

VIEWPOINT

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VIEWPOINT

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Editorial

With already published ten issues, and eleventh in hand, we thought it pertinent to reiterate the scope of the journal.

The journal, Viewpoint was initiated in the year 2010. Since then the journal has published *Viewpoints and Research Papers* of highly acclaimed industrialists, environmentalists, government officials and academicians. The section of the journal, named *Viewpoint* invites the opinion of authors on any issue, problem, or agenda having contemporary relevance. Over all these years the journal has published thoughtful *Viewpoints* on diverse issues like sustainable development, entrepreneurship, cyber security, spiritual economics etc.

Another section of the journal, *Research Papers* carries papers in different areas of management and brings forth food for thought to carry forward the research. The journal provides a forum to research scholars, veterans, industrialists to share their researches which can be used in the larger interest of the society. Due cognizance is given to *Case Studies* and *Book Reviews* in the journal.

All the papers received for the journal undergo thorough review and plagiarism check to ensure that only genuine research finds place in the publication. The forthcoming issue of the journal (Volume 7, issue 1) will be publishing selective papers presented in the Conference on Brand Management in IIT Delhi on April 16-17, 2016 (<http://cbmiitd.in/research.html>).

Dr. Vaishali Dhingra

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To justify spiritual economics based on Gita for economic reforms in India, we have to know what to do and what not to do? Why? When? Where? For whom? It is pertinent to mention that all religions give same message of ethical values but in different languages, tone and tenor. For proving Incredible India as independent, non violent, democracy with integrity and amity, we have to adopt spiritual economics which promote 'Needonomics' confining to needs and no to greed. Spiritual economics is a simple and practical formula for corporate sector to adopt corporate social responsibility (CSR) as 'Trusteeship'—a socio-economic philosophy of Mahatma Gandhi who always said India possess sufficient to satisfy needs and not greed.

Spiritual economics is the proper, productive and practical (3P) use of head, heart and hands (3H)- the real education for the workers in the Indian knowledge economy. This is a way to balanced and sustainable development for all the economies of the world including India and its 29 States and 7 Union Territories (UT). To boost growth (inclusive), gross domestic product (GDP), human development index (HDI), human happiness index (HHI), capital formation, marginal propensity to invest (MPI) and marginal propensity to save (MPS), we have to say no to corruption, inflation, unemployment, poverty, fear (false evidences appearing real), free rider problem, delays and above all greed.

We need user pay principle, spiritual tourism and conversion of Life Insurance Corporation (LIC) of India with logo of 'yoga-ksemam vahamy aham' (Gita: 9.22) as a multinational corporation (MNC).

To capture the full potential of 'Make in India' for generating employment, we need rainbow revolution in

agriculture sector with fast track mechanism for reducing cost and time in the process of 'Bake in India' without any foreign direct investment (FDI) also falls in the domain of spiritual economics.

To reduce unit cost of labour, we have to create work culture by promoting work is worship and vice-versa. Peace in every head and heart (consumer, producer, distributor and trader) is necessary and sufficient to say no to stress, tensions and fear caused by spiritual bankruptcy and commercialization .There is a direct correlation between peace and performance of any economy ensuring intra-generation and inter-generation equity with increase per capita income. Spiritually Guided Materialism (SGM) strategy is the need of the day for solving all of the economic and non economic problems. I firmly believe that the rate of progress in spiritualism is faster than the rate of progress in materialism. Therefore, there is need of accepting spiritually guided materialism as a solution of various problems. There is a strong case for marrying spirituality with materialism in terms of SGM strategy flowing from our epics including Bhagwad Gita which is an ism neutral religion free treatise on welfare economics and management. Let us learn and relearn spiritual economics confining to needs and no to greed in and out of India for all practical aspects of the economy including recession and depression.

Dr. Madan Mohan Goel is President, Antarjyoti as well as Professor of Economics & Editor, KU Research Journal of Arts and Humanities, Former Dean, Faculty of Social Sciences Kurukshetra University, Kurukshetra. He can be reached at mmgoel2001@yahoo.co.in

Impact of Global Financial Crisis on Equity Stock Prices of Select IT Companies- An Analytical Study

G.Sudarsana Reddy

The Global Financial Crisis 2008 is the most severe financial crisis witnessed by the world after the Great Depression in 1930s. It originated in the United States. The crisis is characterized by contracted liquidity in housing market in U.S. Though the crisis started in 2001-02, but has become more visible during 2007-08, when many of the renowned Wall Street firms collapsed. The crisis pulled the down India's stock market by 50 percent by November 2008 and stock prices of IT sector suffered a lot. The study is aimed to assess the impact of global financial crisis on equity stock price of the select IT companies - Wipro, Infosys and HCL Technologies. It is based on the five year secondary data collected from websites of Bombay Stock Exchange. Stock performance of IT firms compared to the performance market with the use of mean, standard deviation, co-efficient of variation, later with correlation between IT company stocks and market index. Study concludes that stock price sample companies was affected by the financial crisis, it is witnessed from the volatility and declining trend during the first four year of the study and major decline in the year 2008, later in the third quarter they have started recovering.

Key Words: Crisis, Financial, Global, Impact, Equity stock, IT Companies

The Global Financial Crisis of 2008 is the most severe financial crisis that the world has ever faced since the Great Depression of the 1930s. It is also called the US Meltdown, since it has its origin in the United States (US) housing sector back in 2001-02, but gradually extended over a period of time and eventually brought the entire world under its grip. The crisis is characterized by contracted liquidity in global credit and housing market, triggered by the failure of mortgage companies, investment banks and government institutions which had heavily invested in subprime loans. Though the crisis started in 2005-06, but has become more visible during 2007-08, when many of the renowned Wall Street firms collapsed.

According to IMF officials (Katalina, M. and Bianco, J.D.(2008), the losses due to real estate crisis is amounted to \$945 billion in USA alone, but might have run into trillions of dollars when pooled the losses of all the countries. Initially, the crisis caused mass foreclosure and default in subprime loans but the crisis accelerated during the month of September 2008, and ultimately developed into a global financial crisis. The impact of this crisis was so severe that it led to the collapse of top investment firms viz. Lehman Brothers, Bears Sterns. Merrill Lynch and others such as Citi Group, JP Morgan were rescued by the government and AIG (American Investment Group). The impact of this crisis was so severe that the United States Government had to intervene in the free market economy and had to come with \$700 billion bailout package to revive the investment banks/firms and reinstate the investors' faith in stock market (Jason Dean 2008). Since January 1, 2008 equity investors in U.S. stock market suffered about \$12 trillion dollar in losses, as their value declined from \$20 trillion to \$12 trillion (Jason Dean 2008). The subprime lending is the practice of providing loans to borrowers who do not qualify at the market rate of

interest owing to various risk factors such as low income level; size of down payments made, credit history, employment status and the like. The subprime loans also called Ninja or Liar loans. The value of U.S. subprime mortgages was estimated at \$1.3 trillion till March 2007 (World-Crisis 2008). An unbearable fact of these subprime loans was that the delinquent rate was as high as 25 per cent till March 2008.

Causes of the Subprime crisis

It is difficult to pin down the exact cause of the financial crisis, but majority of the experts and economists are of the view that subprime loans in the housing sector was one of the most important causes of the financial crisis 2008. The different causes of the crisis are specified below (UKessays 2008):

- **Boom and bust in the Housing Market:** The crisis started with the burst of housing "bubble" in 2001 and spread next to four years and reached its peak. It occurred due to rapid increase in the value of real estate property until the prices of the property reached the unsustainable level.
- **Speculation:** Assuming that investment in real estate sector yields high return than traditional investment avenues, investment in housing sector increased and about 85 percent of houses purchased in Miami were for investment purposes.
- **High Risk Loans and Lending Practices:** The subprime loans were highly risky, as these loans were offered to high risk borrowers like illegal immigrants, person without any job, any assets and any income. The share of subprime mortgages to total originations increased from 5 per cent (\$35 billions) in 1994 to 20 per cent (\$600 billion) in 2006.

- **Securitisation:** Due to securitisation, Mortgage Backed Securities (MBS) were created and sold by the investment banks. Initially a quasi government agency use to issue MBS but later private agencies started issuing MBS on subprime loans. The MBS share of subprime mortgages increased from 54 per cent in 2001 to 75 per cent in 2006.
- **Inaccurate Credit Rating:** Under new system of securitization, investment firms/banks repackaged MBS into innovative financial products called Collateral Debt Obligations (CDOs) that promised to boost the return for investors. These CDOs were further divided into small financial units called 'tranches', which were not properly rated.
- **Government Policies:** US government policy to provide houses at affordable price to all the people was the priority of the both the Clinton and Bush administration. In 1974, President Carter passed the Community Reinvestment Act. This Act made mandatory for all the banks to provide home loans to lower income people. This was fueled by the U.S. Department of Housing and Urban Development's (HUD) Mortgage policies. HUD directed Freddie and Fannie to provide at least 42 per cent of their mortgage financing to borrowers with income below the median in their area. This target was increased to 52 per cent in 2005 and achieved loan target by keeping underwriting lending standards aside
- **Central Bank Policies:** The Federal Reserve's primary concern is to manage the monetary policy and was least bothered about the housing and dot-com bubble. After the bubble burst, Central Bank tried to control the spread of the crisis to other sectors. Lowering interest rate raised home prices earlier in the decade by the Federal Reserve lowered by the funds rate target from 6.5 per cent to 1 per cent.

Impacts of the US Financial Crisis on India

Though in the beginning Indian officials denied the impact of US meltdown affecting the Indian economy but later the government had to acknowledge the fact that crisis effected Indian economy. The financial turmoil affected Indian stock markets. The combination of a rapid sell off by financial institutions and the prospect of economic slowdown have pulled down the stocks and commodities market. Foreign institutional investors (FIIs) pulled out close to \$ 11 billion from India, which led stock market down and stock prices fallen by 60 per cent. BSE Sensex touched above 21,000 points in the month of January, 2008 and has plunged below 10,000 during October 2008 (Business Today 2011). On 10 October 2008, Rs.2,50,000 crores was wiped out on a single day bourses in the India's share market (Economic Times 2015). The Sensex lost 1000 points on that day before regaining 200 points, an intraday loss of 200 points. This is due to huge withdrawal by FIIs and participatory-notes (Economic Times 2015).

Global financial crisis not only affected stock market but also impacted India's imports and exports; handloom, jewelry; tourism, IT-BPO, banks and real estate sectors; exchange rate depreciation; decrease in FIIs and Foreign Direct Investment (FDI); foreign exchange outflow; and increase in Unemployment. However, US meltdown which shook the world had little impact on India, because of India's strong fundamentals and less exposure of Indian financial sector to global financial market. Perhaps this has saved Indian economy from being swayed over instantly. Unlike in US where capitalism rules, in India, market is closely regulated by the government.

Statement of the Problem

The Indian financial system and information technology (IT) sector have been badly affected by the global financial crisis. The currency market, stock indices, money market and the mutual fund industry have been hit by the crisis to some extent. With the global financial system getting trapped in the quicksand, there is uncertainty across the Indian Software Industry. The U.S. banks have huge running relations with Indian Software Companies. A rough estimate suggests that at least a minimum of 30,000 Indian jobs impacted immediately in the wake of happenings in the U.S. financial system (The Hindu, 2008). Approximately 61 per cent of the Indian IT Sector revenues are from U.S financial corporations like Goldman Sachs, Washington Mutual, Citigroup, Bank of America, Morgan Stanley and Lehman Brothers. The top five Indian players account for 46 per cent of the IT industry revenues. The revenue contribution from U.S clients is approximately 58 per cent. About 30 percent of the industry revenues are estimated to be from financial services (UKessays 2008)⁷ The companies were finding it hard to raise fund from the financial market most of the IT companies are unable to declare dividend due to financial crunch; foreign institutional investors are with drawing huge fund from the market.

Are the stock prices of select IT Companies affected? If yes, for how many years? Are the stock prices of select IT Companies were moved along with the market or differently? Which year stock price recovered? The study seeks answers to these questions.

Objectives of the Study

The primary objective of the paper is to study the impact of global financial crisis of equity stock prices of select Information Technology (IT) companies. Also aims to study the impact of global financial crisis on Indian stock market.

Methodology

This study is purely analytical study. The study covers three software companies namely Wipro Limited, Infosys Limited and HCL Technologies. The present study deals with the market performance of the selected IT companies' stock price movements before and after recession. It covers five years period from 2004-05 to 2008-09. The information for the study is obtained from

the secondary sources - news papers, magazines - Dalal Street, website of BSE, NSE and books. The stock market prices collected from the BSE website. The data analysed using statistical tools mean, standard deviation, coefficient of variation and Correlation. SPSS package is used to calculate mean, standard deviation, coefficient of variation and correlation.

Impact of global financial crisis on Indian Stock Market

The housing burst in the US has led to a sequence of economic repercussions in the US.

Then it has got transmitted to other economies, engulfing many developed and emerging Economies. The stock market activity is one of the principal activities in the corporate world among the chain of activities, which got affected. A falling stock index reflects the dampening of the investment climate while a rising stock index indicates more confidence and soundness of the economy. The latter attracts more investment demand on stocks. Rising investment on stocks raises stock prices and generates profits. When crisis affects the real estate activities, it affects the stock market, as profit expectation on financial investments would be lower. Once the real estate sector activity lessens, that would affect the entire economy. Thus, it is mainly the expectation of the investors mainly works affecting both the financial and real estate investment in the economy.

Market Index during 2004-05 to 2007-08

Before going to study the performance of select IT companies' stock, we first discuss the performance of the market.

Table 1 Market Index during 2004-05 to 2007-08

Monthly	Opening	High	Low	Closing
Market Index for The Year 2004-05				
Mean	5724	5993	5470	5786
SD	681	655	728	717
Coefficient of variation (%)	11.89	10.93	13.31	12.39
Market Index for The Year 2005-06				
Mean	8104	8669	7910	8482
SD	1364	1475	1357	1542
Coefficient of variation (%)	16.83	17.01	17.16	18.18
Market Index for The Year 2006-07				
Mean	16604	17557	15363	12375
SD	2510	2562	1957	2193
Coefficient of variation (%)	15.12	14.59	12.74	10.35
Market Index for The Year 2007-08				
Mean	16604	17557	15363	16799
SD	2510	2562	1957	2193
Coefficient of variation (%)	15.12	14.59	12.74	13.05
Market Index for The Year 2008-09				
Mean	12674	13527	11112	12125
SD	3134	3098	3137	3055
Coefficient of variation (%)	24.73	22.90	28.23	25.19

In India the stock market has undergone significant transformations with the liberalization measures. Bombay Stock Exchange has emerged as one of the largest stock exchanges in the world in terms of the number of listed companies in all categories. BSE Sensex, sensitive index during the period continuously indicated that intraday volatility mainly due to the events which took place within the country. The internal changes within the country are normal in any country. The year 2008 was very bad year for Indian Capital Market. From a high 21,2006 in Jan 2008 and dropped to 9000 points in November in 2008 (Business Today 2011). This ripples observed in the Indian capital market was mainly due to problem with allowing or not allowing 'p' notes and the global melt down. During this period i.e. Jan to Dec 2008, the Indian Market witnessed intermittent bouts of a little surging up followed by deep plunging and Sensex. The Sensex had fallen down by more than 50 per cent and deterioration in the market capitalization of companies. The daily turnover on the exchanges has drastically fallen down.

The impact of global financial crisis on Indian capital markets has been studied by studying the volatility of sensex for the period 2004-05 to 2008-09. 2004-05 to 2006-07 has been considered as pre-financial crisis period and remaining two years has been calculated for each of the years. The market index values have been obtained for opening, high, low and closing indexes. All tables in the paper have been prepared showing consolidated volatility of the sensex for all the five years which will reveal clearly the volatility of the market index.

2004-05: The Sensex (closing value) for the 12 months period ranges between a low of 4676 points and a high 6714 and recorded a mean 5786 points, the volatility has measured by coefficient of variation is 12.39 per cent (Table 1). This particular volatility is kept as basis for comparing the other 4 years period.

2005-06: The Sensex during the year oscillated between a low of 6154 and a high 11280 points. The mean value for the year is 8482, the volatility is accounted at 18.18 per cent, which is higher than the 2004-05.

2006-07: The Sensex in this year ranges between a low of 10399 points and a high 14091, the mean recorded at 12375 points, the coefficient of variation at 10.35 per cent. This particular volatility of 10.35 per cent is low compared to the previous years.

2007-08: The Sensex for the 12 months period varies between a low of 13872 points and a high 20287, the mean is 16799 points and the volatility is 13.05 per cent. This particular volatility of 13.05 per cent is low compared to the previous year 2005-06, 2006-07 and it is high when compared to the previous year 2004-05 and 2006-07.

2008-09: The Sensex for the year 2009 ranges between a low of 8892 points and a high 17287. The mean is 12125 points and the volatility is 25.19 per cent. This particular volatility of 25.19 per cent is high compared all the previous years. Therefore, stock market is affected by the financial crisis.

Market Prices of Selected IT Companies

In this analysis an attempt has been made to study the market prices of select IT companies before and after the financial crisis. Three companies from IT sector has been selected as sample companies. They are Wipro Ltd., Infosys Ltd., and HCL Technologies. The market prices of these companies have been calculated for five year period. In the process of collection of data opening, high, low and closing prices has been recorded year wise. Afterwards for each of the year the mean, standard deviation, co-efficient of variance has been calculated to

know the average changes and the determined the consistency or otherwise of the change the market change.

Market Prices of Wipro Limited

2004-05: The market prices of Wipro for the year 2004-05 indicated in Table 2. It reveals that in the first three months the prices are more than 1500. On an average and later on they have dropped to around 800 on an average. This could be because of splitting of shares. The Mean value indicated that there is high volatility. The lower value is Rs.708 per share and high value is Rs.925 with an average of Rs816. The co-efficient of variation (46.57) is very high during this period. This high range could be because of high market price witnessed during the first three months. But it is due to splitting of the shares.

2005-06: The market price for the year 2005-2006 ranged between the low of Rs. 350 and the high of Rs.776. The Mean value indicates that there is moderate volatility between the opening and closing. The opening value of the stock Rs.547 and closing is 537. The coefficient of variation varied between the low of 25 per cent and the high of 28 per cent. This is low compared to the previous year, this could be because of substantiality in the prices. Stock price has increased for two months and it started declining up to September and it started increasing. It indicates that it is less volatility when compared to the 2004-05. This is due to moderate fluctuations in the market prices.

2006-07: The stock price of Wipro shows that Rs.383 is the lowest and Rs.690 is the highest price during for this year. The Mean value shows that there is low volatility (with Rs.3) between the opening and closing. It further supported by the very low coefficient of variation 8.86 per cent. This is very low when compared to the previous years and this is because of substantial increase in the prices. Stock price has decreased slightly for two months and it started increasing for next 8 months. In the last month it is showing a declining trend. This lead to conclude that market prices are very less volatile compare to the previous year

Table 2 Market Price of Wipro Limited during 2004-05 to 2007-08

Monthly	Opening	High	Low	Closing
Market Index for The Year 2004-05				
Mean	854	925	708	798
SD	388	437	268	353
Coefficient of variation (%)	45.22	47.24	37.85	46.57
Market Index for The Year 2005-06				
Mean	547	590	483	537
SD	151	145	128	147
Coefficient of variation (%)	27.61	24.58	26.50	27.37
Market Index for The Year 2006-07				
Mean	545	585	494	542
SD	50	56	54	48
Coefficient of variation (%)	9.17	9.57	10.95	8.86

Market Index for The Year 2007-08				
Mean	499	524	441	486
SD	49	42	63	49
Coefficient of variation (%)	9.82	8.02	14.28	10.08
Market Index for The Year 2008-09				
Mean	352	380	299	338
SD	111	116	110	112
Coefficient of variation (%)	31.5	30.53	36.78	33.13

2007-08: The stock price recorded at the low of Rs.325 and the high Rs.600 in this year. There is a moderate volatility between the opening and closing shown by mean value. The coefficient of variance is low during this period with a range of 8 per cent and 10 per cent. This is slight increase compared to the 2006-07. This range could be because of substantiality in the market prices. Stock price has decreased for 11 months and it is showing declining trend. This lead to conclude that market prices are more volatility compare to the previous year. This is due to continuous decrease in the stock prices.

2008-09: The market price of Wipro depicts that Rs.181 is the lowest and Rs. 537 is the highest during this period. The mean value shows that there is high volatility between the opening (Rs.352) and closing (Rs.338). The coefficient of variation is high during this period with a range of 30 per cent and 37 per cent. This huge increase compared to the previous year. This range could be because of continuous decrease in the market prices. Share price it has decreased continuously for the whole year. This lead to conclude that it is showing high volatility compared to the previous year. Due to continuous decrease in the market prices with the impact of global financial crisis on the market prices of IT sector.

Market Prices of Infosys Limited

2004-05: The market price of Infosys Company for the year 2004-05 shows that the price ranged between Rs.1281 and Rs.6000 the highest. The mean value indicated that there is high volatility between the opening (Rs.2669) and closing (Rs.2784). The coefficient of variation is low moderate during this period with an only 3 per cent gap (Table 3). This gap could be because of decrease in the market prices. Stock price decreased for one month and it increased for the one month from very high value the market prices dropped to very low prices and it remain same level for the period of 8 months. It shows that market prices are very high volatile compare to previous year due to huge drop in the market prices.

Table 3 Market Prices of Infosys Ltd., during 2004-05 to 2007-08

Monthly	Opening	High	Low	Closing
Market Index for The Year 2004-05				
Mean	2669	2906	2498	2784
SD	1499	1698	1369	1534
Coefficient of variation (%)	56.16	58.43	54.80	55.10
Market Index for The Year 2005-06				
Mean	2419	2658	2370	2546
SD	323	316	320	339
Coefficient of variation (%)	13.35	11.89	13.50	13.31
Market Index for The Year 2006-07				
Mean	2371	2554	2104	2277
SD	543	581	438	504
Coefficient of variation (%)	22.90	22.75	20.82	22.13
Market Index for The Year 2007-08				
Mean	1830	1934	1663	1777
SD	186	187	244	204
Coefficient of variation (%)	10.16	9.67	14.67	11.48
Market Index for The Year 2008-09				
Mean	1501	1625	1314	1481
SD	260	272	246	265
Coefficient of variation (%)	17.32	16.74	18.72	17.89

2005-06: The stock price of Infosys during 2005-06 shows that Rs.1876 is the lowest price and Rs. 3075 is the highest. The mean value indicated that there is high volatility between the opening (Rs.2419) and closing (Rs.2546). The coefficient of variance is low moderate during this period with a range of 12 per cent and 14 per cent, which is low compared the previous year. This range could be because of continuous increase in the market prices. Stock price increases continuously. This lead to conclude that market prices during this period is less volatility compare to previous year due to continuous increase in the market prices.

2006-07: The market prices of Infosys for the year 2006-07 indicated that it recorded at low of Rs.1572 and at the high of Rs.3400. The mean value indicated that there is moderate volatility between the opening (Rs.2371) and closing (Rs.2277). The coefficient of variation is moderate during this period with a range of 21 per cent and 23 per cent. This high range could be because of fluctuations in the market prices. Stock price has decreased continuous up to August and it started increasing from the remaining months. This lead to conclude that market prices during this period are moderately volatile compared to previous year due to fluctuation in the market prices.

2007-08: The stock price of Infosys for the year 2007-08 shows that Rs.1212 is the lowest price and Rs.2140 is the highest price. The mean value indicated that there is moderate volatility between the opening (Rs.1830) and closing (Rs.1777). The coefficient of variation is medium during this period with a range of 10 per cent and 15 per cent. This is high compared to the previous year this range could be because of continuous decrease in the market prices. Stock price has decreased continuously remaining period. This lead to conclude that market prices are high volatility compared previous year due to continuous decrease in the market prices.

2008-09: The stock prices of Infosys during the year 2008-09 indicated that Rs.1040 is the lowest price and Rs. 2017 is the highest. The mean value indicated that there is high volatility between the opening (Rs.1501) and closing (Rs.1481). The coefficient of variation is moderate during this period with a range of 17 per cent

and 19 per cent. This is low compared to the previous year. This range could be because of continuous decrease in the market prices. Stock price has increased for month and it started decreasing continuously up to February and it again started increasing. This lead to conclude that market prices are highly volatile compared previous year. This is due to continuous decrease in the market prices.

Market Prices of HCL Technologies

2004-05: The Market price of HCL Technologies for the year 2004-2005 shows that the price ranges between Rs.241 and Rs.407 (Table 4). The mean value indicated that there is moderate volatility between the opening (Rs.324) and closing (Rs.332). The coefficient of variation (9.33 per cent) is low during this period with a range of 8 and 12, this is because of continuous increase in the market prices. Stock price increased continuously during the 11 months period. This lead to conclude that it is less volatility.

2005-06: The stock price of HCL indicated that Rs.331 is the lowest and Rs.707 is the highest for this period. The mean value indicated that there is high volatility between the opening (Rs. 458) and closing (Rs.480). The coefficient of variation is low during this period with a range of 20 per cent and 23 per cent. This is because of continuous increase in the market prices. Stock price increased continuously for 11 months. This lead to conclude that market prices are less volatility compare to the previous year.

2006-07: Stock price during the year 2006-2007 gives that Rs. 283 is the lowest and Rs.715 is the highest for this period. The Mean value indicated that there is high volatility between the opening (Rs.588) and closing (Rs.555). The coefficient of variance is also high with a range of 8 per cent and 19 per cent. This is very high when compared to the previous year. This variation is because of huge fluctuations in the market prices. Stock price has decreased for 3 months. It started increasing up to the month of February again it started increasing. This lead to conclude that market prices are high volatility compare to the previous year. This is due to high fluctuations in the market prices.

Table 4 Market Prices of HCL Technologies during 2004-05 to 2007-08

Monthly	Opening	High	Low	Closing
Market Index for The Year 2004-05				
Mean	324	353	305	332
SD	38	30	38	31
Coefficient of variation (%)	11.72	8.49	12.45	9.33
Market Index for The Year 2005-06				
Mean	458	510	437	480
SD	95	108	94	108
Coefficient of variation (%)	20	21.17	21.51	22.5

Market Index for The Year 2006-07				
Mean	588	632	502	555
SD	56	51	95	99
Coefficient of variation (%)	9.52	8.06	18.92	17.83
Market Index for The Year 2007-08				
Mean	310	332	278	309
SD	31	22	49	33
Coefficient of variation (%)	10	6.62	17.62	10.67
Market Index for The Year 2008-09				
Mean	199	219	162	185
SD	71	78	65	74
Coefficient of variation (%)	35.67	35.61	40.12	40

2007-08: The market price of HCL Company for the year 2007-2008 indicated in table 5.9 reveals that Rs 180 is the lowest price and Rs 366 is the highest price for this period. The mean value indicated that there is very low volatility between the opening and closing .The opening value is Rs 310 per share and closing is Rs 309 per share. The coefficient of variation is high during this period with a range of 7%and 18%.this range is similar to previous year . This range could be because of fluctuations in the market prices. By looking at graph 5.9 we observed. From the low price it has increased for 2 months and it started declining for the next 3 months and again it started showing slight increase for 3 months and it again started declining for the remaining months. This lead to conclude that there is huge fluctuations in the market prices when compare to the previous year. This is due to fluctuations in the market prices.

2008-09: The market price of HCL Company for the year 2008-2009 recorded at the lowest of Rs. 89 and highest of Rs. 325 during this period. The mean value indicated

that there is moderate volatility between the opening (Rs.199) and closing (Rs.185). The coefficient of variation is low during this period with a range of 36 per cent and 40 per cent. This is high compare to all previous years. This range could be because of continuous decrease in the market prices. Stock price has increased for one month and it started decreasing continuously for the remaining 11 months. This lead to conclude that there is high volatility compare to the previous year. This is due to continuous decrease in the market prices.

Correlation between Market Prices and Market Indices

The correlation between market prices of the selected IT companies have been compared with the market index represented by BSE Sensex. The comparison is made for a period of 5 years taking monthly market prices of selected companies and BSE sensex. In the process mean, standard deviation, co variance, correlation has been calculated between selected companies and the BSE Sensex.

Correlation between Market Prices and Market Indices for the Year 2004-2005

For the year 2004-2005 the correlation between Wipro and BSE sensex indicated there is a negative correlation of 0.19 (Table 5). This shows the performance of Wipro is moving opposite to the market, this is very much apparent when we compared to actual values. Correlation between Infosys and market Index shows that there is negative correlation of 0.49, indicating that the market price of Infosys declined substantially and when compared to Wipro. Correlation between HCL and market index is 0.58, showing that the company's stock price moving with the market and performance of HCL is better than Infosys and Wipro.

Table 5 Correlation between Stock Price of Select Companies and Market Indices for the year 2004-05

Monthly	Wipro	Infosys	HCL	BSE Sensex
April	1544	5147	275	5655
May	1527	5209	299	4760
June	532	5523	298	4795
July	547	1554	316	5170
August	579	1575	318	5192
September	597	1695	355	5584
October	658	1906	364	5672
November	766	2148	372	6234

December	748	2089	343	6603
January	705	2067	330	6556
February	699	2237	338	6714
March	671	2253	370	6493
Mean	798	2784	332	5786
SD	1170	5087	103	2379
CV (%)	146.61	182.72	31.02	41.12
Correlation	-0.19741	-0.49606	0.579811	

Correlation between Market Prices and Market Indices for the Year 2005-2006

For the year 2005-2006 the correlation between Wipro and BSE sensex indicated that there is negative correlation of 0.35 (Table 6) this indicates that the performance is worst than the previous year. Whereas correlation between Infosys and market index is positive with 0.92 and Wipro is with 0.98 this shows that the performance is very close to the market price of market. Infosys and HCL stock prices increased substantially in fact the increase is high when compared to Wipro. But, the performance of HCL is better than the Infosys.

Table 6 Correlation between Stock Price of Select Companies and Market Indices for the year 2005-06

Monthly	Wipro	Infosys	HCL	BSE Sensex
April	632	1887	334	6154
May	716	2251	366	6715
June	766	2358	389	7193
July	736	2269	404	7635
August	365	2376	453	7805
September	372	2517	457	8634
October	365	2524	418	7892
November	422	2684	509	8789
December	463	2997	539	9398
January	529	2880	626	9920
February	520	2829	610	10370
March	558	2981	660	11280
Mean	537	2546	480	8482
SD	489	1126	358	5113
CV (%)	91.06	44.22	74.58	60.28
Correlation	-0.35855	0.928404	0.980393	

Correlation between Market Prices and Market Indices for the Year 2006-2007

For the year 2006-2007 the correlation between Wipro and BSE Sensex recorded a positive correlation of 0.93 (Table 7), showing high correlation between Wipro stock price and market performance. It means as the market index increases Wipro price is also increasing significantly. On the other hand, correlation between Infosys and market index recorded a negative correlation of 0.32, indicating the performance of stock prices of Infosys is moving opposite to the market index. Correlation between HCL and market index is 0.36. This means as market index and HCL's index are moving in same direction - increasing moderately. It indicates that HCL is doing better than Infosys. For the year 2006-2007 Wipro and HCL shares are going in the same direction of market index as against Infosys shares are showing opposite of market index with negative correlation.

Table 7 Correlation between Stock Price of Select Companies and Market Indices for the year 2006-07

Monthly	Wipro	Infosys	HCL	BSE Sensex
April	539	3177	574	12043
May	449	2908	500	10399
June	513	3078	502	10609
July	491	1654	520	10744
August	517	1809	580	11699
September	525	1848	550	12454

October	538	2095	623	12962
November	598	2180	629	13696
December	604	2240	649	13787
January	612	2244	648	14091
February	560	2078	596	12938
March	558	2013	291	13072
Mean	542	2277	555	12375
SD	160	1672	324	4253
CV (%)	29.52	73.42	58.91	34.36
Correlation	0.93562	-0.32368	0.362819	

Correlation between Market Prices and Market Indices for the Year 2007-2008

For the year 2007-2008 the correlation between selected companies Wipro (-.031), Infosys (-0.41) and HCL (-0.19) and BSE Sensex shows that there is a negative correlation (Table 8). This indicates that this year the performance stock of selected companies is moving opposite direction to the BSE Sensex.

Table 8 Correlation between Stock Price of Select Companies and Market Indices for the year 2007-08

Monthly	Wipro	Infosys	HCL	BSE Sensex
April	571	2049	334	13872
May	544	1920	344	14544
June	518	1929	344	14651
July	495	1977	340	15551
August	482	1855	303	15319
September	459	1897	300	17291
October	504	1839	311	19838
November	460	1604	320	19363
December	524	1768	331	20287
January	413	1504	250	17649
February	434	1547	278	17579
March	425	1430	253	15644
Mean	486	1777	309	16799
SD	163	678	111	7273
CV (%)	33.53	38.15	35.92	43.29
Correlation	-0.31886	-0.41537	-0.19822	

Correlation between Market Prices and Market Indices for the Year 2008-2009

For the year 2008-2009 the correlation between selected companies – Wipro, Infosys and HCL is positive when compared to the BSE Sensex. But, Wipro did better with 0.97 followed by HCL 0.93 and Infosys 0.91 (Table 9). It indicated that all the companies performance is good and they are moving with the market. Wipro, Infosys and HCL share prices are increasing along with the market index increasing trends due to recovery of stock market s from the impact of the global financial crisis.

Table 9 Correlation between Stock Price of Select Companies and Market Indices for the year 2008-09

Monthly	Wipro	Infosys	HCL	BSE Sensex
April		1754	287	17287
May	508	1958	313	16416
June	437	1735	251	13462
July	416	1583	201	14356
August	432	1748	234	14564
September	339	1398	194	12860
October	272	1382	173	9788
November	243	1241	137	9093

Exploring Criteria for In-Store and Online Apparel Retailing effectiveness

Tejas R. Shah

December	233	1118	115	9647
January	231	1305	116	9424
February	207	1231	100	8892
March	245	1324	102	9709
Mean	338	1481	185	12125
SD	371	879	245	10134
CV (%)	109.76	59.35	132.43	83.57
Correlation	0.97827	0.913372	0.939694	

Conclusion

The finding relating to the impact of global financial crisis on Indian stock market indicates that the impact was severe during 2008-09. This was mainly because of the selling of equity shares by the FIIs which created a panic among the Indian mutual funds. The impact was substantial. However, the Indian capital market has recovered in the middle of 2009. Although it has not reached early peak of 21000 it is around 17000. It indicates that the capital market is recovered slowly from the period of crisis.

The impact of financial crisis on the select IT companies indicated that companies slowly recovered from the earlier shock for a year 2004-05. All the three select IT companies showed declining trend from 2004-05 up to 2007-08 showing the impact of US financial crisis, later in the year 2009 they have shown that they were recovered. Wipro has indicated too much of volatility and Whereas HCL was less volatile during the period of crisis but Infosys lost their market capitalisation. But, in the third quarter of 2009 all three sample companies shown a growth trend. The correlation between market index and IT companies indicated that for the year 2004-05 Wipro and Infosys recorded negative correlation, whereas HCL recorded positive correlation. During 2005-06 Wipro indicates negative correlation, Infosys and HCL shown very high correlation. The impact of financial crisis has started indicating its negative impact. In 2006-07 Infosys indicated negative correlation. Whereas Wipro has indicated high positive index which is very surprising and HCL with low positive correlation. For the year 2007-08 all the companies shown negative correlation, which indicates market index increasing, where as IT sector shares showing declining trend. The 2008-09 indicates a stage of recover since the companies shown a significant correlation with a market index. The coefficient of variation of market index substantiate the above findings because for the year 2006 and 2007 the market index is showing to much of volatility which is reflected in case of sample companies volatility. The impact of global financial crisis on Indian stock market has been witnessed in the beginning of the crisis period 2006-07, later on the IT sector as equipped itself to face the challenge and the impact is lesser in subsequent periods.

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In today's era, most of retailers use bricks and clicks model in their business. The basic objective of this research is to explore common factors that retailer should consider while doing in-store as well as online retailing. The objective is also to analyze the variations in importance of these factors between in-store and online retail formats as well as across different demographic characteristics of respondents. The sample size for this research is 201 respondents, who have frequent experience of purchasing from in-store or/and online retail stores. The results of factor analysis shows that four factors, namely, accuracy, cost effectiveness, merchandising and responsiveness are important for retailers to consider both for in-store and online models. The results of t-test and anova test reveal that the retail format and demographic profile of customers affect the importance of these criteria upto certain extent. This research brings unique contribution in terms of identifying common criteria for effectiveness in both in-store and online retailing.

Key Words: retailing, apparel, in-store, online, bricks & clicks, internet

Introduction

Consumer behavior research is the scientific study of the processes consumers use to select, secure, use and dispose of products and services that satisfy their needs. The distinct needs and wants of consumers is due to their consumption pattern, demographics (like age profile, working patterns, income and expenditure, occupation), lifestyle changes, buying process, shopping behavior, shopping motivations and objectives, and changing consumer etc. Consumer behavior knowledge directly affects marketing strategy (Anderson et al, 2005). Although various consumer decision making models and consumer behavior models with an apparel perspective have been developed in the past, the usefulness of consumer models in marketing management context is hampered by certain limitations (Preez, 2003).

Shopping experience is a utilitarian effort aimed at obtaining needed goods and services as well as hedonic rewards. Olsena and Skallerud (2011) found that retail shopping experience is associated with utilitarian and hedonic values. The modern consumer behavior model examined utilitarian and hedonic consumer motives. In addition to that, the modern consumer behavior models include the impact of personal and social factors influencing actual shopping motives (Kaur and Singh, 2007). The literature reveals different consumer decision making models with an apparel perspective have been developed in the past (Preez, 2003). But, these models were not specific to a particular context. The apparel purchase decision making is complex. The complexity of decision making is depended upon the consumers' level of involvement with a product category as well as the impact of other situational variables. Some individuals are highly involved when purchasing

apparel items, while others may experience it as a routine process. Consumer purchase decision-making models should reflect the variables influencing the shopping behavior.

The apparel shopping decision making is different to decision-making with regard to other products. Apparel shopping behavior is influenced by a very large number of variables (Krishna, 2011). These variables can be classified as conscious and subconscious, market dominated and consumer dominated or a fusion of the two, thus increasing the complexity thereof. Preez (2003) mentioned that the majority of previous studies lack the identification of variables affecting consumer purchase decision making for apparel products. Market-dominated, consumer-dominated and market and consumer interaction variables should be considered to find their impact on purchase decision making of apparel products.

Today, brick and mortar firms have included the use of internet in their channel mix. The evidences showed that the retailers are using the internet as a supplement to traditional bricks and mortar purchasing. Recent trends advocate using click and brick, multi-channel approach to retailing. A large amount of literature is available on adoption of click and mortar retailing, but a study on consumer behavior toward traditional brick and mortar retailing and click and mortar retailing has been missing. This has been condemned by many researchers in their study (Yoh et al., 2003). The evidences admits that the marketers often meet difficulty in understanding and managing dynamics of consumer behavior, which necessitates a study of behavioral issues in in-store and online retail shopping.

A large amount of literature is available on attributes of in-store as well as online apparel shopping environments, but those attributes are vast and fragmented. The selection criteria for online and in-store shopping are retail category (Sinha and Benerjee, 2004) as well as product category specific (Lee and Kim, 2008). In-store and non-store buying is different in certain manner. Both types of shopping generate different shopping experiences for consumers. In addition to this, the evidences suggest that buying experiences of consumers differ between in-store and online shopping (Rajamma et al., 2007). So, this study includes studying variables affecting in-store and non-store apparel shopping.

A large amount of literature confirms that demographic factors influence consumers' decision to shop apparel products (Dennis et al., 2009) both traditional physical store (Kuruville and Joshi, 2010) and online store (Sahney et al., 2008). So, this study also includes a framework to study the effects of the demographic characteristics on consumers' apparel shopping behavior.

Based on above discussion, the following questions are developed:

- Are there any diversity in preferences towards in-store and non-store shopping?
- What are the factors influencing consumers' decision making to shop apparel products both from in-store and non-store retail?
- What is the impact of consumer demographics on their apparel shopping behavior in both in-store and non-store context?

Literature Review

In-store (Bricks and Mortar) Retailing

Rajamma et al. (2007) mentioned that physical products shopping like apparel, grocery items, durables, etc. are more effective through traditional retailing than modern non-store retailing. Bricks and mortar outlets are perceived as more tangible, since they typically have a physical location, a building that shoppers can visit, and have all the attached sensory cues as well. Consumers tend to touch it, feel it and often wear it to make the final purchase decision. Bricks and mortar stores have traditionally enjoyed an advantageous position on the merchandise dimension, i.e. products and services are available for immediate possession, and consumers can easily see the quality and variety of merchandise on display (Menon and Kahn, 2002). Bricks and mortar stores do fulfill the pragmatic expectations of consumers like quality, price, comparisons, convenience and promotional offers (Rajamma et al. 2007).

Non-store (Click and Mortar) Retailing

Non-store retailing can be in the form of click and mortar, electronic commerce, bricks and clicks, surf and turf, cyber-enhanced retailing, e-retailing and hybrid e-commerce (Steinfeld, n.d.). The basic characteristic of non-store retailers is that they do not have any physical stores and market directly to consumers through internet (Kennedy and Coughlan, 2006). In literature, online stores are defined as those that sell goods and services, where the buyer places an order over the internet, intranet, electronic data interchange network, electronic mail or other online system. Clark (1997) defined click and mortar retailers as those who respond to consumer demand through offline and online stores. Meuter et al. (2000) have defined e-retailing in terms of the internet market as, "a virtual realm where products and services exist as digital information and can be delivered through information-based channels. Sahney et al. (2008) defined online-retailing as use of an electronic media through which the customer and the marketer may enter into a transaction for sale and purchase, so as to benefit both the parties in the long run.

Benefits of Click and Mortar over Brick and Mortar

Several Researchers have mentioned the benefits of Click and Mortar practice over traditional Brick and Mortar business. Kim and Forsythe (2009) and Demangoet and Broderick (2007) mentioned that decisions to shop through online or offline channels are influenced by both functional and hedonic motives. Hedonism in context of online shopping experiences can be termed as experience, enjoyment and entertainment. Because many apparel shoppers still hesitate to make purchases online and typically prefer shopping in traditional stores, online retailers are utilizing product virtualization technologies to enhance the online environment in order to attract consumers and encourage online purchases. Product virtualization technologies that allow online shoppers to view the product interactively not only deliver product information but also deliver a more entertaining shopping experience than can be obtained by static product images. The interactivity and customer involvement created by product virtualization technologies increases the entertainment value of the online shopping experience. E-shopping experience is based on e-interactivity with retail site. E-interactivity includes the interaction between customer and sales person, visual merchandising and impact of all senses on consumer behavior (Dennis et al., 2009). Richard and Chandra (2005) found that e-interactivity is a major determinant of formation of consumer attitude towards e-retailing

The major advantages of online retailing are that it is cheaper, more convenient, provides larger selection, quicker transactions, reduces processing errors, protects consumer anonymity, and results in savings for consumers. Likewise, some of the major disadvantages

of e-tailing are security fears, delayed gratification, lack of return policies, lower rate of order placement, impersonalization of shopping, and lack of customer service (Rajamma et al., 2007). Kim and Park (2005) emphasized the need of studying consumer behavior towards shifting from traditional offline retail purchase to modern online retail purchase.

Table 1 below list the benefits that consumers seek while purchasing from click and mortar retail outlets

(Table 1 about here)

In-store (Bricks) and Non-store (Clicks) Retailing

Brick and Mortar and Click and Mortar retail formats can be studied in terms of in-store and non-store retail formats respectively. Weeks et al. (1997) defined non-store retailing as venues through which consumers can use media to shop without any face-to-face communication with other human being. In contrast, in-store retailing relies upon consumers' direct interaction with other human being to process transactions in store. Sahney et al. (2008) explained in their study that current retailing trends show a shift from the traditional store-based retailing to an increased use of the internet based retailing. The shift from physical retail stores to traditional retail stores can be analyzed at two levels: catalog shopping and computer shopping (Kim and park, 2005). Catalog firms present their print catalogs on the web. Catalog shopping is different from in-store shopping (Dholakia and Uusitalo, 2002). At second level, the shift within non-store or in-home shopping methods, i.e. from catalog shopping to computer or internet shopping require fewer changes in consumer behavior (Dholakia and Uusitalo, 2002). In computer or internet purchasing consumers get the response from e-retailers quickly (Kim and Park, 2005). Catalog shopping is suitable for time compressed consumers, consumers having high disposable income and consumers having high confidence in their purchase decision without any physical inspection of the product.

Today, multi channel retailing has been recognized as a new key marketing program for several retailers. The multi channel retail format includes not only physical stores and catalogs, but also online stores, kiosks and wireless channels (Kim and Park, 2005). The simultaneous use of store and non-store retailing is termed as bricks and clicks approach (Kennedy and Coughlan, 2006). Based on the study of several researches, Kim and Park (2005) concluded that those customers who purchased the products both online and offline, showed greater loyalty to the retailer. Earlier, Dennis et al. (2009) also concurred that the future of shopping lies in multi-channel retailing where, rather than competing with the internet, retailers should adopt a hybrid strategy merging online and offline activities through a bricks and clicks approach. Later, Shankar et al. (2003) found that the consumers who have frequent and satisfactory experience with the retailer were likely

to receive greater satisfaction with the retailer in both offline and online shopping contexts. Balabanis and Reynolds (2001) mentioned the positive impact of positive attitude towards traditional retailing on creating positive attitude towards online retailing.

Earlier, Calkins et al. (2000) explained that store-based retailers have a number of advantages over their Internet-only competitors, which can offer personalized search tools and links to related products and services but not the ability to see, touch, and try merchandise and to walk out with it. More generally, store-based retailers can leverage their multichannel advantage to give customers what they want, how and when they want it. So if store-based retailers make their sites as innovative and adaptable as those of their pure-play Internet rivals and at the same time realize synergies with their brick-and-mortar facilities, they may yet come in first after all.

Selling through existing physical stores and through internet channels allows retailers to leverage the strengths of each channel with stores and web sites working well together and so increasing sales at both. Additional advantages from integrating online and offline channels include increased shopping convenience, easier product return, and ability to offer information that may motivate a consumer to buy offline. Integrating online and offline operations may provide advantages such as broader distribution, reputation, management skills, and capital". Bricks and clicks businesses can also augment their land-based businesses by offering customers extended selections online (Kennedy and Coughlan, 2006).

Consumer Demographics and Shopping Behavior

Several studies have shown the impact of consumer demographics on consumer purchase decision in traditional brick and mortar context as well as modern click and mortar context. Kuruville and Joshi (2010) mentioned that the study on the impact of consumer demographic and psychographic characteristics on traditional bricks and mortar retailing business is missing in literature. Krishna (2011) has mentioned the impact of consumer demographic characteristics on their buying behavior in traditional in-store retail environment. Several researchers have shown the impact of demographic factors on shifting from traditional offline purchase to modern online purchase. O'Cass and Fenech (2003) showed the importance of role played by consumer demographic and psychographic characteristics on consumer e-retailing purchase decision. Later, Venkatesh et al. (2003) have explained the connections between consumer demographics and e-shopping behavior. But, they further mentioned that the majority of technology acceptance and e-shopping behavior studies lacks to study the impact of consumer demographic characteristics on it.

Demographic characteristics have been found to be useful to differentiate between sub segments that could have unique demographic and socioeconomic profiles and helped explain patronage decisions (Kuruville and Joshi, 2010). The literature concentrates on four of the most commonly examined consumer demographics, i.e. gender, education, income and age (Hernandez et al., 2011). Psychology research over many years has identified numerous gender differences that are potentially relevant to e-shopping context (Dennis et al., 2009). Dennis and McCall (2005) mentioned the important role of gender in bricks and mortar shopping as well as clicks and mortar shopping. Dholakia and Uusitalo (2002) mentioned that in-store and non-store shopping is a gendered activity. The social role theory says that the men and women tend to behave in different manner. The decision criteria to purchase products offline and online differs among different gender.

The role of education in shopping behavior has been given little research attention (Dennis et al., 2009). Eastlick and Feinberg (1999) showed the importance of considering education level of consumer in determining their shopping behavior. Few previous studies have found a positive relationship between e-shopping behavior and education (Dholakia and Uusitalo, 2002). Highly educated consumers have high consumer literacy than less educated consumers. Highly educated customers engage more in information gathering and processing and use more information prior to decision making, whereas less well educated people rely more on fewer information cues (Homburg and Giering, 2001).

Dholakia and Uusitalo (2002) explained that consumers at high age are more likely to purchase from traditional retail in-store retail outlets than youngsters. Older consumers are less likely to seek new information, relying on fewer decision criteria, whereas younger consumers seek alternative information (Homburg and Giering, 2001). The young consumers have more positive intention towards non-store shopping than older consumers because young consumers tend to have high computer literacy than older consumers (Dholakia and Uusitalo, 2002).

Apparel Shopping Behavior

Several researchers have emphasized on studying consumer behavior in apparel products' context (Preez, 2003). Apparel, termed "high touch" merchandise, varies by size, texture, and color; these variables lead to high consumer involvement in purchase of apparel products (Yoh et al., 2003). Since many apparel consumers' purchasing decisions are motivated by their senses (e.g., touching, feeling, trying on or observing the product first-hand), being unable to get highly involved with apparel purchasing increases consumers' purchase risks (Kim and Forsythe, 2009). Furthermore, since apparel is visible, worn in public, and subject to changing fashion trends, the concern of the

inappropriate selection of apparel may lead to a high level of purchase risk. High purchase risks may lead apparel consumers to spend more time searching for product information and to demand a more interactive shopping experience than they would from other product categories.

In-store apparel Shopping Behavior

Carpenter et al. (2005) mentioned that the traditional stores provide unique consumer shopping experiences, both in terms of utilitarian and hedonic values. They further mentioned that traditional retailing results in more favorable consumer perceptions towards a particular brand than competitive brands. Rajamma et al. (2007) mentioned that in an era of online store, still, consumers prefer to purchase from traditional bricks and mortar stores. A large amount of literature is available on traditional in-store consumer shopping behavior. Earlier, Hirschman (1979) suggested that socio-economic (race, sex, etc.), interpersonal (social activities) and intrapersonal (merchandise pricing, quality and assortment, etc.) dimensions influence store-choice behavior. Later, Kim and Kim (2004) considered following variables as important for in-store retailing: convenience, price, merchandise assortment, value for money, fashionability, merchandising and sales service. Slowly and gradually consumers are shifting from traditional in-store buying to modern online buying. Kim and Kim (2004), in their study, found that consumers tend to focus more on utilitarian functions than hedonic functions while purchasing apparel products from a retail store. Later, Krishna (2011) found that brand awareness and image of the store, price perception, promotional offers, convenience, durability, ambience and visual merchandising create significant influence on consumer buying behavior in apparel shopping context. Khare (2011) studies traditional mall shopping behavior of consumers and found factors influencing consumers' shopping behavior towards traditional store retail format, namely, aesthetics, escape, flow, exploration, role enactment, social and convenience.

Non-store (Click and Mortar) Apparel Retailing

Consumers derive several different outcomes such as products, information, and pleasure from the shopping process (Ha and Stoel, 2004). In other words, shopping includes both information searching behavior and purchasing behavior. Menon and Kahn (2002) investigated differences among Internet apparel purchasers, browsers, and non-purchasers. They found that purchasers were significantly different from browsers and non-purchasers in terms of perceptions of relative advantages and ease of Internet shopping. In addition, compared to browsers and non-purchasers; Internet apparel purchasers tended to perceive Internet shopping as safe for using credit cards. Browsers and non-purchasers showed similar attitudes toward internet

apparel shopping. Goldsmith and Goldsmith (2002) found that consumers who have previous experience of internet shopping have a higher tendency to purchase apparel products online and more frequently as well. Yoh et al. (2003) explained apparel online shopping behavior in terms of theory of reasoned action (TRA). They concluded that customers who had more positive beliefs about Internet apparel shopping had more positive attitudes toward Internet apparel shopping. People who had more positive attitudes toward Internet apparel shopping had greater intention to purchase apparel through the Internet.

A large amount of literature is available regarding the components of apparel retails websites. Then and DeLong (1999), based on their study, derived recommendations for Web site design by surveying consumer response to apparel shopping on the Web sites and categorized into five basic areas: products, information, visual design, online ordering, and name brand recognition. Szymanski and Hise (2000) examined the effect of online convenience, merchandising, site design, and financial security on e-satisfaction assessments. Park and Stoel (2002) explored the availability of product, customer service information and Web site quality on apparel shopping experience. Jang and Burns (2004) included three important aspect of apparel shopping website, namely, merchandise, promotion and customer service.

The success of online retailing depends to a large extent on the underlying characteristics of the products and services being marketed. With the advent of advanced technology, the apparel products has gain wiser acceptance through online retailing. The recent integration of apparel manufacturers into direct Web selling, as well as the continuing incursion of traditional retailers into the online channel, has fueled the clothing surge (Kim and Kim, 2004).

Ha and Stoel (2004) mentioned that the concept of online apparel shopping is not well accepted among consumers. While shopping apparel products, consumers like to physically examine the products to assess color, size, design, and fabric. Due to the sensory and interactive nature of the apparel purchase process, apparel products are categorized as high-risk and high involvement products and apparel shopping has been associated with high perceived risk (Bhatnagar et al., 2000). The non-catalog shoppers tended to have higher risk perceptions related to catalog apparel purchases than catalog shoppers. For Internet shopping, consumers consider apparel products to be risky to purchase on the Internet because of uncertainty about color, fabrics, and fit (Bhatnagar et al., 2000). So, it becomes imperative to find the most effective attributes that a apparel website should have to gain wider acceptability and success among consumers.

Attributes of Apparel Shopping Websites

A large amount of literature is available on attributes of online apparel shopping. According to Taylor and Cosenza (2000), when shopping online for clothing, consumers rated the functional attributes such as price, ease of movement and ease of return as important. Shim et al. (2001) reported that attitudes toward online shopping were stronger for cognitive products such as books and computer software than for sensory experiential products such as apparel or accessories. Kim and Kim (2004) found four attributes for non-store apparel retail, namely, transaction/cost, incentive program, site design and interactivity. Goldsmith and Goldsmith (2002) found important characteristics of online apparel shopping experience, namely, fun, shop, safe, confidential, cheap and quick.

Objectives

1. To explore the common criteria for effective clicks & bricks retailing
2. To understand the difference in perception of consumers about the effectiveness criteria based on their demographic profiles

Research Methodology

The exploratory and descriptive designs were used to conduct this study. In the first phase, exploratory study was conducted to explore the common criteria of effectiveness in both online and in-store retailing. Later, descriptive study was undertaken to find the variations in preferences towards this criteria among different demographic characteristics of respondents. The non-probability convenient sampling method was used to select the sample. The personal contact method was used to collect the data. In total, 229 respondents were contacted out of which 201 completely filled questionnaires were received. So, the final sample size consisted of 201 respondents. The sample consists of respondents who have experience of both offline and online apparel purchasing. Structured questionnaire was used having closed-ended questions. The criteria for effectiveness of online and in-store apparel purchasing were identified based on literature survey. In total, 14 variables were rated using Likert scale with 1 = least important, 2 = unimportant, 3 = neutral, 4 = important and 5 = most important. The respondents were asked to rate each variable in terms of the amount of important they attach respectively.

Data Analysis and Discussion

Factor analysis was conducted for analyzing the structure of the interrelationships among a set of variables by defining a set of common underlying dimensions. Cronbach's Alpha was calculated to assess the degree of consistency between multiple measurements of a variable. Mean analysis was conducted to measure the emotional competence of

employees during selling encounters in organized retail. Anova test was conducted to find out the variations in importance of criteria for effectiveness of online and in-store apparel purchasing on the basis of various demographic variables. (Malhotra and Dash, 2010)

Factor Analysis

(Table 2 about here)

The objective of this research is to explore the various components of criteria for effectiveness of online and in-store apparel purchasing. The 14 statements have been subjected to multivariate data analysis tool – factor analysis – to reduce them to a few uncorrelated factors. In order to test the suitability of the data for factor analysis, the correlation matrix was computed and examined. This revealed that there were enough correlations to go ahead with factor analysis. Anti image correlations were computed. These showed that partial correlations were low, indicating that true factors existed in the data. Kaiser-Meyer-Olkin Measure of Sampling Adequacy (MSA) was calculated both for the entire correlation matrix and each individual variable evaluating the appropriateness of applying factor analysis. Bartlett's Test of Sphericity was calculated to find whether the number of correlations among the variables is statistically significant or not. The value of MSA was found to be 0.702, which is much higher than the minimum cut off rate of 0.50. Bartlett's Test of Sphericity showed the value of Chi-Square at 1344.235 with 116 degrees of freedom, which was significant at 0.05 level, indicating the suitability of data for factor analysis. Thus, all of these examinations revealed that data was fit for factor analysis.

Principle component analysis was employed for extracting factors. The number of factors to be extracted was finalized on the basis of latent Root Criterion. Orthogonal rotation with Varimax method was used for factor analysis. Rotations converged into 6 iterations. In orthogonal rotation, each factor is independent of or orthogonal from all other factors. The correlation between the factors is determined to be zero. As, the sample size taken for data analysis was 201 respondents, all factor loadings greater than 0.40 were considered for the analysis.

Table 1 shows the communality values of all variables. Communality is the amount of variance an original variable shares with all other variables included with analysis. Large communality indicates that a large amount of variance in the variable has been accounted for by the factor solution. As shown in the table 2, all the variables are having the communality values above cut off value of 0.40, which indicate that all the variables should be considered for further analysis. The results of Principle Component Analysis with Varimax rotation for sample are shown in table 2. It shows that 4 factors have been extracted which together accounted for 80.491% of the variance. Eigenvalues for the factors 1 to 4 are 5.964,

3.433, 2.299 and 1.049 as revealed in table 2. The percentage of the variance explained by individual factors is shown in the penultimate row of the table. It is observed that the percentages of variance explained by factors 1 to 4 are 32.061, 24.520, 16.419 and 7.491.

Test of Mean Difference

(Table 3 about here)

The t-test and anova test were conducted to find out difference in importance of effectiveness criteria for online and in-store retailing on the basis of various demographic variables (table 3).

1. Retail Format wise: The t-test was conducted to find out the differences in importance of effectiveness criteria based on online and in-store retail format. The results showed that the results showed that type of retail format affects the importance of effectiveness criteria. The mean analysis showed that consumers give more importance to these criteria of effectiveness while purchasing in-store than online. The difference was also found for the factors, namely, accuracy ($t = 4.042$, $p = 0.019$), cost effectiveness ($F = 3.421$, $p = 0.034$) and responsiveness ($t = 4.150$, $p = 0.000$).

2. Gender wise: The t-test was conducted to find out the differences in importance of effectiveness criteria for online and in-store retailing between different genders. The results showed that the results showed that gender affects the importance of effectiveness criteria for online and in-store retailing up to certain extent. The mean analysis showed that females attached more importance (3.70) than male (3.50) with respect to effectiveness criteria. The difference was also found for the factors, namely, Cost effectiveness ($t = 11.234$, $p = 0.023$) and Merchandising ($F = 14.962$, $p = 0.003$).

3. Age wise: The anova test was conducted to find out the differences in importance of effectiveness criteria for in-store and online retailing, with different age groups. The mean analysis showed that respondents in age group 18 to 30 were the most emotional competent people (3.78), followed by employees in age group 31 to 55 (3.56) and employees in age group 45 and above (3.45). The difference was also found for the factors, namely, accuracy ($F = 8.913$, $p = 0.000$) and responsiveness ($F = 6.881$, $p = 0.001$).

4. Experience wise: The anova test was conducted to find out the differences in importance of effectiveness criteria for in-store and online retailing, with different experience groups. The mean analysis showed that respondents in experience group of more than 5 years were the most emotional competent people (3.90), followed by respondents in experience group of 3-5 years (3.65) and respondents in age group of 0-3 years (3.25). The difference was also found for the factor, namely, accuracy ($F = 6.332$, $p = 0.002$).

Discussion

Accuracy is defined in terms of time savings from purchase efforts, convenience during pre-purchase, in-purchase and post-purchase stages, safety of financial transactions and security of personal information and ease of decision making. In today's era of competition, it is essential to enhance the customer value through providing greater customer benefits. Literature reveals that accuracy leads to impart the feeling of trust in retailers in long term. Again, safety and security of personal financial information is a major concern for consumers sharing this information to online or in-store retailers. The results of t-test and anova tests show that the importance about accuracy dimensions differs among different formats of retailing, age of consumers and experience of customers in purchasing through online as well as offline retail stores. Consumers feel more accuracy while purchasing in-store than online store, due to lack of touch of the product in online purchasing. Again, lack of conversation between online retailer and customers can also be a reason for lack of accuracy in purchasing. A large amount of literature reveals the same results as in case of this research that youngsters are more accurate while purchasing in-store and online retail stores than old age consumers. Again, as the experience with respect to purchasing through offline and online stores increases, it brings more accuracy in purchasing efforts due to learning curve effects.

Responsiveness includes the ability of retailers to customize the products, enhance Interactiveness with customers, enhance the overall service and purchase experience. Apparel product categories are lifestyle products and shopping or specialty goods, for which customers need to do some special purchasing efforts. In today's era of competition, tailoring the products as per the need of customers can create competitive advantage over competitors. Customization is more critical in online business due to lack of touch with respect to products. Again, the ability of retailers to enhance the Interactiveness between them and customers leads to better responsiveness to customers. Interactiveness is both critical in in-store physical as well as online environment. In growing era of experiential marketing, it is critical for both in-store and online retailers to enhance the customer experience during pre-purchasing, in-process and post-purchasing stages. The results of t-test and anova test also reveal that responsiveness differs between in-store and online retailing. The responsiveness seems to be more critical in case of online retailing where there are no or less face-to-face communication between retailer and customers. Age is also an important factor affecting the importance of responsiveness to customers. Youngsters are more technology friendly and require less consultation from retailers. While, old age people require a greater amount of assistance from in-store and more importantly online retail store.

Cost effectiveness has remained an important aspect across the retailing literature. Recent literature also reveals that the margins of in-store and online retailers are shrinking day-by-day. Consumers who shop apparel products especially from online retail store have the foremost preference for better deal in terms of lowest price advantage. Both in-store and online retailers have come up with innovative promotional schemes to attract more and more customers to purchase from their stores. A few amount of research has been done on returns of goods from customers to retailers. But, this is an important function especially in case of online retailing, where no physical store is available. Many online retailers have started with return policy as well as other alternative strategies like cash on delivery. The results of t-test and anova test reveal that the importance cost effectiveness differ between in-store and online retailing. As previously discussed in literature, the first and foremost motivation for consumers to go for online purchasing is cost advantage. In case of in-store retailing, still the quality and merchandising remain more or equally preferred criteria for consumer purchasing. Based on gender, the results reveal that female attach more importance to cost effectiveness than male.

Merchandising is a retail strategy that maximizes the aesthetics of a product with the intent to increase sales. Merchandising plays an important role in the look, feel and culture of a brand. Merchandising can be the reason to engage and inspire shoppers to buy more of the products. It provides experience the brands to customers. The "wow" factor through merchandising and branding enriches the customer experience, leading to a positive shopping experience and increased sales. The results of t-test and anova test show that the importance of merchandising differs among different genders, where female attaché more importance to merchandising than males.

Conclusion

This research reveals the common factors that bricks and clicks retailers should consider while shifting from in-store retailing to online retailing. Four factors, namely, accuracy, cost effectiveness, merchandising and responsiveness, found to be the most significant factors, both for in-store as well as online retailing. The results of t-test and anova test reveal that the importance of all these four criteria differ between in-store and online retailing as well as across different demographic characteristics of target consumers. This research also brings important implications for academicians and research scholars in terms of exploring unique as well as common characteristics that brick and click retail firms should maintain. Based on these factors, more retail environment specific factors can be developed to enhance the effectiveness. Retail managers can also use this research to understand the commonality between in-store and online retailing that brings synergy between two different formats. They can also use these results to customize strategy as per customers they are targeting based on demographic profiling.

In future, research can be done that explores the effectiveness criteria customized to different retail environment/formats. Research can also be extended in terms of effects of factors, namely, accuracy, cost effectiveness, merchandising and responsiveness, on customer satisfaction, trust and loyalty in different retail environment/formats.

List of Tables

Table 1: Benefits of Click and Mortar Retailing

Usability	Functionality (Interactivity)	Psychological (Trust)	Content Factors	
			Aesthetics	Marketing Mix
Convenience	Customer service	Transaction security	Design	Communication
Site Navigation	Interaction with company personnel	Customer data safety	Presentation quality	Product
Information Architecture	Customization	Uncertainty reducing elements	Design elements	Fulfillment
Ordering process	Network effects	Guarantees/ returns policy	Style/ atmosphere	Fulfillment
Search facilities				Price
Site speed				Promotion
Accessibility				Characteristics

(Adapted from Constantinides, 2004).

Table 2: Factor Analysis, Reliability Analysis and Descriptive Statistics

Variables	Factor 1 (Accuracy)	Factor 2 (Responsiveness)	Factor 3 (Cost Effectiveness)	Factor 4 (Merchandising)	Communality	Mean	S.D.
Time Savings	0.941				0.924	3.56	0.45
Convenience	0.884				0.788	3.76	0.34
Safety / Security	0.874				0.746	4.33	0.23
Ease of Decision Making	0.850				0.824	3.34	1.02
Customization		0.915			0.834	3.25	0.46
Interactiveness		0.900			0.885	3.70	0.56
Better Overall Experience		0.860			0.859	3.86	0.85
Better Service Quality		0.845			0.837	3.34	0.76
Better Deal			0.925		0.978	3.90	0.98
Better Promotional Offers			0.930		0.958	3.25	1.05
Ease in Returns			0.909		0.758	4.22	0.67
Variety of Products				0.905	0.831	3.25	0.56
Better Merchandising				0.895	0.866	3.56	0.68
Better Branding				0.962	0.824		
Eigen value	5.964	3.433	2.299	1.049			
% of Variance	32.061	24.520	16.419	7.491			
Cumulative %	32.061	56.681	73.000	80.491			
Cronbach Alpha	0.889	0.873	0.923	0.875			

Table 3: t-test and Anova test

Variable	No. of Samples	Overall Mean	Accuracy	Cost Effectiveness	Merchandising	Responsiveness
Format						
Offline	105	3.75	t = 4.042 0.019	t = 3.421 0.034	t = 1.023 0.435	t = 4.15 0.000
Online	95	3.45				
Total	200	3.60				
Gender						
Male	105	3.50	t = 2.033 0.765	t = 11.234 0.023	t = 14.962 0.003	t = 3.145 0.221
Female	95	3.70				
Total	200	3.60				
Age						
18-30 Years	102	3.78	F = 8.913 0.000*	F = 0.320 0.727	F = 0.027 0.974	F = 6.881 0.001*
31-45 Years	58	3.56				
More than 45 Years	40	3.45				
Total	200	3.60				
Experience						
0 – 3 years	92	3.25	F = 6.332 0.002*	F = 1.664 0.192	F = 2.299 0.103	F = 0.220 0.802
3 – 5 years	65	3.65				
5 years & above	23	3.9				
Total	201	3.60				

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Implementation of Wireless Sensor Networks in the Field of Military and Defense: A Review

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Wireless Sensor Network (WSN) has gained popularity in the field of research mainly in the last few decades due to their wide areas of application like habitat monitoring, structural monitoring, pipeline monitoring, agriculture and smart grid etc. Apart from these applications, the wireless sensor networks have huge potential in the field of military and defense. These networks being equipped with appropriate sensors can enable detection of enemy movement, intrusion, analyze their movement and progress. Since last few decades researchers have been studying, testing and implementing these networks in many mission-critical applications. Forces from around the world have been implementing these networks for real time information flow, detection of hostilities and jamming enemy communication networks. This paper reviews the requirements and implementation of existing technologies and ongoing efforts and potential benefits of implementing WSN in the field of military and defense.

Key Words—Wireless sensor networks, military and defense, Joint intelligence, surveillance reconnaissance (JISR), Network Jamming.

Introduction

Wireless sensor network (WSN) has gained popularity in the field of research mainly in last few decades due to their wide areas of application. Also a significant progress has been achieved in the same field. The application of these networks have expanded from their usage in the fields like habitat monitoring, structural monitoring, pipeline monitoring, healthcare, intelligent traffic control [1] to the wide usage in military and defense. Basically wireless sensor networks consist of number of miniature low-power sensor nodes communicating via radio frequency (RF) and are spread over the area of interest and the activities in that area is monitored from far away stations which collect the real time information about the area. This helps in the collection of sufficient Intel for the military forces without much human intervention in the areas being monitored. This sensor node consists of several sensors and sometimes small actuators which sense the physical phenomenon. The sensors like temperature sensor, pressure sensor, noise detection sensor, motion detectors, thermal cameras etc are used for effective monitoring. Such a system should reduce the workload of the ground troops [2] who regularly go on patrolling in the areas near hostile territory. Thus saving the precious lives of the soldiers and avoiding direct contact with hostile forces.



Figure 1: Wireless Sensor Network

When deployed, these sensor nodes self configure and form a network or more specifically ad-hoc network between themselves for ease of the information flow. An ad-hoc network is a multi-hop wireless network, consisting of wireless nodes which communicate in a peer to peer fashion where every node receives and sends data at the same time [3]. One main advantage of ad-hoc network is that it is more robust and facilitates quick and easy deployment of sensor nodes. For the effective data gathering, the sensor nodes must be placed appropriately at a certain distance from each other and from the gateway for ease in the data flow. Wireless long-haul connectivity is provided between the sensor nodes and the backend command or reach-back station by the gateway. In the paper, the defense application and implementation techniques of WSN have been reviewed.

The rest of the paper is organized as follows: Section 2 consists of the background of the WSN. Section 3 discusses about the characteristics and working of wireless sensor network. Section 4, 5 and 6 consists of the application and methodology of deployment of WSN for Border surveillance, marine and underwater surveillance and the research challenges in WSN, at last Section 7 concludes the paper.

Background

An advantage of WSN is their ability to bridge the gap between physical and logical worlds. This is done by collecting useful information from the physical world and communicating that information to logical devices that can process it. Apart from civilian usage, the wireless sensor networks find a wide area of interest in

the field of defense. Nowadays, the military forces want to gather real time information of remote areas, areas with frequent militant activities or along the borders and for the protection of their bases. The sensor nodes are deployed which form an intrusion detection system (IDS) based on the approach of smart sensor networks (SSN).

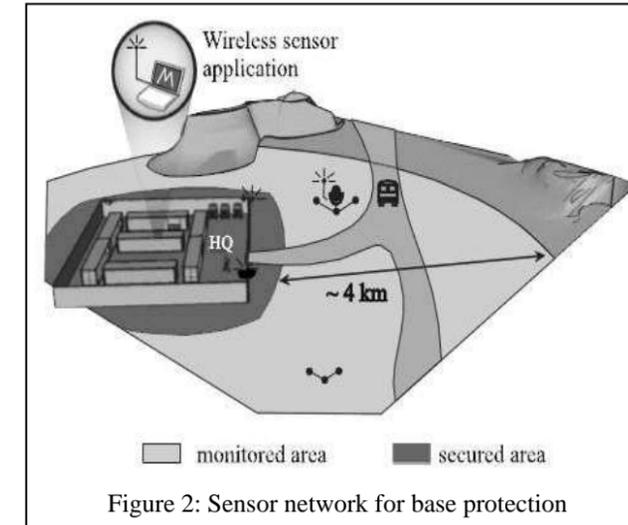


Figure 2: Sensor network for base protection

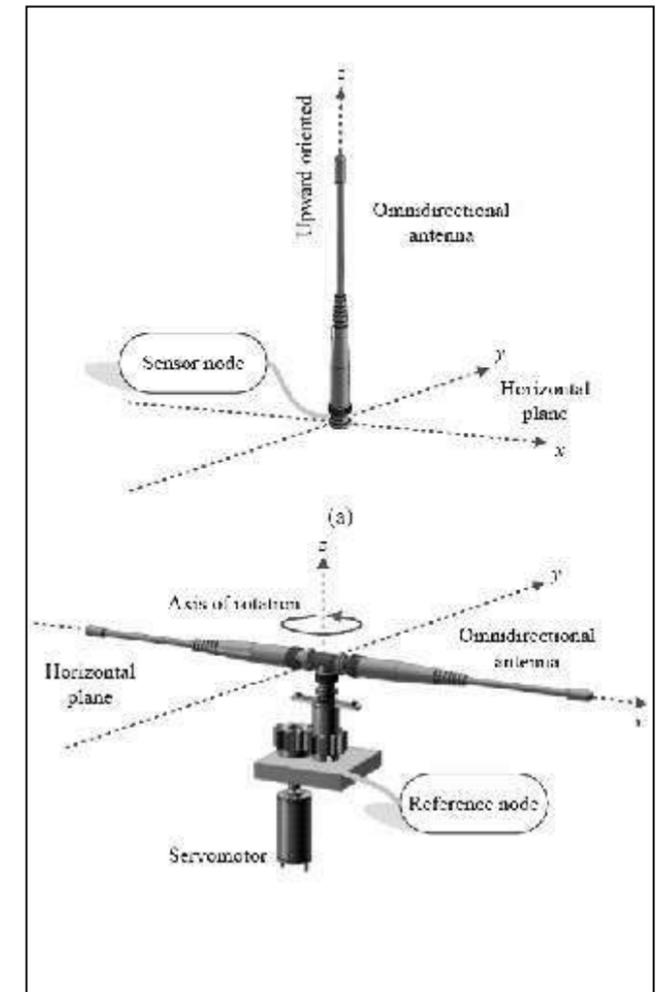
Figure 2 shows how the wireless sensor networks for a protective detection layer around the base station or the headquarters. There may be some interference in the network during real time deployment due to the terrain. To facilitate the intrusion detection as earlier as possible, the sensors would have to form a belt around the HQ. It is assumed that the sensor node will be very small, lightweight and cheap. At the same time it has to be robust coupled with anti-jamming functions. They are assumed to be hand deployed before the operation but sometimes they may require to be air dropped or rocket launched. These nodes contain power unit, sensors, ADC converter for converting analog signals to digital, storage and processing unit, transceivers etc.

Working characteristics

For majority of applications, the wireless sensor networks may cover the area between 5-20 km² with the communication range between the nodes of around 250-500 m. In the military applications sensor nodes are required to be operated with beyond line-of-sight (BLOS) communication [2]. Under such conditions need for energy-efficient routing and elimination of sensing coverage problems is required. Usage of Omni-directional antennas would be a right choice under such circumstances. With self-orienting antennas coming into picture, the problem of energy efficiency may arise.

The sensor nodes must be able to operate for the required time during actual operation. These networks are usually required to operate for few days, although duration of one or two months may be desirable in case of military applications. The nodes must also have small

electromagnetic signature so as to remain hidden from adversaries.



Few companies like Lockheed Martin, SenTech and Textron have developed their wireless sensor network that transfers their data directly to the base stations over a number of long-range non line of sight bearers (like satcom, very high frequency bearers). These are generally categorized in First generation sensor networks (1GSN). Future Combat System and Terrain Commander from Textron Systems are considered as second generation sensor networks (2GSN). The third generation sensor networks (3GSN) are the only true ad hoc systems that are multi-hop in nature.

These wireless sensor networks have different routing protocols that enable them to self-configure after their deployment. These routing protocols are discussed as follows:

- **Hierarchical/node-centric:** This is the most common routing protocol where cluster heads are formed which perform some aggregation. Clustering of the nodes reduces the amount of data to be transmitted and saves critical energy.

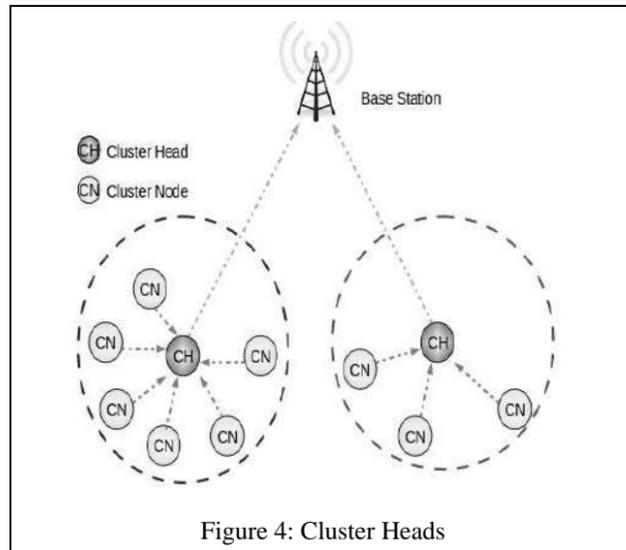


Figure 4: Cluster Heads

- **Location based/position centric:** This is a GPS based routing technique. Data transfer is based on the GPS locations of the nodes. The smart sensor network (SSN) estimates the transmission power required and facilitates energy efficient routing.
- **Data centric:** Fundamentally, the sensor networks are different from Ad-hoc networks in the data they carry. In sensor networks it is the aggregate data or the information carried in the data rather than the actual data itself. Routing is performed using aggregate data rather than individual data from a sensor itself.

Medium Access Control (MAC): The medium access control technique mainly focuses on ad hoc networks for optimizing fairness and throughput efficiency, emphasizing lesser on energy conservation [5]. However the energy constraint is considered one of the main issues so the MAC protocol has recently been tailored as per the requirements of sensor networks. MAC protocol is used to avoid collision if two radios transmit simultaneously. Protocols like MACAW and IEEE 802.11 eliminate the energy wastage due to collision of networks. Also to avoid unnecessary reception of signals another enhancement called PAMAS has been made. Thus, MAC protocol is used to put the sensor nodes to sleep state and reduce the idle power consumption.

Sensor-MAC (S-MAC), Timeout-MAC (T-MAC), DMAC and TRAFFIC adaptive medium access (TRAMA) are also a part of MAC protocol.

Border surveillance

The role of Wireless Sensor Networks in border monitoring and surveillance is a wide and complex application than assumed. Most of the countries do not have a permanent fencing along the national borders and are exposed to frequent trafficking and intrusion. Although, the patrolling Border Security Forces patrol

the border continuously, there is a huge time span between the rotation of their shifts which is ideal for the intruders/militants to break into the country and become a potential threat to the national security. Deployment of miniature sensor nodes coupled with various types of sensors such as seismic sensors, motion detectors and thermal cameras can alert the security forces in case of intrusion. Wireless sensor network processes the data received from

physical world and sends it to command centre.

The military forces require an ideal system that can work 24 hours in all weather conditions for critical surveillance of the borders. One such system developed by Lockheed Martin is Self-powered Ad-hoc Network (SPAN). SPAN is a wireless sensor network system of 'Field and Forget' ground sensors that provide unhindered, continuous surveillance which help in border protection and many mission-critical applications for the military [6]. SPAN is a mesh of self-organizing, self-healing sensor network. Information from these sensors is processed using appropriate algorithms reducing false alarms and provides situational awareness to the security forces about the area of deployment.

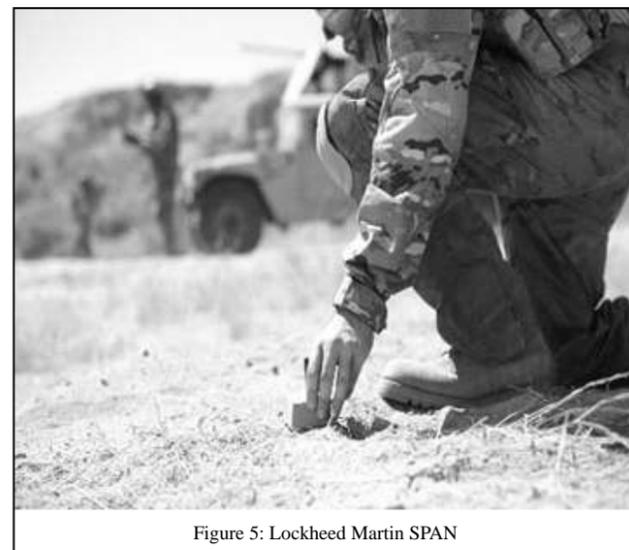


Figure 5: Lockheed Martin SPAN

SPAN sensors are small enough to fit into one's hand and can be concealed in camouflage housings easily. These sensors resemble the shape of stone or rocks and are hard to identify. The span system is also an energy efficient system and it is possible to power it via small solar panels. Each sensor node within the SPAN network incorporates an energy harvesting subsystem that recharges itself using simple energy sources from the surrounding environment. This eliminates the constraint of power consumption. Another such system is Self-healing Autonomous Sensor Network typically called as SASNet [2]. Tiered wireless sensor network SASNet exhibits hierarchical networking architecture.

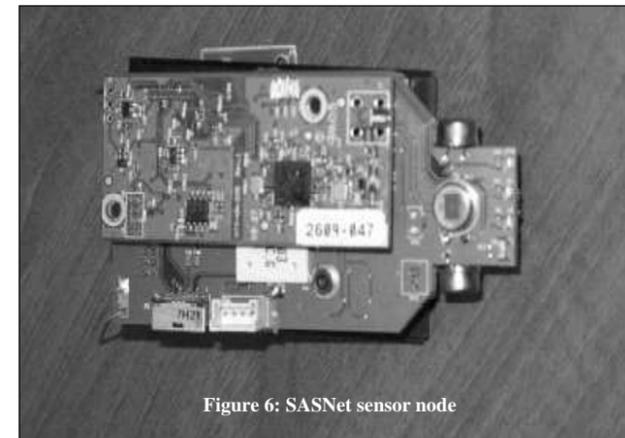


Figure 6: SASNet sensor node

The SASNet sensor node is shown in the figure. The sensor nodes form the first level (tier-1), performing basic operations and forming extended monitoring coverage. Sensor nodes are equipped with seismic, acoustic, passive infra-red (PIR), piezo-electric and magnetic sensors. Every sensor node acts as a router, delivering data to the nearby sensor nodes thus forming an Ad-hoc network. At the second and third level (tier-2, 3) formation of clusters, application logic formation and management node (MN) provides operational control and system management.

Another such project is Line in the sand by Ohio State University. The researchers there have deployed around 90 sensor nodes with the capability of detecting metallic objects. The objective of Line in the sand project is to identify the armored vehicles and tanks. The system uses magnetometer and micro-power impulse radar sensors. These sensors detect any metallic object passing through the network. The routing of nodes in this system is done by a simple algorithm called Logical Grid Routing Protocol.

4.1 Network Jamming: Wireless sensor networks have also been used for the purpose of jamming enemy communication networks in the area of deployment. A sophisticated jammer jams an area in a single-channel wireless sensor network [7]. The jammers incur maximum damage to the network in the form of corrupted communication links. The main objective of jammer signal is to wireless transmission in the form of interference, noise or collision at the receiver side.

One such wireless sensor network with jamming capabilities is Wolfpack, designed by Defense Advanced Research Projects Agency (DARPA). Wolfpack denies the use of enemy radio communications (20 TO 2,500MHz) throughout the battle space by a distributed network of emplaced autonomous, cooperative jammers while avoiding disruption of friendly radio communications [8].

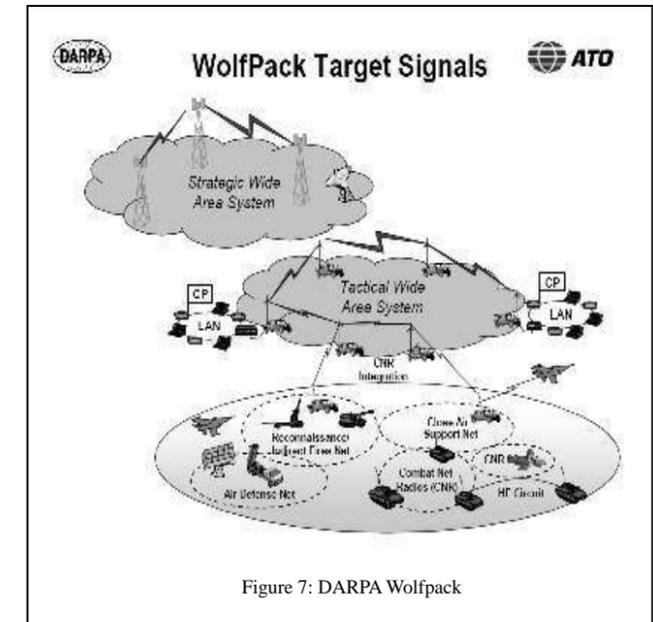


Figure 7: DARPA Wolfpack

Wolfpack detects the transmissions in the area and determines the network links and nodes and projects intent. It exfiltrates enemy emitter information and jams it while raising 'local noise level' on friendly force frequency as a result the friendly transmissions and intentions are masked. The above were the few major applications of WSN for the ground forces.

Marine Surveillance

The protection of coastlines is strategically important for every country. Recently, the militant activities and intrusion through sea routes had increased in south-east Asia. Although, the coast guard and Naval ships patrol the sea regularly but 24 hour surveillance without hectic manual patrolling is not possible without implementing an autonomous smart sensing and tracking system. As the sensor networks are deployed on ground, the same sensors can also be deployed for marine surveillance. The deployment of acoustic sensor nodes in shallow waters is most common method.

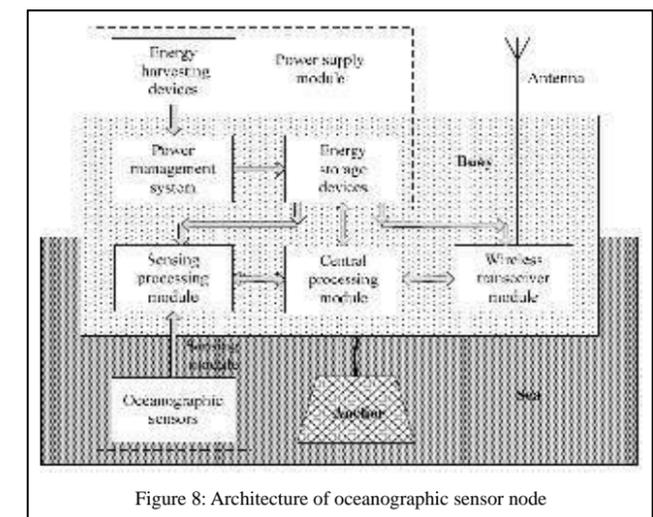


Figure 8: Architecture of oceanographic sensor node

There had been research on the ship detection techniques through the V-shaped wave generated by their movement on the water. These sensor deployment uses grid topology with predefined locations. Accelerometers are used for measuring the buoys during waves. The readings collected by the accelerometer are then processed to detect the ship and its speed. The only problem with underwater network is the uselessness of Radio Frequency (RF) which does not communicate inside the water. The current protocols designed for terrestrial wireless communications are found useless in under water applications thus making marine sensor networks more challenging. A typical marine wireless sensor network consists of floating sensor nodes collecting outside data while at the same time they are connected with the diving sensors which collect data under the sea. The impact of water on the signals can delay the transmission process and degrade or even halt the operation. So, the best topology for land network may not work the same for marine networks. In marine applications, the sensor nodes are placed in specific predefined locations relative to each other. Thus, it is easier to manage the topology of the network. Routing techniques for such systems play a vital role because the information collected by the nodes is basically transmitted to some cluster head. The head must be able to identify the location of the target with the help of nodes. Also, the information which transfers from node to node must have minimal latency.

The researches nowadays focus more on terrestrial sensor network development than marine network. Even the protocols and routing techniques are mostly developed considering the terrestrial applications, making the research and innovation in marine sensor network more difficult and challenging.

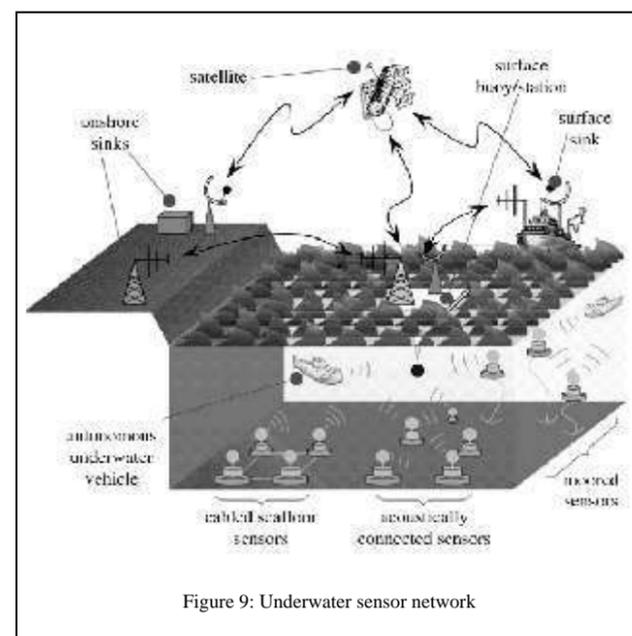


Figure 9: Underwater sensor network

Research Challenges

Wireless Sensor Network (WSN) faces many research challenges, both in terrestrial and in marine applications. The sensor nodes have to be energy efficient, better camouflaged with optimal jamming capabilities during adversaries. The accuracy of data transferring from node to node with minimum latency and finally reaching the base station must be trustworthy enough. Miniaturizing the sensor nodes and quick deployment is itself a great challenge. Research to develop combat suits integrated with sensors for health monitoring and GPS has been going on since few decades and has acquired pace in recent times. One such project is Future Infantry Soldier as a System (FINSAS). This is an initiative by the Indian defense sector to equip the soldiers with state of the art combat suit integrated with sensors for monitoring body parameters, shoes as a mine detection device and battlefield management system [10]. Such complex combat system is still in design and fabrication phase.

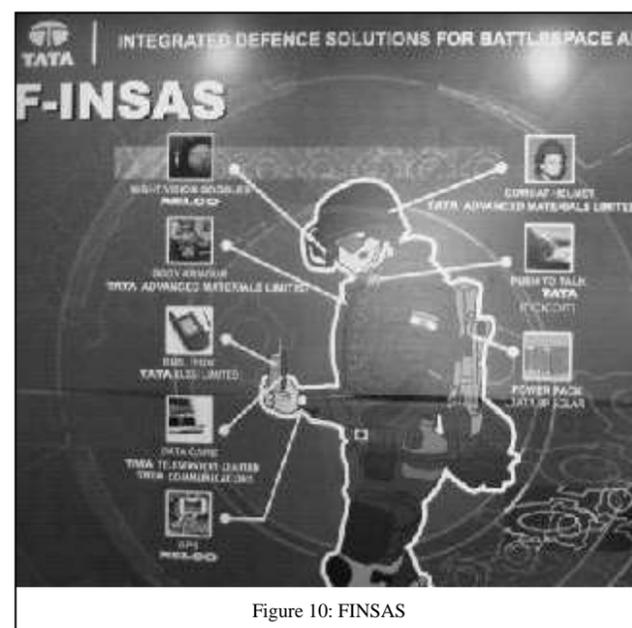


Figure 10: FINSAS

Another major concern that cannot be avoided is the data looping in large sensor networks. Robustness of the data and its processing and accurately tracking the hostile activities is also a major challenge. To deploy a pure Ad-hoc network that self-configures itself with minimal latency and minimal transmission time is still a very big task and requires state of the art technology.

Conclusion

In the coming times, the wireless sensor networks will play a major role in the battlefield, along the national borders and even in the marine environment. Still only a limited number of nodes form this type of wireless network and the network with thousands of nodes, strategically important for military applications is desirable. This paper reviews the requirements and implementation of existing technologies and ongoing

efforts and potential benefits of implementing WSN in the field of military and defense. In addition we have discussed the technical requirements of these networks and few challenging aspects of using such a network in marine/underwater environment.

Acknowledgment

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Managing Core Conflict: A Practical Approach

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Abdul Hameed

Conflict is a part of professional and personal lives. Some thinkers believe that a low dose of controlled conflict is in fact good for the system. The resolution of conflict can be managed by understanding the root cause and dealt them intelligently. Conflict can never be fully resolved but it can be minimized or can be used for the benefit of organization. There are several mini conflicts within an overall conflict. And they are inter-related.

Key Words: Challenges In Managing Core Conflict; Conflict Resolution using the Evaporating Cloud technique of E Goldratt.

Objective of study

- To assess the type and probable cause of conflict.
- To develop the practical approach to identify the conflict and the solution using generic Evaporating Cloud Technique of E. Goldratt.

Methodology of conducting the study

Following methodology has been adopted to carry out the study to gather the data.

- Secondary source: Information collected from E. Goldratt evaporating cloud technique and then practical approach has been developed using a specific scenario..
- The study on the subject was carried out after the analysis of compiled data, the final finding is based on own perception and knowledge.

Major Results

The major results of the study are;

- Approach to identify core conflict using CRT and then finding the solution to those using assumptions.
- General guide line to practice CRT and judge the efficacy of the proposed technique to manage core conflict.

Core conflict

Like the core muscles of the body or like the main trunk of the tree, there is a core conflict and there are subsidiary mini conflicts.

Core conflict may be defined as a struggle or contest between people with opposing needs, ideas, beliefs, values, or goals. Conflict on teams is inevitable; however, the results of conflict are not predetermined. Conflict results because of miscommunication between people with regard to their needs, ideas, beliefs, goals, or values. Conflict management involves acquiring skills related to conflict resolution, self-awareness about

conflict modes, conflict communication skills, and establishing a structure for management of conflict in environment.

Depicting Core Conflict

The core conflict is depicted through Conflict Resolution, using the Evaporating Cloud technique of E Goldratt. The Evaporating Cloud is one of the six thinking in the Theory of Constraints initially developed by Eliyahu. M. Goldratt. to enable the focused improvement of any system (especially business system). The Evaporating Cloud is suited to finding a solution to conflict between two parties or two points of view. The method requires the participants to find 'win-win' solutions because it emphasizes that both parties are trying to reach the same ultimate goal

The above technique describes two views of reality or two arguments depicted by the two rows. Thus with a common aim, there are two ways to get there. The beliefs may or may not be compatible with each other but the actions are definitely not (if they were, there wouldn't be any conflict).

Introduction

Management to conflict.

Conflict is a part of professional and personal lives. Some thinkers believe that a low dose of controlled conflict is in fact good for the system. The resolution of conflict can be managed by understanding the root cause and dealt them intelligently. Conflict can never be fully resolved but it can be minimized or can be used for the benefit of organization, and are there several mini conflicts within an overall conflict. And they are inter-related. Each one is continuously learning by experience (of self and others) how to manage his personal/organizational conflict.

Core conflict

Like the core muscles of the body or like the main trunk of the tree, there is a core conflict and there are subsidiary mini conflicts.

Core conflict may be defined as a struggle or contest between people with opposing needs, ideas, beliefs, values, or goals. Conflict on teams is inevitable; however, the results of conflict are not predetermined. Conflict might escalate and lead to nonproductive results, or conflict can be beneficially resolved and lead to quality final products. Therefore, managing conflict is integral to a high-performance team. Although very few people go looking for conflict, more often than not, conflict results because of miscommunication between people with regard to their needs, ideas, beliefs, goals, or values. Conflict management is the principle that all conflicts cannot necessarily be resolved, but managing conflicts can decrease the odds of nonproductive escalation. Conflict management involves acquiring skills related to conflict resolution, self-awareness about conflict modes, conflict communication skills, and establishing a structure for management of conflict in your environment.

Managing core conflict has following benefits:

- Listening, oral communication, interpersonal communication, and teamwork rank near the top of skills that employers seek in their new hires
- When effectively manage and resolve conflicts with others, then more opportunities for successful team memberships are available to you.
- If we manage this highly probable event called conflict (average five conflicts per day), then there are less apt to practice destructive behaviors that will negatively impact the team. Although conflict may be misunderstood and unappreciated, research shows that unresolved conflict can lead to aggression. Most of us use conflict skills that we observed growing up, unless have made a conscious effort to change conflict management style. Some observed good conflict management, while others observed faulty conflict management.

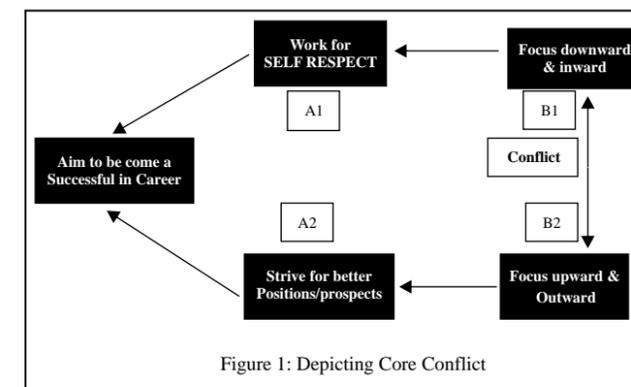


Figure 1: Depicting Core Conflict

Ingredients

Aim is depicted to the left, **beliefs** are in A1 and A2 and their corresponding actions are in B1 and B2 which are conflicting. The figure is read from left to right prefixing in order to..

Top Row

In order to become successful in career, one must work for self Respect and must focus downward and inward (One relentlessly work for organization and the task at hand by subordinating own individual goals to organizational goals. While doing so, the organization prospers and his own contribution is also recognized).

Bottom Row

In order to become a successful in career. One must work and strive for better positions and higher prospects, in order to do that one must focus upward and outward (To achieve this one must persistently strive for personal excellence to obtain good positions and promotion by pursuing his individual goals. While so doing, he prospers and organization too is benefited).

Explanation

The above technique describes two views of reality or two arguments depicted by the two rows. Thus with a common aim, there are two ways to get there. The beliefs may or may not be compatible with each other but the actions are definitely not (if they were, there wouldn't be any conflict). What are hidden are the assumptions that lie underneath the arrows in the diagram.

Managing Conflict

The conflict once depicted it has to be analyzed then it has to be managed The Core Cloud Conflict is an Evaporating Cloud that emerges from analysis of a Current Reality Tree, which is one of the thinking process introduced by Eliyahu M. Goldratt's.

Current Reality Tree (CRT)

The current reality tree describes the system, as it is today, to help find the core conflict, which is a root cause of many undesirable effects (UDE). The CRT process with UDEs (list of all those things that really bothers about the current reality for instance, it really bothers managers, when due to competition they have to perpetuate zero error syndrome), two or three UDEs to be selected to develop the core conflict, by developing each UDE conflict and then combining the conflicts to discern the underlying generic conflict that leads to them. Continuing this step wise, the CRT derives the core conflict that leads to most (and usually all) of the UDEs, A core conflict being an important conflict and therefore a high leverage place to focus on changing the process.

Analogy

An analogy of a tree with its root, trunk and branches would be in order. To find a series of cause effect relationships as we have to progressively move down the tree from the leaves to the root. If the branch is healthy then the leaves are healthy. Moving downward, if the trunk is healthy, then the branches are healthy and so on.

CRT then is read bottom up as a series of If – then statements depicting cause effect relationships. The strength of these relationships can be conveniently classified as strong medium and weak so as to priorities intervention later. Quite simply put, if the root is healthy then the entire tree is healthy since the root of the tree is at the root of all cause effect relationship. Constructing the CRT requires patience (for several attempts) and clarity of thought (to focus on cause effect relationships).

Scenario's CRT (Refer Figure 2, Page 11)

UDEs 1 and 2 Due to the core conflict (as explained in Figure 1) depicted at the bottom of the CRT (analogous to the root of the tree), two UDEs occur as follows :-

UDE 1 Managers cannot prioritize between developments of subordinates, Versus self development. (This is a focusing problem between B1 and B2 of Figure 1 – it is difficult to simultaneously focus at a near object and a far object).

UDE 2 Leads to zero error syndrome for the allotted tasks (since mistakes by self and/ or subordinates are perceived as a threat to one's career .Theoretically nothing should ever go wrong under one's command)

UDEs 3, 4 and 4. The causes of UDEs 1 and 2 lead to the effects of UDEs 3,4 and 5 as follows :-

UDEs 1-3 If the managers cannot prioritize between the development of subordinates under him versus self development, **then** they find it difficult to reconcile personal commitments of subordinate under him in view of organizational commitments.

UDEs 1-4 If the managers cannot priorities between development of Subordinates under him versus self development, **then** their cost benefit analysis of interest in global affairs tends to be more profitable than interest in organizational affairs.

UDEs1-5 If the managers can not priorities between development of Subordinates under him versus self development, **then organization** training commitments suffer due to sundry administrative duties (some of them mischievously designed).

UDEs 2-5 If **managers** propagate zero error syndrome for the allotted tasks **then** organizations operations commitments suffer since gladiators (those few well trained personnel who commit few or no mistakes) are developed and sustained who create a false front to deceive seniors, inspectors and clients.

UDEs 6,7 and 8. The **causes** of UDEs 3 and 5 lead to the **effects** of UDEs 6,7 and 8 as follows :-

UDEs 3-6. If managers find it difficult to reconcile personal commitments of his subordinates, then even their self development suffers (preparation for mandatory training and professional courses) because

of Improper time management and short sightedness of organization.

UDEs 5-7 & 8. If training commitments suffer, then individual professional standards deteriorate (due to reduced organizational demand with little self control on luxurious life style).

UDEs 9. The **causes** of UDEs 4, 7 and 8 similarly lead to the effect of UDE 9 i.e. managers clamor for external recognition and awards in comparison to intrinsic ones.

The Culminating Effect, UDE 10

The causes of UDEs 6,4 and 9 finally lead to the culminating effect of UDE 10, i.e. the annual appraisal reports consciousness dominates one's mind and the long term perspective is sacrificed, (one tends to increasingly think about one's actions as perceived by one's current reporting officers)

Mini Conflicts

When we drill down the various UDEs we notice mini conflicts which have to be identified in the CRT construction stage so that focused intervention is facilitated later. We will examine two of them

Mini Conflict 2 : Zero Error Syndrome

Refer Figure 3 at page 12 the top row reads as in order to enable unit to do well I must delegate responsibility to subordinates (belief A 1) and in order to do that one must accept their mistakes (action B1). The bottom row reads as In order to enable organization to do well, one must efficiently complete assigned tasks (belief A2) and in order to do that one must not accept their mistakes (action B2). B1 conflicts with B2.

Mini Conflict 7: Professional Competence.

Refer Figure 4 at page 12. The top row reads as in order to lead a good life, one must live up to the expectations of the seniors and in order to do that one must strive for professional competence(B 1). The bottom row reads as in order to lead a good life, one must enjoy and relax (A2) and in order to do that one need not strive for professional competence (B2). Action B1 necessary for long term motivation conflicts with action B2 of short term gratification.

To find a solution to conflict, we look underneath the arrows of the core conflict to find the assumptions on which conflict diagram have been created.

Assumption of the Core Conflict

The assumption here is that **“a successful manager is a good leader”**. When life is thought to mean climbing the ladder being on top, in positions of power, being influential being right and competing with all others then effort is directed towards personal career to be successful. We can now divide managers into four

quadrants good leader and successful (1”) good leader but not successful (2”), successful but not good leader (3”) and neither successful nor good leader (4”) .There is no problems with the 1”and the 4”types the former being ideal and the latter being undesirable. The conflict is between the 2”and 3”given a choice between the two which one to be preferred. If answer is 2” it will be able to manage the conflict of this scenario but if answer is 3”one will have to work out the CRT again (This article is not about giving a solution it is one of the solution, it is to suggest a technique to manage conflict at personal/ organizational level. Note we have ignored the overlap of good and successful characteristics in each quadrant what is meant here is the predominant characteristic in that particular quadrant.

Injections and Future Reality Tree (FRT)

FRT describes what to change to injections are the changes one will make to the system. FRT connects one's injections to the desirable effects of future reality (Des are opposites of UDEs) having deliberately constructed the CRT and the core conflict it shouldn't be very difficult to devise multi pronged injections delivered simultaneously to the system in controlled doses. What is left hereafter is monitoring and feedback which are equally important.

Practice CRT

Before judging the efficacy of the proposed technique to manage conflict one is to attempt a CRT of the practice core conflict attempted earlier. Say the UDEs which one's organization encountered in the first six months were inability to grasp new complacency in management. Low performance in induction training tendency of organizations to assign challenging tasks to other department and not one's generating us versus them and 'I know you don't know' syndromes unable to measure performance for comparison etc. If it is not managed, this organizational conflict the user will not believe in the system and a parallel system will be developed neither system will work very well.

Conclusion

Experience demonstrates that effective leadership and a good implementation plan are the critical success factors. If beliefs are not changed, one is unlikely to succeed in changing behavior for the long term. This may cause a temporary impact but the system will over time swing back to where it was started. Don't underestimate the cultural resistance that will occur. Plan to counter the resistance but don't harm the resistors. Frequently the greatest resistors become the biggest champions once they have understood and tried the new approach.

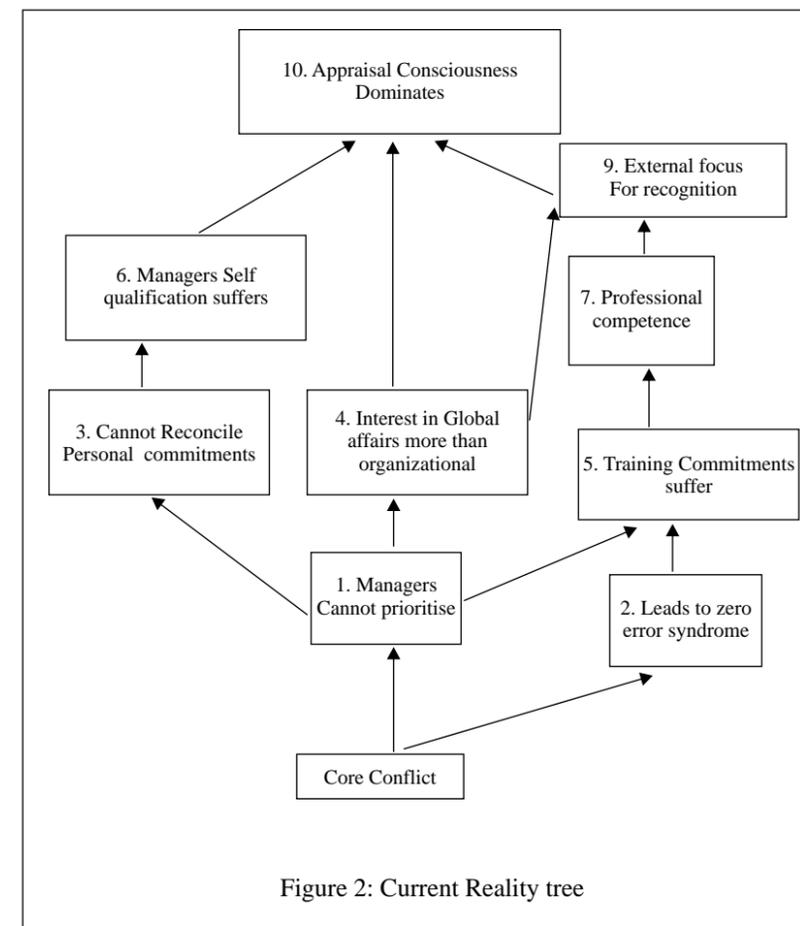


Figure 2: Current Reality tree

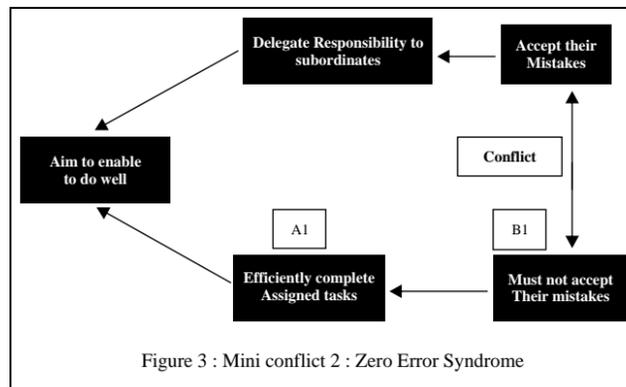


Figure 3 : Mini conflict 2 : Zero Error Syndrome

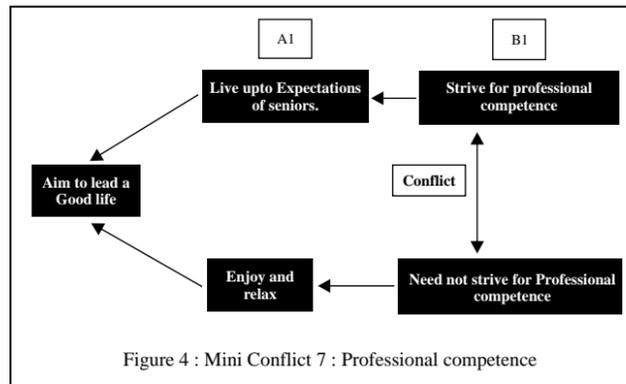


Figure 4 : Mini Conflict 7 : Professional competence

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CASE STUDY

Humour in Indian Television Advertisement: A Case Based Study

Sumanta Dutta
Mehar Gosal
Rohan Volrath

Humour in advertising is one of the most widely used techniques in advertising around the globe; India is not exception to this rule. It has been seen that one out of every five television ads containing humorous appeals. Advertising in today's competitive environment have become one of the major sources of communication. It is also observed that humorous ads have higher recallability than serious ads. Humour is directly linked to attention and recognition. However, humour is by no means a guarantee of better ads, but its effect can be enhanced with careful consideration of the objectives one seek to achieve as well as the type of audience, situation and type of humour. Present study, focus on some of the humor based Indian advertisements with the help of selective Indian cases.

Key Words: Humour appeals, Indian Advertising, Television commercial (TVC).

Introduction

"Humour is the best way to out chatter. If your ad manages to bring a smile on the viewer's face, half the job is done. It ensures instant brand recall."

-Abhijit Avasthi, Ogilvy & Mather (O&M) Advertising

In today's competitive era developing a good product is not enough for a company to make it a successful one. Companies have to engage in different modes of communication under which advertisements is of vital importance. The success of a marketer depends on how brilliantly his advertisements can capture the minds of the consumers. Advertisements help in forming the brand image and symbolic appeals for a brand or a company. In addition to that it helps in differentiation as well as makes it easier for consumers to easily remember or associate with a brand (Belch and Belch, 2003).

As rightly quoted by the advertising genius David Ogilvy, *"If it doesn't sell, it's not creative"*. Therefore, to attain creativity correctly a marketer makes use of both art and science while designing an advertisement strategy. The two things they plan on are – what the ad communicates about the product and how the ad expresses the brand claims (Kotler and Keller 2012).

In order to entrap consumers attention, an advertisers attempts to choose the appropriate element of appeal which is either rational or emotional in nature. Under emotional appeal, it has been seen that humour is a popular persuasion technique used by advertisers (Chattopadhyay & Basu, 1990). Research has shown how a humorous ad succeeds in getting consumers

attention than a non-humorous ad and has positive effects on consumers' purchasing quantity and product quality. Marketers have realized that it's important to execute humor appeal correctly in order to cut through the clutter and stand out. Humour helps in attaining three major things. Firstly, a humorous message attracts and holds consumers attention. Secondly, it enhances the ads effectiveness by making consumers positive. Lastly, it distracts the receiver from counteracting against the message.

However, an important point to be noted is that different customers belonging to different cultures will react and perceive humorous ads differently. Keeping that in mind, present study taken into consideration some of the humour based Indian advertisements.

Literature Review

Yeuh-Hua Lee (2014) aimed to study the different attitudes towards humour advertising of brands and analyzed its effects on brand recognition & recall. Their paper mainly analysed cognitive, affective & social orientation elements in humour advertising and its retrospective effects on communication towards the audience. The study incorporated a 4X2 factorial experiment design using four advertisement types – cognitive, social, affective & non-humorous. 268 subjects were randomly and equally allocated to each type of advertisement. Their findings indicated that humorous advertisements are superior in terms of brand image promotion, comprehension, brand recall & recognition.

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Venkatesh & Senthilkumar (2005) in their research paper examined the impacts of humour advertising in print and radio advertising. The paper suggested that humorous ads attracted more attention in comparison to non humorous ads. Also it connected better with the audience in terms of emotion.

Biswas et al. (1992) content analysed 279 USA and 259 French print advertisements. Based on the high context/low context theory. They hypothesized that there will be no difference between the two countries in terms of the use of humour. But the study revealed that humour is more often used in France (high context culture) than in USA (low context culture). It has also seen that pun type of humour were employed more often in USA and jokes in France.

Humor in Indian Television advertisement: Selective cases

Case: I

Fevi Kwik Advertisement:



Kelly & Solomon (1975) in their paper seek to explore the various uses of humour in advertising rather than addressing its effectiveness. They examine ads on the basis of humour placement, relation to the product, Humour use frequency, differentiation with respect to non-humorous ads. 2056 commercials were analysed on the basis of context analysis. Results of their study indicated that advertisers are using humour in at least 15% of all. Humorous ads used far more animation to take advantage of attention. Humour in the ads was primarily placed in the beginning as an attention seeking mechanism. They considered humour as an effective advertising tool of communication.



Source: <http://www.india.com/icc-cricket-world-cup-2015/fevikwik-todo-nahi-jodo-india-pakistan-ad-brilliant-ad-against-all-negativity-around-ind-vs-pak-world-cup-2015-match-283089/>

AD Description:

In the Fevikwik Todo Nahi Jodo TVC is based on exaggeration (overstating and magnifying something out of proportion) type of humor, the setting is around the famous Wagah Border closing ceremony or The Beating the Retreat ceremony. In this TVC, two soldiers from the respective nations are seen performing the ceremony, until something unexpected happens. The Indian officer noticed that his Pakistani counterpart has a problem with his shoe sole. He looks appealingly at his rival, who, in a flurry of movement, miraculously fixes it. A slow-motion replay reveals how the Indian soldier whips out a tube of Fevikwik from his pocket and mends his rival's shoe instantly. Further, the soldier's help is well acknowledged by the Pakistani security officer.

Case: II

Camlin Marker:



AD Description

The story depicts a village in Rajasthan where professional mourners are waiting for a man to die. When he does, they follow the tradition and start breaking the wife's bangles and remove her locket. But to their surprise, they were not able to rub off her bindi. Just then all of a sudden, the husband starts coughing and comes back to life. Then a flashback is shown that every day the husband put vermilion on his wife's head with Camlin's red marker instead of using the traditional powder. It was because of Camlin's red marker the vermilion could not be wiped off; hence her marriage lifeline gets extended.

1 It is a daily military practice that the border security forces of India (Border Security Force) and Pakistan (Pakistan Rangers) have jointly followed since 1959. (https://en.wikipedia.org/wiki/Wagah_border_ceremony)

2 A bindi (originate from Sanskrit bindu, meaning "point, drop, dot or small particle"). The bindi is arguably the most visually fascinating of all forms of body decoration. Hindus attach great importance to this ornamental mark on the forehead between the two eyebrows - a spot considered a major nerve point in human body since ancient times. Also loosely known as 'tika', 'pottu', 'sindoor', 'tilak', 'tilakam', and 'kumkum', a bindi is usually a small or a big eye-catching round mark made on the forehead as adornment. (<http://hinduism.about.com/od/bindis/a/bindi.htm>)

Case: III Greenply



Source: <http://www.afaqsreporter.com/perl/tbr/story.html?id=939>

AD Description

The ad shows that a Sikh family consisting of a mother, father and son are travelling on a bus in South India. All of a sudden the boy starts talking in south Indian language and asks the bus driver to stop the bus. The boy then leaves the bus and runs into a south Indian home. On entering the house, he noticed a table and a flashback strikes him where he sees a man writing at that same table. Suddenly he reads out a name - Savitri, and reclines on a chair. While all this was happening an old woman observes him and realization dawned upon her that her husband used to recline in the similar manner, after which she runs to the young boy and calls him 'Swami'.

3 The term "swami" from ancient times considered as an ascetic or yogi who has been initiated into the religious monastic order founded by some religious teacher. In Indian culture, Swami also means husband.

Case: IV

Center Shock:





Source: https://qph.is.quoracdn.net/mainimg8b66b3c38f9750b8c7579305d85703b2?convert_to_webp=true

AD Description

The story depicted shows that a young boy enters a barber shop with the desire to get a particular hairstyle done. On showing a picture of the hairstyle which he wanted, the barber thinks of giving him Center Shock chewing gum. After the boy chews the gum, he gets charged and moves his head in an oddly manner, which leads to his hair getting charges. Hence, he gets the hairstyle he wanted by just eating Center Shock.

Conclusion

Hence, it can be said that as a communication strategy, humour constitutes the common denominator and the key success factors for a number of advertising agencies across the globe. A humorous promotion should be

effective only if humour is relevant to the product, service, or event being promoted. Advertiser must be careful while using humour in association with serious problems, misfortune, illness or death.

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