FORECASTING ANALYTICS USING TIME SERIES OF INDIAN PREPAID MOBILE SERVICES

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Abstract

The telecom market in India especially mobile telephony continues to grow at a frenetic pace, driven particularly by the rapid penetration of mobile services with an exploding increase in churn rate and disloyalty. To face this operational challenge it is highly essential to predict the consumer purchasing pattern to identify unique and actionable factors influencing this market segment. Thus this research mainly focuses on forecasting analytics of the mobile subscription base.

Keywords: Forecasting analytics, Customer value, customer lifecycle analysis, Churn management, Market Basket analysis, Customer profiling, Data mining, customer focus groups, Mind mapping, up selling, cross selling, switching cost

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Introduction

Back ground:

Highlights on Telecommunication Industry

- The second largest in the world based on the total number of telephone users both fixed and mobile phone.

- It has one of the lowest call tariffs in the world enabled by the mega telephone networks and hyper-competition among them.

- It has the world's third-largest Internet user-base with over 137 million as of June 2012.

- Major sectors of the Indian telecommunication industry are telephony, internet and television broadcasting.

- Challenging digital areas- as digital telephone exchanges, mobile switching centers, media gateways and signaling gateways, DTH,INSAT system

Telecommunication segments in India

   1.Wireline- **Fixed Service Provider network** which comprises land lines, basic services, domestic and long distance call services.

   BSNL and MTNL comprise almost 90 % of the FSPs in the country. Around 5 % are operated by private firms and are mostly scattered in the urban areas

   2. Wireless- **cellular services or mobile services and Fixed wireless phones**, there are mainly two sub divisions in cellular services**: Code Division Multiple Access (CDMA) and Global System for Mobile Communications (GSM).**

Mobile Communications in India

History:

1992- Telecommunication sector in India liberalized to encourage entry of multinationals telecommunications units to enhance the use of sophisticated technology.

1994-License for providing cellular mobile services granted by the government of India for the Metropolitan cites of Delhi, Mumbai, Kolkata & Chennai , under a fixed license fee regime for 10 years.

1995-19 more telecom circles get mobile licenses

1995(August) Kolkata became the first metro to have a cellular network

1997-Telecom Regulatory Authority of India is set up

1999(March)-National Telecom Policy is announced.

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2000 (January)-Amendment of TRAI Act.

Recent Statistics on Mobile telecommunications in India

- A subscriber base of more than 929 million, the Mobile telecommunications system in India is the second largest in the world.

- GSM-80% and CDMA -20% is the present market share composition.

- Total Telecom circles-22

- 96% of the total wireless market is occupied by prepaid segment and remaining 4% by postpaid mobile segment

Justification of the Research topic:

The mobile telecom market persists to grow at a hectic pace, driven particularly by the rapid penetration of mobile services with an acute increase in churn rate and disloyalty. To face this operational challenge it is highly essential to exploit customer behavioral data using trend study to identify unique and actionable factors influencing the purchasing decision and customer loyalty. Thus this research mainly targets on forecasting trend with respect to prepaid mobile operators in Telecom Industry.

Need for the study

The purpose of this research is to find out what kinds of specific and concrete operational factors have an important impact on subscription with respect to the prepaid mobile segment. Thus this study identifies multidimensional constructs that characterize relationship between customers and service providers in mobile environment and examines how these constructs are related to market trend.

Broad subject:

Research will focus mainly on the analysis of subscription trend of prepaid mobile users in India .

Problem Finding:

Though many service industries are affected by the churn phenomenon the problem is extremely acute in the telecom industry, with customers joining and quitting in short periods. Recent churners often switch because of promotional offers from competing providers, but dissatisfaction with their existing services is an even more common reason. They are most likely to churn between one and three years, probably at the end of a 12 or 24-month contract.

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Therefore this research is carried out a study to analyze the behavior of the customer using time series and to project the future trend in prepaid mobile segment.

Research Questions:

1. What is the pattern of subscription observed for each mobile provider?

2. Does this pattern vary among the mobile operators?

3. How does the other components of the time series vary over a period in pre-paid segment?

Research objectives:-

1. To analyze the trend in subscription of the prepaid mobile segment.

2. To determine the other components of time series for the subscription of prepaid mobile segment.

3. To design the marketing strategies for the service providers to improve their performance in prepaid segment.

RESEARCH METHODOLOGY

Research Design:

Research design proposed to adopt for this study is "Descriptive" type.

Data collection:

Secondary data on subscription for pre-paid segment is used.

Period of Data collection

Subscription figures for each month from August 2000 to February 2012 are collected for five leading mobile operators for this study.

Source of Data collection:

Quantitative and Qualitative survey reports of TRAI and CAOI.

Category of Data:

Subscription figures with respect to prepaid mobile segment

Selection of prepaid mobile operators:-

Totally five potential mobile operators are selected based on their performance with respect to their network operations and subscription base from 1995 to August 2012 .They are BSNL/MTNL, Airtel, Aircel, Vodafone and IDEA

Reason for the mobile operators selection:

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The reason for choosing 1995 is because mobile licensing commenced from that year. Selection was done based on the listing given by TRAI report 2012[1] and COAI successive reports from Jan 1995 to 2012[2] in India.

Steps performed in Forecasting:

1. The subscription data for five chosen mobile operators was taken from January 2000 to February 2012 on monthly basis. Hence totally 134 months' subscription figures for each operator was collected.

2. Trend was calculated by applying suitable quadratic models for each operator.

3. Then seasonal indices were compounded using moving Average method.

4. Cyclical Relative was calculated. Subsequently seasonal and cyclical variations were calculated for all the cases.

5. Finally Irregular component was estimated using the generic forecasting equation

6. It was validated with the forecasting error.

Analytical tools:

Time series analysis for forecasting –Trend, cyclical, seasonal, Residual and forecasting error

Figure I

Trend in pre-paid subscription for the selected Mobile operators

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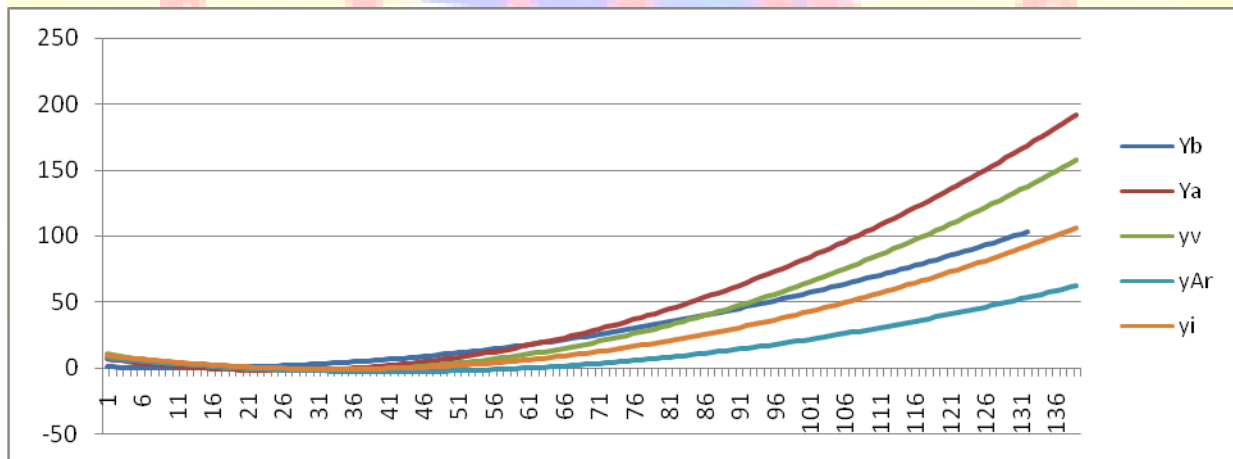
[1] http://www.trai.gov.in/Content/Annual_Reports.aspx
[2] http://www.coai.in/statistics.php

Please refer the appendix with respect to the calculation of Trend values for all the five operators. The above graph is plotted with the trend values of all five selected operators. All have quadratic trends with accelerated values. Here Yb-BSNL/MTNL, Ya-Bharti Airtel, Yv-Vodafone, YAr-Aircel,Yi-Ide

Trend Value Interpretation:-

The subscription values of all selected mobile operators, except Idea, are plotted in the chart and as per the pattern of the graph the quadratic model of fitting the trend was chosen. The trend equation was of the following type : $Y_t = a + bt + ct^2 + dt^3$

Table I

Trend Equation

Mobile Operator	Quadratic Equation
BSNL/MTNL	$Y_t = 21.96 + 0.78t + 0.007t^2 + ot^3$
Bharti Airtel	$Y_t = 28.15 + 1.34t + 0.0157t^2 + ot^3$
Vodafone	$Y_t = 19.169 + 1.069t + 0.01t^2 + ot^3$
Aircel	$Y_t = 2.9 + 0.40t + 0.0068t^2 + ot^3$

From the above equations, it could be noted that Airtel recorded highest rate of change in subscription [1.34], followed by Vodafone [1.069], BSNL/MTNL [0.78] and Aircel [0.40] Similarly it is clear that all these operators are enjoying an increasing rate of change in subscription, as revealed by the third component in each equation. Even in this, Airtel subscription exceeds that of all the others. It is also to be noted that among the above four operators, Airtel, Vodafone and BSNL/MTNL are present in all the circles while Aircel has only limited presence. From this it could be inferred that Airtel is most preferred operator in India.

2. For Idea, the actual subscription plotted in a graph indicated that the parabolic model is more relevant. Hence, the model fitted for Idea is of the following type : $Y = a + bt + ct^2$ The equation fitted was : $Y = 11.52 + 0.72t + 0.00969t^2$ This equation implies that Idea realizes increasing subscription for their services over a period and the change in subscription is at an increasing rate. However, compared to other operators, the rate of change is only less pronounced. This is because, among all the operators Idea entered late in to the business and is

also present only in certain circles. Since the existence of Idea was late when compared with BSNL and Bharti Airtel they improvised their subscription rates by effective promotional positioning Strategies[3].

Table II
## Seasonal Indices for pre-paid subscription

Month	BSNL/MTNL	Bharti Airtel	Vodafone	Aircel	IDEA
January	87.39597	86.06493165	84.83604	81.39799	84.50577
February	89.80803	88.65482052	87.76905	84.69696	87.52339
March	93.80404	91.26340709	90.93735	88.41934	90.4002
April	95.29625	93.75840507	93.68315	91.69189	92.96771
May	96.47323	96.34097927	96.38862	95.08663	95.58335
June	97.99141	98.93208452	99.06278	98.25586	98.4211
July	100.3665	101.4158367	101.6233	101.4893	100.9147
August	102.736	103.7934439	104.1168	104.8669	103.785
September	105.1523	106.1012751	106.3123	108.2907	106.3922
October	107.477	111.1915158	108.961	111.7518	109.3106
November	110.2362	113.8644447	111.7311	115.2315	113.2074
December	113.263	113.8644447	114.5785	118.8212	116.9885

For all the selected mobile operators the influence of seasonal factors seemed to be very powerful during the second half of the year from July to December. This is due to the fact that majority of the subscribers belong to the youth segment. A large number of youths complete their education and get into some job or other. With improved buying power they subscribe for mobile connection. Another reason is, in India June to December is the peak agricultural season. During years of good monsoon the worker population in rural areas gets more jobs opportunities and this result in increase in subscription during this season. Added to this during this period,

[3] COMPARATIVE REASEARCH ON THE MARKETING STRATEGIES OF TELECOMMUNICATION INDUSTRY IN CHINA AND INDIA,Chengchang Wang, Abhinav Kishore,School of Business Administration, Wuhan University of Technology, Wuhan, China, 430070

majority of important festivals are celebrated when the people tend to spend more money. A part of this goes for subscription for mobile connection. Hence the subscription is very high during the second half of the year. Hence it is clear that the first half of the year from January to June is considered as off season for the mobile operators and the second half of the year from July to December is the peak season for them. Each mobile operator should pay attention to introduce new products and new schemes during the off season so as to tide over the seasonal fall in subscription.

Figure II

Cyclical relative in pre-paid subscription for the selected Mobile operators
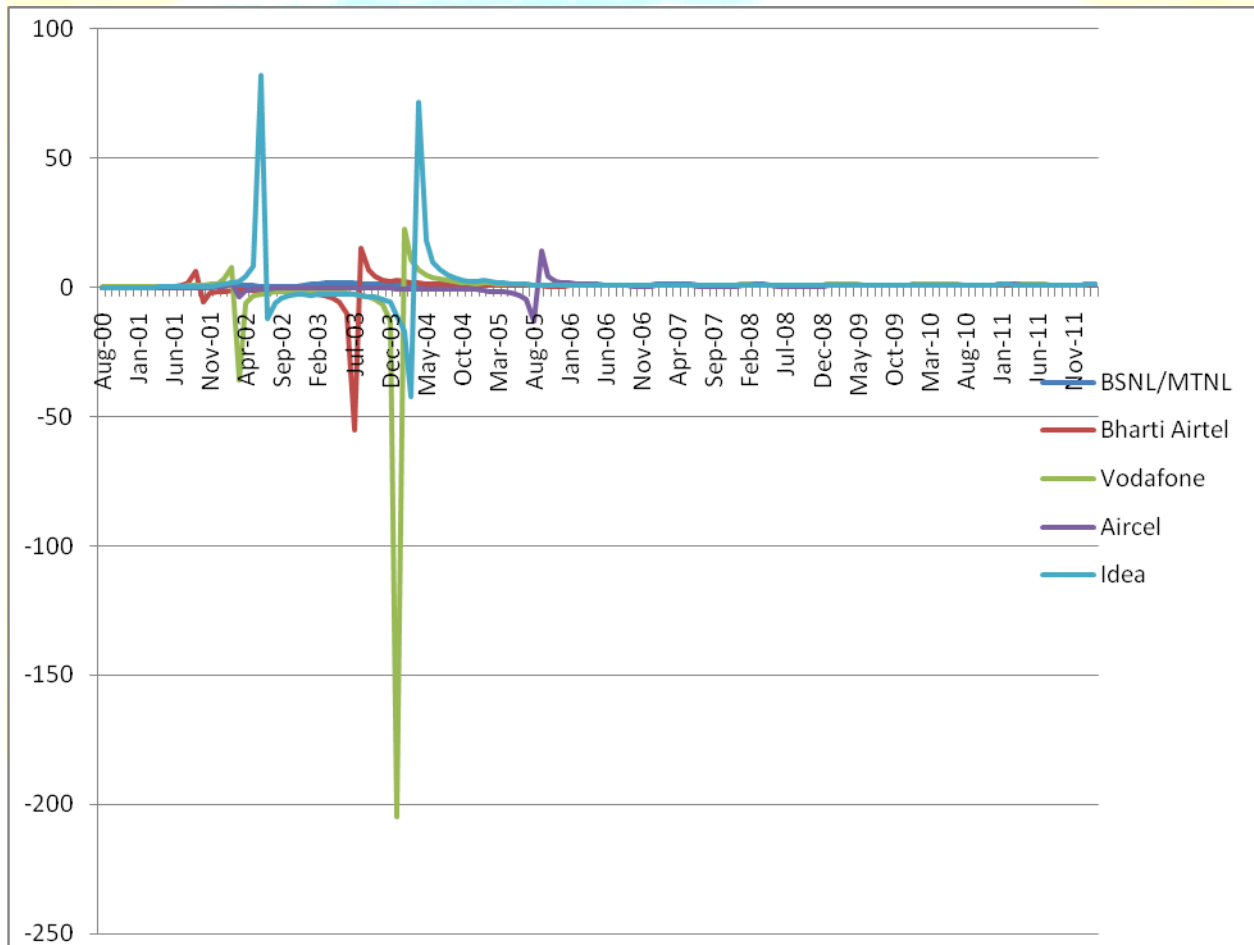
Interpretation:-

Cyclical Relative was calculated from prepaid subscription for all selected service providers. From the above graph it is clear that heterogeneous cyclical pattern was observed for the selected mobile operators It was observed that the peak and trough in customer relative for different service providers differed in magnitude .This could be because in initial stage of market entry these companies were influenced by cyclical pulls towards which ,they had no effective policy options. It is interesting to know that BSNL/MTNL alone recorded peak among the companies twice. This company being one of the earliest in mobile operators had in place the policies to withstand cyclical influence. It is to be observed that cyclical factors had influenced the subscription for nearly five years (January 2001 to January 2006) after which all the operators have cycle free subscription base. This indicates that over a period of operation companies have implemented measures and methods to control cyclical influence.

For calculating the forecasting accuracy the actual values of subscription is compared with estimated values for the next months from March 2012 to August 2012.TRAI announced the revision on tariff rates ,voice tariffs are hiked with effect from march 2012 .This devised an impact on subscription rates. The difference between actual and estimated is high after march 2012 especially for BSNL/MTNL ,Airtel and Vodafone because of the tariff hikes. (Plagued with shrinking subscriber base, also owing to intense competition, India's leading telcos, which are in the GSM space, seem to be contemplating hiking their voice call tariffs. Once rolled out, the revision of call rates would be effective in 22 circles.[4])

Table I

Actual Vs Projected values for pre-paid subscription

Month/Year	BSNL/MTNL		Bharti Airtel		Vodafone		Aircel		IDEA	
	A	P	A	P	A	P	A	P	A	P
March-2012	95.6	104.78575	181.2	195.45	**150.4**	161.071	62.6	64.22	112.7	108.0
April-2012	95.6	106.5	183.2	198.9	151.3	164.0	63.	65.57	114.2	110.067

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[4] http://www.ciol.com/ciol/news/159529/bharti-airtel-vodafone-idea-announce-hike-rates

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May -2012	95.8	108.23575	185.3	202.39	152.5	167.09696	64.3	66.95	115.9	112.153
June-2012	95.8	109.98175	187.3	205.905	153.7	170.15101	64.8	68.33	117.1	114.258
July-2012	95.8	111.74175	188.8	209.45	154.9	173.23244	65.18	69.73	117.6	116.382
August-2012	95.8	113.51575	186.9	213.025	153.4	176.34125	65.95	71.15	115.9	118.526

Here A-actual mobile subscription in million

P-Projected mobile subscription in million

To examine the reliability of forecasting the trend equation was applied to forecast the subscription form 2000 to 2012 .This was compared with the actual and forecasting subscription. Forecasting error was determined. As regards the accuracy, the size of forecasting error was used. Larger the error the lesser is the accuracy of forecasting. Based on this it was found that the subscription forecasting for Aircel and IDEA turned out to be more accurate and that the others are relatively less accurate.

Table II

Calculation of Forecasting Error

Company	Standard deviation	Forecasting Error
Bsnl	13.7	5.595
Airtel	19.2	7.81
Vodafone	16.4	6.7

Aircel	3.5	1.432
Idea	3.4	1.39

Conclusion:

The telecom industry, especially the mobile industry of India is undergoing a transformation and the number portability is bringing about imperatives worthy enough to carry out high-end research. This study is one such attempt to enhance the exposure on forecasting analytics and it is also expected to facilitate the marketers to design the essential operational parameters for scheming the retention strategies and to enhance Customer Experience management.

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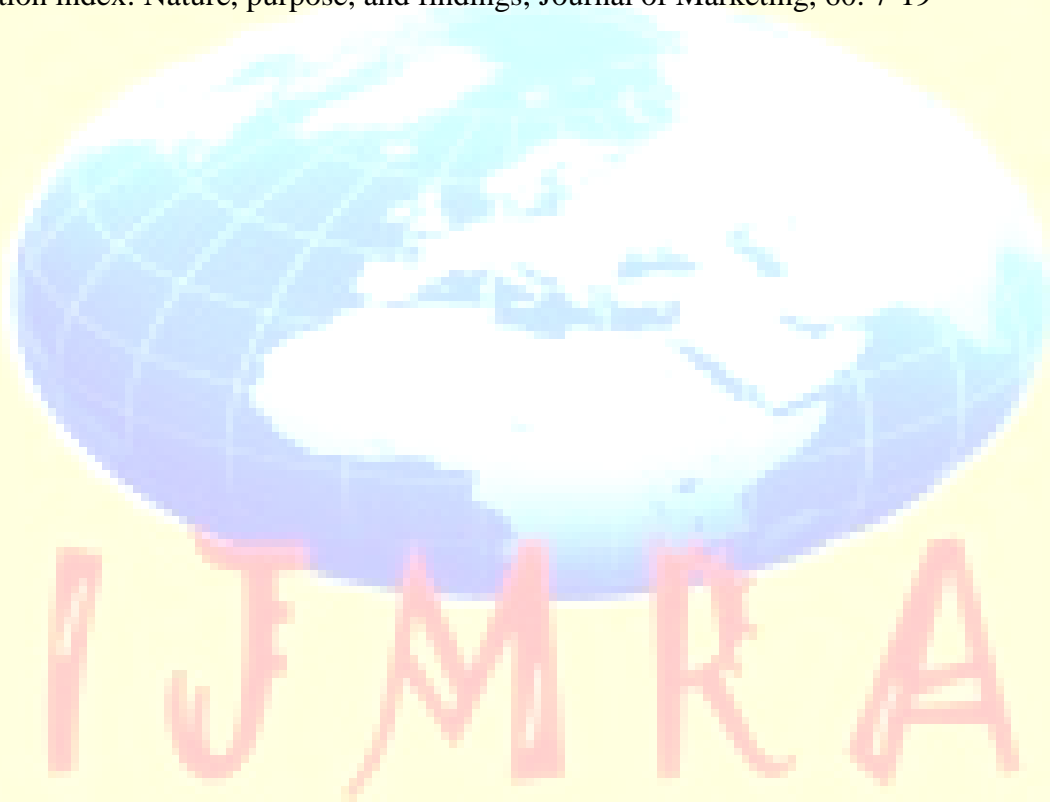
Appendix

Time Series Analysis

Month/Year	BSNL/MTNL					BHARTI AIRTEL					VODAFONE					AIRCEL					IDEA				
	y*	yc**	S	C	I	y*	yc**	S	C	I	y*	yc**	S	C	I	y*	yc**	S	C	I	y*	yc**	S	C	I
Aug-00						0.48	7.1	1.04	0	7.66	0.81	10.59	1.04	0	-10.82	0.12	7.67	0.81	0	8.37	0.62	9.35	1.04	0	-9.77
Sep-00						0.51	6.39	1.06	0	6.94	0.86	9.78	1.06	0	-9.98	0.13	7.14	0.85	0	7.86	0.67	8.73	1.06	0	-9.12
Oct-00						0.54	5.7	1.09	0	6.25	0.92	9	1.09	0	-9.18	0.14	6.63	0.88	0	7.37	0.71	8.12	1.09	0	-8.5
Nov-00						0.57	5.05	1.11	0	-5.6	0.96	8.25	1.12	0	-8.4	0.15	6.12	0.92	0	6.89	0.76	7.53	1.13	0	-7.9
Dec-00						0.59	4.42	1.14	0	4.97	1.03	7.52	1.15	0	7.64	0.16	5.63	0.95	0	6.42	0.81	6.96	1.17	0	-7.32
Jan-01						0.64	3.83	0.86	0	4.05	1.08	6.83	0.85	0	-6.6	0.17	5.15	0.81	0	-5.8	0.85	6.41	0.85	0	-6.41
Feb-01						0.68	3.26	0.89	0	3.48	1.12	6.16	0.88	0	5.91	0.18	4.69	0.85	0	5.36	0.89	5.88	0.88	0	-5.87
Mar-01	0.02	0.9	0.95	0	-1.84	0.73	2.73	0.91	0	2.91	1.17	5.52	0.91	0	5.26	0.19	4.24	0.88	0	4.93	0.92	5.37	0.9	0	-5.35
Apr-01	0.01	0.77	0.96	0	-1.73	0.76	2.22	0.94	0	-2.4	1.21	4.9	0.94	0	4.63	0.19	3.8	0.92	0	4.53	0.95	4.88	0.93	0	-4.86
May-01	0.02	0.66	0.98	0	-1.62	0.8	1.75	0.96	0	1.91	1.25	4.31	0.96	0	4.03	0.2	3.38	0.95	0	4.13	1.01	4.4	0.96	0	-4.35
Jun-01	0.02	0.55	1	0	-1.54	0.86	1.3	0.99	0.01	1.44	1.31	3.75	0.99	0	3.44	0.21	2.97	0.98	0	3.75	1.07	3.95	0.98	0	-3.87
Jul-01	0.02	0.47	1.03	0	-1.47	0.9	0.89	1.01	0.01	1.01	1.38	3.22	1.02	0	2.86	0.21	2.58	1.01	0	3.38	1.12	3.52	1.01	0	-3.41
Aug-01	0.03	0.39	1.05	0	-1.41	0.98	0.5	1.04	0.02	0.58	1.46	2.71	1.04	0.01	2.31	0.22	2.19	1.05	0	3.02	1.19	3.1	1.04	0	-2.95
Sep-01	0.04	0.33	1.07	0	-1.36	1.05	0.15	1.06	0.06	0.22	1.53	2.24	1.06	0.01	1.78	0.23	1.82	1.08	0	2.68	1.27	2.71	1.06	0	-2.51

Oct-01	0.06	0.29	1.1	0	-1.33	1.08	-0.18	1.09	-0.06	0.23	1.58	1.79	1.09	0.01	-1.3	0.24	1.47	1.12	0	-2.35	1.34	2.33	1.09	0.01	-2.09
Nov-01	0.09	0.25	1.13	0	-1.3	1.12	-0.47	1.11	-0.02	0.5	1.62	1.36	1.12	0.01	0.88	0.24	1.13	1.15	0	-2.04	1.41	1.98	1.13	0.01	-1.7
Dec-01	0.12	0.24	1.13	0	-1.25	1.18	-0.74	1.14	-0.01	0.79	1.66	0.97	1.15	0.01	-0.47	0.25	0.8	1.19	0	-1.74	1.5	1.64	1.17	0.01	-1.31
Jan-02	0.15	0.23	0.87	0.01	-0.96	1.26	-0.97	0.86	-0.01	1.39	1.7	0.6	0.85	0.03	0.21	0.26	0.49	0.81	0.01	-1.05	1.58	1.32	0.85	0.01	-0.6
Feb-02	0.16	0.24	0.9	0.01	-0.98	1.36	1.18	0.89	-0.01	1.66	1.76	0.26	0.88	0.08	0.55	0.27	0.19	0.85	0.02	-0.78	1.67	1.02	0.88	0.02	-0.25
Mar-02	0.22	0.27	0.94	0.01	-0.99	1.44	-1.35	0.91	-0.01	1.89	1.82	0.06	0.91	-0.36	1.33	0.29	-0.1	0.88	0.03	-0.47	1.78	0.75	0.9	0.03	0.11
Apr-02	0.22	0.3	0.95	0.01	-1.04	1.49	-1.5	0.94	-0.01	2.06	1.91	0.34	0.94	-0.06	1.37	0.29	0.37	0.92	0.01	-0.24	1.88	0.49	0.93	0.04	0.43
May-02	0.23	0.36	0.96	0.01	-1.1	1.58	1.61	0.96	-0.01	2.23	1.98	-0.6	0.96	-0.03	1.66	0.3	0.63	0.95	0	-0.01	1.96	0.25	0.96	0.08	0.68
Jun-02	0.23	0.42	0.98	0.01	-1.18	1.7	-1.7	0.99	-0.01	2.42	2.08	0.83	0.99	-0.03	1.95	0.31	0.88	0.98	0	0.21	2.04	0.03	0.98	0.82	0.21
Jul-02	0.23	0.5	1	0	-1.28	1.87	-1.75	1.01	-0.01	2.62	2.18	1.04	1.02	-0.02	2.23	0.31	1.11	1.01	0	0.41	2.1	-0.18	1.01	-0.12	1.38
Aug-02	0.23	0.6	1.03	0	-1.4	2.15	1.78	1.04	-0.01	2.9	2.31	1.21	1.04	-0.02	2.5	0.32	1.33	1.05	0	0.6	2.15	-0.36	1.04	-0.06	1.52
Sep-02	0.25	0.7	1.05	0	-1.51	2.4	1.77	1.06	-0.01	3.12	2.4	1.36	1.06	-0.02	2.72	0.33	1.54	1.08	0	0.79	2.17	-0.52	1.06	-0.04	1.67
Oct-02	0.26	0.83	1.07	0	-1.64	2.62	1.74	1.09	-0.01	3.28	2.52	1.49	1.09	-0.02	2.93	0.35	1.73	1.12	0	0.96	2.23	-0.66	1.09	-0.03	1.83
Nov-02	0.59	0.96	1.1	0.01	-1.48	2.76	1.67	1.11	-0.01	3.33	2.62	1.58	1.12	-0.01	3.1	0.38	-1.9	1.15	0	1.13	2.34	-0.79	1.13	-0.03	2.02
Dec-02	1.03	1.11	1.13	0.01	-1.22	2.89	1.58	1.14	-0.02	3.34	2.69	1.65	1.15	-0.01	3.2	0.4	2.07	1.19	0	1.28	2.41	-0.89	1.17	-0.02	2.15
Jan-03	1.51	1.28	0.87	0.01	-0.65	3	1.45	0.86	-0.02	3.61	2.72	1.69	0.85	-0.02	3.58	0.4	2.22	0.81	0	1.81	2.42	-0.98	0.85	-0.03	2.58
Feb-03	1.8	1.45	0.9	0.01	-0.53	3.12	-1.3	0.89	-	3.55	2.78	-1.7	0.88	-0.02	3.63	0.4	-	0.85	0	1.92	2.46	-1.04	0.88	-	2.65

Month																									
	4								0.03								2.36							0.03	
Mar-03	2.55	1.65	0.94	0.02	-0.05	3.2	1.11	0.91	-0.03	3.43	2.86	1.68	0.91	-0.02	3.65	0.41	-2.48	0.88	0	2.01	2.51	-1.09	0.9	-0.03	2.72
Apr-03	2.94	1.85	0.95	0.02	0.12	3.36	-0.9	0.94	-0.04	3.35	2.95	1.64	0.94	-0.02	3.68	0.41	-2.59	0.92	0	2.08	2.49	-1.11	0.93	-0.02	2.7
May-03	3.24	2.07	0.96	0.02	0.19	3.62	-0.65	0.96	-0.05	3.36	3.11	1.57	0.96	-0.02	3.74	0.42	-2.69	0.95	0	2.16	2.58	-1.12	0.96	-0.02	2.77
Jun-03	3.48	2.31	0.98	0.02	0.18	3.91	-0.38	0.99	-0.1	3.39	3.33	1.48	0.99	-0.02	3.84	0.43	-2.77	0.98	0	2.22	2.77	-1.11	0.98	-0.03	2.92
Jul-03	3.78	2.55	1	0.01	0.21	4.2	-0.07	1.01	-0.55	3.81	3.59	1.35	1.02	-0.03	3.96	0.43	-2.84	1.01	0	2.26	3	-1.08	1.01	-0.03	3.1
Aug-03	4	2.82	1.03	0.01	0.14	4.56	0.26	1.04	0.15	3.11	3.85	-1.2	1.04	-0.03	4.04	0.46	-2.89	1.05	0	2.31	3.21	-1.03	1.04	-0.03	3.23
Sep-03	4.32	3.09	1.05	0.01	0.17	4.8	0.63	1.06	0.07	3.04	3.97	1.02	1.06	-0.04	3.96	0.5	-2.94	1.08	0	2.36	3.34	-0.96	1.06	-0.03	3.27
Oct-03	4.69	3.38	1.07	0.01	0.22	5.06	1.03	1.09	0.04	2.9	4.15	0.81	1.09	-0.05	3.92	0.57	-2.97	1.12	0	2.42	3.48	-0.87	1.09	-0.04	3.29
Nov-03	4.95	3.69	1.1	0.01	0.15	5.37	1.45	1.11	0.03	2.78	4.41	0.58	1.12	-0.07	3.95	0.69	-2.98	1.15	0	2.52	3.84	-0.76	1.13	-0.04	3.51
Dec-03	5.09	4	1.13	0.01	-0.06	5.7	1.91	1.14	0.02	2.64	4.8	0.32	1.15	-0.13	4.11	0.75	-2.98	1.19	0	2.54	4.12	-0.63	1.17	-0.06	3.64
Jan-04	5.22	4.34	0.87	0.01	-0.01	6.08	2.39	0.86	0.03	2.8	5.22	0.03	0.85	-2.05	6.45	0.79	-2.97	0.81	0	2.95	4.46	-0.48	0.85	-0.11	4.21
Feb-04	5.28	4.68	0.9	0.01	-0.32	6.44	2.91	0.89	0.02	2.63	5.66	0.29	0.88	0.23	4.27	0.85	-2.94	0.85	0	2.95	4.71	-0.32	0.88	-0.17	4.32
Mar-04	5.61	5.04	0.94	0.01	-0.38	6.76	3.45	0.91	0.02	2.38	6.07	0.63	0.91	0.11	4.42	1.03	-2.9	0.88	0	3.05	4.93	-0.13	0.9	-0.42	4.58
Apr-04	5.76	5.42	0.95	0.01	-0.62	7.02	4.03	0.94	0.02	2.04	6.4	1	0.94	0.07	4.39	1.07	-2.85	0.92	0	3.01	5.09	0.08	0.93	-0.72	3.37
May-04	5.95	5.8	0.96	0.01	-0.83	7.34	4.63	0.96	0.02	1.73	6.65	1.4	0.96	0.05	4.24	1.12	-2.78	0.95	0	2.96	5.23	0.3	0.96	0.18	3.79
Jun-04	6.21	6.21	0.98	0.01	-0.99	7.67	5.27	0.99	0.01	1.4	6.86	1.82	0.99	0.04	4.01	1.17	-2.7	0.98	0	2.9	5.35	0.55	0.98	0.1	3.72

Jul-04	6.67	6.62	1	0.01	-0.96	8	5.93	1.01	0.01	1.04	7.13	2.28	1.02	0.03	3.8	1.27	-2.61	1.01	0	2.87	5.56	0.81	1.01	0.07	3.68
Aug-04	7.32	7.05	1.03	0.01	-0.77	8.29	6.63	1.04	0.01	0.61	7.35	2.76	1.04	0.03	3.53	1.38	-2.5	1.05	0.01	2.83	5.68	1.09	1.04	0.05	3.5
Sep-04	8.11	7.5	1.05	0.01	-0.44	8.7	7.35	1.06	0.01	0.28	7.57	3.27	1.06	0.02	3.22	1.47	-2.38	1.08	0.01	2.77	5.77	1.4	1.06	0.04	3.27
Oct-04	8.56	7.95	1.07	0.01	-0.48	9.06	8.11	1.09	0.01	-0.14	7.8	3.8	1.09	0.02	2.89	1.51	-2.25	1.12	0.01	2.65	5.88	1.72	1.09	0.03	3.03
Nov-04	8.86	8.43	1.1	0.01	-0.68	9.42	8.89	1.11	0.01	-0.59	8.12	4.36	1.12	0.02	2.62	1.56	-2.1	1.15	0.01	2.51	6	2.06	1.13	0.03	2.78
Dec-04	9.21	8.91	1.13	0.01	-0.84	9.83	9.71	1.14	0.01	-1.03	8.46	4.95	1.15	0.01	2.35	1.65	-1.93	1.19	0.01	2.4	6.19	2.42	1.17	0.02	2.58
Jan-05	9.55	9.41	0.87	0.01	-0.75	10.24	10.55	0.86	0.01	-1.18	8.73	5.57	0.85	0.02	2.29	1.69	-1.76	0.81	0.01	2.64	6.38	2.8	0.85	0.03	2.71
Feb-05	9.8	9.93	0.9	0.01	-1.04	10.66	11.43	0.89	0.01	-1.66	9.03	6.21	0.88	0.02	1.92	1.72	-1.57	0.85	0.01	2.45	6.56	3.2	0.88	0.02	2.46
Mar-05	10.49	10.45	0.94	0.01	-0.92	10.98	12.33	0.91	0.01	-2.27	9.15	6.89	0.91	0.01	1.34	1.76	-1.37	0.88	0.01	2.25	6.51	3.62	0.9	0.02	1.97
Apr-05	10.84	11	0.95	0.01	-1.12	11.39	13.27	0.94	0.01	-2.82	9.32	7.59	0.94	0.01	0.78	1.77	-1.15	0.92	0.02	2.02	6.6	4.06	0.93	0.02	1.6
May-05	11.1	11.55	0.96	0.01	-1.42	11.8	14.23	0.96	0.01	-3.4	9.55	8.31	0.96	0.01	0.26	1.79	-0.92	0.95	0.02	1.78	6.83	4.52	0.96	0.02	1.34
Jun-05	11.52	12.12	0.98	0.01	-1.59	12.26	15.23	0.99	0.01	-3.97	9.82	9.07	0.99	0.01	0.25	1.86	-0.68	0.98	0.03	1.58	7.03	4.99	0.98	0.01	1.03
Jul-05	12.06	12.71	1	0.01	-1.66	12.79	16.25	1.01	0.01	-4.48	10.28	9.85	1.02	0.01	-0.6	1.94	-0.42	1.01	0.05	1.39	7.22	5.49	1.01	0.01	0.71
Aug-05	12.71	13.3	1.03	0.01	-1.63	13.41	17.31	1.04	0.01	-4.94	10.76	10.66	1.04	0.01	0.95	2.01	-0.15	1.05	0.13	1.23	7.36	6	1.04	0.01	0.31
Sep-05	13.34	13.92	1.05	0.01	-1.64	14.07	18.39	1.06	0.01	-5.39	11.21	11.49	1.06	0.01	1.36	2.09	-0.14	1.08	0.14	0.73	7.44	6.54	1.06	0.01	-0.18
Oct-05	14.02	14.54	1.07	0.01	-1.61	14.74	19.51	1.09	0.01	-5.86	11.69	12.36	1.09	0.01	1.76	2.17	0.43	1.12	0.04	0.57	7.58	7.09	1.09	0.01	-0.62
Nov-05	14.	15.18	1.1	0.01	-1.43	15.42	20.6	1.11	0.01	-	12.2	13.2	1.12	0.01	-	2.23	0.74	1.15	0.03	0.31	7.76	7.67	1.13	0.01	-1.05

Date																									
	87					5			6.35	3	5			2.14											
Dec-05	15.95	15.84	1.13	0.01	-1.03	16.33	21.83	1.14	0.01	-6.64	12.97	14.17	1.15	0.01	-2.35	2.28	1.07	1.19	0.02	0.01	8.1	8.26	1.17	0.01	-1.34
Jan-06	17.12	16.5	0.87	0.01	-0.27	17.37	23.03	0.86	0.01	-6.53	13.75	15.11	0.85	0.01	-2.22	2.38	1.41	0.81	0.02	0.14	8.45	8.88	0.85	0.01	-1.28
Feb-06	17.89	17.19	0.9	0.01	-0.21	18.45	24.27	0.89	0.01	-6.71	14.53	16.09	0.88	0.01	-2.44	2.46	1.76	0.85	0.02	-0.16	8.83	9.51	0.88	0.01	-1.57
Mar-06	19.21	17.88	0.94	0.01	0.37	19.58	25.53	0.91	0.01	-6.87	15.36	17.09	0.91	0.01	-2.64	2.61	2.13	0.88	0.01	-0.41	9.3	10.16	0.9	0.01	-1.77
Apr-06	19.71	18.59	0.95	0.01	0.15	20.68	26.83	0.94	0.01	-7.09	16.06	18.11	0.94	0.01	-3	2.83	2.51	0.92	0.01	-0.61	9.63	10.83	0.93	0.01	-2.14
May-06	20.2	19.32	0.96	0.01	-0.09	21.86	28.15	0.96	0.01	-7.26	16.77	19.17	0.96	0.01	-3.37	3.02	2.9	0.95	0.01	-0.84	10.09	11.52	0.96	0.01	-2.39
Jun-06	20.57	20.05	0.98	0.01	-0.48	23.07	29.51	0.99	0.01	-7.43	17.54	20.25	0.99	0.01	-3.71	3.2	3.31	0.98	0.01	-1.1	10.59	12.23	0.98	0.01	-2.63
Jul-06	21.37	20.81	1	0.01	-0.45	24.34	30.89	1.01	0.01	-7.57	18.4	21.36	1.02	0.01	-3.99	3.39	3.73	1.01	0.01	-1.36	11.22	12.96	1.01	0.01	-2.76
Aug-06	22.33	21.57	1.03	0.01	-0.28	25.65	32.31	1.04	0.01	-7.7	19.38	22.5	1.04	0.01	-4.17	3.6	4.16	1.05	0.01	-1.62	11.88	13.71	1.04	0.01	-2.87
Sep-06	23.23	22.35	1.05	0.01	-0.19	27.06	33.75	1.06	0.01	-7.76	20.36	23.66	1.06	0.01	-4.38	3.8	4.61	1.08	0.01	-1.9	12.56	14.48	1.06	0.01	-2.99
Oct-06	24.38	23.15	1.07	0.01	0.15	28.61	35.23	1.09	0.01	-7.71	21.27	24.86	1.09	0.01	-4.69	4.01	5.07	1.12	0.01	-2.19	13.25	15.26	1.09	0.01	-3.12
Nov-06	25.35	23.95	1.1	0.01	0.28	30.26	36.73	1.11	0.01	-7.59	22.27	26.08	1.12	0.01	-4.93	4.24	5.54	1.15	0.01	-2.47	14.2	16.07	1.13	0.01	-3.01
Dec-06	26.04	24.78	1.13	0.01	0.13	31.97	38.27	1.14	0.01	-7.44	23.31	27.32	1.15	0.01	-5.17	4.51	6.03	1.19	0.01	-2.72	14.89	16.89	1.17	0.01	-3.18
Jan-07	26.94	25.61	0.87	0.01	0.44	33.73	39.83	0.86	0.01	-6.97	24.41	28.6	0.85	0.01	-5.04	4.8	6.54	0.81	0.01	-2.56	15.59	17.74	0.85	0.01	-3
Feb-07	28.02	26.46	0.9	0.01	0.65	35.44	41.43	0.89	0.01	-6.88	25.34	29.9	0.88	0.01	-5.44	5.09	7.05	0.85	0.01	-2.81	16.22	18.6	0.88	0.01	-3.27
Mar-07	30.18	27.33	0.94	0.01	1.9	37.14	43.05	0.91	0.01	-6.83	26.44	31.23	0.91	0.01	-5.7	5.51	7.58	0.88	0.01	-2.96	16.74	19.49	0.9	0.01	-3.66

Apr-07	30.24	28.2	0.95	0.01	1.07	38.89	44.71	0.94	0.01	-6.76	27.7	32.58	0.94	0.01	-5.83	5.93	8.12	0.92	0.01	-3.12	17.38	20.39	0.93	0.01	-3.95
May-07	30.54	29.1	0.96	0.01	0.47	40.74	46.39	0.96	0.01	-6.62	29.21	33.97	0.96	0.01	-5.73	6.41	8.68	0.95	0.01	-3.23	18.27	21.32	0.96	0.01	-4.01
Jun-07	31.03	30	0.98	0.01	0.04	42.7	48.11	0.99	0.01	-6.4	30.75	35.38	0.99	0.01	-5.63	6.78	9.25	0.98	0.01	-3.46	19.3	22.26	0.98	0.01	-3.95
Jul-07	31.65	30.92	1	0.01	-0.29	44.76	49.85	1.01	0.01	-6.11	32.44	36.82	1.02	0.01	-5.41	7.16	9.83	1.01	0.01	-3.69	20.29	23.22	1.01	0.01	-3.94
Aug-07	32.43	31.86	1.03	0.01	-0.46	46.81	51.63	1.04	0.01	-5.86	34.12	38.28	1.04	0.01	-5.22	7.62	10.43	1.05	0.01	-3.87	21.27	24.2	1.04	0.01	-3.98
Sep-07	33.08	32.8	1.05	0.01	-0.79	48.88	53.43	1.06	0.01	-5.62	35.66	39.78	1.06	0.01	-5.19	8.04	11.04	1.08	0.01	-4.09	22.15	25.2	1.06	0.01	-4.12
Oct-07	33.86	33.77	1.07	0.01	-0.99	50.91	55.27	1.09	0.01	-5.45	37.19	41.3	1.09	0.01	-5.21	8.52	11.67	1.12	0.01	-4.27	22.99	26.22	1.09	0.01	-4.33
Nov-07	34.83	34.74	1.1	0.01	-1.02	52.96	57.13	1.11	0.01	-5.29	38.56	42.85	1.12	0.01	-5.41	9.03	12.3	1.15	0.01	-4.44	23.88	27.26	1.13	0.01	-4.52
Dec-07	35.67	35.73	1.13	0.01	-1.21	55.16	59.03	1.14	0.01	-5.01	39.86	44.42	1.15	0.01	-5.71	9.43	12.95	1.19	0.01	-4.72	24.85	28.32	1.17	0.01	-4.64
Jan-08	36.76	36.74	0.87	0.01	-0.86	57.42	60.95	0.86	0.01	-4.4	41.15	46.03	0.85	0.01	-5.74	9.93	13.62	0.81	0.01	-4.51	25.9	29.4	0.85	0.01	-4.35
Feb-08	37.69	37.75	0.9	0.01	-0.97	59.67	62.91	0.89	0.01	-4.13	42.56	47.66	0.88	0.01	-5.99	10.19	14.3	0.85	0.01	-4.97	26.96	30.49	0.88	0.01	-4.42
Mar-08	39.45	38.79	0.94	0.01	-0.28	61.98	64.89	0.91	0.01	-3.83	44.13	49.31	0.91	0.01	-6.11	10.61	14.99	0.88	0.01	-5.27	28.21	31.61	0.9	0.01	-4.31
Apr-08	39.97	39.83	0.95	0.01	-0.83	64.37	66.91	0.94	0.01	-3.48	45.78	51	0.94	0.01	-6.16	10.99	15.7	0.92	0.01	-5.63	29.4	32.75	0.93	0.01	-4.28
May-08	40.35	40.89	0.96	0.01	-1.52	66.83	68.95	0.96	0.01	-3.1	47.47	52.71	0.96	0.01	-6.22	11.49	16.42	0.95	0.01	-5.88	30.64	33.9	0.96	0.01	-4.23
Jun-08	40.8	41.97	0.98	0.01	-2.15	69.38	71.03	0.99	0.01	-2.64	49.2	54.45	0.99	0.01	-6.25	11.92	17.15	0.98	0.01	-6.21	31.74	35.08	0.98	0.01	-4.33
Jul-08	41.45	43.05	1	0.01	-2.61	72.08	73.13	1.01	0.01	-2.08	50.95	56.22	1.02	0.01	-6.29	12.48	17.9	1.01	0.01	-6.44	32.45	36.27	1.01	0.01	-4.84
Aug-08	42.	44.16	1.03	0.01	-3.06	74.78	75.2	1.04	0.01	-	52.7	58.0	1.04	0.01	-6.3	13.13	18.6	1.05	0.01	-	32.84	37.48	1.04	0.01	-5.69

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25
13						7			1.53	6	1					6			6.59					
Sep-08	42.84	45.27	1.05	0.01	-3.49	77.48	77.43	1.06	0.01	-1.02	54.62	59.83	1.06	0.01	6.28	13.88	19.43	1.08	0.01	-6.64	33.98	38.72	1.06	0.01	-5.81
Oct-08	43.55	46.4	1.07	0.01	-3.93	80.2	79.63	1.09	0.01	-0.52	56.7	61.68	1.09	0.01	-6.08	14.66	20.22	1.12	0.01	-6.68	35.22	39.97	1.09	0.01	-5.85
Nov-08	44.31	47.55	1.1	0.01	-4.35	82.92	81.85	1.11	0.01	0.05	58.76	63.56	1.12	0.01	5.92	15.38	21.02	1.15	0.01	-6.8	36.52	41.24	1.13	0.01	-5.87
Dec-08	45.26	48.7	1.13	0.01	-4.58	85.65	84.11	1.14	0.01	0.4	60.93	65.46	1.15	0.01	5.68	16.08	21.83	1.19	0.01	-6.95	38.01	42.53	1.17	0.01	-5.7
Jan-09	46.68	49.88	0.87	0.01	-4.08	88.38	86.39	0.86	0.01	1.12	63.34	67.4	0.85	0.01	4.91	16.76	22.66	0.81	0.01	-6.72	40.02	43.84	0.85	0.01	-4.68
Feb-09	48.27	51.06	0.9	0.01	-3.7	91.11	88.71	0.89	0.01	1.51	65.92	69.35	0.88	0.01	4.32	17.48	23.51	0.85	0.01	-6.88	41.52	45.17	0.88	0.01	-4.54
Mar-09	50.86	52.26	0.94	0.01	-2.35	93.92	91.05	0.91	0.01	1.95	68.77	71.34	0.91	0.01	3.49	18.48	24.36	0.88	0.01	-6.78	43.02	46.52	0.9	0.01	-4.41
Apr-09	51.95	53.48	0.95	0.01	-2.49	96.74	93.43	0.94	0.01	2.36	71.54	73.35	0.94	0.01	2.76	19.59	25.23	0.92	0.01	-6.57	44.17	47.89	0.93	0.01	-4.66
May-09	52.44	54.7	0.96	0.01	-3.24	99.55	95.83	0.96	0.01	2.75	74.08	75.4	0.96	0.01	2.29	20.69	26.11	0.95	0.01	-6.39	45.48	49.28	0.96	0.01	-4.77
Jun-09	53.37	55.95	0.98	0.01	-3.56	102.37	98.27	0.99	0.01	3.1	76.45	77.46	0.99	0.01	2.01	21.8	27.01	0.98	0.01	-6.2	47.09	50.69	0.98	0.01	-4.59
Jul-09	55.03	57.2	1	0.01	-3.18	105.18	100.73	1.01	0.01	3.42	78.68	79.56	1.02	0.01	1.91	23.1	27.92	1.01	0.01	-5.84	48.52	52.11	1.01	0.01	-4.61
Aug-09	56.41	58.47	1.03	0.01	-3.1	108	103.23	1.04	0.01	3.72	80.87	81.68	1.04	0.01	1.86	24.42	28.84	1.05	0.01	-5.48	50.06	53.56	1.04	0.01	-4.55
Sep-09	57.73	59.76	1.05	0.01	-3.09	110.51	105.75	1.06	0.01	3.69	82.85	83.83	1.06	0.01	2.06	25.73	29.78	1.08	0.01	-5.14	51.45	55.02	1.06	0.01	-4.64
Oct-09	58.4	61.05	1.07	0.01	-3.74	113.21	108.31	1.09	0.01	3.81	85.83	86.01	1.09	0.01	1.28	27.75	30.73	1.12	0.01	-4.11	53.35	56.51	1.09	0.01	-4.26
Nov-09	59.7	62.37	1.1	0.01	-3.78	116.01	110.89	1.11	0.01	4	88.61	88.02	1.12	0.01	0.73	29.35	31.7	1.15	0.01	-3.5	55.91	58.01	1.13	0.01	-3.25
Dec-09	61.79	63.69	1.13	0.01	-3.04	118.86	113.51	1.14	0.01	4.21	91.4	90.45	1.15	0.01	-0.2	31.02	32.67	1.19	0.01	2.85	57.61	59.54	1.17	0.01	-3.1

Month																									
Jan-10	64.06	65.03	0.87	0.01	-1.85	121.71	116.15	0.86	0.01	4.69	94.14	92.71	0.85	0.01	0.57	33.04	33.66	0.81	0.01	-1.45	59.89	61.08	0.85	0.01	-2.05
Feb-10	65.7	66.39	0.9	0.01	-1.59	124.62	118.83	0.89	0.01	4.9	97.23	95	0.88	0.01	1.34	34.86	34.67	0.85	0.01	-0.67	62.14	62.64	0.88	0.01	-1.39
Mar-10	68.27	67.75	0.94	0.01	-0.43	127.62	121.53	0.91	0.01	5.17	100.86	97.31	0.91	0.01	2.63	36.86	35.69	0.88	0.01	0.28	63.82	64.22	0.9	0.01	-1.31
Apr-10	69.56	69.14	0.95	0.01	-0.54	130.62	124.27	0.94	0.01	5.41	103.76	99.65	0.94	0.01	3.15	38.47	36.72	0.92	0.01	0.82	65.29	65.83	0.93	0.01	-1.48
May-10	70.65	70.53	0.96	0.01	-0.86	133.62	127.03	0.96	0.01	5.62	106.35	102.02	0.96	0.01	3.35	40.08	37.77	0.95	0.01	1.35	66.73	67.45	0.96	0.01	-1.69
Jun-10	71.79	71.94	0.98	0.01	-1.14	136.62	129.83	0.99	0.01	5.8	109.06	104.42	0.99	0.01	3.64	41.68	38.83	0.98	0.01	1.86	68.89	69.09	0.98	0.01	-1.19
Jul-10	73.01	73.37	1	0.01	-1.37	139.22	132.65	1.01	0.01	5.55	111.47	106.84	1.02	0.01	3.59	43.3	39.9	1.01	0.01	2.37	70.75	70.75	1.01	0.01	-1.02
Aug-10	75.35	74.8	1.03	0.01	-0.49	141.25	135.51	1.04	0.01	4.7	113.77	109.3	1.04	0.01	3.43	44.91	40.99	1.05	0.01	2.86	72.74	72.42	1.04	0.01	-0.74
Sep-10	77.72	76.26	1.05	0.01	0.4	143.29	138.39	1.06	0.01	3.83	115.55	111.77	1.06	0.01	2.71	46.52	42.09	1.08	0.01	3.34	74.21	74.12	1.06	0.01	-0.98
Oct-10	80.23	77.72	1.07	0.01	1.42	146.29	141.31	1.09	0.01	3.89	118.04	114.28	1.09	0.01	2.66	47.52	43.2	1.12	0.01	3.19	76.02	75.84	1.09	0.01	-0.92
Nov-10	83.28	79.2	1.1	0.01	2.97	149.39	144.25	1.11	0.01	4.02	121.16	116.82	1.12	0.01	3.22	48.74	44.33	1.15	0.01	3.25	78.83	77.58	1.13	0.01	0.11
Dec-10	86.5	80.7	1.13	0.01	4.67	152.5	147.23	1.14	0.01	4.12	124.26	119.38	1.15	0.01	3.72	50.17	45.47	1.19	0.01	3.5	81.78	79.33	1.17	0.01	1.27
Jan-11	88.74	82.2	0.87	0.01	5.65	155.8	150.23	0.86	0.01	4.69	127.36	121.96	0.85	0.01	4.54	51.83	46.62	0.81	0.01	4.38	84.29	81.11	0.85	0.01	2.32
Feb-11	90.28	83.73	0.9	0.01	5.64	159	153.27	0.89	0.01	4.84	130.92	124.58	0.88	0.01	5.45	53.5	47.79	0.85	0.01	4.85	86.8	82.9	0.88	0.01	3.01
Mar-11	91.66	85.26	0.94	0.01	5.45	162.2	156.33	0.91	0.01	4.95	134.57	127.22	0.91	0.01	6.42	54.84	48.98	0.88	0.01	4.97	89.5	84.72	0.9	0.01	3.87
Apr-11	92.36	86.81	0.95	0.01	4.59	164.61	159.43	0.94	0.01	4.24	136.98	129.89	0.94	0.01	6.14	55.95	50.17	0.92	0.01	4.85	91.95	86.55	0.93	0.01	4.46
May-11	92.	88.38	0.96	0.01	3.5	167.0	162.	0.96	0.01	3.54	139.	132.	0.96	0.01	5.86	57.06	51.3	0.95	0.01	4.72	93.75	88.4	0.96	0.01	4.38

Month	y*	yc**	S	C	I	y*	yc**	S	C	I	y*	yc**	S	C	I	y*	yc**	S	C	I	y*	yc**	S	C	I
	85					7	55				43	59					8								
Jun-11	93.7	89.95	0.98	0.01	2.75	169.19	165.71	0.99	0.01	2.48	141.52	135.32	0.99	0.01	5.2	57.98	52.6	0.98	0.01	4.38	95.11	90.28	0.98	0.01	3.84
Jul-11	95.5	91.55	1	0.01	2.94	170.7	168.89	1.01	0.01	0.78	143.01	138.07	1.02	0.01	3.91	58.59	53.84	1.01	0.01	3.72	96.11	92.17	1.01	0.01	2.92
Aug-11	95.92	93.15	1.03	0.01	1.73	171.85	172.11	1.04	0.01	1.31	144.14	140.85	1.04	0.01	2.24	59.19	55.09	1.05	0.01	3.04	98.44	94.08	1.04	0.01	3.31
Sep-11	96.4	94.77	1.05	0.01	0.57	172.78	175.35	1.06	0.01	-3.64	144.99	143.66	1.06	0.01	0.26	59.79	56.35	1.08	0.01	2.35	100.18	96.01	1.06	0.01	3.1
Oct-11	96.95	96.41	1.07	0.01	-0.54	173.73	178.63	1.09	0.01	-5.99	145.92	146.49	1.09	0.01	-1.68	60.28	57.63	1.12	0.01	1.53	101.82	97.96	1.09	0.01	2.76
Nov-11	97.54	98.05	1.1	0.01	-1.63	174.69	181.93	1.11	0.01	-8.36	146.84	149.36	1.12	0.01	-3.64	60.96	58.92	1.15	0.01	0.88	103.99	99.93	1.13	0.01	2.92
Dec-11	98.01	99.72	1.13	0.01	-2.85	175.65	185.27	1.14	0.01	-10.76	147.75	152.25	1.15	0.01	-5.65	61.64	60.23	1.19	0.01	0.22	106.38	101.92	1.17	0.01	3.28
Jan-12	98.92	101.39	0.87	0.01	-3.36	176.95	188.63	0.86	0.01	-12.55	148.6	155.16	0.85	0.01	-7.42	62.46	61.54	0.81	0.01	0.09	108.13	103.93	0.85	0.01	3.34
Feb-12	98.96	103.08	0.9	0.01	-5.03	178.78	192.03	0.89	0.01	-14.14	149.44	158.11	0.88	0.01	-9.56	63.26	62.87	0.85	0.01	-0.48	110.71	105.95	0.88	0.01	3.87

y*-Subscription or Actual sales in million

yc-Trend values**

S-Seasonal Variation, C-Cyclical Variation, I-Irregular Component