Applying a Treatment

Once the cause has been established, doctors can plan a specific intervention, using the least invasive process necessary to deal with the problem. A doctor's credibility would surely be affected if the patient learned the doctor performed unnecessary surgery or prescribed unnecessary medication.

In applying a treatment to a call center performance problem, managers will want to recommend the least invasive intervention to improve performance. This intervention must focus on the root cause to establish the most effective long-term solution, rather than a "quick fix" remedy.

Step 5: Monitoring Behaviors

When medical treatment is prescribed, a process for monitoring the patient's progress is established to make sure the treatment is effective and there are no harmful side effects. The more complicated the situation and intervention, the more formal or elaborate the monitoring process is. Monitoring could be as simple as "take two aspirins and call me if the pain continues," or as complex as a hospital stay after major surgery. In either case, the process serves the same purpose: to ensure the intervention has been effective.

In some cases, the intervention may not be effective. The doctor may change a medication if the desired results are not achieved with the first one. When a treatment is not effective, the doctor tries another method.

Managers should follow the same process. When an intervention is planned, monitoring should be included as part of the process to assess the effectiveness of the action. In some cases, the prescribed treatment does not work, and the

manager will need to work closely with the agent to try another solution until the desired performance is achieved.

Step 6: Practicing Preventative Maintenance

Preventative maintenance plays a major role in today's health care. The emphasis is shifting from treatment to prevention, which includes proactive measures to change unhealthy behaviors and habits before they can create bigger, more costly medical problems.

The same is true at the call center. Correcting simple performance situations before they manifest into complex problems is always desirable. By using processes to continuously monitor and diagnose performance issues, managers can prevent simple errors or misunderstandings from becoming widespread problems.

Defining Performance Standards

The first step of performance management is defining performance standards and expectations. However, this is not typically a job undertaken by a single individual. These performance standards need to be consistent across the centers and are probably not unique to any site or team.

Defining expectations and performance goals based on an individual management style is dangerous. It would be difficult for your call center or your company to survive if all the managers and supervisors used their own individual styles of management to determine performance expectations. The overall performance management process and standards must support the organization's mission and goals.

As Aubrey Daniels points out in the book *Bringing Out the Best in People*, imagine a doctor saying, "I've developed my own operational style. I'm going to operate on your brain a little differently than other surgeons would. I've had a few real successes with this technique, so don't worry." Or suppose you are on a plane and the pilot announces that he is going to land a little differently than Federal Aviation Administration procedures require because of his flying preferences. Performing surgery or flying a plane requires precision and the use of established processes. Managing people's behaviors is just as important to a business and, therefore, should not be made up of a collection of subjective approaches based on each manager's or supervisor's personal style.

Performance standards should be defined so that what is expected of every person in the call center is clearly defined. Agents on one team who take the same kinds of calls as those on another team should have their performance judged in the same way, even though they work for a different supervisor. The standards should define what is expected in terms of desired behaviors, and each supervisor should measure actual performance against those standards. Every supervisor should follow the same steps of diagnosis and treatment. Employees must see in practice, not just in theory, that the same performance is expected of everyone. They should know that their performance will be evaluated in the same way, and that rewards and consequences will be applied consistently.

The performance management process involves establishing clear expectations about the essential job functions the employee is expected to perform and then breaking down those job functions into clearly defined behavioral expectations and standards.

Quantitative Standards

The easiest expectations to define are the quantitative standards of performance for the organization. It is fairly easy to define a range of numbers into which a person's performance should fall within various categories. A list of quantitative measures and a sample range for each is listed in the table below. (Note: The numbers listed in the table are not meant to indicate "industry averages" or suggested standards. They are only provided as an example.)

Performance Category	Quantitative Performance Measures	Sample Target
Service	Schedule adherence	>97%
Quality	First-call resolution rate	>90%
	Transfer rate	<10%
	Error/rework rate	<5%
Efficiency	Availability	>80%
	AHT	220 sec
	After-call work	25 sec
	On-hold time	< 30sec
Profitability	Conversion rate	50%

The categories listed in the table represent the common categories of performance upon which an agent might be measured. These expectations of performance should be defined for each unique position in the center, with careful thought given to what an unacceptable number would be, what constitutes satisfactory performance, and what level of performance would be considered exceptional.

Different numbers may be appropriate based on the type(s) of calls the team receives or the length of time on the job. For example, you may have an AHT expectation of 220 seconds, but that expectation may be different for brand-new employees still learning. They should be aware that they will be expected to reach this number, but their performance expectation as a trainee may legitimately be lower.

Most call center measures tend to focus on quantitative performance measures, not because they are more important but because they are easy to obtain. They are also a more obvious measure of whether an employee met an expectation. However, much of what defines success for a caller has to do with how *well* the call was handled, and that expectation points to qualitative measures of performance.

Qualitative Standards
Defining qualitative standards of performance is much more difficult since definitions of quality tend to be more subjective in nature. For example, everyone would agree that agents should exhibit good telephone etiquette on a call, but different people may have different definitions about what constitutes good telephone manners.

Below are a few sample competencies associated with providing quality service over the telephone:
- Adapt the call to the customer's tone and pace.
- Project a positive and professional corporate image.
- Demonstrate a supportive approach when dealing with callers.
- Maintain control of the conversation to balance service with efficiency.

Everyone would agree that these are certainly reasonable and desirable expectations. However, each of the above expectations needs to be defined in more detail in order to be a clear performance standard.

For example, what is meant by "adapting the call to the customer's tone and pace" needs to be specifically defined. A full definition of that expectation, along with sample behaviors of what to do and what not to do, is illustrated below:

Goal: Adapt call to the customer's tone and pace	
Definition: Adjust to the mood and pace of the caller. Refrain from imposing your own style or rate of speech on the caller. Relate to callers as individuals and adapt presentation style and content to fit their needs.	
Positive Behaviors	**Negative Behaviors**
Slow pace for inexperienced caller.	Raise your voice to a caller who is yelling.
Adapt to slower pace for different language or accent.	Offer detailed, complicated explanations when caller has indicated he is in a hurry.

Another example might be the expectation of displaying a positive, professional corporate image. That phrase alone leaves much room for interpretation about what is meant by "professional" or what contributes to corporate image. Fully defining this expectation and providing examples of positive and negative behaviors will make the expectation clearer, and therefore, more likely to be met.

Goal: Project a positive, professional corporate image	
Definition: Speak clearly and keep conversation focused on the caller's needs. Use the agency name in the greeting and/or closing. Avoid slang and technical terms unfamiliar to the caller. Use "we" instead of "they" to project cohesion.	
Positive Behaviors	**Negative Behaviors**
Offer assistance – "I'll be happy to help you with that question."	Use can't, don't, or won't – "I can't find that in your record."
Offer positive statements about company – "Our success rate is excellent with this program."	Disclose undesirable things about company – "Delays have been really long all day."
Use "we" when referring to company – "We have a wide range of services to offer."	Use "they" when referring to company – "They don't give out that number to callers."

Defining the standards at this behavioral level will accomplish two things. First, your employees will have a clearer idea of what to do and what not to do on a call. One reason that employees do not live up to performance expectations is that they do not understand what the expectations are. Too much is left up to the employee to figure out. The more ambiguity the center can remove, the clearer employees will be on what to do, and they will be more likely to meet the performance expectation. Be as precise as possible with the definitions and give both positive and negative examples.

The other benefit of defining performance standards at the behavioral level is that performance evaluation is then much easier for managers and quality analysts. Scoring a call becomes a matter of checking yes or no for the display of the behaviors you want to see, with little room for interpretation about whether an employee met the expectation. The process is easier for you and much fairer for the employees.

Defining performance expectations at this level takes time, but it is well worth the effort because it helps each employee better understand what to do and ensures fairness and consistency in the evaluation process. Ultimately, the evaluation process becomes a matter of judging a set of behaviors and not an individual.

SECTION 4: TECHNOLOGY MANAGEMENT

Introduction

The modern call center invests more in technology per employee than most other departments within a company. These technologies are used to receive and generate inbound and outbound calls and faxes, process e-mails and Web contacts, and manage the center.

This section will define common call center technologies and their roles. Examples of end-to-end handling of contacts are used to demonstrate the interaction of the systems involved in the process throughout the customer interaction.

For most call centers, the bulk of the interactions are over the telephone. While other types of interactions, such as e-mail and Web chat are making their way into the mix, the volume of these is still low compared with telephone contacts. The pressing need for human interaction for most contacts demands that most of this contact be done over the phone or in person.

There are efficiencies to be gained for the company in moving calls to lower-cost interaction methods, such as interactive voice response or e-mails, but not all customers are willing or able to use these tools. Self-service also reduces the company's chance to form a relationship with the customer. So selecting and using the right technologies is a key component to call center success.

The Telephone Network

Calls generally start by a customer dialing a company's telephone number and being placed into the telephone network often referred to as the Public Switched Telephone Network. When the call reaches the call center site, it is generally received in a private switching system. These switching systems distribute the calls, queue them as needed, and provide announcements and reports for management. A wide variety of peripheral equipment can be added to enhance the interaction, to automate routine processes, and to give management information to improve performance. More contacts are moving to the Web, and this section also explores the way that an e-mail or Web chat can be delivered to the center. While calls are not going away anytime soon, the volume of Web-based transactions is growing and centers must be prepared to handle these demands.

The telephone call generated by a caller to the call center can be a:

- Local call, the caller and company are in the same town or calling area where seven-digit dialing is appropriate;

- Long-distance call, the caller pays for the call and dials the 10-digit number of the company; or a

- Toll-free long-distance call, the caller dials a special 10-digit number and the receiving company pays for the call.

When the call is a local call, the entire transmission is handled by the local telephone service provider (such as BellSouth, GTE, Verizon, etc.). This local exchange company is referred to as the LEC. When it is a long-distance call paid for by the caller, the call travels over facilities of the caller's long-distance provider (such as AT&T, MCI, Sprint, etc.). These long-distance carriers are referred to as the Inter Exchange Carriers, or IXCs. In the case where callers dial a toll-free number, the call is free for them because the cost is paid by the receiving call center. The IXC designated by the receiving call center handles these calls.

Toll-Free Services
One of the most commonly used network services in call centers is toll-free service. Toll-free is a bit of a misnomer because the receiving company pays for the call. This is sometimes referred to as 800-service because the area code for toll-free calls was 800 for many years. However, since all of the 800-number choices have been depleted, more area codes have been designated for toll-free calling, including 877, 866, and others. This special numbering plan makes it easy for people to know when they are dialing a call they will not pay for and easy for the LEC switch to recognize a call that is to be handed off based on receiver preference of carrier rather than caller preference.

Many features have been developed for toll-free service customers. These include providing the receiving party with information on the dialed number (dialed number identification service) or dialing number (automatic number identification), allocation of calls among multiple sites, routing based on time of day or day of week, and even network-based menus and voice response technologies. More sophisticated network-based intelligent routing technologies have also been added to utilize customer data from the company database as well as other complex rules to route calls to certain sites or representatives. All of these features are selected and paid for by the receiving company.

Automatic Call Distribution
The primary on-site telephone switching technology used by call centers is the ACD. Once the call has traveled through the network to reach the call center's site, the ACD typically is the point of entry. The role of the ACD is to receive the call, connect it to an agent in the center, provide queuing and announcements when agents are not available, and provide management reports.

One of the most critical roles of the ACD is to distribute the workload equally to a group of people. This ensures that the callers wait the shortest time possible and the workload is distributed fairly to the employees.

Features and Functions
The basic features of the ACD are designed to automatically answer calls and place them in the order defined by the programmed rules, distribute the calls to the staff, and provide reports to manage the operation. Generally, that means the first call in is the first call handled and workload is distributed equally among the staff.

The advent of skill-based routing has changed that basic assumption for some centers. Skill-based routing assumes that calls will be sorted into specific types based on the needs of the callers and then matched to the staff in the center who can best handle them. Calls can be queued for more than one group of staff who can handle the calls, and agents can be logged into more than one queue, allowing them to handle several types of calls.

Various priorities can be set as well. One priority setting ranks callers against other callers and is used to ensure priority callers receive special service. When agent skills are given different priorities and several calls are in queue when the agent becomes idle, the next call handled by that agent will be the one with the highest ranking for that agent, generally the one they handle best.

When all agents are busy, the ACD places the call into a queue. Generally, a recorded announcement is played that tells callers their call has been placed in queue. More sophisticated systems can include a prediction of how long each caller may wait. While the caller is in the queue, generally music or some kind of continuous message is played and is interrupted at pre-set intervals with additional announcements about the queue state.

A wide variety of features are also available to help the agent process the call. These include such things as an alpha-numeric display that tells the agent what greeting is appropriate for a particular call, buttons that allow the agent to

enter different work states that are recorded in the reporting tools, codes that can be dialed to indicate what the caller requested, and buttons to summon a supervisor for assistance on a difficult call.

Supervisory features allow the supervisor to silently monitor both sides of a call so that neither party knows the call is being observed. This capability is used to monitor the quality of the work in the center and aid in identifying training needs.

Reporting Packages
The ACD has two primary types of reporting capabilities. One provides historical data and the other gives real-time snapshots. The historical data can provide information on call handling, agent performance, volumes, and service levels over the last half-hour, day, shift, week or longer. There are hundreds of standard reports offered by the vendors. Customized reports can be provided, generally with an export of the data to a software package designed for customizing reports, such as Crystal Reports.

The real-time data is generally provided on a color-coded computer screen and allows "corner of the eye" management. Supervisors can monitor how long an agent has been on a call or in a work status, what the ASA is, how long callers are waiting in queue, and other data.

In addition to the standard reporting packages that come with the ACD from the manufacturer, there are third-party reporting tools. These include wall-display boards and TV monitors that provide the current queue status, service level information, and other customized messages for all in the center to see. These can keep the staff and supervisors informed and serve as a quick communications tool for updated information that needs to be passed to everyone quickly. Other tools can also provide the same kind of data on the agent's monitor.

ACD Integration Trends
Call centers are growing and changing rapidly. New features and technologies are announced almost daily. Some of the trends over the last couple of years are fully digitized operations and integration of voice-over-Internet-protocol technologies to allow full utilization of the Internet.

Integration of the ACD with a variety of other technologies in the call center continues to expand. The ACD can be linked to a quality-monitoring system to allow managers to tap into the agent phone for recording the conversation. A workforce management system looks to the ACD for both real-time and historical data to update forecasting and performance data. E-mail management systems connect to the ACD to distribute work on a blended basis to the agents. Time clocks are linked to the ACD so when an agent logs into the ACD for work, the time clock is updated for payroll purposes. Learning management systems use the ACD to manage the agent's work state when a session of e-learning is pushed to the agent during idle periods. The list keeps growing. Any linkage that saves data entry, coordinates functions, and aids operations should be considered. These technologies are discussed in more detail later in this section.

Computer Telephony Integration
Linking the computer in the private branch exchange or ACD to another computer is called computer telephony integration. It is generally used to coordinate the functions of the telephone system with another data system. This can be as simple as looking up the caller's phone number in a directory and displaying that name. In some cases, the whole routing and handling of the call can be altered because of data that was found about the caller.

The "screen pop" application brings up a screen of information for call center agents when they answer calls. The process allows the ACD to capture information about the caller, pass it to an external computer (typically where the customer files are held) to look up the caller's account, and then present the call to the agent's phone and "populate"

the caller's account information on the agent's monitor at the same time. This can shorten the call-handling time by as much as 15 or 20 seconds per call.

The information that identifies the caller can come from a variety of sources. One common source is automatic number identification data, which identifies the phone number where the call originates and is passed from the 800-service carrier to the ACD as the call is presented for answering.

This screen pop is the most common application, but calls, and the data screens associated with them, also can be transferred between agents. Coordinated voice/data transfer can work between sites in addition to within the same ACD. When the external computer finds data that suggests abnormal handling, a message is sent to the ACD to handle the call differently. This can be an instruction to prioritize, reroute to a different agent group, or play a special announcement, as examples. The external computer cannot control the call directly but, through its instructions to the ACD, it can determine what steps are next for the caller.

Voice Processing

Voice processing covers a number of capabilities and systems, including voice mail messaging, automated attendant, information mailboxes/announcements, voice response systems, speech recognition, and text-to-speech technology. All of these involve recording, storing, and/or manipulating voice inputs.

One of the primary applications is voice mail. In addition, recorded-menu systems and automated-attendant systems offer simple choices, such as "Press 1 for Sales," allowing the call to be routed to the correct department without the aid of an operator. Interactive voice response systems allow a caller to interact with a computer database to do tasks, such as check a bank account balance, without the aid of a human. Each of these applications has the potential to enhance communications and to reduce the cost of such communication.

The drawback of all voice-processing systems is the loss of human-to-human interaction. Machines are impersonal, and poorly designed system scripts confuse and frustrate callers. Most people will tell you they hate talking to the machines so commonly used in business today. Thoughtful design and constant vigilance in managing the systems is the key to success. However, too few companies make the necessary effort, resulting in applications that frustrate communications rather than facilitate it.

Desktop Tools

Once the contact has reached the inbound call center, the agent must process the requests and perform the necessary tasks. These include the desktop applications on the computer, imaging systems, and video interaction tools. On a broader scale, workflow management and knowledge management systems offer tools that may handle certain tasks or offer solutions to the customer's requests on an automated basis.

The applications and programs available to call center agents from their computers are generally referred to as desktop tools. These can include company-specific applications, such as a program developed in-house to handle orders for the company's products. In addition, there may be a host of commercially available programs that are used, such as word processing, spreadsheets and directory services. While some companies still have mainframe computer applications that are accessed via dumb terminals (or terminal emulation programs), most call centers today have agents use personal computers.

The company-specific applications generally provide the customer information files with the data about each customer's accounts, purchases, balance, address, phone, e-mail address, etc. While these applications may be generally available programs made for the industry, they may be modified for the specific company or be written

entirely by in-house programmers. Each industry and company has unique needs, and a host of vendors are available to provide industry-specific programs.

Some call centers use scripts to assist agents in handling calls. The text of the script displays on the agent's screen, and depending on the caller's response (which the agent enters into the computer), the script will branch to the appropriate response and/or next question. This kind of scripting minimizes training for new hires and allows them to take calls before they have memorized every possible option. The skilled agent can paraphrase the script and even disable it.

Integrating the functions of the telephone into the computer screen for the agent is becoming more common. The agent can answer a call, place it on hold, transfer, and disconnect it by clicking the mouse or touching the screen. The ACD work states, such as after-call work, can be entered on the screen, too. In fact, nearly anything that can be done from the agent's telephone can be integrated into a button or display on the telephony interface. This integrated telephone set allows agents to remove the telephone from their desks and have only one system to interact with for all of the normal functions. The headset is plugged into the PC for audio. One issue that should be noted with these integrated telephony functions is that a power failure that disables the PC will also disable phone service. An ACD might have a battery backup that would keep phones operational, but with integrated telephony, the PC must also have an alternative power source.

If letters and numbers are not sufficient to support communications, pictures may be required. These images can be supported in several ways. Facsimile systems and image scanning are the most common tools. Storage techniques are important for these systems as well so that specific images can be accessed as needed. Image-scanning systems work in much the same way as a copier or facsimile machine by taking a picture of the item and storing it as a digital file.

Knowledge Management
One of the most valuable assets an organization has is the knowledge of its employees. Capturing that knowledge and making it available to everyone who needs it is very difficult. Knowledge management systems are designed to address this need because they are essentially data storage and retrieval systems. They organize data so that it can be searched easily to find answers.

Technical support help desks are heavy users of knowledge management systems. For example, perhaps a customer wants to know if the computer system she has is compatible with a specific printer. The agent types the computer model and the printer name into the search window and the knowledge management system finds all the data on the specified model and printer. When the information has been located, the data about compatibility, known issues, where to go to download the appropriate printer drivers, etc., is displayed so that the agent can answer the customer's question. Even though this agent may never have heard of the printer, the information that was stored by someone else is there to solve the problem.

Although these tools can improve service in highly complex environments, they require a great deal of maintenance. Each time a new issue or problem is identified or the company makes a new product, all of the relevant data must be entered into the system so that those who need it can access it. In many organizations, this updating process requires that the solution be tested to ensure its accuracy before it can be entered in the system. This prevents erroneous or incomplete data from being entered and proliferating. The initial data entry to set up the system is generally a huge task, and ongoing maintenance is essential to ensure that the system stays up to date and as effective as possible.

Quality Monitoring and Recording

Nearly every ACD is equipped with the capability to support silent monitoring of calls by a supervisor. This allows the supervisor to access a call in progress, listening to both sides of the conversation without either the caller or the agent knowing the supervisor is observing. This approach requires the supervisor (or quality control manager) to access these conversations in real-time. If there are few calls in progress, the supervisor can waste time waiting for a call to come to a specific agent. During busy times, the supervisor may be needed on the floor to assist agents. While centers typically set a goal of listening to several calls per agent per month, the goal is often missed if real-time silent monitoring is the only option.

Automated recording of the calls is the role of the call-recording system. While some organizations record every call for business purposes, most do not. The call-recording system typically is set to record randomly, sampling each agent at different times of day and days of week throughout the period to ensure a fair sampling. Alternatively, the system may also record agents' data screens during the calls so that the supervisor can see exactly what the agents saw on the screen and what keystrokes they entered as they processed the calls.

With a recording, the supervisors can review the calls whenever they have time. Recordings can be accessed from outside the center by phone in some cases and the data portions accessed through the Internet so supervisors can even review calls while at home. One of the additional benefits is that the supervisor and agent can listen to the recording together during a coaching session. With the system recording on a regular basis, there is little risk of missing the goal of monitoring the number of calls needed to ensure quality control. Supervisors must still find the time to listen to the calls and score them based on the criteria that is pre-set for this purpose.

Contact Management Systems

Whether the contact being tracked is a trouble ticket reported to a help desk, a sales lead, or a customer interaction requesting some service, a contact management system can be of assistance. This type of system tracks interactions by customers and provides the databases and analytical tools to look for trends and sort by demographics.

In a call center, the contact management system provides a record of all the previous interactions with the customer. The customers find they do not have to tell their whole history to the agent, and the agent can see what has been done or promised by others.

While quitlines are certainly a special type of call center in their own right, quitline service providers make use of the various planning and management fundamentals outlined in this paper in much the same manner as traditional call centers. It is critical that funders and service providers alike have a keen understanding of these fundamentals and continue to explore the various ways in which all of them affect the quality of services delivered to tobacco users trying to quit.

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