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Assessment of Carilion Health System Call Center

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ASSESSMENT OF CARILION HEALTH SYSTEM CALL CENTER

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INTRODUCTION

Carilion Health System is a corporation consisting of eight hospitals and 65 physician practices throughout Western Virginia. Carilion Direct is the call center for Carilion Health System hospitals: Carilion Roanoke Memorial and Carilion Roanoke Community Hospitals. The call center is staffed with hospital operators and call center representatives. Call center representative staff receive health information requests and physician referral calls, as well as, receiving general hospital calls. Hospital operators answer all types of calls that come into Carilion Roanoke Memorial and Carilion Roanoke Community Hospitals.

Incoming calls are answered through a system called MediCall Console, a call and paging processing system that is a division of Xtend Communications (http://www.xtend.com/medicall.htm). Hospital operators answer calls and page physicians, as well as transfer other incoming calls to the appropriate area within the system. The call center representatives transfer these calls to the Registered Nurses in the call center when appropriate. Call center representatives take calls from callers who want to schedule Carilion offered classes and events, along with general information calls. The calls coming into Carilion Health System in Roanoke are managed by Call Management Supervisor which is division of Avaya.   The amount of calls coming into the call center are counted and divided into different statistic groups. The amount of calls each operator receives, the amount of time taken to answer the call and the amount of calls not answered, where the caller hung, up are separated into each group and stored for managers to access the information.   This information is useful in keeping the call center

employees aware of their job performance, and it also keeps upper management informed of the progress of the department.

STATEMENT OF PROBLEM

The problem with this study was to compare the effectiveness of hospital operators and call center representatives to answer calls working for Carilion Health System.

HYPOTHESES

The problem will be addressed with the following hypotheses.

H_1: There will be a significant difference in the length of time taken to answer a call comparing the operators and the call representatives of the Carilion Health System Call Center.

H_2: There will be a significant difference in performance of hospital operators compared to the performance of call center representatives in the amount of calls each group receives in a month's time.

BACKGROUND AND SIGNIFICANCE

In late 2004 Carilion Health System employed the MediCall Console to replace the phones on each call representative's desk. The phone and the computer are one. Prior to the purchase of MediCall Console the call center used standard phones with many lines and functions. Paging and transferring calls were done on the traditional phone. The computer was used to look up information and phone numbers for the callers. This process was time consuming. Calls where logged by each call representative in hand written logs. This process created much paperwork for everyone involved.

The benefit of MediCall Console computer system over the traditional method is all calls are handled through the computer based Avaya™ Call Management Supervisor

system. The call comes into the call center on a computer and is answered with keyboard functions. This process reduces the time the caller is on the phone and the amount of paperwork compiled by the operator. Each call is logged into a tracking system within the Avaya™ Call Management Supervisor computer program (http://www.avaya.com/). The call tracking system Call Management Supervisor is a component of Avaya™ Call Management Supervisor which stores valuable information showing how productive the call center is and where there is need for improvement. The program Call Management Supervisor tracks the amount of calls, the time taken to answer the call, and any calls that where dropped showing the need for additional staff when too many calls have not been answered. With the traditional method it was difficult to keep track of how many calls were lost due to no one answering the call.

Another benefit to the MediCall Console call system is keeping track of the physician call schedules. Before MediCall Console the call schedules were typed out and distributed to each nursing unit. Anytime there where changes each nursing unit had to be notified. This was time consuming and left room for error. With the MediCall Console the call schedule can be updated by an operator in the computer system quickly and leaves little room for error. The MediCall Console system helps to improve communication throughout the Carilion Health System by keeping the call schedule updated, cutting down the time needed for each call by having information at the operators' fingertips. The significance for this study was to use the information provided by the Call Management Supervisor, a component of Avaya™ Call Management Supervisor, to determine the need for staffing based on the amount of received calls and the length of each call. The difference between the hospital operators and the call center representatives regarding the

types of calls each received and the amount of time used to complete the call can vary depending on the caller's needs.

LIMITATIONS

This study was based on the following limitations.

1.   The research was limited to the population of Carilion Health Systems, Carilion Roanoke Memorial Hospital and Carilion Roanoke Community Hospital operators and call center representatives using the Call Management Supervisor, a component of Avaya™ Call Management Supervisor, to answer calls through the computer.

2.   The research was limited to the information given by the Avaya Call Management Supervisor tracking system used by Carilion Roanoke Memorial and Carilion Roanoke Community Hospital databases to determine the effectiveness of the hospital operators and call center representatives performance.

ASSUMPTIONS

This study was based on the following assumptions.

1.   Each operator and call center representative will answer a call within a minimal time of 30 seconds or less (Physician Referral and Telephone Triage Times, 2004).

2.   Operators and call center representatives are answering more calls in an efficient manor and fewer calls are dropped.

3.   The Avaya Call Management Supervisor is a reliable source for tracking calls and measuring time taken to answer a call (Avaya^{TM} Call Management Supervisor, 2006).

PROCEDURES

At the end of each month the call center manager will run the reports provided by the tracking system. The information provided by the system database is given to the manager to evaluate each employee's productivity. The system is designed to monitor how fast a call is answered, how many calls an individual operator received, and how many calls each operator did not answer. This information gives the manager a good indication of how many calls are being dropped due to time consuming calls or short staffing issues (Avaya^{TM} Call Management Supervisor, 2006). The data collected will be evaluated to determine the effectiveness of the hospital operator's compared to the call center representatives' performance.

DEFINITION OF TERMS

Terms used in this study were defined as follows:

1.   MediCall-is a Windows-based application that gives telephone operators visual access to advanced telephony capabilities right from their desktop computer. Before answering the phone, valuable information about the call along with the reason for the call is seen on the computer screen (X-tend Communications, 2006).

2.   Physician Call Schedule-List of physicians taking calls for their own practice or other physician practices after business hours, on weekends, and holidays.

3.   Hospital Operator-call center employee who answers incoming calls, pages physicians, and transfers calls to appropriate areas.

4.   Call Center Representative-call center employee who answers incoming calls, transfers calls to appropriate areas, and registers callers for classes and events given by Carilion Health System.

5.   Avaya™ Call Management Supervisor-Avaya is a worldwide provider of business

communications applications, systems, and services focused entirely on serving the needs

of businesses and provide administration and reporting capabilities using a Microsoft

Windows interface (Avaya^{TM} Call Management Supervisor, 2006).

SUMMARY AND OVERVIEW

In Chapter I of this study, the problem and research goals were defined. The problem was

to compare the effectiveness of answering a call at the Carilion Health System hospitals in

Roanoke, Virginia, using one of two systems: operators or call center representatives. The

background and significance explained the old version of the call center equipment and

the need for the new systems MeidCall Console, a division of the Xtend Communications

System (X-tend Communications, 2006).

The limitations and assumptions described the population used for this study. The

research was limited to the information retrieved by the Avaya Call Management

Supervisor reports and explained the assumed outcome of the study. Definition of terms

listed the terms used to at the Carilion Health System Call Center. A brief discussion of

the procedures involved in this study was included to explain how the data collected will

be used to determine the effectiveness of the hospital operators and the call center

representatives. In the chapters to come, a review of literature related to the study could

help determine the use of similar data in other studies regarding call centers in other

facilities. Methods used to gather data will be discussed and an analysis for findings of

the study, as well as, recommendations and conclusions will be included.

CHAPTER II

REVIEW OF LITERATURE

This study was based on the information provided by Call Management

Supervisor, a component of Avaya™ Call Management Supervisor. The information was

used to determine the effectiveness of the operators and the call center representatives.

The information provided gives the operator and the call center representative a review of

their individual performance to see where there is need of improvement. This chapter will

review information about call center employees, as well as, call center performance

overall in call centers other than Carilion Health System.

CALL CENTER PERFORMANCE

Before the age of computers any performance evaluation for an operator or a call

center representative were done manually by employees. The employee and the manager

would fill out a form of how well the employee performed in their own opinion. This left

room for error for both parties. With computer programs keeping track of an operator's

and call center representative's performance the evaluation of each performance was

recorded with little room for error. With tracking computer programs a manager can

create reports automatically and eliminate the manual hand-written evaluation of the past.

"Speed of answer remains a core quality metric for many organizations even though

answering the phone quickly is only part of the equation. If the [person] answering the

phone lacks the necessary knowledge and skill level to solve the customer's issue, then the

only thing the company has accomplished is frustrating its customer" (Heinen, 2006, p.

34). The operator and call center representative's relationship with the caller, regarding

helpfulness, friendliness and knowledge of job related issues, were evaluated on site by co-workers and the manager.

Another aspect of a medical call center was to "offer patient-pleasing human voice telephone contact as an alternative to taped messages and answering machines" (Darling, and Wood, 2002, p. 82). When a patient calls a medical facility to get help for various reasons, most do not wish to speak with a machine. With a person answering the phone the patient feels that help is not far away. When patient calls are answered by a person the call can be any length of time. The goal for the operator or the call center representative is to help the patient quickly and effectively. There are incidences where a call may take an unusual amount of time. The types of calls are taken into consideration by the manager when evaluating the performance of the operator or the call representative. "If call center representatives and hospital operators are measured solely on talk time, they may not care whether they solve a caller's problem as long as they wrap up the call quickly. Speed does not always mean caller satisfaction. Is it beneficial to save 20 seconds on a call, or by winning a customer for life" (Heinen, 2006, p. 35).

Many call centers use what is called Key Performance Indicators (KPIs). KPIs are used in all types of call centers, not just medical call centers. A study conducted by the Annapolis, Maryland-based, Incoming Call Management Institute, *Call Center KPIs: A Look at How Companies are Measuring Performance",* focused on Key Performance Indicators. It found that 94 percent of call center leaders said that the use of KPIs ultimately improved call center performance in their organizations (Physician Referral and Telephone Triage Times, 2004). The down side to using KPIs is that the percentage totals may not be completely accurate due to the types of call received, the length of call

received and the time of day the call is received. One caller may need to have someone paged requiring a long hold period or another caller may simply need to get directions to the hospital or a particular event. These varied types of calls are unpredictable in nature. It is hard for the system to have a complete and accurate key performance reading. As Yogi Berra stated "Predictions are hard to make, especially about the future" so is the prediction of call center performance or even the need for the healthcare call centers at all (Physician Referral and Telephone Triage Times, 2004, p. 1).   Health care center executives are becoming aware of the need for call centers within their organizations as their call volume increases with many types of calls such as physician referral and health information calls.

Call centers who give physician referrals, health information or just general information to the public help to increase the need for that particular healthcare center to the community where the person resides. Many people will call the healthcare call center multiple times when they are in need of health care. If the caller receives the needed information they may become some of the healthcare centers best customers and in turn will spread the word of how helpful the call center is. Fell, a partner with the Chattanooga, Tennessee-based, Daniel+Douglas+Norcorss, keynoted the Sixteenth National Conference of Physician Referral and Health Information Call Centers. He indicated that "the average call center caller generates 150 percent more revenue for the facility per year than the average patient" (Physician Referral and Telephone Triage Times, 2004, p. 2).

Fell also goes on to say that in a 2003 study by his firm, in cooperation with the Corporate Health Group and the Physician Referral and Telephone Triage Times, there

were three management challenges within a call center: "being valued for their
contribution to the organization, integrating with service lines, and allocating resources
(money and people)" (Physician Referral and Telephone Triage Times, 2004, p. 3).
Managers need to take responsibility in relaying information to their employees. The
study showed that 74 percent of the respondents planned to add call center services to
their organization (Physician Referral and Telephone Triage Times, 2004).

SUMMARY

Call Centers create revenue for the organization by retaining well informed
operators and call center representatives that can give the needed information to the caller
in a quick and efficient manor. Callers are more likely to call the same call center over
and over when they are confident the services they received in the past will again be the
services they will receive with each call.

A computer-based operation using computer software to track employee
performance, KPIs, help to maintain the performance level knowledge for managers and
employees alike. With the knowledge of how one is performing and the areas that need
improvement, the manager and employee can address these issues in a timely manor
creating a functional and effective call center that any healthcare organization can be
proud.

> Call centers must make sure the technology can deliver the right
> information and transactions to service the customer as quickly and
> efficiently as possible. Frustrated service representatives who do not have
> what they need to service the customer add to high attrition-something call
> centers cannot afford. Call centers must not overwork the best employees,

must not limit the abilities or pigeonhole their employees, must not

undermine the authority of anyone in the department and must not lose

sight of the human element in managing a call center (Serafino, 2000, p.

42).

In some incidences callers may feel their needs were not met by the call center

representative due to little or no information given. A Westford, Massachusetts-based

Aspect Software Company launched a Satisfaction Index survey in conjunction with a

market research company, Leo J Shapiro and Associates, that showed 23% of consumers

felt that contact center interactions fall short of their expectations (Sheff, 2005).   This lack

of service could hinder the success of the call center performance.

Chapter III will provide the methods and procedures used to collect the data for

this study. It describes how the data were collected to determine if there was a difference

in performance of hospital operators and call center employees at Carilion Health System.

The population used for the study, the instrument used for the data collection and the

statistical analysis will be explained.

CHAPTER III

METHODS AND PROCEDURES

The problem of this study was to determine the effectiveness of hospital operators compared to call center representatives at Carilion Health Systems in Roanoke, Virginia. It was designed to determine which group can answer calls more efficiently, while keeping the call to the least amount of time needed to help the caller. The purpose of this chapter was to identify how the population was selected, the instrument used to obtain the data, methods of data collection and the treatment of the data.

POPULATION

The population for the study consisted of hospital operators and call center representatives working for the Carilion Health System for the month of May 2006. There were eight hospital operators and four call center representatives on duty when the data were collected. The skill levels of the operators ranged from as little as one year of service to as many as 20+ years of service. The skill levels for the call center representatives ranged from 10 – 20 + years of service. The total population was 12 employees who answered the system's phones at the time of the data collection for Carilion Health System.

RESEARCH VARIABLES

The independent research variables of this study were hospital operators and call center representatives that used the latest telephone answering technology, with effective skill levels to complete a call in a timely manor. Hospital operators answer calls, transfers calls, page the person who needs paging and overhead page throughout the building for

emergency situations. Call center representatives answer calls, schedule callers for classes and special events and answer health related questions.

The dependent variables were length of call and amount of calls the call center received which can effect the satisfaction of callers. Call time is measured in how many seconds the caller is on the line. The length of time it takes the employee to assist the caller, as well as the number of calls received per employee are recorded per the hospital computer system and given to the employee at their individual evaluations. When a caller's question is answered in a timely manor, this enables the call center representative the ability to answer more calls during their assigned shift allowing for less dropped calls.

INSTRUMENT DESIGN

At the end of each month the Manager for the Call Center at Carilion Health System in Roanoke, Virginia, prepared a report of the data collected by the computer data collection program. The information provided gave the manager what was needed to evaluate each call center employee's performance and effectiveness.

METHODS OF DATA COLLECTION

Data collections for the call center were collected by the computer program, which gathered information during the month, and then was printed by the manager in order to evaluate performance at the end of each month. The data gave the status of each employee's performance. The data showed how much time elapsed before the call was answered, how many calls were received and the length of the call time per employee. The results were then compared to each group independently. At the end of each month the manager looked at the performance of each employee and saved this data for the yearly evaluation given to employees at the time of their performance evaluation with

Carilion Health System. The data collected was categorized as call volume and length of call. The computer program used to collect the data reported the results and gave the totals in percentages calculated by the computer.

STATISTICAL ANALYSIS

To determine the results of the data with and without the use of the computer, the t-test method of statistical analysis was employed. The t-test method compared the two groups' performance by determining if there was a significant difference between the two groups. The t-test method for this study was used to determine how well each group performed and helped determine if there was a significant difference in how fast each group handled calls.

SUMMARY

This chapter has described the population used to conduct the study, the research independent and dependent variables that can affect the data, the instrument used to collect the data and the length of time and amount of calls received per employee. In Chapter IV the findings of the research will be presented, as well as, the statistical data matrix used to determine if there was a significant difference in the performance of hospital operators and call center representatives.

CHAPTER IV

FINDINGS

The purpose of this study was to compare the operators and call center

representatives performance in a month's time at the Carilion Health System hospitals:

Carilion Roanoke Memorial Hospital and Carilion Roanoke Community Hospital. The

results of the data collected from the computer data collection system, Call Management

Supervisor, a component of Avaya™ Call Management Supervisor, will be presented in

this chapter. The data were used to determine if there was a significant difference in

performance between operators and call center representatives for Carilion Roanoke

Memorial Hospital and Carilion Roanoke Community Hospitals. The manager retrieved

information on each group of employees within the call center categorized by length of

call and amount of calls received for each employee.

DATA ANALYSIS

Hypothesis 1

The resultant means of each group were compared to determine which group had

the shortest talk time using a t-test method. The results of the t-test for hospital operators

and call center representatives length of calls in seconds received for one month were

determined.

The mean score of the eight Hospital Operators was 22.3 seconds compared to the

four Call Center Representatives means score of 40 seconds, (see Appendix A). Call

Representatives schedule classes and events for callers. This action required more time

than what was used by the Hospital Operators, who answered and transferred calls to

various departments. The t comparison was 3.145. The level of significance was 2.764 at the .01 level of significance in the length of calls received. The average call times per group can be found in Table 1.

Table 1. A Comparison of the Mean Scores of the Hospital Operators and Call Center Representatives Length of Call

	$\overline{X}$
Hospital Operators N = 8	22.3 seconds
Call Center Representative N = 4	40 seconds
t-test	3.145

DATA ANALYSIS

Hypothesis 2

The same test was repeated to compare the resultant means of each group to determine which group had a significant difference in the amount of calls received. The mean number of calls for the Hospital Operators was 10,750.25 calls compared to the Call Center Representatives with an average of 5751.75 calls in a month's time, (see Appendix B). The t comparison was 3.453. The level of a significant difference was 2.764 at the .01 level. The data on the amount of calls is shown in Table 2.

Table 2. A Comparison of the Mean Scores of the Hospital Operators and Call Center Representatives Number of Calls

	$\overline{X}$
Hospital Operators N = 8	10,750.25 calls per month
Call Center Representative N = 4	5751.75 calls per month
t-test	3.453

SUMMARY

In this chapter the results of the t-test comparisons were reported. The results showed a significant difference between the Hospital Operators and Call Center representatives in both call length and number of calls received in a month's time. Chapter V will provide a summary of the comparisons of the hospital operators and call center representatives performance, as well as, draw the conclusions and make recommendations based upon the data collected through this study on Carilion Health system Call Center.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The summary, conclusions, and recommendations are presented in this chapter. The summary provides the hypotheses for this study, the instrument used to collect the data, and the population used for this study. The conclusions of the study are stated, as well as, the recommendations based upon findings.

SUMMARY

The problem of this study was to compare the effectiveness of hospital operators and call center representatives who answer calls working for Carilion Health System. The problem was addressed with the following hypotheses: H_1: There will be a significant difference in the length of time taken to answer a call comparing the operators and the call representatives of the Carilion Health System Call Center. H_2: There will be a significant difference in performance of hospital operators compared to the performance of call center representatives in the amount of calls each group receives in a month's time.

The significance for this study was to use the information provided by the Call Management Supervisor, a component of Avaya™ Call Management Supervisor, to determine the need for staffing based on the amount of received calls and the length of each call. The difference between the hospital operators and the call center representatives regarding the types of calls each received and the amount of time used to complete the call can vary depending on the caller's needs. This study was based on the following limitations. The research was limited to the population of Carilion Health Systems, Carilion Roanoke Memorial Hospital and Carilion Roanoke Community Hospital operators and call center representatives using the Call Management Supervisor, a

component of Avaya™ Call Management Supervisor, to answer calls through the computer. The research was limited to the information provided by the Avaya Call Management Supervisor tracking system used by Carilion Roanoke Memorial and Carilion Roanoke Community Hospital databases to determine the effectiveness of the hospital operators and call center representatives performance.

The population for the study consisted of hospital operators and call center representatives working for the Carilion Health System for the month of May 2006. There were eight hospital operators and four call center representatives on duty when the data were collected. The skill levels of the operators ranged from as little as one year of service to as many as 20+ years of service. The skill levels for the call center representatives ranged from 10 – 20 + years of service. The total population was 12 employees who answered the phone at the time of data collection for Carilion Health System.

At the end of each month the manager for the Call Center at Carilion Health System in Roanoke, Virginia, prepared a report of the data collected using the computer data collection program. The computer provided the manager information needed to evaluate each call center employee's performance. Data collections for the call center were evaluated at the end of each month. The data gave the status of each employee's performance. The data showed how much time elapsed during the call, and how many calls were received per employee. The results were then compared to each group independently. At the end of each month the manager reviewed the performance of each employee and saved this data for the yearly evaluation given to employees at the time of their performance evaluation with Carilion Health System. The data collected were

categorized as call volume and length of call. The computer program used to collect the

data reported the results and gave the totals in percentages calculated by the computer. To

determine the difference of the data the researcher used the t-test method of statistical

analysis. The t-test method enabled the manager to compare the two group's performance

by determining if there was a significant difference between the two groups. The t-test

method for this study was used to determine how well each group performed and helped to

determine if there was a significant difference in how fast each group handled calls.

CONCLUSIONS

The conclusions for this study were drawn for the data reported on each

hypothesis.

H_1: There will be a significant difference in the length of time taken to answer a

call comparing the operators and the call representatives of the Carilion Health System

Call Center. The resultant means of each group were compared. The mean score for the

Hospital Operators was 22.30 seconds. The Call Center Representatives mean time was

40 seconds.   The t comparison was 3.145 which showed a significant difference of 2.764

at the .01 level of significance. The call center representatives had longer talk time than

the hospital operators and the hypothesis was accepted. In conclusion the Hospital

Operators talk time was significantly shorter than the call center representatives due to the

type of calls received to each group.

H_2: There will be a significant difference in performance of hospital operators

compared to the performance of call center representatives in the amount of calls each

group receives in a month's time.   The t-test was performed to determine if there was a

significant difference in the amount of calls received by each group. The resultant means

of each group were compared. The mean score for the eight Hospital Operators was 10,750.25 calls per month compared to the four Call Center Representatives of 5751.75 calls per month. The t comparison was 3.453 which showed a significant difference at the .01 level of significance, 2.764. Based on the t-test results, the hospital operators received more calls than the call center representatives and hypothesis was accepted.

RECOMMENDATIONS

Recommendations for the improvement in both groups of telephone operators are listed below.

1.   Each employee should be evaluated separately on the basis of time spent on the phone with a caller to determine if the employee is informed with the proper information to complete calls quickly.

2.   Each employee can be evaluated using a telephone survey at the end of each call to determine if the caller was satisfied with the services received.

3.   Each day the manager should evaluate the number of calls coming into the center compared to the number of operators on duty to receive the calls. The manager should determine the amount of calls dropped at peak times and schedule more employees at those times.

4.   Each employee's computer skills and knowledge of areas within the Carilion Health System need to be evaluated in order to complete calls successfully in a timely manor.

5.   Each employee should receive adequate training to remain competent and resourceful with up-to-date technology and information.

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Appendix A

Hospital Operators and Call Center Representatives at
Carilion Roanoke Memorial and Carilion Roanoke Community Hospital in Roanoke, VA

Hospital Operators	
Average Talk Time of Calls in seconds for one month.	
Operator 1	21
Operator 2	19
Operator 3	24
Operator 4	21
Operator 5	18
Operator 6	22
Operator 7	30
Operator 8	23
Call Center Representatives	
Talk time in seconds	
Call Center Representative 1	44
Call Center Representative 2	36
Call Center Representative 3	21
Call Center Representative 4	59

Hospital Operators and Call Center Representatives at
Carilion Roanoke Memorial and Carilion Roanoke Community Hospital in Roanoke, VA

Hospital Operators	
Number of calls received in one month per employee	
Number of Calls	
Operator 1	12814
Operator 2	10552
Operator 3	9556
Operator 4	9415
Operator 5	12949
Operator 6	10633
Operator 7	9614
Operator 8	10469
Call Center Representatives	
Number of calls received in one month.	
Call Center Representative 1	4298
Call Center Representative 2	4771
Call Center Representative 3	11219
Call Center Representative 4	2719