

Association for Information Systems AIS Electronic Library (AISeL)

PACIS 2011 Proceedings

Pacific Asia Conference on Information Systems
(PACIS)

9 July 2011

A Performance Measurement Framework For UK Contact Centres

Shushma Patel

London South Bank University, shushma@lsbu.ac.uk

Yuan Xing

London South Bank University, xingy@lsbu.ac.uk

Dilip Patel

London South Bank University, dilip@lsbu.ac.uk

ISBN: [978-1-86435-644-1]; Full paper

Recommended Citation

Patel, Shushma; Xing, Yuan; and Patel, Dilip, "A Performance Measurement Framework For UK Contact Centres" (2011). *PACIS 2011 Proceedings*. 149.

<http://aisel.aisnet.org/pacis2011/149>

This material is brought to you by the Pacific Asia Conference on Information Systems (PACIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in PACIS 2011 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

A PERFORMANCE MEASUREMENT FRAMEWORK FOR UK CONTACT CENTRES

Shushma Patel, Department of Informatics, Faculty of Business, London South Bank University, London, UK., shushma@lsbu.ac.uk

Yuan Xing, Faculty of Engineering, Science and the Built Environment, London South Bank University, London, UK., xingy@lsbu.ac.uk

Dilip Patel, Faculty of Business, London South Bank University, London, UK., dilip@lsbu.ac.uk

Abstract

Contact centres are used in a wide range of contexts by organisations and play a crucial role in shaping customer experience and managing customer relationship. Performance measurement is a crucial practice for contact centres that are committed to delivering superb customer service and keeping competitive advantages. Despite its importance, there are no studies that systematically review the performance measurement practice in the contact centre industry. This paper aims to develop a key performance indicator (KPI) framework for contact centres to evaluate and benchmark performance.

A KPI framework consisting of six dimensions was developed from the literature and tested by means of a web based survey with Call Centre Focus magazine (CCF), an authoritative and well-known call centre magazine in the UK. The survey was sent to 10070 contact centre professionals and had a response rate of 3.9%. The results were analysed with SPSS and factor analysis was used to validate the framework.

The analysis showed the ten most important KPIs and exploratory factor analysis extracted ten factors. They confirmed the original framework to a large extent and also revealed new insights amongst the dimensions and variables.

The framework has significant managerial implications and could be used as a guideline for contact centres for performance measurement. The framework could also be used to benchmark against other companies.

Keywords: contact centre, performance measurement, benchmark.

1 INTRODUCTION

The contact centre is a physical or virtual operation established by an organisation to deliver services remotely by a group of specially trained people working in a computer-automated environment via the phone primarily (Higgs 2004). Contact centres have become part of our everyday lives as it may be the most important channel for customers to contact companies. Contact centres take in-bound calls from customers regarding their services and products. Some contact centres also make out-bound calls for customer service quality monitoring or cross-selling. Most modern contact centres interact with customers via multiple media-channels: telephone, letter, email, text and web support system. Contact centres replace the need for face-to-face interaction with customers and significantly shift the economics of service delivery (Higgs 2004).

There has been a significant growth in the establishment of contact centres in the UK and they have grown by 250% over the last decade (Higgs 2004, DTI 2004). Contact centres are present in almost every economic sector in the UK including finance, service, retailing, utility, Telecom, public and travelling. There are nearly 7000 contact centres which employ 2-3% of the UK working population (Holman 2003). Two-thirds of all customer interactions with organisations go through contact centres nowadays (Crouch 2006). The growth of contact centres reflects companies' desire to improve access to the services in a cost-effective manner while retaining satisfied customers (Sewell-Staples et al. 2003).

Contact centres play an important role in customer service, answering customers' enquiries, offering technical support, dealing with complaints and providing various services. Contact centres are normally the richest data source of customer information within an organisation and provide valuable feedback on the performance of the products and services. In light of the strategic importance of running contact centres efficiently and to customers' satisfaction, performance measurement and business best practice models have been used to evaluate and improve contact centres' performance and to achieve desired targets and service level. Performance measurements are driven by an organisation's strategy, impacted by its customers and financial resources and delivered through process, procedures and the organisational environment (Dimension Data 2005).

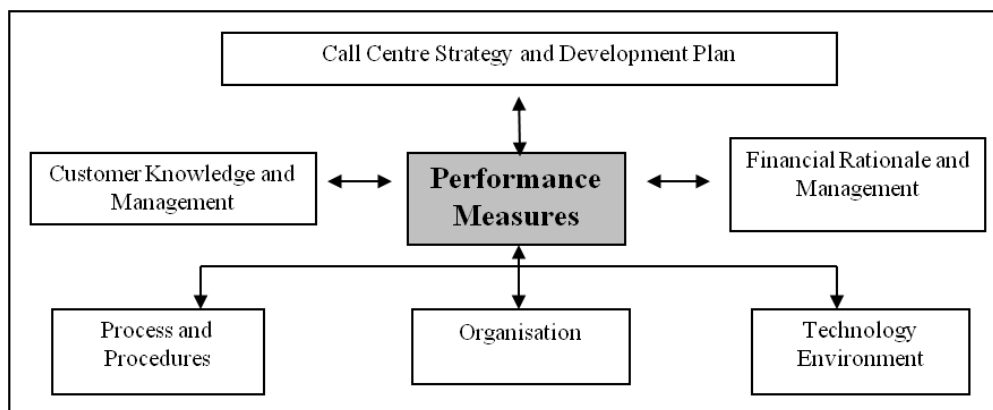


Figure 1. Strategic and Operational Benchmarking Model Source: Dimension Data 2005

2 CONTACT CENTRE PERFORMANCE MEASUREMENT

Contact centres use Automatic Call Distribution (ACD) technology to place calls in a queue and allocate them to agents (Robinson and Morley 2006). ACD is capable of collecting a large amount of operational statistics in terms of agent activities. Many contact centres also have internal team monitoring agent performance, customer satisfaction and experience. The abundance of information

makes it possible to measure the performance internally (Robinson and Morley 2006). Managers could use the data to evaluate individual agent’s performance as well as the whole contact centre’s performance.

Contact centre performance measurement involves using a set of key performance indicators (KPI) that measure and track business processes, the behaviour and outcome of agents and customers that influence the corporation’s bottom line (Fluss 2007). These measures align contact centre objective with corporate goals and raise awareness among individual agents. Baird (2004) argued that though the choice of KPI may vary depending on the business model, a valid KPI needs to have five attributes: relevance, accuracy, timeliness, completeness and clarity. Table 1 explains the five attributes.

Relevance	The KPI relates to the purpose of the contact centre in terms of broad mission, shorter term goals and objectives.
Accuracy	The KPI states what it indicates and forms the basis for confident action.
Timeliness	The KPI represents current, preferably real-time, information.
Completeness	All available data sources that may bear on the KPI are represented for a full measurement of the indicated performance
Clarity	The interpretation and understanding of the KPI is unambiguous.

Table 1: Attributes of a Valid KPI

The most comprehensive performance measurement includes all aspects of a contact centre. Measurements cover areas in organisation mission/strategy, customer service, operations and standards, IT and telephony infrastructure, HR, recruitment and training practices, physical characteristics and finance (Scottish Executive 2003).

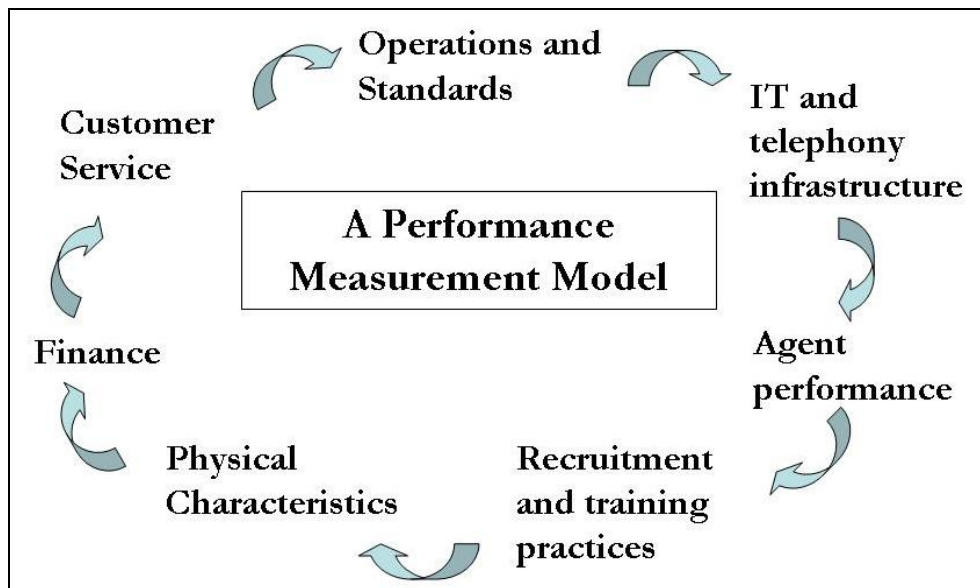


Figure 2. The Most Comprehensive Form of Performance Measurement Adapted from Scottish Executive 2003

Although contact centres of different size or from different industry sectors have different priorities in terms of existing purposes and main activities, the purpose of this paper is to develop a set of general KPIs. Figure 2 (above) summarizes a general framework of KPIs which set scenes for customization of sub-KPIs for different industry sectors for future research.

3 LITERATURE IN CONTACT CENTRE PERFORMANCE MEASUREMENT

There has been a concern that some contact centres measure what is easy to measure rather than what is right or important to measure (Robinson and Morley 2006). Although the technology enables multiple reading of individual agents, the criteria by which it can be measured are always unclear (Houlihan 2001). Especially when there is a conflict between the quantity and quality of calls, performance tends to be viewed in terms of target outcomes, with little appreciation of the implications they entail (Houlihan 2001). Sometimes contact centres may fail to serve customers to their satisfaction as they are preoccupied with cost control and efficiency targets (Mukherjee and Malhotra 2006). Also, contact centres are pressured to meet targets within a certain period and match the capacity with the growing customer demand (they do not have the ability to buffer the operation from the demand surges) which may lead to a short-term result thinking (Houlihan 2000, Betts et al. 2000). As a result contact centre measurements may be heavily weighed towards productivity rather than quality and service (DTI 2004). For example, Gilmore and Moreland (2000) identified the following measures that were most popular KPI in contact centres (summarised in Marr and Parry 2004):

Number of calls answered within past ten minutes; Calls waiting to be answered; Number of agents currently taking calls; Number of agents waiting to take calls; Number of 'not ready' agents; and, Number of agents on outgoing calls or on a call to another agent

Despite the debate on the use of quantitative and qualitative KPI, little research has been done on systematically reviewing the KPI used in contact centres. Feinberg et al. (2000) cited Anton's work (1997) which listed a few KPI that were considered important:

Average speed of answer; Queue time for caller to be connected to an agent; Percentage of callers who have satisfactory resolution on the first call ; Abandonment rate; Average talk time; Adherence to schedule; Wrap time (average work time after call); Percentage of calls blocked (callers receive a busy signal and could not even get in to the queue); Time before abandoning; Inbound calls per eight-hour shift; Agent turnover; Total calls; and, Service levels (calls answered in less than x seconds divided by number of total calls)

Feinberg et al. (2000) empirically tested that first call resolution and abandonment rate had significant influence on customer satisfaction. Marr and Parry (2004) identified the missing link between employee satisfaction, service quality and profitability. They proposed a 'sense and respond' approach which introduced change to contact centres and brought in KPI built around the business goals of their customers.

The literature in contact centre performance measurement mainly focuses on quantitative measures. With the focus and potential of contact centres evolving towards a more central and substantive role and contribution to organisational objectives (Houlihan 2000), the contact centre industry has started to acknowledge that quantitative measurement alone is inadequate and there has been a call for more qualitative measurement (Murphy 2006, Massey 2006). The next section discusses the development of the KPI model.

4 KPI FRAMEWORK DEVELOPMENT

Different contact centres have different business models and functions, thus they may prioritize KPI differently. The purpose of this paper is to develop a general and comprehensive set of KPI which could be customised on contact centres' needs.

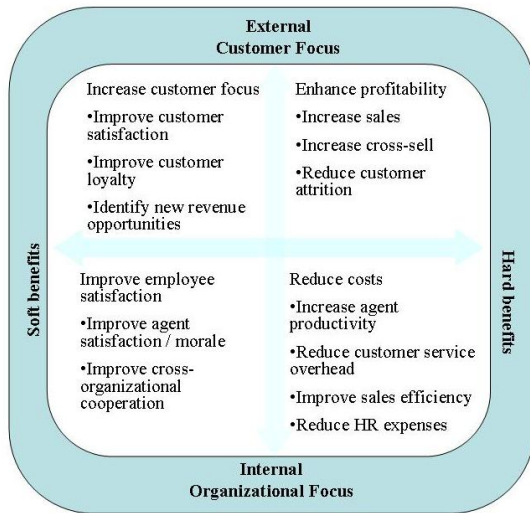


Figure 3. Performance Management Benefits Adapted from Fluss 2006

A good KPI framework should help contact centres to increase customer focus, enhance profitability, improve employee satisfaction and reduce costs (Fluss 2006, see Figure 3 above).

To reflect the needs of organisations, employees and customers, the KPI framework is divided into six areas: customer service, agent utility, agent performance, HR management, IT and infrastructure and finance. Some research (ICMI 2007, Dimension Data 2006, Cleveland 2006, DTI 2004, Scottish Executive 2003) was referred to in developing the framework and defining the KPI. Table 2 to Table 7 demonstrates what KPIs are included in the framework and how they are defined.

Customer service KPIs reflect customer satisfaction and experience which include customer satisfaction, customer expectation, overall call service quality, customer advocacy, complaints as % of calls and first call resolution.

KPI in Customer Service	Definition
Customer satisfaction	How satisfied customers feel about the contact centre’s service
Customer expectation	The expectations customers had before they make contacts
Overall call service quality	The overall quality of individual contacts
Customer advocacy	Whether customers would recommend the company to other people
Complaints as % of calls	The percentage of complaints to the total contact volume
First call resolution	Customers’ issues are fully resolved on the first contact

Table 2. Customer Service KPI

Agent utility KPIs reflect how efficient the contact centre is in handling customer contacts and it include talk time, wrap-up time, idle time, % occupancy of workstations, speed to answer, average time to abandon, abandon rates, number of calls answered per hour, call volume forecast accuracy and call back rates.

KPI in Agent Utility	Definition
Talk time	The time an agent is talking, from answering a call to the caller hanging up
Wrap-up time	The time spent completing work associated with a call after the caller has hung up
Idle time	The time when an agent is available and waiting for a call to come in
% occupancy of workstations	The percentage of time agents handle calls versus wait for calls to arrive
Waiting time/speed to answer	The time from a call arriving at the automated call distribution (ACD) to being answered by an agent
Average time to abandon	Average time caller held on before giving up in queue
Abandon rates	The percentage of callers who hang up or disconnect prior to answer
Number of calls answered per hour	The average number of calls answered per hour
Call volume forecast accuracy	The accuracy of forecasting the workload (call volume*call handling time)
Call back rates	The percentage of callers who call back over the same issue

Table 3. Agent Utility KPI

Agent performance KPIs are mainly qualitative and demonstrate agents' skills, manner and knowledge in handling customer contacts. It includes welcome, communication and service skills, product knowledge, proficiency in system use, quality / error rates in solution, friendliness and manner, closing and speed in resolving issues.

KPI in Agent Performance	Definition
Welcome	The ease of use of IVR and greetings of agents
Communication and service skills	How well agents communicate and serve customers' needs
Product knowledge	Agents' knowledge in organisations' products
Proficiency in system use	Agents' knowledge and skills in using the system
Quality / error rates in solution	Agents' ability in solving customers' issues accurately
Friendliness and manner	Agents' friendliness and manner
Closing	Agents' ability to close a call effectively and friendly
Speed in resolving issues	How quickly could an issue be solved by agents

Table 4. Agent Performance KPI

Agent HR management KPIs are related to the management, training and development of staff. They include attrition, absenteeism, training and coaching, supervisor/staff ratio, staff satisfaction and staff engagement.

KPI in HR Management	Definition
Attrition	Loss of staff as a percentage of total staff
Absenteeism	Agents' absence due to sickness and other reasons
Training and coaching	The quality and amount of training and coaching agents receive
Supervisor/agent ratio	The number of agents a supervisor manages
Peak management measures	Measures taken to cope with the surging of call volumes
Staff satisfaction	How satisfied staff feel about their jobs

Table 5. HR Management KPI

IT and infrastructure KPIs are related to the IT and telecom systems and the physical environment of contact centres.

KPI in IT and Infrastructure	Definition
% of calls handled by automatic service	Automation degree of IVR
Self-service accessibility and completion	The ease of accessibility of self-service to customers
Multiple channel integration	The use and integration of channels including phone, web, mail, fax and IVR self-service etc
System support time	The reliability of the system
Staff satisfaction to the physical environment	How staff feel about the physical environment
IT infrastructure	The reliability of the IT infrastructure
Email turnaround time	The time interval between a customer sends out an email enquiry and gets the reply from an agent
Letter turnaround time	The time interval between a customer sends out an mail enquiry and gets the reply from an agent

Table 6. *IT and Infrastructure KPI*

Finance KPIs normally include both cost and sale metrics. However, as many contact centres do not have sales function such as public sector and contact centres with help desk and enquiry functions, we only include cost metrics here.

KPI in Finance (Cost)	Definition
Cost per call/contact	Divide the number of calls handled into the full cost of the entire centre
Cost per productive hour	Divide the number of productive hour (contact handling time + wrap time) into the full cost of the entire centre
Budgeted vs actual cost	The difference between the budgeted and actual costs

Table 7. *Cost KPI*

5 METHODOLOGY

To test the validity of the contact centre KPI framework, a website based survey was conducted with Call Centre Focus magazine (CCF), which is the most authoritative and well-known call centre magazine in the UK. An email was sent to 10070 contact centre professionals most of whom are CCF subscribers and they were invited to participate in the survey. The link to the web survey was attached to the email. The Survey Monkey software was used to design the web based survey in a user friendly way.

The survey was divided two parts. The first part listed all the above KPIs and respondents were asked to evaluate the importance of these KPIs using Likert scale (Hair et al. 1995) from ‘unimportant’ (1) to ‘very important’ (5). Respondents were also asked whether their contact centres measure these KPIs. The second part contained a few demographic information regarding the respondents’ job title and the size and function of contact centres. Three hundred and ninety-two people answered the questionnaire which made the response rate of 3.9%. Figure 4 shows that finance is the most represented sector in the survey followed by public and service sector. Finance is the biggest vertical sector in the UK contact centre industry (DTI 2004).

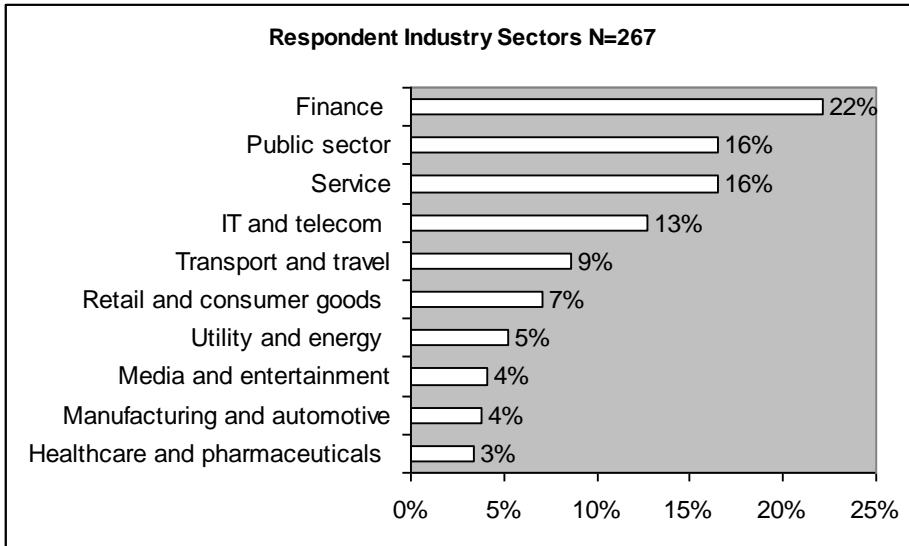


Figure 4. Respondent Industry Representation

The respondents' job titles range from analyst, team leader to contact centre manager and head/director of the contact centre. Their responsibility and specialties cover operations management, customer service management, HR and other aspects. The diversity of the respondents' job roles sheds insights from multiple perspectives and provides opportunities to cross check the reliability and validity of the data.

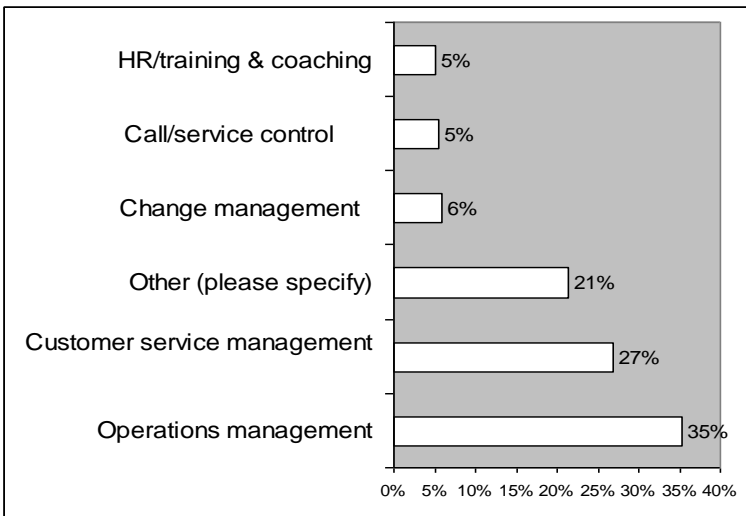


Table 8. Respondents' Job Roles

Most contact centres have more than one functions ranging from customer service, enquiry and information, sales, order process, help desk, specific company related functions to research. Table 4 shows the percentage of contact centres that have the above functions.

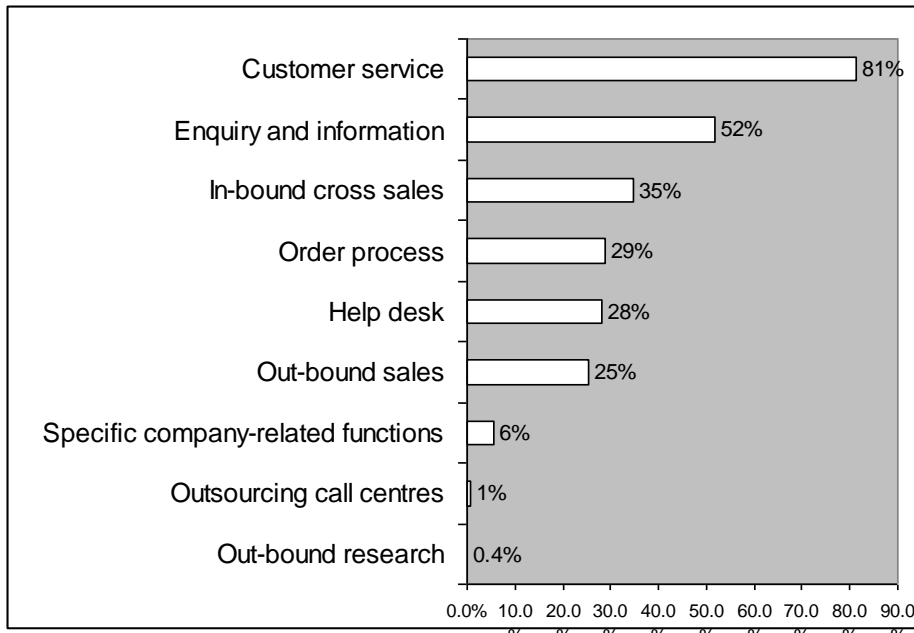


Table 8. The Main Functions of Contact Centres

6 DATA ANALYSIS

6.1 Top Ten Most Important KPI

Table 9 lists the top ten most important KPI which shows a strong trend in valuing the qualitative KPI by contact centres (only absenteeism, speed to answer and abandonment rates are quantitative KPI). One issue to note is that the most measured KPI may not be the most important ones although important KPI are measured by most contact centres. For example, only 78% of contact centres measure staff internal satisfaction but it is the eighth most important KPI.

KPI	Importance	Is it measured? (Yes)
Customer satisfaction	4.8	86%
Call service quality	4.7	94%
Communication and service skills	4.6	93%
Absenteeism	4.6	98%
Waiting time/speed to answer	4.5	96%
Product knowledge	4.5	89%
Friendliness and manner	4.5	89%
Staff internal satisfaction	4.4	78%
Training and coaching	4.4	86%
Abandon rates	4.4	95%

Table 9. The Top Ten Most Important KPI (by all sectors)

6.2 Exploratory Factor Analysis

Exploratory factor analysis was used to assess the KPI framework, which yielded ten factors utilizing all forty-one variables at a factor loading of 0.40 (Hair et al. 1995). Factor analysis is a statistical tool to uncover the latent dimensions of a set of variables. It reduces a large number of variables to a smaller number of factors (Field 2000, Hair et al. 1995). Exploratory factor analysis (EFA) is

generally used to discover the factor structure of a measure and to examine its internal reliability. The results are presented in Table 10.

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Welcome	.666				
Communication and service skills	.770				
Product knowledge	.471				
Proficiency in system use	.629				
Quality / error rates in solution	.550				
Friendliness and manner	.737				
Closing	.629				
Training and coaching	.647				
Staff internal satisfaction	.473				
Staff satisfaction to the physical environment	.610				
IT infrastructure	.441				
Talk time		.778			
Wrap-up time		.816			
Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Idle time		.679			
Call Volume forecast accuracy		.487			
Peak management measures		.499			
Supervisor/staff ratio		.526			
Self service accessibility and completion			.746		
% of calls handled by automatic service			.814		
Multiple channel integration			.645		
System support time			.554		
Email/letter turnaround time			.493		
Cost per call/contact				.794	
Cost per productive hour				.743	
Budgeted vs actual cost				.814	
Average time to abandon					.769
Abandon rates					.778
Number of calls answered per hour					.452
<i>Initial Eigenvalues</i>	10.01	3.6	2.1	1.9	1.6
<i>Variance Explained</i>	25.1%	9%	5%	4.6%	4%
<i>Cumulative Variance</i>	25.1%	34.1%	39.2 %	44%	48%
<i>Cronbach's Alpha or inter-item correlation if two variables</i>	0.86	0.79	0.77	0.82	0.70
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.					
KMO:0.869; Bartlett's Sphericity: 3478.8; df=780; p=0.000					

Table 10. Factor Analysis of the KPI Framework

Variable	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10
Customer satisfaction	.836				
Call service quality	.747				
First call resolution	.476				
Speed to answer	.476				
Customer expectation		.643			
Customer advocacy		.733			
Complaints as % of calls			.435		
Attrition			.683		
absenteeism			.509		
% occupancy of workstations				.755	
Call back rates				.409	
Speed in resolving issues					.577
<i>Initial Eigenvalues</i>	1.4	1.3	1.2	1.1	1
<i>Variance Explained</i>	3.4%	3.2%	3.1%	2.8%	2.5%
<i>Cumulative Variance</i>	51%	54.5%	57.6%	60.3%	63%
<i>Cronbach's Alpha or inter-item correlation if two variables</i>	0.64	0.58	0.59	0.4	N/A
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.					
KMO:0.869; Bartlett's Sphericity: 3478.8; df=780; p=0.000					

Table 10. continued: Factor Analysis of the KPI Framework

The results exhibited good Kaiser Meyer Olkin (KMO) and Bartlett's Sphericity measures of adequacy and fit. The KMO statistics varies between 0 and 1 and values greater than 0.5 are acceptable (Kaiser 1974). Table 10 shows that KMO was 0.869, indicating an excellent value. The ten factors explained 63% of the total variance. A reliability test was done to assess the internal consistency of the variables and factors by using coefficient alpha. The Reliability Analysis procedure calculates a number of commonly used measures of scale reliability and also provides information about the relationships between individual items in the scale. The calculation of coefficient alpha was based on the average inter-item correlation. Alpha values exceeding 0.70 are considered to be reliable (Hair et al. 1995). The first five factors have satisfactory factor reliability with the alpha values exceeding 0.7. The last five factors, however, have lower value indicating a lower reliability.

- Factor 1 includes six KPIs in agent performance, two KPIs in HR management and two KPIs in IT and infrastructure. Therefore we consider Factor 1 as the agent performance factor, which is affected by HR management and the infrastructure. Agents perform better with good training, high internal satisfaction and better environment.
- Factor 2 includes four KPIs in agent utility and two KPIs in HR management. This result shows that peak management and supervisor / staff ratio are more related to utility than HR. HR should focus on people management and personal development.
- Factor 3 and 4 are more in line with the original framework. Factor 3 includes five KPIs in IT and infrastructure. Factor 4 includes all the three finance / cost KPIs.
- Factor 5 includes three KPIs in agent utility. Two variables are about abandonment rate and the third one is the number of calls answered per hour. The higher number of calls is answered the lower the abandonment rate should be. It could be explained that respondents felt call abandonment issue was important and should be emphasised.
- Factor 6 includes three KPIs in customer service and one KPI in agent utility. Speed to answer may be less of a utility indicator but more of a customer service indicator.
- Factor 7 includes the other two customer service KPIs about customer expectation and advocacy. We could argue that customer expectation is pre-transaction KPI and customer advocacy is post-transaction KPI.

- Factor 8 includes two KPIs in HR management and customer complaints. It could be explained that customer complaints are one of the main causes for agent attrition and absenteeism. A better process dealing with complaints could not only increase customer satisfaction but bring unexpected benefits to the agents.
- Factor 9 includes the rest two agent utility KPIs. High absenteeism would result in low workstation occupation.
- Factor 10 includes one agent performance KPI, i.e. speed in resolving issues, which involving problem solving and thus is different from other KPIs.

7 CONCLUSION

The research drew data from a comprehensive sample covering various industry sectors. The survey results identified the most important KPIs for customer experience which is important for organisations to understand when allocating limited resources to maximise customer experience. However In the contact centre operational context, it is always important to look at things in relation to each other and avoid pursuing targets of particular KPIs in isolation. For example, sometimes the increase in the number of calls answered may be caused by rushing customers through the calls, which results in decreased customer service and increased call back. Unless there is an improvement in infrastructure, staff utilisation or training, it is difficult to achieve tell the performance of the contact centre through a few quantitative data.

KPIs were originally broadly categorised into six groups and the factor analysis largely confirmed that framework but also indicated the possibility of better interpreting the inter-relationships of some variables. For example, HR KPIs turned out to have a huge impact on agent performance and utility. The conventional way of categorising contact centre experience KPIs should be reviewed.

Our survey and analysis have made a valuable contribution to the literature of performance measurement and established a contact centre performance measurement framework. The factor analysis offered more interpretation of the framework which could be used by contact centre managers to evaluate the performance both qualitatively and quantitatively, thus shedding light to new areas for improvement. Organisations could use this KPI framework as a basis and tailor for their industry sectors. They could also use the framework to benchmark against each other.

Future research could focus on investigating the inter-relationships amongst these factors and identifying effective ways to optimising the whole customer contact centre experience rather than pursuing the improvement of individual KPIs.

8 REFERENCES

- Betts, A. Meadows, M. and Walley, P. (2000). Call centre capacity management. *International Journal of Industry Service Management*, 11 (2),185-196
- Brown, G. and Maxwell, G. (2002). Customer service in UK call centres: organizational perspectives and employee perceptions. *Journal of Retailing and Consumer Services*, (9), 309-16.
- Cleveland, B. (2006). *Call Centre Management On Fast Forward*. ICMI Press
- Contact Babel (2006). *The UK Contact Centre Operational Review*. 4th Edition.
- Crouch, M. (2006). Contextuality and culture texts: a case study of workplace learning in call centres. *Journal of Workplace Learning*, 18 (7/8), 426-438
- Dimension Data (2006). *Merchants Global Contact Centre Benchmarking Report*. Dimension Data Group
- Dimension Data (2005). *Merchants Global Contact Centre Benchmarking Report*.
<http://www.synovate.com/knowledge/publications/benchmarking/doc>
- DTI (2004), 'The UK contact centre industry: a study', www.dti.gov.uk
- Field, A. (2000). *Discovering Statistics Using SPSS for Windows*. SAGE Publications

- Fluss, D. (2007). Performance management: aligning business objectives through the contact centre. www.nice.com, accessed in March 2007
- Hair, J.F. Anderson, R.E. Tatham R.L. and Black, W.C. (1995). *Multivariate Data Analysis*. 4th Edition. Englewood Cliffs, NJ. Prentice-Hall.
- Higgs, M. (2004). A study of the relationship between emotional intelligence and performance in UK call centres. *Journal of Managerial Psychology*, 19 (4), 442-454
- Holdsworth, L. and Cartwright, S. (2003). Empowerment, stress and satisfaction: an exploratory study of a call centre. *Leadership and Organization Development Journal*, 24 (3), 131-140
- Holman, D. (2003). Phoning in sick? An overview of employee stress in call centres. *Leadership and Organization Development Journal*, 24 (3), 123-130
- Houlihan, M. (2000). Eyes wide shut? Querying the depth of call centre learning. *Journal of European Industrial Training*, 24 (2), 228-240
- Houlihan, M. (2001). Managing to manage? Stories from the call centre floor. *Journal of European Industrial Training*, 25 (2), 208-220
- Kaiser, H.F. (1974). An index of factorial simplicity. *Psychometrika*, 39, 31-36
- Massey, P. (2006). Are you fiddling while Rome burns? *Customer Management*, March/April 2006, 42-44
- Mortlock, B. (1996). Winning quality at IBM: best practice at the National Call Management Centre. *Business Process Re-engineering and Management Journal*, 2(2), 57-72
- Mukherjee, A. and Malhotra, N. (2006), 'Does role clarity explain employee perceived service quality? A study of antecedents and consequences in call centres', *International Journal of Industry Service Management*, 17 (6), 444-473
- Murphy, P. (2006). How to measure the quality of customer interactions. *Customer Management*, March/April 2006, 60-61
- Murphy, P. (2006). How to measure the quality of customer interactions. *Customer Management*, March/April, 2006
- Robinson, G and Morley, C (2006). Call centre management: responsibilities and performance. *International Journal of Service Industry Management*, 17 (4), 284-300
- RXP (2007). White paper: performance management. www.rxp.co.uk, accessed January 2007
- Scottish Executive (2003). Benchmarking and definitions within contact centres. www.scotland.gov.uk
- Sewell-Staples, W. J. Dalrymple, J.F. and Phipps, K. (2003). Auditing excellence in call centres: access is a corporate responsibility. *Managerial Auditing Journal*, 18 (1), 68-75