Improving Contact Center Productivity through Optimized Workforce Management

"A Real-World Case Study"

by

Dr. Jon Anton
Purdue University
Center for Customer-Driven Quality

and

Scott Davis
Director of Product Validation
BenchmarkPortal, Inc.

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Content Editor
John Chatterley

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Acknowledgements

We wish to thank the Navy Federal Credit Union whose story appears in this study, and thank their managers and staff whose cooperation and support enabled us to produce our findings.

We also want to express our gratitude to Pipkins, Inc for their sponsorship of this landmark research study.

EXECUTIVE SUMMARY

The goal of our research was to evaluate the impact that the Navy Federal Credit Union (hereinafter, "NavyFCU") experienced following their implementation of Maxima Advantage Vantage Point System (hereinafter, the "Maxima System"). The Maxima System, developed by Pipkins, Inc. (hereinafter, the "Sponsor"), is a comprehensive workforce management solution for enterprise-wide, multi-site, call center scheduling, forecasting, and planning.

Specifically, we wanted to determine the impact that workforce management had on operating costs, customer (hereinafter, "member") satisfaction, call handling times, and loan counselor (hereinafter, "CSR") performance, and to calculate the financial value NavyFCU realized by implementing the Maxima System.

Our objective was to measure and quantify the improved performance levels that NavyFCU realized following the implementation of the Maxima System.

The highlights of our research findings are summarized below. The background and details of this executive summary form the basis of the remainder of this case study.

Our Most Important Findings

After installing the Maxima System, NavyFCU's Telephone Interview Branch witnessed the following changes:

1. a 24% increase in total calls answered;
2. a 38% increase the percent of calls answered within their desired service level;
3. a 5% decrease in the average handle time, resulting in a $340,000 reduction in operating costs;
4. a 7% reduction in the average payroll cost per hour of handle time, resulting in a reduction in their overall operating costs by $450,000;
5. a 28% reduction in the average time members waited in queue before reaching a CSR, resulting in an annual savings of $40,000 in toll costs;
6. a 12% increase in total monthly handle time;
7. a 25% reduction in overtime hours;
8. a 9% decrease in the percentage of calls abandoned; and
9. an increase in the ratio of CSRs per supervisor by 10%.

INTRODUCTION TO OUR PRODUCT VALIDATION RESEARCH

Powerful technology solutions designed specifically for call centers allow imaginative executives to initiate sales and service strategies that could not have been successfully implemented until now. Through these innovative call center solutions, businesses are better able to:

1. meet member needs;
2. increase satisfaction;
3. increase market share;
4. increase revenues;
5. reduce transaction costs;
6. improve CSR retention;
7. acquire new members;
8. retain existing members; and
9. increase profits and earnings per share.

Our researchers have developed a scientific method to determine the impact that such enabling technologies have on leveraging a call center's ability to achieve all of the above.

Our case studies tell a compelling story. We have found astounding ROIs, with paybacks of less than four months in some cases and less than 12 months in most cases. Because of our focus on revenue generation, and/or cost reduction, our quantitative product validations stimulate the imagination of executives, who have their eye on bottom-line profits.

It is an unfortunate fact that, in almost all cases, the financial impact of call center improvement initiatives are not adequately measured, and therefore, the success stories are never told. This is a loss for both the vendor providing the improvement solution, and the company's "champion" who could take full credit for the financial gains, if only someone would do the research.

It is our conviction that documenting these success stories will engage the imaginations of business leaders and call center professionals to reach out and embrace the power of enabling technology for call centers.

This unique case study documents another such financial success story.

IDEAL COMPONENTS OF A WORKFORCE MANAGEMENT SYSTEM

An ideal workforce management system should:

1. forecast the arrival rate of incoming contacts and the amount of work (handle time) the contacts will generate for each period (typically 15 or 30 minutes) of each day;
2. convert call volume forecasts into the number of CSRs required for each period of the day to handle the incoming contacts within predetermined service level goals;
3. develop staffing schedules that optimize the balance between CSR availability and expected call volumes for each time period during each day to meet the service level goals;
4. adjust staff schedules as each day progresses to account for actual contact arrival rates along with CSR attendance and adherence to their schedules in order to meet the service level objectives;
5. interface with the automatic call distributor (hereinafter, "ACD") to track and collect:
    a. statistics regarding incoming calls, including:
        i. when the call arrives;
        ii. how long members wait in queue before their call is answered;
        iii. how many members abandon (hang-up) their call;
        iv. how much time CSRs spend talking to members (average talk-time); and
        v. how much time CSRs spend completing work resulting from the call, after the call is completed (after-call work time or wrap-time).
    b. real-time statistics on call volumes and queues;
    c. statistics on CSR login/logout status;
6. maintain a historical data base of contact volumes, arrival rates, peak periods, and average handle times;

7. use sophisticated forecasting algorithms, such as Erlang C (or an Erlang C derivative) to:
    a. generate accurate call-volume forecasts; and
    b. develop optimal CSR staffing schedules;
8. produce schedule and staffing forecasts, using the historical data collected, by skill group and contact type, predicting the resources required to meet the service level goals;
9. permit management to define the rules for creating CSR schedules, including rules for the:
    a. minimum and maximum number of hours for each schedule type. For instance:
        i. part-time shift lengths must be at least 4 hours, but no more than 6 hours;
        ii. part-time employees must be scheduled to work at least 20 hours, but no more than 30 hours per week; and
        iii. full-time employees must be given either five 8-hour shifts, or four 10-hour shifts per week; and
        iv. meal breaks should occur no earlier than 3 hours, but no later than 5 hours after the shift begins;
    b. rules determining how weekend and holiday shifts are to be assigned.
10. allow CSRs to specify their scheduling preferences, including:
    a. days, and hours within each day, they are available;
    b. start and/or end time preferences; and
    c. special needs or requests;
11. produce a broad range of reports that:
    a. detail the forecasts and schedules for management, supervisors and CSRs;
    b. compare actual results to forecasted results;
12. support the use of e-mail, messaging systems, and browser-based tools for CSRs to obtain their schedules; and
13. balance the needs of CSRs with the needs of management to cost-effectively serve their member and prospect needs within established service level goals.

RESEARCH PROJECT BACKGROUND

We performed a thorough and comprehensive study to determine the changes in performance resulting from the deployment of the Maxima System.

To do so, we captured and analyzed key performance indicators (hereinafter, "KPIs") for the Telephone Interviewing Branch (hereinafter, "TIB") and Consumer Loan Servicing (hereinafter, "CLS") groups, for the time periods from:

1. January 2001 through July 2001, before the two groups were merged;
2. August 2001 through December 2001, immediately following both the merger of the two groups and NavyFCU implementation of the Maxima System; and
3. January through November 2002.

Our findings and conclusions were drawn primarily by comparing the average monthly performance data for January through July 2001, to the average monthly performance data for January through November 2002.

In our research project, working closely with the NavyFCU contact center leadership, we achieved the following:

1. identified the KPIs that we expected would be impacted after the two call centers merged and implemented the Maxima System;
2. collected baseline monthly performance data for two years beginning in January 2001 for both TIB and CLS calls;
3. captured and analyzed information related to NavyFCU's workforce management processes and practices, both before and after implementation of the Maxima System;
4. visited the NavyFCU contact center in Vienna, VA to observe the operation and interview key management and staff;
5. conducted interviews with NavyFCU contact center management, supervisors, and CSRs; and
6. interviewed staff analysts who create and manage the forecasts, schedules and reports produced by the Maxima System.

While we certainly expected to find some performance impact, no guarantees of the outcome were given to either the Sponsor or NavyFCU. Whatever conclusions we made were driven and supported by the data we gathered during our study.

RESEARCH PROJECT METHODOLOGY

We followed an iterative discovery process with NavyFCU and the Sponsor consisting of:

1. telephone interviews with key executive management and operational staff;
2. preparation of a list of major KPIs;
3. analysis and interpretation of the data provided;
4. a site visit to interview key management and staff, observe the operation and environment, validate and enhance the data being used in the study;
5. development and review of preliminary conclusions; and
6. validations of the data to ensure our conclusions were accurate.

Our primary interviews were with the NavyFCU team comprised of:

1. Dee Kirby, Supervisor – Analysis Branch, Call Center Operations;
2. Annette D'Isa, Assistant Vice President, Call Center Operations;
3. Michael Shahbazi, Call Center Analyst responsible for workforce management; and
4. Several TIB supervisors and CSRs.

The NavyFCU team was able to provide us with accurate data for the following:

1. KPI measurements of call center performance, by month, for two years beginning January 2001, for both the TIB and the CLS groups;
2. detail on their CSR scheduling practices and processes, both before and after implementation of the Maxima System;
3. costs, pricing, and staffing changes resulting from the implementation of the Maxima System; and
4. insights into the response of their CSRs and supervisors to the changes made in their scheduling practices and processes.

We used this data to construct the financial models, and to conduct a "before-and-after" performance benchmark to measure the impact of the Maxima System.

The NavyFCU and Sponsor teams were very cooperative with us in furnishing and validating the data provided. Our ROI analysis and conclusions are based upon the actual financial results reported.

BRIEF BACKGROUND OF NAVY FEDERAL CREDIT UNION

Navy Federal Credit Union, with headquarters in Vienna, VA, serves the men and women of the Navy and Marine Corps and their families.

With over 2 million active members, assets exceeding $15 billion, and more than $10 billion of loans outstanding, NavyFCU is one of the nation's largest credit unions. Its offerings include:

1. savings and checking programs;
2. debit cards;
3. credit cards (Visa and MasterCard);
4. ATMs;
5. automobile, consumer, mortgage and equity loans; and
6. telephone and internet services for members to;
    a. pay bills;
    b. apply for loans;
    c. obtain account balances; and
    d. obtain statements.

A survey conducted in 2001 by the publication *American Banker*, Harris International, and the Reputation Institute, measuring the reputation of financial service companies, ranked NavyFCU number 4. No other credit union made the list of the top 40 financial institutions. The highest ranking for any commercial bank was 20th.

In its 2001 Annual Report, NavyFCU discusses its commitment to the values of long-term relationships and responsive service. Its contact centers play a critical role in supporting these values. NavyFCU operates ten call centers, each serving one or more products or services, employing approximately 500 CSRs on a full or part-time basis.

GENERAL BUSINESS CONDITIONS THAT PROMPTED A NEW STRATEGY

In January of 2001, the Consumer Lending Group within NavyFCU operated two call centers with approximately 175 CSRs.

The Telephone Interviewing Branch (TIB) was responsible for generating consumer loans, answering inquiries about NavyFCU's loan and leasing products, and taking and approving application.

The Consumer Loan Servicing group was responsible for servicing loans once they were made, providing members with loan balances, payment histories, as well as, performing collections activities on delinquent loans.

The Consumer Lending Group faced several very significant challenges:

1. **There was a mismatch of CSR schedules to member calling patterns**. Call volume forecasting, creating, and managing schedules for CSRs was essentially a manual operation. CSR schedules (called "billets" at NavyFCU) were fixed. As with all call centers, call volume would change from day-to-day, week-to-week, and month-to-month. Yet CSR schedules were rarely changed. This led to periods of overstaffing, with CSRs waiting for the phone to ring, and periods of understaffing, where calls were always in queue, member abandons were high, and complaints to senior management were frequent. When call volume was high, NavyFCU would ask its CSRs to work overtime to address the volume, thus driving up their payroll costs.

2. **The two consumer lending contact centers needed to be merged into a single center**. NavyFCU used an ACD containing sophisticated skills based routing algorithms. They wanted to combine the loan origination and loan servicing functions into a single call center, and use the skill based routing capability to route each call to the CSR who could best serve the member's need, while, at the same time, gain efficiencies accruing from having a larger staffing base of CSRs to handle the calls.

3. **NavyFCU wanted to connect more of the loan application calls to CSRs who had the authority to make a decision on the call**. TIB CSRs had various levels of authority to approve loans. When a CSR without the authority to approve a loan took a loan application, they would electronically send the loan application to a senior loan officer to make the loan decision. The member was told they would be notified when the loan decision had been made.

In order to ensure enough loan officers were available to make these loan decisions, experienced CSRs with loan approval authority, who could be answering incoming calls, would be taken off the phones to fill in as a loan officer. NavyFCU management believed they needed to develop a different approach to scheduling, allowing them to place more CSRs with the authority to approve loans on the phones without referring the call to another loan officer, thereby shortening the loan decision response cycle and improving the service experience their members received.

But, in order to accomplish this goal, NavyFCU knew they needed better tools to forecast when the loan application calls were likely to occur, and better tools to develop and manage CSR schedules, to ensure the proper number of CSRs with the proper skill-set would be available when the calls hit.

4. **Neither on NavyFCU's consumer lending call center were meeting service level goals**. NavyFCU call centers consistently fell well short of their goal of answering 80% of all calls in 60 seconds, in both TIB and CLS, despite paying for enough staff hours to handle the call volume. Their scheduling practices resulted in staffing levels out of sync with their peak call volume periods.
5. **NavyFCU wanted to reduce its overtime expense**. To meet call volume demands, NavyFCU would ask its CSRs to work overtime to handle the extra call volume. Approximately 10% of their call handling time was met through overtime. Management wanted to reduce this cost.
6. **NavyFCU wanted to take more advantage of part time employees**. NavyFCU guarantees part time CSRs 20 hours per week of work, but can ask their part time CSRs to work up to 35 hours without receiving overtime pay. Their manual scheduling techniques rendered them unable to effectively utilize their part time employees to minimize overtime.

NavyFCU's management knew about workforce management solutions. Several years earlier they budgeted for a system, and actually selected a vendor, but never purchased the solution. They determined it was now time to make the investment. After a rigorous search, which included a "run-off" where NavyFCU asked the finalists to produce schedules using NavyFCU's data, they selected the Maxima System.

KPIs Before Implementation of the Maxima System

Table 1, below, shows the monthly average for selected KPIs for NavyFCU's consumer lending call centers. The first column shows the value for each KPI for TIB only. The second column shows the value for each KPI for CLS only, and the last column shows the value for both centers combined. NavyFCU was not able to provide us with payroll and monthly individual CSR productivity data for CLS. The KPIs using these data are shown as n/a (not available).

Table 1. KPIs Before Implementation

KPI	TIB	CLS	Combined
Average Calls Offered per month	145,250	35,617	194,475
Average Calls Answered per month	131,267	31,867	166,963
Average Calls Abandoned per month	13,983	3,750	27,512
Average Hours of Handle Time per Month	11,420	2,400	13,820
Average Hours of Wait Time per Month	3,178	2,273	5,452
Average Handle Time per Call	313	242	298
Average Speed of Answer per Call	87	229	118
% Calls Answered within Service Level	56.5%	36.4%	52.2%
% Calls Abandoned	9.6%	27.5%	14.1%
Average Staff Time per month	16,457	n/a	n/a
Handle Time as a percent of Staff Time	69.4%	n/a	n/a
Average Mo Base Payroll	$ 466,217	n/a	n/a
Average Mo Overtime	$ 26,580	n/a	n/a
Average Mo Total Payroll	$ 492,797	n/a	n/a
Payroll costs per hour of handle time	$ 43.15	n/a	n/a

Table 1 also shows that consumer lending was answering 52% of its calls within their service level goal of 60 seconds. Members calling the CLS center waited almost 4 minutes for their call to be answered. Over one-quarter of the calls placed to CLS were abandoned (the member hung up) before they were answered. Members calling the TIB, which handled new loan applications, received slightly better service.

SPECIFIC FEATURES OF THE MAXIMA SYSTEM

Specific Features of the Maxima System include:

1. **Forecasting**, which:
    a. automatically collects actual call arrival rates and work volume by skill set and time period from NavyFCU's ACD;
    b. forecasts call and work volume by skill group for every 15 or 30 minutes for future days, weeks and months;
    c. converts call and work volume forecasts to number of CSRs required to meet service level targets using the Sponsor's' patented Merlang® optimization algorithm; and
    d. provides extensive reporting and administrative tools to support the workforce management specialists creating the forecasts.
2. **Scheduling**, which:
    a. maintains a complete roster of CSRs and supervisors to be scheduled that includes their seniority, skill set ratings, availability and schedule preference;
    b. maintains a comprehensive set of business rules defining acceptable shifts and schedules;
    c. produces schedules optimizing the number of CSRs, with the necessary skill-sets, for each 15 minute period, while adhering to the business rules established by management;
    d. provides reporting and administrative tools enabling the workforce management specialists to perform such tasks as:
        i. sending schedules to CSRs and their supervisors;
        ii. scheduling vacation time;
        iii. scheduling special events, such as training, team meetings, or individual counseling sessions;
        iv. tracking schedule exceptions and attendance; and
        v. managing CSR requests for time off and shift swapping.

3. **Intra-day Schedule Management**, which:

    a. allows workforce management specialists to adjust schedules during the day to reflect: changes in forecasted call volume and CSR requirements; the actual number of CSRs available for the remainder of the day; and exception requests from CSRs and management.

4. **Schedule Adherence Management**, which:

    a. integrates with the ACD to get real time status information identifying each individual CSR's ACD state, such as; signed in, waiting for a call, talking to a customer, in after call work, in an auxiliary – non-call handling state;

    b. compares the actual state for each CSR to their schedule for that time period and, via a real time display, shows both the state and highlights the non adhering CSRs;

    c. provides administrative tools to allow the workforce management specialists to identify approved changes in a CSR's schedule to ensure the adherence data is accurate;

    d. produces historical adherence reports for use in CSR performance reviews.

5. **Web Access to Schedules**, which:

    a. provides CSRs and supervisors the ability to:

        i. view schedules;
        ii. request schedule changes;
        iii. swap schedules with other CSRs; and
        iv. request vacation days and personal time off.

    b. provides the workforce management specialists an easy vehicle to communicate with CSRs regarding schedule changes.

6. **Comprehensive Reporting and Analysis**; which:

    a. provides standard reports such as:

        i. comparing forecasts to actuals;
        ii. comparing requirement to actuals;
        iii. schedule adherence reports;
        iv. call center statistics; and
        v. ad hoc reporting.

EFFECTS OF THE ENABLING TECHNOLOGIES

Effect of the Maxima System on Scheduling Practices

The Maxima System allowed NavyFCU to make extensive changes to the scheduling practices. These included:

1. CSRs receive new schedules every two weeks.

   Before using the Maxima System, NavyFCU changed a CSR's schedule only if the CSR could no longer work the days and hours scheduled, or when CSR positions needed to be filled either due to attrition or an increase in staffing positions.

   When filling CSR positions, NavyFCU would create a new schedule to better meet their scheduling requirements. They would post the new schedule, allowing CSRs already on staff to bid, in seniority order, for that schedule. If a CSR successfully bid for the schedule, their present schedule would then be posted and the bid process would continue. Once the bidding process ended NavyFCU would hire to fill the remaining open schedules

   Today, CSRs indicate both when they are available (or more importantly, unavailable) to work, and their preference for days and start times. The Maxima System generates two-week schedules for each CSR. The schedule tells the CSR:

   a. the days they will be working;
   b. the time each day their shift will start and end;
   c. the time of their meal break; and
   d. the time of other scheduled breaks.

2. Schedules are no longer fixed.

   Before implementing the Maxima System, each CSR shift would start and end at the same time each day of the week, as would their meal and other breaks.

   Now, the start and end times can be different on different days. Thus, a CSR's schedule might start at 8am on Monday, 8:30 on Tuesday and Wednesday, 9am on Thursday, and 8am on Friday. Their meal and other breaks would also change.

3. Everyone gets his or her fair share of weekend and holiday duty.

   All CSRs are now expected to work at least 2 weekend days per month. To accomplish this, each CSR agrees to be available six days a week. The Maxima System keeps track of weekend days and holidays worked and develops schedule that ensures adherence to their business rules

4. A wider variety of schedules are now available.

   While most full time CSRs work five 8-hour shifts each week, NavyFCU now offers schedules consisting of four 10-hour shifts, as well as a four 9-hour and one 4-hour shift. Part-time CSRs are guaranteed 20 hours of work each week, but can work up to 35 hours, if they so desire, and the requirements and schedule show the need for the additional hours.

   The Maxima System allows NavyFCU great flexibility in scheduling both the days each part time CSR will work, and the length of each day's shift. The system attempts to accommodate the special needs of each CSR while ensuring that NavyFCU's forecasted requirements are met.

5. The responsibility for approving CSR requested schedule exceptions has shifted.

   Prior to implementing the Maxima System, CSRs who needed or desired to take time off during their normal schedules would request permission from their immediate supervisor. Supervisors would make their decision without the means to determine its impact on NavyFCU service levels.

   Now, the workforce management specialist makes the decision at the time the request is made. The specialist can quickly determine, based upon the latest call volume forecast and the current actual staffing levels, whether the call center can grant the CSR's request and still achieve its service level goals.

   When sufficient staffing is available to handle the forecasted calls, the CSR's request can be approved. The workforce management specialist knows what the impact is likely to be, and can take steps to provide additional staffing in other ways.

Effect of the Workforce Management System on Key Constituencies

Strategic technology initiatives impact many different constituencies. An analysis of the impact of the Maxima Systems on several constituencies at NavyFCU follows:

1. Members

   Member calls to NavyFCU are being answered more quickly. Fewer members hang up before reaching a CSR. More members calling to make a loan application are reaching CSRs with the authority to approve their application. The member knows immediately whether they can buy the car, or proceed with their home improvement project, or finance their child's college tuition.

Because the Maxima System now produces schedules that meet incoming call requirements, members spend less time waiting for their calls to be answered, CSRs no longer experience extended periods of time where they get no rest between calls, and CSRs receive fewer calls beginning with a complaint about the amount of time spent waiting. All three of these factors result in reduced member and CSR stress.

2. CSRs

   CSRs no longer start each day at the same time, nor do they take their meal and lunch breaks at the same time. This change was quite an adjustment for many of NavyFCU CSRs. Some objected that they could no longer be assured of eating lunch with certain people every day. This objection is offset by the Maxima System's ability to accommodate special needs and requests, and the ability of CSRs to change their preferences and availability.

   Preference examples include:

   a. working around new class schedules for students;

   b. helping parents to work around day care issues; and

   c. ensuring that CSRs with special diet or health needs receive meal breaks and other breaks at times that conform to their special requirements.

   Since the Maxima System forecasts requirements by skill-set, and develops schedules that provide sufficient CSRs with each skill-set to meet the demands for that skill, the right calls are getting to the proper CSRs more frequently. CSRs realize this improves their ability to deliver good service to their members.

3. Workforce Manager

   A full time analyst manages the forecasting, scheduling, performance analysis and intra-day scheduling processes of the Maxima System, along with support of an administrative assistant. While the analyst position existed before the Maxima System was implemented, changing schedules to better meet requirements was not an integral part of the job. Rather, schedule changes were made to accommodate individual CSR needs or to fill open schedules when they arose.

   Today the analyst prepares new schedules every two weeks, and manages exception requests and the intra-day adjustment process after the schedules are posted. The analyst has the authority to accept or reject CSR or manager requests for schedule exceptions, using the Maxima System to determine the impact that accepting a request will have on the center's ability to meet NavyFCU service level goals.

4. Supervisors

   Supervisors and managers are no longer asked to approve schedule exceptions, freeing up an average of one hour per day of their time to spend on other supervisory tasks. Reduced CSR stress and increased ability to meet individual CSR preferences for schedule start and end times mean supervisors spend less time dealing with dissatisfied CSRs.

   Because the schedules change every two weeks, supervisors had to develop new approaches to managing CSR adherence to schedule for their team. Before the Maxima System was implemented, supervisors and their CSRs team worked the same schedules.

   The Maxima System now develops schedules that ensure enough overlap of shifts within a supervisory team to enable the supervisor to work with each of their CSRs.

KPIs After Implementation of the Maxima System

Breakdown of KPIs for NavyFCU After Implementation of the Maxima System

Table 2, below, shows the monthly average value for selected KPIs for NavyFCU's consumer lending call centers from January 2002 through November 2002, after implementation of the Maxima System, as follows:

1. the first column shows the value for each KPI for TIB only;
2. the second column shows the value for each KPI for CLS only; and
3. the last column shows the value for both centers combined.

Table 2. KPIs After Implementation of the Maxima System

KPI	TIB	CLS	Combined
Average Calls Offered per mo.	153,708	24,293	178,001
Average Calls Answered per mo.	140,417	22,067	162,483
Average Calls Abandoned per mo.	13,292	2,226	15,518
Average Hours of Wait Time per mo.	2,873	638	3,511
Average Hours of Handle Time per mo.	11,374	1,413	12,787
Average Handle Time per Call	292	230	283
Average Speed of Answer per Call	74	104	78
% Calls Answered within Service Level	73.8%	63.3%	72.4%
% Calls Abandoned	8.6%	9.2%	8.7%
Average Staff Time per month	n/a	n/a	17,878
Handle Time as a % of Staff Time	n/a	n/a	71.5%
Average Mo Base Payroll	n/a	n/a	$ 520,387
Average Mo Overtime	n/a	n/a	$ 19,834
Average Mo Total Payroll	n/a	n/a	$ 514,529
Payroll costs per hour of handle time	n/a	n/a	$ 40.24

Comparison By Individual KPI for TIB Before and After Implementation of the Maxima System

Table 3, below, compares the performance of TIB before and after the merger with CLS and implementation of the Maxima System. The KPIs in the "Before" column contain the performance data for TIB only, whereas the "After" column reflects the impact on TIB of both the addition of the call servicing function and the implementation of the Maxima System.

Table 3. Comparison of the TIB KPIs Before and After Implementation of the Maxima System and Merger of CLS into TIB

KPIs	Before	After	% Change
Average calls offered per mo.	145,250	178,001	23%
Average calls answered per mo.	131,267	162,483	24%
Average calls abandoned per mo.	13,983	15,518	11%
Average hours of wait time per mo.	3,178	3,511	10%
Average hours of handle time per mo.	11,420	12,787	12%
Average handle time per call	313	283	-10%
Average speed of answer per call	87	78	-11%
% Calls answered within service level	56.5%	72.4%	28%
% Calls abandoned	9.6%	8.7%	-9%
Average staff time per month	16,457	17,878	9%
Handle time as a percent of staff time	69.4%	71.5%	3%
Average mo base payroll	$ 466,217	$ 520,387	12%
Average mo overtime	$ 26,580	$ 19,834	-25%
Average mo total payroll	$ 492,797	$ 514,529	4%
Payroll costs per hour of handle time	$ 43.15	$ 40.24	-7%

Analysis of the Performance Changes by Individual KPI

1. NavyFCU is Now Answering a Higher Percentage of Its Members' Calls

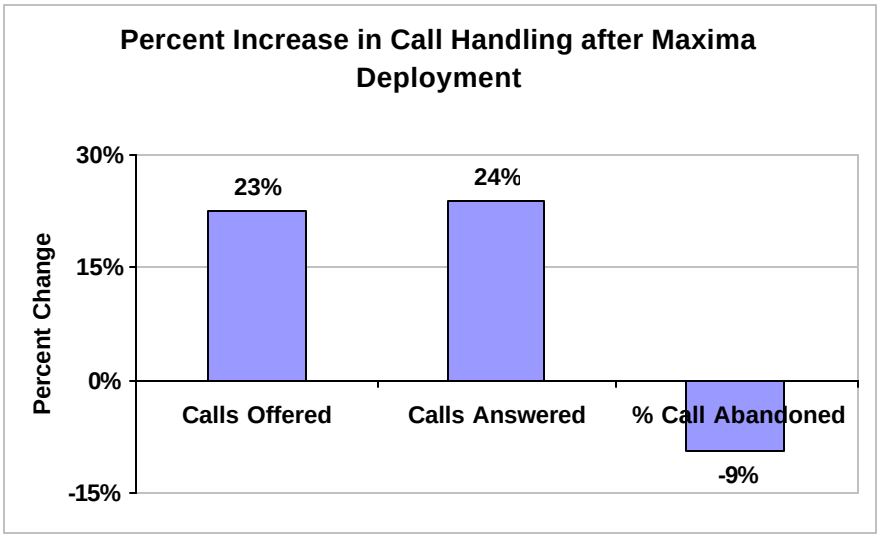

Figure 1. KPIs "after" Maxima deployment for calls offered, calls answered, and calls abandoned

While the number of calls offered and calls answered increased 23% and 24% respectively, the percentage of calls abandoned dropped by 9%.

2. NavyFCU is Answering a Higher Percentage of its Calls in Less than 60 Seconds

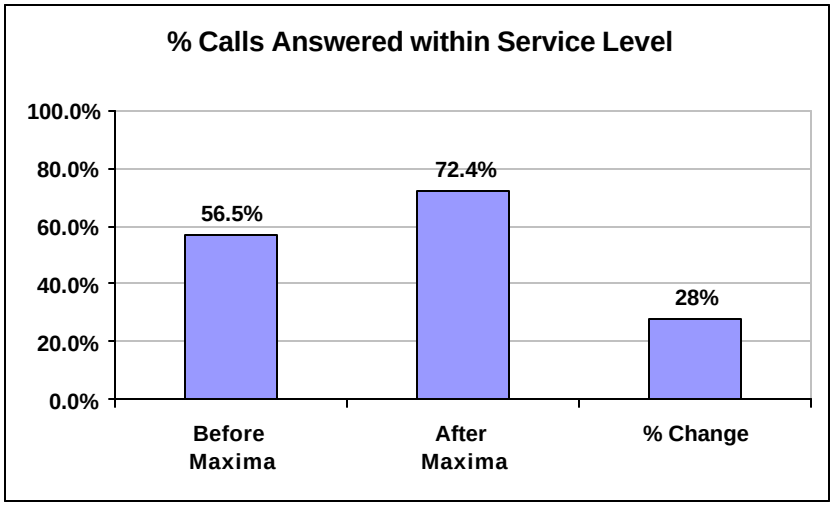

Figure 2. Improvement in service level following Maxima deployment

3. NavyFCU's Payroll Cost Increased at a Slower Rate Than the Increase in Call Volume and Total Handle Time

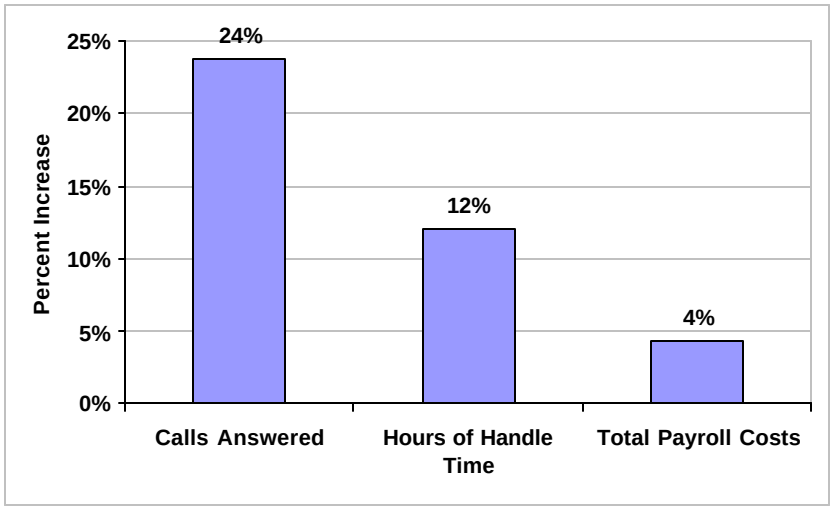

Figure 3. Increase in efficiency following Maxima deployment

Figure 3 shows a 24% increase in answered calls, a 12% increase in total CSR time spent handling the calls, yet only a 4% increase in total payroll

4. NavyFCU Reduced its Overtime Costs Significantly

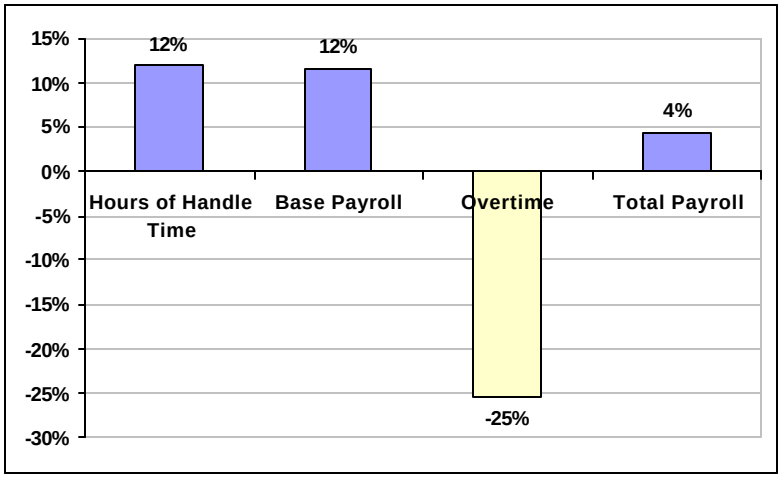

Figure 4. Reduction in overtime costs following Maxima deployment

Overtime costs have declined by 25%, as NavyFCU is now able to optimize its call-handling requirements through better scheduling of its CSR staff.

5. NavyFCU Improved CSR Utilization

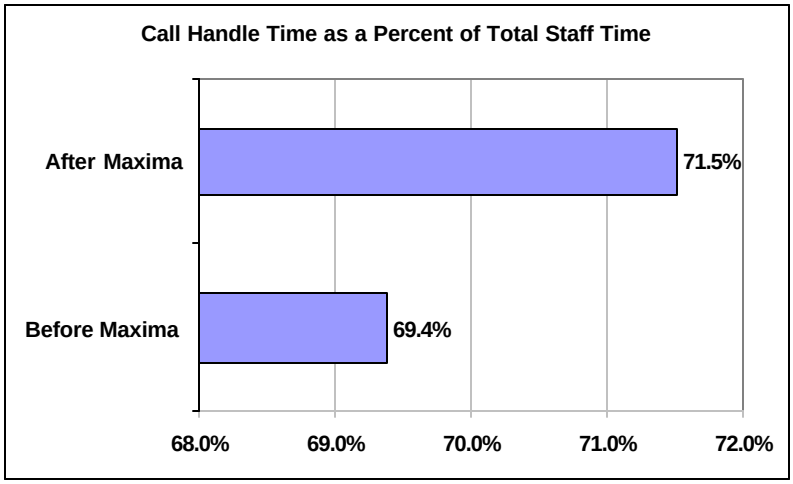

Figure 5. Comparison of call handle time before and after Maxima deployment

CSR utilization, (the percent of total staffed time actually spent handling calls) has increased from 69.4% to 71.5%. This two-percentage point increase represents 350 hours of additional call handling time per month, saving NavyFCU the cost of at least three additional CSRs.

6. NavyFCU Reduced the Average Handle Time (AHT) per Call

The combined or blended average handle time (talk plus after call work time) declined by 5% as Table 4 depicts below.

Table 4. Average Handle Time Before and After Maxima Deployment

Impact of Change in AHT (sec / call)	Before	After	% Change
CLS AHT	242	230	-4.8%
TIB AHT	313	292	-6.9%
Combined CLS-TIB AHT	298	283	-4.9%
Net Reduction in AHT		15	

The correlation between monthly AHT and average speed of answer (ASA) is very strong. We computed a correlation coefficient of .88 for the 24 months studied. The longer members wait in queue for a CSR to answer their call, the longer the average handle time for the call. By using Maxima to optimize staffing forecasts and schedules, NavyFCU has experienced a reduction in the average speed of answer, which has led to shorter AHTs. Without this reduction in AHT, NavyFCU would require six more full time CSRs to handle an additional 662 hours of call related work each month.

7. NavyFCU Reduced the Average Number of Toll Hours Per Month Their Members Spend Waiting for a CSR

Table 5. Savings in Toll-hours Following Maxima Deployment

Time Members Wait for Answer	Before	After	% Change
Average calls answered per mo.	166,963	162,483	-3%
ASA (seconds per call)	118	78	-34%
Average hours of wait-time per mo.	5,452	3,511	-36%

Without the reduction in the average speed of answer, NavyFCU would be paying toll charges for an average of 5,306 hours of calls waiting to be answered rather than 3,511.

FINANCIAL ANALYSIS OF THE ECONOMIC IMPACT

Economic Value Realized From the Improvements in KPIs.

Changes in three KPIs show the economic value we found. All of these changes resulted in cost reductions. The key performance indicators are:

1. payroll cost per hour of handle time, resulting from a 2% increase in CSR utilization and a 25% reduction in paid overtime;
2. average handle time (AHT), where reductions in AHT allowed NavyFCU to handle more calls with fewer hours of total handle time; and
3. average speed of answer (ASA), where improvements in ASA enabled NavyFCU to reduce their long distance toll cost.

We determined the actual economic value of the Maxima System by calculating what the payroll and long distance costs would have been in 2002 if these three KPIs had not changed. By subtracting the actual costs for these KPIs from this baseline, we derived the savings that accrued to NavyFCU, as shown in figure 6 below:

Total Savings	**Estimated Annual Savings**
Payroll Costs	$ 447,185
Average Handle Time Costs	$ 343,051
Toll Costs for holding calls in queue	$ 38,763
Total Savings	$ 828,998

Figure 6. Total savings accruing to NavyFCU resulting from the Maxima System deployment and the consolidation of their two consumer lending call centers

Costs Associated With The Maxima System.

The total acquisition cost of the Maxima System was about $230,000, which included licensing, installation, training, and initial maintenance costs.

On-going support cost for this investment is $30,000 annually.

Return on Investment (ROI) Analysis of the Maxima System Acquisition

Total Annual Savings	$	828,998
Total First Year Investment	$	225,000
Total First Year Return	$	603,998
First year ROI		368%
Payback in months		3.16

Figure 7. ROI analysis of the Maxima System acquisition

As shown in figure7, after deducting the cost of the Maxima System from the savings generated in the first year of its use, NavyFCU saved almost $604,000. For each year thereafter, the projected savings will be close to $800,000. The ROI to NavyFCU enabled them to recoup their initial investment in less than 4 months.

CONCLUSION AND RECOMMENDATIONS

Deployment of the Maxima System allowed NavyFCU to combine and optimize the operation of its loan acquisition (TIB) and loan servicing (CLS) call centers. We found that NavyFCU:

1. answered its members calls quicker;
2. answered more of its members calls on their first attempt;
3. reduced the average amount of time CSRs spent handling calls, either talking to members or performing wrap-up tasks after the call was completed;
4. increased the percentage of each CSR's workday handling member calls;
5. reduced the amount of overtime incurred to handle members calls;
6. reduced their overall cost per call; and
7. generated over $800,000 in savings in the first year following implementation of the Maxima System, almost four times its investment, paying for the Maxima System in four months.

NavyFCU realized these results because the Maxima System enabled them to optimize their scheduling practices by ensuring that the proper numbers of CSRs with the right skills were available each period of each day to handle the volume of calls they were forecasting.

Changes in scheduling practices have a profound effect on CSRs. This certainly happened at NavyFCU. CSRs who were accustomed to working the same shift schedule week after week, with the same start time, the same end time, the same break times, were suddenly being asked to start their shift at different times on different days, take their breaks at different times, and work different days in different weeks. These changes were not popular with all CSRs. However, NavyFCU responded to individual schedule exceptions as they arose by using the array of workforce management tools available with their newly acquired Maxima System. Their increased ability to adapt and respond to individual CSR needs and requests was well received by their CSRs.

NavyFCU's management realized they were risking CSR satisfaction and support with the changes, but they also realized that they needed to provide more scheduling flexibility to provide their members the high level of service the members were expecting. The Maxima System allowed them to create and support the scheduling flexibility they required.

We have determined that the rule-of-thumb for properly supporting a workforce management system is to have one qualified full-time workforce specialist for every 100 CSRs. Such individuals must be highly skilled analysts, well versed in the principles of effective workforce management. NavyFCU dedicated one full time analyst and on full time administrative assistant position to performing the Maxima System's workforce forecasting and scheduling functions.

Sound practices in the areas of:

1. developing realistic forecasts of member contact demand;
2. determining the number of CSRs required each period of each day to handle the demand;
3. producing schedules that both meet the member contact demand and the needs of CSRs for reasonable work shifts; and
4. managing exceptions as they arise;

will yield substantial economic benefit.

These practices require sophisticated software in the hands of skilled experts and the support of the contact center management team to be successful. NavyFCU's story demonstrates that the rewards justify the investment.

ABOUT THE SPONSOR

Pipkins, Inc. has been at the forefront of Workforce Management Systems development for nearly two decades. Headquartered in St. Louis, Missouri, Pipkins provides modern commercial call centers with advanced sophisticated forecasting and scheduling technology.

Founded in the early 1980s, Pipkins' early and continuing associations with British Telecom (BT) and AT&T Network Systems United Kingdom helped establish Pipkins at the forefront of the demanding operator services industry. In 1993 Pipkins reengineered its product line to meet the business needs of the rapidly expanding US commercial call center market. Pipkins, Inc. offers complete technical and human resources in the areas of new product development, technical support, sales, customer service, and training.

Pipkins has a rapidly expanding installed customer base customer base in the areas of Banking, Cable TV, Catalog Sales, Financial Services, Health Care, Hospitality, Hotel, Insurance, Manufacturing, Member Associations, Outsourcing, Public Utilities, Publishing, Retail Distribution, Travel, and Telecommunications.

Pipkins' Products and Services include:

Maxima Advantage Vantage Point: Pipkins' premier enterprise product featuring comprehensive scheduling, forecasting, and planning functionality for complete enterprise-wide, multi-site, call center workforce management.

WorkforceScheduling.com offering the same comprehensive functionality as Pipkins' premier product, Vantage Point, but with the added benefits of a *low cost*, subscription-based, hosted solution. This product was designed to meet the specific needs of the small, mobile, or seasonal call center

Merlang Call Center Consultant: Pipkins' introductory product suitable for individual call center consultants or managers - featuring enhanced Merlang (Modified-Erlang) calculations to provide answers for staffing, trunking, profits, and service level questions.

GLOSSARY OF TERMS

ACD: Automatic Call Distributor. A device that forwards incoming calls to the next available TSR or answering position.

After Tax Net Income (Earnings): Net Income before taxes minus income taxes.

Automated Self-Service Options: Refers to system features that permit a customer to obtain service response without being connected to a "live" CSR; For example, request a Fax, obtain account information, place an order, etc. through an automated system.

Automated Voice Recognition: Technology that enables a customer to verbally speak to an automated voice response system (IVR) instead of using a phone keypad; for instance, to ask questions, make requests, respond to questions, etc.

CTI: Computer-Telephony Integration refers to the linkage of a telephone switch (ACD, PBX) and computer systems to enhance call processing. Common applications include screen pop, simultaneous voice and data transfer, and IVR.

Earnings per share: After Tax Net Income (Earnings) divided by the total number of shares outstanding.

Gross Margin: Revenue minus the cost of goods and services sold (also known as gross profit).

Integrated CSR Desktop: Refers to a CSR workstation that is configured to provide ease of navigation to CSRs across multiple application screens and windows as part of a CTI system.

IVR: Interactive Voice Response. Technology that allows a customer making an inbound call to interact with the data systems by responding to a menu of options. Responses are typically entered by pressing the keys on the telephone keypad; however, voice recognition is becoming more commonly integrated into the process, thus providing a more useful tool.

Key Performance Indicator (KPI): A quantifiable metric used to measure and benchmark the performance of people, processes, and/or organizations, in comparison to best practice industry, organization, group, or individual CSR standards, which drives the goal of customer satisfaction. KPIs are generally classified into categories such as CSR productivity, asset management, human resource retention, cost ratios, direct telecom, customer relationship, and other. Examples of KPIs include service level, talk time, first-time final, abandon rate, cost per contact, contacts per shift, customer satisfaction rating, sales per contact, error rate, and CSR occupancy.

Net Income (Earnings) before Taxes: Net Operating Income minus interest and other non-operating expenses.

Net Operating Income (NOI): Income before deducting non-operating expenses such as interest and income taxes. To calculate Net Operating Income, subtract operating expenses (sales and marketing expenses + research and development expenses + administrative expenses + other operating expenses) from Gross Margin.

Revenue: The total dollar amount collected for goods and services provided.

Skills-Based Routing: A feature of an ACD permitting incoming calls to be routed to specially skilled CSRs based upon the type of call, type of customer, type of product or service, etc.

Web Chat: A Web site feature that allows for interactive keyboard communication with another person or persons, i.e., an interactive written correspondence.

AUTHORS' BIOGRAPHIES

Dr. Jon Anton (also known as "Dr. Jon") is the director of benchmark research at Purdue University's Center for Customer-Driven Quality. He specializes in enhancing customer service strategy through inbound call centers, and e-business centers, using the latest in telecommunications (voice), and computer (digital) technology. He also focuses on using the Internet for external customer access, as well as Intranets and middleware.

Since 1995, Dr. Jon has been the principal investigator of the Purdue University Call Center Benchmark Research. This data is now collected at the BenchmarkPortal.com Web site, where it is placed into a data warehouse that currently contains over ten million data points on call center performance. Based on the analysis of this data, Dr. Jon authors the following monthly publications: "The Purdue Page" in *Call Center Magazine*, "Dr. Jon's Benchmarks" in *Call Center News*, "Dr. Jon's Industry Statistics" in *Customer Interface Magazine*, and "Dr. Jon's Business Intelligence" in the *Call Center Manager's Report.*

Dr. Jon has assisted over 400 companies in improving their customer service strategy/delivery by the design and implementation of inbound and outbound call centers, as well as in the decision-making process of using teleservice providers for maximizing service levels while minimizing costs per call. In August of 1996, *Call Center Magazine* honored Dr. Jon by selecting him as an Original Pioneer of the emerging call center industry. In October of 2000, Dr. Jon was named to the Call Center Hall of Fame. In January of 2001, Dr. Jon was selected for the industry's "Leaders and Legends" Award by Help Desk 2000. Dr. Jon is also a member of the National Committee for Quality Assurance.

Dr. Jon has guided corporate executives in strategically re-positioning their call centers as robust customer access centers through a combination of benchmarking, re-engineering, consolidation, outsourcing, and Web-enablement. The resulting single point of contact for the customer allows business to be conducted anywhere, anytime, and in any form. By better understanding the customer lifetime value, Dr. Jon has developed techniques for calculating the ROI for customer service initiatives.

Dr. Jon has published 96 papers on customer service and call center methods in industry journals. In 1997, one of his papers on self-service was awarded the best article of the year by *Customer Relationship Management Magazine*.

Dr. Jon has published eighteen professional books:

Offshore Outsourcing Opportunities, The Anton Press, 2002
Optimizing Outbound Calling: The Strategic Use of Predictive Dialers, The Anton Press, 2002
Customer Relationship Management Technology: Building the Infrastructure for Customer Collaboration, The Anton Press, 2002
Customer Obsession: Your Roadmap to Profitable CRM, The Anton Press, 2002
Integrating People with Processes and CRM Technology, The Anton Press, 2002
Selecting a Teleservices Partner, The Anton Press, 2002
How to Conduct a Call Center Performance Audit: A to Z, The Anton Press, 2002
20:20 CRM A Visionary Insight into Unique Customer Contact, The Anton Press, 2001
Minimizing Agent Turnover, The Anton Press, 2001
e-Business Customer Service, The Anton Press, 2001
Customer Relationship Management, The Bottom Line to Optimizing Your ROI, Prentice Hall, 2nd Edition, 2001
Call Center Performance Enhancement Using Simulation and Modeling, Purdue University Press, 2000
Call Center Benchmarking: How Good is "Good Enough", Purdue University Press, 1999
Listening to the Voice of the Customer, Alexander Communications, 1997
Contact Center Management by the Numbers, Purdue University Press, 1997
Customer Relationship Management: Making Hard Decisions with Soft Numbers, Prentice-Hall, Inc., 1996
Inbound Customer Contact Center Design, Dame Publishers, Inc., 1994
Computer-Assisted Learning, Hafner Publishing, Inc., 1985

Dr. Jon is the editor for a series of professional books entitled *Customer Access Management*, published by the Purdue University Press.

Dr. Jon's formal education was in technology, including a Doctorate of Science and a Master of Science from Harvard University, a Master of Science from the University of Connecticut, and a Bachelor of Science from the University of Notre Dame. He also completed a three-summer intensive Executive Education program in Business at the Graduate School of Business at Stanford University.

Dr. Jon can be reached at 765.494.8357 or at <DrJonAnton@BenchmarkPortal.com>.

R. Scott Davis is the Director of Product Validation Studies at BenchmarkPortal. An industry pioneer, Scott first began working with call centers in 1971, when he was instrumental in the development of an operator scheduling system for McDonnell Douglas Automation Company. This system was the genesis of EDS's Visual FMS, which is still widely used today.

In April 1976, Scott co-founded the Affinitec Corporation in St. Louis. Affinitec delivered the first computer-based call center management reporting system, the Force Analyzer. Under Scott's leadership, Affinitec became a major supplier of Work Force Management Systems. Among its many accomplishments, Affinitec was the first company to offer comprehensive CSR performance reporting which merged a) productivity data from the ACD with b) quality data derived from CSR monitoring and c) schedule adherence data. Affinitec was the first company to offer real time CSR adherence displays. Affinitec products were deployed in hundreds of call centers including AT&T, American Express, Wachovia Bank, Maritz, New Zealand Telephone. The products integrated with leading ACDs manufactured by Lucent, Rolm, Northern Telecom, Aspect, NEC, and Rockwell.

Scott's passion is identifying and quantifying the case studies of the ROIs realized by organizations who create innovative sales and service strategies taking advantage of call center technologies and management practices. Scott often lectures at leading call center conferences on topics such as:

1. Developing a Contact Center Performance Improvement Roadmap,
2. Measuring the ROI of Contact Center Performance Improvement Initiatives,
3. Benchmarking Your Contact Center,
4. Balancing Technology and Management in Call Centers, and
5. Employee Measurement and Motivation.

Scott's education includes a BA in Mathematics from Vanderbilt University, and a fast-track executive education program in Business Administration from Columbia University.

John Chatterley is International Call Center Certification Director at BenchmarkPortal, Inc. In this capacity, he is in charge of working with multi-national companies to benchmark and improve their call center performance up to a level where they can attain the coveted Purdue University Certification as a "Center of Excellence." Mr. Chatterley also specializes in benchmarking certification, best practices, facilities design, site selection, and offshore outsourcing for the customer contact community. John is a Purdue Certified Contact Center Auditor, Certified AT&T Call Center College Instructor, BenchmarkPortal Certified Benchmarking Instructor and Analyst.

John has published numerous customized benchmarking reports, research reports, and white papers, including a report on the power utilities industry. Mr. Chatterley is the author of a study entitled "Improving Contact Center Performance through Optimized Site Selection." Mr. Chatterley is also the content editor of a recently published book entitled "Selecting a Teleservices Partner, and a co-author of a new book entitled "Offshore Outsourcing Opportunities."

Prior to joining BenchmarkPortal, Mr. Chatterley was Director of Site Development and Facilities Management and as a Call Center Manager for MicroAge Teleservices, a Fortune 500 call handling outsourcing company. Mr. Chatterley designed, implemented, staffed and managed three 500+ seat contact center sites in Arizona, Nevada, and California, and has extensive call center operational management experience.

John's professional career spans more than 20 years of experience in call center technical customer support and service. He has first-hand experience at all levels of a call center including front-line technical support agent, supervisor, team lead, analyst, designer, call center manager, and operations director.

John's professional education was in Engineering & Computer Science at Southern Utah State University, and subsequently at the University of Utah.

