

A **Call Center** is a centralized office used for the purpose of receiving and transmitting a large volume of requests by telephone.

A call center is operated by a company to administer incoming product support or information inquiries from consumers. Outgoing calls for telemarketing, clientele, and debt collection are also made. In addition to a call center, collective handling of letters, faxes, and e-mails at one location is known as a contact center.

A call center is often operated through an extensive open workspace, with work stations that include a computer, a telephone set/headset connected to a telecom switch, and one or more supervisor stations. It can be independently operated or networked with additional centers, often linked to a corporate computer network, including mainframes, microcomputers and LANs. Increasingly, the voice and data pathways into the center are linked through a set of new technologies called computer telephony integration (CTI).

Most major businesses use call centers to interact with their customers. Examples include utility companies, mail order catalogue firms, and customer support for computer hardware and software. Some businesses even service internal functions through call centers.

Mathematical theory

A call center can be viewed, from an operational point of view, as a queuing network. The simplest call center, consisting of a single type of customers and statistically-identical servers, can be viewed as a single-queue. Queuing theory is a branch of mathematics in which models of such queuing systems have been developed. These models, in turn, are used to support work force planning and management, for example by helping answer the following common staffing-question: given a service-level, as determined by management, what is the least number of telephone agents that is required to achieve it. (*Prevalent examples of service levels are: at least 80% of the callers are answered within 20 seconds; or, no more than 3% of the customer's hang-up, due to their impatience, before being served.*)

Queuing models also provide qualitative insight, for example identifying the circumstances under which economies of scale prevail, namely that a single large call center is more effective at answering calls than several (distributed) smaller ones; or that cross-selling is beneficial; or that a call center should be quality-driven or efficiency-driven or, most likely, both Quality and Efficiency Driven (abbreviated to QED). Recently, queuing models have also been used for planning and operating skills-based-routing of calls within a call center, which entails the analysis of systems with multi-type customers and multi-skilled agents.

Call center operations have been supported by mathematical models beyond queuing. For example, for forecasting of calls, for determining shift-structures, and even for analyzing customers' impatience while waiting to be served by an agent.

Accommodation

The centralization of call management aims to improve a company's operations and reduce costs, while providing a standardized, streamlined, uniform service for consumers, making this approach ideal for large companies with extensive customer support needs. To accommodate for such a large customer base, large warehouses are often converted to office space to host all call center operations under one roof.

Personnel management

Centralized offices mean that large numbers of workers can be managed and controlled by a relatively small number of managers and support staff. They are often supported by computer technology that manages measures and monitors the performance and activities of the workers. Call center staff are closely monitored for quality control, level of proficiency, and customer service.

Typical contact center operations focus on the discipline areas of workforce management, queue management, quality monitoring, and reporting. Reporting in a call center can be further broken down into real time reporting and historical reporting.

The types of information collected for a group of call center agents typically include: agents logged in, agents ready to take calls, agents available to take calls, agents in wrap up mode, average call duration, average call duration including wrap-up time, longest duration agent available, longest duration call in queue, number of calls in queue, number of calls offered, number of calls abandoned, average speed to answer, average speed to abandoned and service level, calculated by the percentage of calls answered in under a certain time period.

Many call centers use workforce management software, which is software that uses historical information coupled with projected need to generate automated schedules. This aims to provide adequate staffing skilled enough to assist callers.

The relatively high cost of personnel and worker inefficiency accounts for the majority of call center operating expenses, influencing outsourcing in the call center industry.

Inadequate computer systems can mean staff takes one or two seconds longer than necessary to process a transaction. This can often be quantified in staff cost terms. This is often used as a driving factor in any business case to justify a complete system upgrade or replacement. For several factors, including the efficiency of the call center, the level of computer and telecom support that may be adequate for staff in a typical branch office may prove totally inadequate in a call center.

Technology

Call Centers use a wide variety of different technologies to allow them to manage the large volumes of work that need to be managed by the call center. These technologies ensure that agents are kept as productive as possible, and that calls are queued and processed as quickly as possible, resulting in good levels of service.

These include;

- ACD (automatic call distribution)
- Agent performance analytics
- BTTC (best time to call)/ Outbound call optimization
- IVR (interactive voice response)
- Guided Speech IVR
- CTI (computer telephony integration)
- Enterprise Campaign Management
- Outbound predictive dialer
- CRM (customer relationship management)
- CIM (customer interaction management) solutions (Also known as 'Unified' solutions)
- Email Management
- Chat and Web Collaboration
- Desktop Scripting Solutions
- Outsourcing
- Third Party Verification (Third party verification)
- TTS (text to speech)
- WFM (workforce management)
- Virtual queuing
- Voice analysis
- Voice recognition
- Voicemail
- Voice recording
- VoIP
- Speech Analytics

Call Center dynamics

Types of calls are often divided into outbound and inbound. Inbound calls are calls that are made by the consumer to obtain information, report a malfunction, or ask for help. These calls are substantially different from outbound calls, where agents place calls to potential customers mostly with intentions of selling or service to the individual.

Call center staff are often organized into a multi-tier support system for a more efficient handling of calls. The first tier in such a model consists of operators, who direct inquiries

to the appropriate department and provide general directory information. If a caller requires more assistance, the call is forwarded to the second tier, where most issues can be resolved. In some cases, there may be three or more tiers of support staff. If a caller requires more assistance, the caller is forwarded to the third tier of support; typically the third tier of support is formed by product engineers/developers or highly-skilled technical support staff of the product.

Many call centers in the UK have been built in areas that are depressed economically. This means that the companies get cheap land and labor, and can often benefit from grants to encourage them to improve employment in a given area. There has also been a trend to move call centers to India, where there is a large pool of English-speaking people. However, there has been widespread dissatisfaction from consumers, who are unable to understand Indian call center staff and vice versa, owing to differences between British and Indian English.

This trend is on a decline as India rapidly absorbs most of the highly educated people who are qualified in the science and mathematics streams, and, like in other countries, call center jobs are increasingly viewed as stopgap jobs rather than as careers.

Another popular call center site is the Philippines, owing to its abundant English speakers that are college graduates and Americanized when it comes to English accent and cultural affinities. The Philippines was an American colony for almost 50 years. The Philippines is said to be the best outsourcing site outside North America since the accent of Filipinos is nearer to that of American consumers as compared to other ethnicities.

Management of call centers

Management of call centers involves balancing the requirements of cost effectiveness and service. Callers do not wish to wait in exorbitantly long queues until they can be helped and so management must provide sufficient staff and inbound capacity to ensure that the quality of service is maintained. However, staff costs generally form more than half the cost of running a call center and so management must minimize the number of staff present.

To perform this balancing act, call center managers make use of demand estimation, Telecommunication forecasting and dimensioning techniques to determine the level of staff required at any time. Managers must take into account staff tea and lunch breaks and must determine the number of agents required on duty at any one time.

Forecasting demand

Forecasting results are vital in making management decisions in call centers. Forecasting methods rely on data acquired from various sources including historical data, trend data and so on. Forecasting methods must predict the traffic intensity within the call center in quarter-hour increments and these results must be converted to staffing rosters. Special attention must be paid to the busy hour. Forecasting methods must be used to pre-empt a

situation where equipment needs to be upgraded as traffic intensity has exceeded the maximum capacity of the call center.

Call center performance

There are many standard traffic measurements (performance metrics) that can be performed on a call center to determine its performance levels. However, the most important performance measures are:

- The average delay a caller may experience whilst waiting in a queue
- The mean conversation time, otherwise referred to as Average Talk Time (ATT)
- The mean dealing time, otherwise referred to as Average Handling Time (AHT - equal to ATT plus wrap-up and/or hold time)
- The percentage of calls answered within a determined time frame (referred to as a Service Level or SL %)
- The number of calls / inquiries per hour an agent handles (CPH or IPH).
- The amount of time spent while an agent processes customer requests while not speaking to a customer (referred to as Not Ready time/NR, or After Call Work/ACW, or Wrap-Up.)
- The percentage of calls which completely resolve the customer's issue (if the customer does not call back about the same problem for a certain period of time, it is considered a successful resolution or FCR - First Call Resolution).
- The percentage of calls where a customer hangs up or "abandons" the call is often referred to as Total Calls Abandoned or Percentage of calls abandoned. Calls are often abandoned due to long hold times when a call center experiences a high call volume.
- Percentage of time agents spend not ready to take calls, often referred to as Idle Time.
- Quality Assurance monitored by a quality assurance (QA) team.

Refinements of call centers

There are many refinements to the generic call center model. Each refinement helps increase the efficiency of the call center thereby allowing management to make better decisions involving economy and service.

The following list contains some examples of call center refinements:

Predictive Dialing – Computer software attempts to predict the time taken for an agent to help a caller. The software begins dialing another caller before the agent has finished the previous call. This, because not every call will be connected (think of busy or not answered calls) and also because of the time it takes to set up the call (usually around 20 seconds before someone answers). Frequently, predictive dialers will dial more callers than there are agents, counting on the fact that not every line will be answered. When the line is answered and no agent is available, it is held in a retention queue for a short while.

When still no agent has become available, the call is hung up and classified as a nuisance call. The next time the client is called an agent will be reserved for the caller.

Multi-Skilled Staff – In any call center, there will be members of staff that will be more skilled in areas than others. An 'Interactive Voice Response' (IVR) Unit can be used to allow the caller to select the reason for his call. Management software, called an Automatic Call Distributor, must then be used to route calls to the appropriate agent. Alternatively, it has been found that a mix of general and specialist agent creates a good balance.

Prioritization of Callers – Classification of callers according to priority is a very important refinement. Emergency calls or callers that are reattempting to contact a call center are examples of callers that could be given a higher priority.

Automatic Number Identification – This allows agents to determine who is calling before they answer the call. Greeting a caller by name and obtaining his/her information in advance adds to the quality of service and helps decrease the conversation time.

Variations on the generic call center model

The various components in a call center discussed in the previous sections are the generic form of a call center. There are many variations on the model developed above. A few of the variations are listed below:

Remote Agents – An alternative to housing all agents in a central facility is to use remote agents. These agents work from home and use a Basic Rate ISDN access line to communicate with a central computing platform. Remote agents are more cost effective as they don't have to travel to work, however the call center must still cover the cost of the ISDN line.

VOIP technology can also be used to remove the need for the ISDN, although the desktop application being used needs to be web enabled or VPN is used.

Temporary Agents – Temporary agents are useful as they can be called upon if demand increases more rapidly than planned. They are offered a certain number of quarter hours a month. They are paid for the amount they actually work, and the difference between the amount offered and the amount guaranteed is also paid. Managers must use forecasting methods to determine the number of hours offered so that the difference is minimized.

Virtual Call Centers – Virtual Call Centers are created using many smaller centers in different locations and connecting them to one another. The advantage of virtual call centers is that they improve service levels, provide emergency backup and enable extended operating hours over isolated call centers.

Criticism of call centers

Criticisms of call centers generally follow a number of common themes:

From Callers:

- Operators working from a script.
- Non-expert operators (call screening).
- Incompetent or untrained operators incapable of processing customers' requests effectively.
- Overseas location, with language and accent problems.
- Automated queuing systems.

From Staff:

- Close scrutiny by management (e.g. frequent random eavesdropping on operator's calls).
- Low pay.
- Restrictive working practices (e.g. there isn't much space for personal creativity since many operators are required to follow a pre-written script).
- High stress: a common problem associated with front-end jobs where employees deal directly with customers.
- Poor working conditions (e.g. poor facilities, poor maintenance and cleaning, cramped working conditions, management interference)

As detailed above, none of these are inherent in the call center model, although many companies will experience some or all of the above while implementing a call center approach. As the science suggests, done properly, a call center can offer the quickest route to resolution of customer queries, capitalizing on the ready availability of highly skilled and intelligent people in some areas. ❖

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