
Electronic performance monitoring and control in call centre industry : An empirical study

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Abstract

Call centre is situated at the intersection of several forces namely rapidly expanding information and communication technologies (ICTs), reengineered business processes, a changing (or changed) profile of customer needs and expectations. Call centers are also creating employment opportunities in millions throughout the world. Performance management in call centers is therefore emerging as a widely sensitive issue, affecting both morale and physical potentiality of the employees as well as management issues such as performance control, monitoring and surveillance. As the frontier of technology horizon is changing along with the non-ending dilemma of prioritizing between quantity and quality as performance destinations, adoption of automated and electronically developed monitoring system has become the essential predisposition in call centre industry.

This paper attempts to analyze the context, trends and the long term impacts of electronic performance monitoring systems such as automated call distribution system (ADS) , distant voice monitoring technology (DVMT) etc.on call centre workers. This paper is an empirical study on the basis of data set collected through questionnaire survey. In order to arrive at some specific conclusions the paper has used some fundamental statistical techniques like Chi- square Test, Contingency coefficient, Two way ANOVA, and concept of Mathematical Expectation etc

Key words: Automated call distribution system (ADS), automated and electronically developed monitoring system, distant voice monitoring technology (DVMT), ICT, performance destination, statistical techniques

Introduction:

The advances in information technologies and the precipitous decline in the costs of voice and data transmission over last two and half decades has caused the dynamic growth of call centre industry a world-wide phenomenon. As part of this global industry, call centers in India have experienced a spectacular growth in the last ten years. According to a report published by McKinsey in 2007, about 70% of the revenues of the BPO industry in India used to be earned from call centers. This trend is experiencing a steady growth day by day. This rapid growth has also

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brought managerial challenges in terms of recruitment, staffing, training, and retention of workers and managers with the requisite skills and abilities to provide quality service.

Achieving competitive success in call centers is a highly difficult task. Managers face the growing challenges in balancing the quality and customer service while keeping costs under control. While call center technologies create efficient methods for handling service interactions, customers often become frustrated by overly standardized menus and procedures. Similarly, many employees find call center jobs to be routinized and boring, leading to high levels of employee dissatisfaction, absenteeism,

and turnover. Employee dissatisfaction, in turn, can lead to lower service quality and customer dissatisfaction. With turnover rates at 30 to 50 percent a year, managers find themselves in a vicious circle – just as employees become proficient in the job, they quit. Managing the workforce is a constant cycle of recruitment, selection, training, and retention strategies. In addition, while call center jobs are often portrayed as 'low-skilled' or 'clerical' in nature, they in fact require considerable knowledge and skills. Frontline employees confront on-going changes in product and service offerings, pricing and packaging, legal regulations, work methods, and technical processes. Thus, they need to regularly upgrade their knowledge and skills in order to serve the customers well.

Indian call centres: an overview

Classification of Indian call centres can be done from <i>three</i> perspectives.		
1.	Classification on the basis of customers served	<ul style="list-style-type: none"> ● Domestic call centres ● International call centres
2.	Classification on the basis of primary industry served	<ul style="list-style-type: none"> ● Banking ● Telecommunications ● Utilities ● Healthcare ● Leisure ● Others (food , retail , distribution and manufacturing)
3.	Classification on the basis of primary work function	<ul style="list-style-type: none"> ● Service only ● Sales only ● Sales and service only ● Technical services

* **Source: The Indian Call Centre Industry: National Benchmarking Report, Strategy, HR Practices, & Performance (2006-2008)**

In case of customer / market based analysis, following observations have been reported in the Benchmarking report of Indian call centres, 2006-2008. The report has been prepared on the basis of on-site visits of to sixty call centres in six major call centre locations in India, viz. Bangalore, Mumbai, Kolkata, Hyderabad, Chennai and New Delhi. The study has covered about 34,500 employees of both domestic and international call centres.

According to this study, the banking industry is the primary sector served by the centres in this study. Forty-one percent of international centres and 60 percent of domestic centres report that the banking industry is their primary market. The second largest sector served is the telecommunications industry, with 19 percent of the international centres and 26.6 percent of the domestic centres referring to this sector as their primary market. Other international centres have their primary markets in the areas of utilities (9.5%), healthcare (7.1%), and leisure (7.1%). Due to their small individual numbers, they have been grouped

together food, retail, distribution, and manufacturing as "Other" Industries. These segments are the primary customers of 16.7 percent of international centres and 13.3 percent of domestic centres.

The report also finds that While some centres handle customer service inquiries only (such as loan processing, billing, or collections), others primarily handle sales (the majority are outbound sales or telemarketing). Others handle both service inquiries and sales, and a fourth category offers IT help or technical services. The largest groups of centres are sales and telemarketing centres: 39 percent of international and 57 percent of domestic centres. The second largest group of centres provides both services and sales: 43 percent of international centres and 29 percent of domestic centres. Only a handful of worksite in this study offer technical services, and these entirely serve the international market. The overwhelming majority of centres in this study also serve the mass consumer or general market. The few business-to-business centres are primarily those offering technical services.

Electronic performance monitoring in Indian call centre industry:

Technological developments have brought about numerous changes in the manner of manpower management. Performance monitoring is no exception. Electronic performance monitoring refers to the computerized collection of employee performance information. Electronic monitoring has become popular largely due to the rapid computerization of the modern workplace and development of computer network technology. With the proper software, managers are now able to determine each individual employee's work pace, performance accuracy and the amount of time

spent on work and non-work related activities. According to ILO report on BPO employees in 1990, about 43 million BPO workers across the world used to be electronically monitored at their workplaces. The report gave the projection of at least 52 million BPO workers throughout the world to be monitored electronically by 2000.

Computer monitoring differs from traditional monitoring in the scope and content of monitoring. In traditional performance monitoring, managers are able only to spend a small amount of time engaging in monitoring activities. Computer monitoring is however capable of recording employee activities in a continuous fashion. Even though the managers may not spend their entire time sitting in front of the computer terminal watching employees working or hearing the voice modulation through computerized or automated voice monitoring system, to the monitored employees monitoring is taking place constantly. While focus of traditional monitoring was on productivity or employees' work product, the new capacity of electronic monitoring through *automated call distribution system (ADS)*, *distant voice monitoring technology (DVMT)* etc. has changed this to include a focus on the work process and even non-work activities in certain industries.

In call centres, three practices are normally used to assess employee performance: performance appraisal; electronic performance monitoring (i.e. computerized collection of call statistics such as call times, log-off times); and the monitoring of call quality.

A study on 156 call centers across six major call centre locations in India by **E-Review Journal** in 2007 reveals that majority of the call centers in India practices electronic performance monitoring system.

Locations	International Operations		Domestic operations	
	Inbound	Outbound	Inbound	Outbound
Bangalore	89.67%	100%	74.56%	88.78%
Mumbai	84.77%	100%	88.34%	90.67%
Pune	68.55%	100%	67.54%	75.44%
Gurgaon	98.32%	100%	67.33%	84.77%
Hyderabad	86.34%	100%	76.66%	93.67%
Kolkata	87.67%	100%	69.54%	78.33%

*** Source: Electronic performance management in call centers, E-Review journal, Vol.vi No.4 (Oct-Dec, 2007)**

The study also reveals that many of the call centers are simultaneously running international and domestic operations. It has been found from the report that all of the call centers are using electronic monitoring system in their international operations; where as same technology is not being applied in domestic operations. The study attempted to explore the priorities of selecting electronic performance monitoring as performance measurement tool by international operations of the surveyed call centres, especially with the outbound functions. The most important priority mostly lies with the CMM5 compliance.

Info edge service private limited is a Bhubaneswar based BPO firm with the call center operations. The BPO has both international and domestic operations with average employee strength of 200 as on November, 2008. About 65-70 people usually work under the international operations, spreading across two shifts, viz. evening and night shifts. Remaining 125-130 people work under the domestic operations covering the morning and day shifts. Each of the shifts is normally divided into 3 to 4 campaigns.

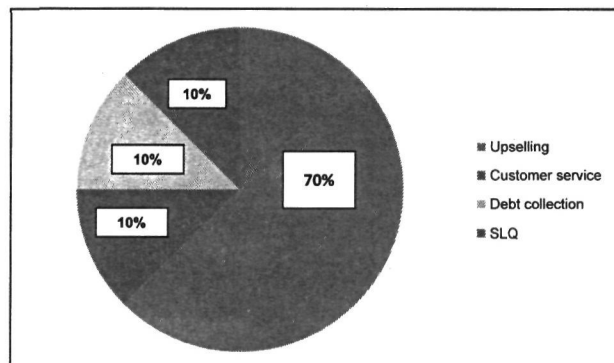
A study on Info edge service private Limited (IESPL), Bhubaneswar:

Functional design of Info edge services Limited as on Nov., 2008

Morning	Domestic shift	<i>Outbound : Up selling (USL) Inbound: Customer service(CS)</i>	3 campaigns 2 USL 1 CS
Day	Domestic shift	<i>Outbound: Debt collection (DC) Outbound : Up selling (USL)</i>	4 campaigns 1 DC 3 USL
Evening	International shift	<i>Outbound : Up selling (USL) Inbound: Sales lead qualification(SLQ)</i>	2 campaigns 1 USL 1 SLQ
Night	International shift	<i>Outbound : Up selling (USL)</i>	1 campaign 1 USL

From the function-wise aspect distributions can be made as follows:

IESPL runs three parallel campaigns in the morning shift, out of which two are outbound up-selling campaigns and one is the inbound customer service campaign. During the normal or day shift, four campaigns are run. Here all the shifts are outbound shifts, which are divided into one debt collection and three direct up selling campaigns. Under the evening shift, two parallel campaigns are run, which consists of one up selling and one sales lead qualification lead generation campaigns. The night shift comprises of one outbound campaign, with up selling function.



Functions	International Shift	Domestic Shift
Up-selling	02	05
Customer service	Nil	01
Debt collection	Nil	01
Sales lead qualification	01	Nil

From the above situation, the research explores the feedback on electronic performance monitoring system of the following sample.

Table- 1 (Sample feature)

Campaign	Domestic		International
A (Up-selling)	TL : 3	CCE: 27	
B (Debt collection)	TL : 4	CCE : 23	
C (Customer service)	TL : 5	CCE: 22	
D (Up-selling)			TL : 4 CCE:27

TL: Team Leader, CCE: Call Center Executive

Objective of the study:

The objectives of the study were to get the information on the followings issues:

- How different categories of employees of IESPL perceive the practice of electronic performance monitoring at their work-place.
- How far electronic performance monitoring has been perceived to be effective from Team Leaders' point of view.
- How far the different campaigns are able to create an influence over the perception of CCE as well as TL.

Research metrics:

- A. Regarding employee perceptions towards electronic performance monitoring following parameters have been identified as metrics:
- Effect of electronic performance monitoring on employee motivation.

- Employee perception of performance monitoring as infringement of their privacy.
- B. Regarding team Leaders' perception about the electronic performance monitoring as the effective tool of management , following parameters have been identified as metrics :
- It has made their overall job easier.
 - It has played a supplementary role to the manual monitoring.

Statistical Analysis:

Keeping the objectives in view the paper uses specific statistical application to examine following:

- a. Whether the perception of CCE for electronic performance monitoring is 'campaign' specific or not and is there any significant difference among the perceptions and the opinion of the campaigns.(Table-2)

- b. Whether the perception of CCE about the 'area coverage' under electronic performance surveillance is influenced by the 'campaign' or not and is there any significant difference among the different feedbacks given by them and different views of the campaigns.(Table-3)
- c. As per the CCEs, whether 'motivation' related to electronic surveillance is 'campaign' independent or not and is there any significant difference among the feedbacks and the opinion of the campaigns. (Table-4)
- d. Whether the perception of 'privacy infringement' is associated with 'campaign' or not and whether the answers of the CCEs and the opinion of the campaigns are significantly different or not. (Table-5)
- e. What is the most accepted reason for close electronic performance monitoring as per CCEs? (Table-6)
- f. As per TLs whether the perception that " electronic performance surveillance has made job easier" is dependent on 'campaigns' or not and whether there is any significant difference between the answers and the opinion of the campaigns.(Table-7)

In the question of 'substitutability between electronic and manual monitoring system' as per TL whether feedbacks are 'campaign' independent and whether there is any significant difference between the feedbacks and the views of the campaigns. (Table-8).

Methodology Used:

In this paper a *descriptive research technique* has been adapted for getting the specific conception about the objectives of the study. A sample size of 115 consisting of 99 CCE s and 16 TLs has been drawn from a population of 200 employees of IESPL, Bhubaneswar following the technique of *Simple Random Sampling Without Replacement (SRSWOR)*. The survey has been conducted based on two sets of structured questionnaires targeting towards two categories of employees, viz. CCE and

TL and the feedbacks have been furnished in seven distinct tables. (Table 2 to Table 8). The duration of the survey was of three months, i.e. from April to June, 2009.

In order to get the inferences about the interference of 'campaigns' on 'feedbacks' given by CCEs and TLs in different occasions on different grounds, Chi-square analysis technique has been applied in each occasion (For Table 2, 3,4,5,7 & 8) and test the association under 5% level of significance for respective different degrees of freedom taking the null hypothesis as "*there is no association between the feedbacks and the campaigns*". If the null hypothesis is rejected, this paper has found out the *coefficient of contingency(C)* to examine the strength or degree of association between the two. On the other hand in order to know whether there is any significant difference among the feedbacks or among the opinions of the campaigns received on different grounds, this paper has used *two way analysis of variance (ANOVA)* in each case (For Table 2, 3,4,5,7 & 8) under 5% level of significance for respective different degrees of freedom with the null hypothesis that "*there is no significant difference among the feedbacks and the opinion of the campaigns as well*". In the case of rejection of null hypothesis this paper has tried to identify the factors for which the null hypothesis is rejected, through the process of finding *critical difference (C.D)* using *t test* under 5% level of significance with a two tailed viability and comparing it with the absolute magnitude of the difference of the summation of the values of the columns containing different feedbacks. Finding out critical difference is possible in this case as because against all the feedbacks the sample sizes are same as four (campaigns). For making a feasible conclusion according to the team leaders (TL) about the most accepted reason of implementing an electronic performance monitoring system the simple concept of *mathematical expectation* has been adapted (For Table 6). Important conclusions have been summarized at the end.

Representation and analysis:

Following tables reflects the **feedback of CCEs on impact of electronic performance monitoring on their motivation.**

A. How do you perceive electronic performance monitoring at your work-place?

Table-2

Campaigns	Normal job hazard	Preferably selectively used	Can be avoided altogether	No response
Campaign A	11 (40.74%)	09 (33.33%)	04(14.81%)	03(11.11%)
Campaign B	10(43.47%)	07(30.43%)	05(21.73%)	01(4.37%)
Campaign C	15(68.18%)	03(13.63%)	0	04(18.18%)
Campaign D	13(48.14%)	10(37.03%)	02(7.40%)	02(7.40)

As per the feedback of table – 2, it is clearly understood that the perception about electronic performance monitoring is not exceptional. Most of the CCEs take it as normal job hazard. A Chi square analysis for association of attributes from this table examines whether these four feedbacks are dependent on four different job specific departments (campaign) or not. The calculated value of Chi square is 8.865 whereas the tabulated value for 9 d.f (Degrees of Freedom) under 5% level of significance is 16.92. As the calculated value is less than the tabulated value, null hypothesis may be accepted by concluding that these four feedbacks are independent, which means those have no association with the campaigns. After getting this result, this paper is interested to see whether there is any significant difference among the different types of feedbacks or among the opinion of different campaigns. For this purpose a "two way analysis of variance has been carried out and the calculated F value for 'feedback' has been found as 13.08 compared to 3.86 as tabulated value for (3, 9) d.f under 5% level of significance. This result rejects the null hypothesis and concludes that there is a significant

difference among the feedbacks. Now the question is among these four feedbacks which are significantly different. The result can come as significant only due to the presence of one exceptional value of the lot. For identifying that this paper has taken the help of t-distribution by finding out critical difference (C.D), which is 16.23 in this case and ultimately, compared it with the modulus value of the differences of the column totals of each feedback. This test reveals that all feedbacks are significantly different between themselves except the feedbacks: "can be avoided altogether" and "no response". Since the feedback "no response" does not play any important role to make viable conclusion, we can ignore it and can conclude that all other three feedbacks are significantly different between themselves. From the same analysis F value for campaign has also been revealed as 0.27 compared with the tabulated value as 3.86 for (3, 9) d.f under 5% level of significance. Since the calculated value is less than the tabulated value, null hypothesis may be retained and the interpretation will be, "there is no significant difference among the opinion of the campaigns".

A. Key areas may be covered under electronic performance surveillance as per employee feedback.

Table-3

Campaigns	Only call monitoring #	Only voice modulation	Both	No preference
Campaign A	05(18.51%)	04(14.81%)	10(37.03%)	08(29.62%)
Campaign B	13(56.52%)	0	05(21.73%)	05(21.73%)
Campaign C	11(50%)	02(9.09%)	05(22.72%)	04(18.18%)
Campaign D	13(48.14%)	11(40.74%)	01(3.70%)	02(8.33%)

Call monitoring includes total number of calls received and made by an individual per shift, total number of calls answered, Percentage of total answered calls within shortest possible time (Say 20 seconds), average call waiting time, average call duration and percentage of calls resolved per shift per CCE.

A careful study of table – 3 reveals that the call center executives prefer electronic performance surveillance only for call monitoring. Chi Square from this table has been found as 32.73 whereas the tabulated value for 9 d.f under 5% level of significance is 16.92. Therefore we have to reject the null hypothesis by concluding that the feedbacks are

influenced by the campaigns. But for getting the strength of this dependency this paper enquires for contingency coefficient C, which has been appeared as 0.5, implies that the influence of the different campaigns over the feedbacks is moderately strong. (The value of C varies from zero to one and inversely related with the sample size). A two way ANOVA on the same data set states that neither the feedbacks nor the campaigns are significantly different in their nature. Since the calculated values for 'feedback' and 'campaigns' (1.83 and 0.09 respectively) are less than the tabulated value (3.86) for (3, 9) d.f under 5% level of significance, we have accepted the null hypothesis.

A. How motivation is related with electronic surveillance of performance?

Table-4

Campaigns	Highly inverse	Moderately inverse	No relations	No reply
Campaign A	04(14.81%)	10(37.03%)	11(40.74%)	02(7.40%)
Campaign B	06(26.08%)	07(30.43%)	02(8.69%)	08(34.78%)
Campaign C	02(9.09%)	10(45.45%)	07(31.81%)	03(13.63%)
Campaign D	04(14.81%)	10(37.03%)	08(29.62%)	05(18.51%)

From table – 4 it has been seen that motivation level of the CCE is more or less negatively related with electronic monitoring although it is not highly inverse. Chi square value (18.29) is greater than its tabulated value (16.92) for 9 d.f under 5% level of significance. It implies that the feedbacks on motivation are dependent on campaigns. But since the value of contingency coefficient C is 0.39, the influence of campaigns on feedbacks regarding employee motivation is weak. The calculated F statistic for 'feedback' and 'campaign' are respectively 2.92 and 0.21 whereas the tabulated values for both the cases are 3.86 for (3, 9) d.f un-

der 5% level of significance. Therefore in both the cases the null hypotheses have been accepted and although merely some slight differences have been found out among the feedbacks, statistically there is neither any significant difference among the 'feedbacks' in the motivation issue nor there is any significant difference among the opinion of the campaigns.

Regarding the CCEs perception about the *electronic performance monitoring and infringement of privacy issues*, following feedback has been gathered through questionnaire survey.

A. Whether electronic performance monitoring is a direct infringement of employee privacy?

Table-5

Campaigns	Yes	NO#	No response
Campaign A	08(29.62%)	16*(59.25%)	03(11.11%)
Campaign B	10(43.47%)	10** (43.47%)	03(13.04%)
Campaign C	08(36.36%)	10*** (45.45%)	04(18.18%)
Campaign D	10(37.03%)	12**** (44.44%)	05(18.51%)

From the feedback of table – 5 it has been observed that the majority opines that electronic surveillance is not a direct infringement on employee privacy. Chi square analysis ($2.68 < 12.59$) for 6 d.f under 5% level of significance accepts the null hypothesis which states that the answers are not influenced by the opinion of campaigns. A two way ANOVA reveals that 'feedbacks' are significantly different ($17.57 > 5.14$) for (2, 6) d.f under 5% level of significance, but opinion of the campaigns are not significantly different ($0.58 < 4.76$) for (3, 6) d.f under 5% level of significance. In order to search the responsible feedback/s a critical difference (C.D) has been found out by using t-statistic

and compared with the modulus values of the difference of the column totals of the respective feedbacks. From this an interesting result has come out which tells that there is no critical difference between feedback 'yes' and 'no', but there are critical differences between feedback 'yes' and 'no response' and feedback between 'no' and 'no response'. Since the number of non respondent is very less, logically we can ignore it. Therefore practically there is no significant difference between the two feedbacks: 'yes' and 'no'. This indicates the opinion of indifference of CCE in the question of infringement of privacy.

A. Based on the feedback NO# , following factors have been collected as the reasons of such opinions:

Table-6

Campaigns compulsion	Operationa	Developmental compulsion	Both	Total
Campaign A	03 (18.75%)	05 (31.25%)	08 (50%)	16*
Campaign B	02 (20%)	05 (50%)	03 (30%)	10**
Campaign C	03 (30%)	03 (30%)	04 (40%)	10***
Campaign D	04 (33.33%)	04 (33.33%)	04 (33.33%)	12****

From this table it has been observed through mathematical expectation (E) that as per the majority opinion this type of surveillance is in existent for both operational and developmental compulsions (E = 1.53) however it is more developmental (E = 1.44) rather

than operational (E = 1.013).

Regarding the **Team Leaders' feedback** to the issue of electronic performance monitoring, following findings have been recorded:

A. Electronic performance surveillance has made their job easier :

Table-7

Campaigns	Highly agreed	Moderately agreed	Total
Campaign A	02 (66.66%)	01 (33.33%)	03
Campaign B	03 (75%)	01 (25%)	04
Campaign C	04 (80%)	01 (20%)	05
Campaign D	03 (66.66%)	01 (33.33%)	04

From table – 7 it has been found that the team leaders (TL) are highly agreed that the electronic performance monitoring has made their job easier. A Chi square analysis of this table reveals that there is absolutely no association between the feedbacks and the campaigns, because here the calculated value is very

close to zero and null hypothesis is accepted for 3 d.f under 5% level of significance. A two way ANOVA states that feedbacks are significantly different ($16 > 10.13$) for (1, 3) d.f under 5% level of significance but the opinion of the campaigns are not significant ($0.34 < 9.28$) for (3, 3) d.f under 5% level of significance.

A. Electronic performance monitoring is supplementary to the manual monitoring:

Table-8

Campaigns	Not supplementary	Partial supplementary	Total
Campaign A	02(66.66%)	01(33.33%)	03
Campaign B	03(75%)	01(25%)	04
Campaign C	04(80%)	01(20%)	05
Campaign D	03(75%)	01(25%)	04

From this table it is clear that as per TL, manual monitoring can not be the proper substitute of electronic monitoring. The value of Chi square analysis is again close to zero which proves that the feedbacks are not campaign specific. A two way ANOVA shows significant difference between two feedbacks ($24.24 > 10.13$) for (1, 3) d.f under 5% level of significance. But for campaigns, there is no significant difference ($1 < 9.28$) among four for (3, 3) d.f under 5% level of significance.

Inferences at a glance:

- A. Except two, in most of the observations different job profiles (campaigns) like up-selling, debt collection, customer service in the domestic sector and up-selling in the international sector have no influence over different feedbacks.
- B. Feedbacks like "key area coverage under electronic monitoring" and "relation between motivation and electronic monitoring" are dependent on campaigns but the degree of dependency is not very strong for both the cases.
- C. Overall campaign specific opinion does not play any significant role in framing the conclusion of this paper.
- D. According to the CCEs electronic performance monitoring is a normal job hazard and it can be taken as doubtless universal feedback for CCEs for all campaigns.
- E. Relating to the opinion of key area coverage under electronic surveillance CCEs are having a bit of hesitation in their selection, because there is no statistical difference among their replies.
- F. Regarding the motivational aspect also the feedbacks are not deterministic although "moderately inverse" is claiming prominence.
- G. According to the CCEs, electronic performance monitoring is not a direct infringement of employee privacy. This is a confirmed conclusion irrespective of campaigns.
- H. As per CCE electronic performance monitoring is required for both developmental and operational compulsion.

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- I. Team leaders from all job portals are highly agreed that electronic performance surveillance has made their job easier.
 - J. According to the team leaders of all campaigns electronic performance monitoring is not supplementary to the manual monitoring.

Conclusion:

From the analysis it is obvious that the call center executives are in favor of electronic performance monitoring system and team leaders from all campaigns believe it as an integrated and important controlling device for call center management. It can be inferred that in the long run also it will be popular in every dimension in the call centre industry and eventually will prove itself as an effective managerial controlling technique which will not decline the morale of the ground soldiers.

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