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Sudhir K. Rinten



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From The Editor's Desk

I take this opportunity to thank all contributors and readers for making *Tecnia Journal of Management Studies* an astounding success. The interest of authors in sending their research-based articles for publication and overwhelming response received from the readers is duly acknowledged. I owe my heartfelt gratitude to all the management institutes for sending us their journals on mutual exchange basis, and their support to serve you better.

We are happy to launch the ninth issue of our academic journal. The present issue incorporates the following articles:

- ❖ Use of Analytical Hierarchical Process Model for Alternative Equipment Selection in Small Manufacturing Enterprise
- ❖ Customers' Perception of Indian Railways (Special Reference to Coimbatore Region)
- ❖ Optimal Policies for Integrated Inventory System for Deteriorating Items using Quantity Discount in Price-sensitive Declining Market
- ❖ A Study to Determine the Potential Antecedents, Types and Consequences of Workaholism in Medical Professionals
- ❖ Implications of an Augmented CPFR Model in Supply Chain Management
- ❖ HRD Climate and Organizational Performance with Focus on Job Satisfaction as a Correlate: An Exploratory Analysis
- ❖ Semantic Web: Ontology Based Web
- ❖ Relationships among Selected Demographic Factors and Employee Satisfaction Level in Indian BPOs
- ❖ Women Investors' Perception Towards Online Trading in Tamil Nadu with Special Reference to Coimbatore District
- ❖ Rural Business Management Imperatives for Sustainable Growth
- ❖ Connective Leadership and Women Entrepreneurs: An Integral Approach
- ❖ Economic Prospective of Media Management in Reference with Ethics and Market Forces

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I extend my sincere thanks to our Chairman Sh. R. K. Gupta, who has always been a guiding light and prime inspiration to publish this journal. I am grateful to Dr. A.K. Rathore, Director, for his continuous support and encouragement to bring out the Journal in a proper form. I also appreciate Editorial Committee Members for their assistance help, advice and suggestion in shaping up the Journal. My sincere thanks to our distinguished reviewers and all team members of Tecnia family for their untiring efforts and support in bringing out this bi-annual Journal.

I am sure the issue will generate immense interest among corporate practitioners, policy-makers, academicians and students.

Dr. Nirmal Singh

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USE OF ANALYTICAL HIERARCHICAL PROCESS MODEL FOR ALTERNATIVE EQUIPMENT SELECTION IN SMALL MANUFACTURING ENTERPRISE

Sutapa Datta*
P. Purkayastha**

Abstract: The study describes the use of a popular multi-criteria decision model AHP in deciding upon the selected supplier and suitable model to be used from among alternative offers for a Dough Kneader used by a Small Manufacturing Enterprise (A Bakery Food Manufacturer). While an exhaustive use of the AHP model has been made as a basis of selection procedure, we may extend this method to enhance its accuracy with aid of Grey loading analysis.

Key Words: Alternative equipment selection, Small manufacturing enterprise, AHP Application

Introduction

We illustrate the application of the Analytic Hierarchical Process (AHP) for a Multi-Criteria Decision Model the best recommended Dough Kneader equipment from among alternatives where Management is considering installation a new system of Kneaders for their Savoury product line.

The Analytical Hierarchical Method is being used since this allows weighting different physical characteristics of the system as well as their suitability characteristics as far as consideration has been made on their appropriateness of their applications in manufacture of Patties, Burgers and other additional Savoury items.

This Multi-Criteria Decision Making Aid was introduced by Saaty (Ref. Operational Research, 7th Ed., Handy Taha, Prentice Hall) and has also found use in various industrial problem solutions designed towards making similar optimal choice decisions. The methodology is based on the following systematic approach.

Methodology

The problem is Multi-Level or Multi-Echelon in structure. Therefore a tree structure decision theoretic

solution approach can be applied by rolling-back to a final optimal solution (in this case the appropriate Kneader Machine to be recommended for operations usage).

The following stages are involved in the use of this method for the optimal Kneader choice:

- (i) Structuring the choice matrix from management representatives well versed in process technology of Bakery line manufacturing, maintenance experts and with operations management involvement in Projects, Production, Packing, Marketing and Quality Management Issues.
- (ii) The favourable choice agreement is given by a choice matrix

$$\begin{matrix} & \mu_1 & \mu_2 & \mu_3 \\ \mu_1 & \begin{pmatrix} 1 & 2 & 3 \end{pmatrix} \\ \mu_2 & \begin{pmatrix} - & 1 & - \end{pmatrix} \\ \mu_3 & \begin{pmatrix} - & - & 1 \end{pmatrix} \end{matrix}$$

wherein pair-wise choice of selection of criteria is assigned where μ_1 , μ_2 and μ_3 = alternative choice criteria relating to some physical property. In the above example μ_2 is 2 times as much in preference to μ_1 and μ_3 is 3 times much in preference to μ_1 .

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- (iii) The conversion of choice matrix to a normalized matrix wherein after completion of filling up of the above matrix components. This is generated by the reciprocals (each element $a_{ij} = 1/a_{ji}$ where i = row of choice matrix and j = column of choice matrix) as proposed by Saaty.
- (iv) The normalized weights of choices μ_1, μ_2 and μ_3 respectively are given by normalized weights for the three characteristics under consideration i.e. $(\bar{\omega}_1, \bar{\omega}_2 \text{ \& } \bar{\omega}_3)$.
- (v) Thereafter Consistency of Choice Matrix is evaluated through assessment of two properties Consistency Index (CI) and Random Consistency Index (RI).
- (vi) For this we use the model

$$[A]^* \bar{\omega} = n_{\max} * \bar{\omega}$$

$$\text{where, CI} = \frac{n_{\max} - n}{n - 1} \text{ and RI} = \frac{1.98(n - 2)}{n}$$

RI (random consistency index is related empirically to a large sample of randomly generated choice matrices [A])

- (vii) Thereafter the Consistency Ratio CR is obtained as

$$\text{CR} = \frac{\text{CI}}{\text{RI}}$$

If $\text{CR} \leq 0.1$, then the inconsistencies of the choice matrix is acceptable. Otherwise a new choice analysis with corresponding Choice Matrix structure is to be generated and the analysis repeated till the Consistency Ratio Condition is satisfied.

Analysis of Problem

In the present study the following hierarchical/echelon levels are involved.

Sl. No.	Code	Details	Echelon Level
1	DB	Decision to be made on which particular Kneader to be selected among from alternatives	At Level – (0)

Sl. No.	Code	Details	Echelon Level
2	K1,...K3	Alternative Kneader Models for selection	At Level – (1)
3	R, U, C	Relativity, Upgradation Capability, Cost Criteria	At Level – (2)
4	P, B, AS	Bakery products using Kneader – Patties, Burger and additional Savoury items	At Level – (3)

Discussions with operations personnel on relevant choice issues were held by the researcher on their views of Choice Preferences. These are given for the various multi-echelon matrices based on the choice characteristics by Table: I, II and III.

The Normalized Weightages were estimated and are also depicted on the R.H.S. of each Choice Matrix.

The calculation of Consistency Index and Random Consistency Index given by the individual Tables along with findings. All Consistency Ratio values being less than 0.1 indicate a use of consistent choice matrices to the extent that inconsistencies are within acceptable choice limits.

The total information on choices has then been translated into Network form with Multi-Level structure and joint probabilities estimated for various combinations of alternatives given by the Network. The probabilities are Normalized probabilities along each linkage.

A composite network model has been developed on the basis of three total blocks of data given by Table: 17.5 leading to the final selection decision.

$K-3 > K-2 > K-1$, based on the Cumulative Highest Total Weightages.

Thus recommendation on the basis of AHP analysis model suggests preference for selecting Kneader Model offer K1 to be the best for implementation.

Calculation for Choice Matrix Parameters; Consistency Index, Random Consistency Index and Consistency Ratio

Alternative Kneader Choice

	K1	K2	K3			K1	K2	K3	W
K1	1	0.5	0.33		K1	0.17	0.14	0.18	0.16
K2	2	1	0.5		K2	0.33	0.29	0.27	0.30
K3	3	2	1		K3	0.5	0.57	0.55	0.54
	6	3.5	1.83						

Table: I

Kneader Choice Matrix:

$$\begin{aligned} K1 &= (0.16*1) + (0.3*0.5) + (0.54*0.33) = 0.5 \\ K2 &= (0.16*2) + (0.3*1) + (0.54*0.5) = 0.9 \\ K3 &= (0.16*3) + (0.3*2) + (0.54*1) = 1.62 \\ &= 3.02 \end{aligned}$$

$$CI = \frac{n_{\max} - n}{n - 1} = \frac{3.02 - 3}{3 - 1} = 0.01$$

$$RI = \frac{1.98(n - 2)}{n} = \frac{1.98(3 - 2)}{3 - 2} = 0.66$$

$$CR = \frac{CI}{RI} = \frac{0.01}{0.66} = 0.015$$

∴ CR ≤ 0.1 then the inconsistencies of the Choice Matrix is acceptable

Kneader Design Suitability

	R	U	C			R	U	C	W
R	1	2	0.5		R	0.29	0.33	0.27	0.30
U	0.5	1	0.33		U	0.14	0.17	0.18	0.16
C	2	3	1		C	0.57	0.50	0.55	0.54
	3.5	6	1.83						

Table: II

Kneader Design Suitability Choice Matrix:

$$\begin{aligned} R &= (0.3*1) + (0.16*2) + (0.54*0.5) = 0.9 \\ U &= (0.3*0.5) + (0.16*1) + (0.54*0.33) = 0.5 \\ C &= (0.3*2) + (0.16*3) + (0.54*1) = 1.62 \\ &= 3.02 \end{aligned}$$

$$CI = \frac{n_{\max} - n}{n - 1} = \frac{3.02 - 3}{3 - 1} = 0.01$$

$$RI = \frac{1.98(n - 2)}{n} = \frac{1.98(3 - 2)}{3 - 2} = 0.66$$

$$CR = \frac{CI}{RI} = \frac{0.01}{0.66} = 0.015$$

∴ CR ≤ 0.1 then the inconsistencies of the Choice Matrix is acceptable

Applicability for 3 Savoury Products

	P	B	AS			P	B	AS	W
P	1	0.5	0.25		P	0.14	0.14	0.14	0.14
B	2	1	0.5		B	0.29	0.29	0.29	0.29
AS	4	2	1		AS	0.57	0.57	0.57	0.57
	7	3.5	1.75						

Table: III

Acceptability for 3 Savoury Products Choice Matrix:

$$\begin{aligned} P &= (0.14*1) + (0.29*0.5) + (0.57*0.25) = 0.43 \\ B &= (0.14*2) + (0.29*1) + (0.57*0.5) = 0.86 \\ AS &= (0.14*4) + (0.29*2) + (0.57*1) = 1.71 \\ &= 3.00 \end{aligned}$$

$$CI = \frac{n_{\max} - n}{n - 1} = \frac{3.00 - 3}{3 - 1} = 0.00$$

$$RI = \frac{1.98(n - 2)}{n} = \frac{1.98(3 - 2)}{3 - 2} = 0.66$$

CR estimation is not essential since Matrix of Normalized values are identity indicating no inconsistency in the Choice Matrix.

Calculation For Individual Weightages Based On Kneader, Performance Characteristics And Individual Savoury Items (Patties, Burgers & Other Savoury Items)

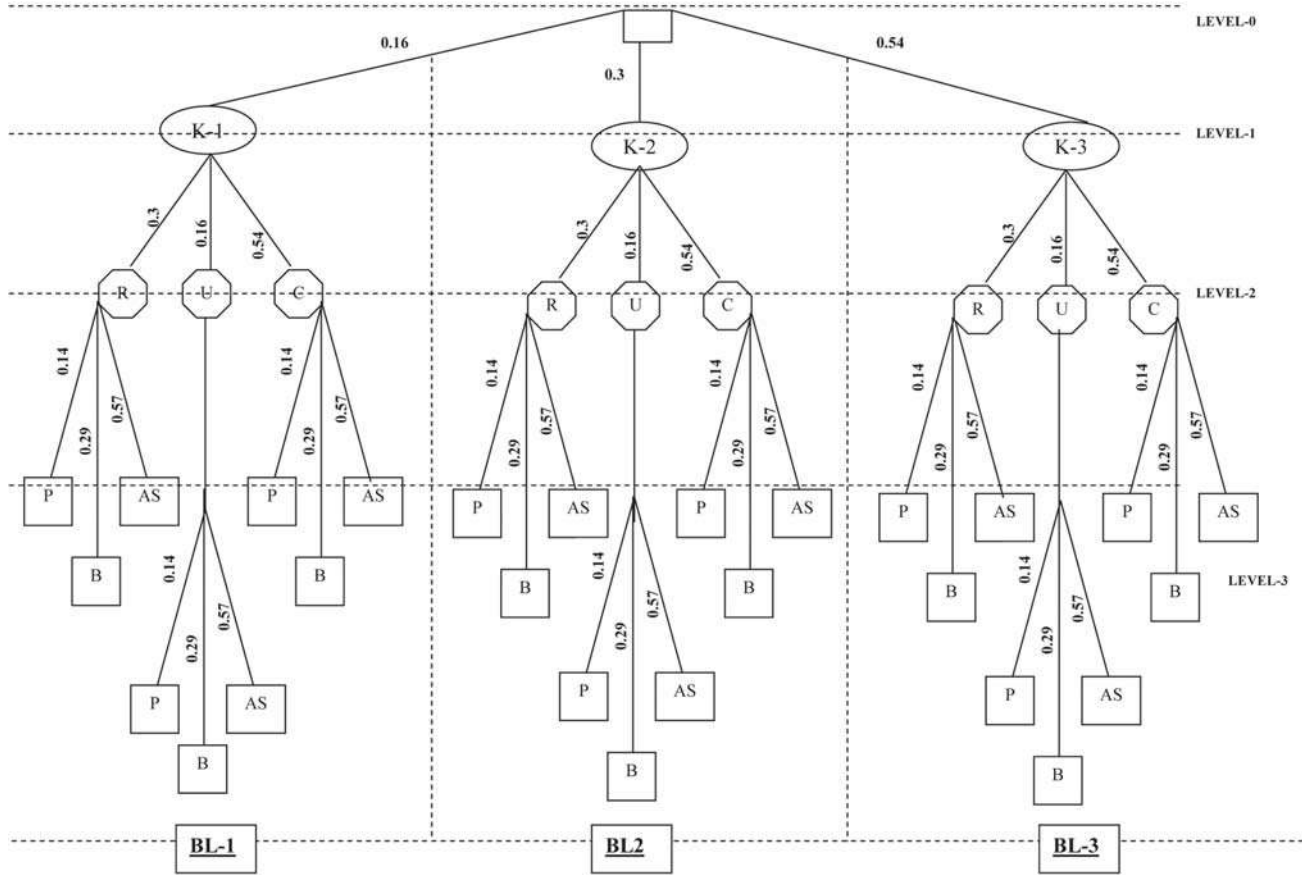
$$p_{BL-1}^P = (0.14*0.3*0.16) + (0.14*0.16*0.16) + (0.14*0.54*0.16) = 0.0224$$

$$p_{BL-1}^B = (0.29*0.3*0.16) + (0.29*0.16*0.16) + (0.29*0.54*0.16) = 0.0464$$

$$p_{BL-1}^{AS} = (0.57*0.3*0.16) + (0.57*0.16*0.16) + (0.57*0.54*0.16) = 0.0912$$

THE MULTI-ECHELON A.H.P. NETWORK FOR OPTIMAL KNEADER BRAND SELECTION

NETWORK TABLE: IV



$$p_{BL-2}^P = (0.14 \times 0.3 \times 0.3) + (0.14 \times 0.16 \times 0.3) + (0.14 \times 0.54 \times 0.3) = 0.042$$

$$p_{BL-2}^B = (0.29 \times 0.3 \times 0.3) + (0.29 \times 0.16 \times 0.3) + (0.29 \times 0.54 \times 0.3) = 0.087$$

$$p_{BL-2}^{AS} = (0.57 \times 0.3 \times 0.3) + (0.57 \times 0.16 \times 0.3) + (0.57 \times 0.54 \times 0.3) = 0.171$$

$$p_{BL-2}^P = (0.14 \times 0.3 \times 0.54) + (0.14 \times 0.16 \times 0.54) + (0.14 \times 0.54 \times 0.54) = 0.0756$$

$$p_{BL-3}^B = (0.29 \times 0.3 \times 0.54) + (0.29 \times 0.16 \times 0.54) + (0.29 \times 0.54 \times 0.54) = 0.1566$$

$$p_{BL-3}^{AS} = (0.57 \times 0.3 \times 0.54) + (0.57 \times 0.16 \times 0.54) + (0.57 \times 0.54 \times 0.54) = 0.3078$$

$$3.9 \text{ K-1} \Rightarrow p_{BL-1}^P + p_{BL-1}^B + p_{BL-1}^{AS} = 0.16$$

$$\text{K-2} \Rightarrow p_{BL-2}^P + p_{BL-2}^B + p_{BL-2}^{AS} = 0.3$$

$$\text{K-3} \Rightarrow p_{BL-3}^P + p_{BL-3}^B + p_{BL-3}^{AS} = \frac{0.54}{1.00}$$

Observation

The calculation of Consistency Index and Random Consistency Index given by the individual

Tables along with findings. All Consistency Ratio Values being less than 0.1 indicate a use of Consistent Choice Matrices to the extent that inconsistencies are within acceptable choice limits.

The total information on choices has been translated into Network from with Multi-level structure and joint probabilities estimated for various combinations of alternatives given by the Network. The probabilities are Normalized probabilities along each linkage.

A composite network model has been developed on the basis of three total blocks of data given by Tables leading to the final selection decision. $K-3 > K-2 > K-1$, based on the cumulative highest total weightages.

Conclusion

Thus recommendation on the basis of AHP analysis model suggests preference for selecting Kneader model offer 1 to be the best for implementation.

References

- Oliver, Gitam Journal of Management, vol.-7, no.-3, July-Sep, 2009
- Ellram & Cooper, International Journal of Logistics Management 1(2) (1990)
- Babu, Lal., Vrat, Prem and Sushil (1999), "In Supply Chain Management for Global Competitiveness", 1st ed. B. S. Sahay (eds.), New Delhi: Mcmillan India Ltd., pp. 1040-1059.
- Christopher M., 'Logistics & Supply Chain Management – Strategies for Reducing Cost & Improving Service', Pitman Publication (1998)
- Ellram, L.M. and Cooper, C. M.(1990), "Supply Chain Management, Partnerships and the Shipper Third Party Relationship", International Journal of Logistics Management, 1(2):1-10.
- Sharman G. (1999), 'Supply Chain Management – Challenges for Supply Chain of the Future', Helsinki University of Technology, Proceedings
- Seturam, Shobha, 1st Ed(1999) 'Supply Chain Management for Global Competitiveness' McMillan India Ltd., New Delhi: Mcmillan India Ltd., pp. 77-93.
- Ulrich, William, (2004), "Revolutionary Supply Chain Management through Holistic Governance Structures, ICFAI Journal of Supply Chain Management, 1(3) pp.9-16.
- Towill, Denis R. (1997), "The Seamless Supply Chain – The Predator's Strategic Advantages", International Journal of Technology Management, Special issue on Strategic Cost Management, 13(1); pp.37-56.
- Lakshaminarsimha,(2004), "Article on 'Impact of Supply Chain Management in Select Countries" – A Review, ICFAI Journal of Operations Management, III(4), November 2004.
- Malhotra, Arvind; Gossain, Sanjay and El Sawy, Omar A. (2005), 'Absorptive Capacity Consideration in Supply Chains: Gearing for Partner-enabled Market Knowledge Creation', MIS Quarterly, 29(1), pp.145-187.
- McCarthy, Robert, 'Cost Effective Supply Chains, E-Business', ICFAI University Press (2006), pp.27-34.
- Gujar, A., Mophare, A. V., Deomore, D. N. and Khodke, P.M.(2007), 'System Dynamics Approach for strategic Supply Chain Management', ICFAI Journal of Supply Chain Management, IV(1) pp.40-48.
- Houlihan, John (1996), "International Supply Chain Management", IJPD & LM, 17(2); pp.51-66.
- Mohan A., (2007)'Risk Control in Supply Chain & Measures for Impact Mitigation' ICFAI Journal of Supply Chain Management, vol. – IV, no.-1, March 2007, pp. 82-89.
- Gokulnananda et al. (2007), 'Supply Chain Redesign Strategies through Identification of Uncertainty', ICFAI Journal of Supply Chain Management, vol. – IV, no.-1, March 2007, pp. 73-81.
- Datta Sutapa, Purkayastha P., 'Manufacturing Planning & Supply Chain- Management' Education Journal.
- Purkayastha P., 'Supply Chain Management – Performance Measures' SURVEY- ISSN0586-008, vol.- 40, no.-34 (2005).

CUSTOMERS' PERCEPTION OF INDIAN RAILWAYS (SPECIAL REFERENCE TO COIMBATORE REGION)

N. Bharathi*

Abstract: After 1991, the reforms process has gathered some momentum and several important decisions have been taken by the Central and State governments. There are indications that political support for deepening the economic reform process is gradually increasing. The general perception is that policy makers realize that reform is an essential pre-requisite for the economic development of India at the targeted GDP growth rate of 7-8 percent per year. With the economy on track for a planned growth at 7-8 per year, the demand for freight and passenger transport is expected to grow at around 10 percent a year. At present, however, India's transport system, especially surface transport, is highly congested, and the sector performance is poor and inefficient by international standards. One way is to improve the conditions of service to satisfy the expectations of the customers. For this it is necessary to know their attitude towards the present conditions of services provided by the Indian railways. Hence, the present study on attitude towards Indian railways.

Introduction

The economic growth of a country mainly depends on the infrastructure facilities available. Transport facility is an important aspect of infrastructure facilitating mobility of goods and people from one place to another place. To keep pace with the changing business paradigms along with its growing needs of the hour ensuring availability of sufficient transport facility is necessary. In this concept, the railways are remained as energy efficient transport mode ideally suited for long distance travel as well as perfect for bulk mode of transport.

The developing countries like India with thick population, Railway transport plays an important role in the development of the economy. The country's economy would be tampered if the railways were not in a position to provide transportation capacity and quality of service required by the growing transport market amidst the globalized scenario. The present Indian railways are characterized by

challenges of market changes and increasing demand in capacity. Moreover, competition is a key factor in achieving improved productivity, lower prices and higher quality of services and products that respond to the changing needs of the customers.

A certain degree of competition exists between rail and road transport, but the level of competition varies widely with volume, distance and customer needs regarding transit time, reliability of service and value of goods. Indian railways can provide the necessary customers focus and compete effectively with road provided its reliability, productivity and efficiency are enhanced. So, it is imperative for Indian railways to develop innovative approach by considering customer focus and competition.

Statement of the Problem

Indian railways is one of the largest and busiest rail network in the world. It is an important form of public transportation in the country. Its operations

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are characterized by a dominance of traffic and long haul of bulk commodities. Since their inception 155 years ago, the railways in India have been contributing significant share to the growth of Indian economy. The social and economic development of the country also depends to a large extent upon Indian railways and for future development.

Indian railways have interesting historical turnaround in its fortunes in recent years largely due to the responsiveness of the organization to align itself to the strategy of striking unit cost and higher social obligations as a common carrier by providing affordable transport service to the masses.

Apart from this, there is also intense competition between railways and roads with substantial investment to improve the highway network in India. For the most part, the highways being improved parallel to the high density railway routes. In addition larger capacity and modern technology trucks that offer advantage of high speed, reliability and lower unit cost in its own way. Thus, the railways need to substantially improve the quality of service, customers focus and service profile to meet the challenges of more intense competition in the transport market.

In view of the above, the Indian railways are expected to provide safe, fast and comfortable service at reasonable prices and good behavior towards customers, it should also focus towards amenities provided and the service profile that meets changing customer's requirements.

As the market needs change and competition becomes more intense, Indian railway has to reinvent itself to continue playing an important role in the Indian transport market. Hence, the Indian railways are expected to change its insides aiming provision of high quality service in line with the changing atmosphere and hectic competitions and maintain and increase the share through market research.

So, a study on the attitude of the customers towards Indian railways about the services and other amenities provided is felt, which resulted into the present research work with the following objectives.

Objectives of the Study

1. To analyze the attitude of the passengers towards facilities and convenience provided ensuring sophisticated service.
2. To identify the factors that influences the liking of the railway mode of the transport.
3. To suggest measures for improvement of the conditions of service in particular to the Coimbatore junction and Indian railways in general.

Sampling and Data Collections

The present study analysis the attitude of the passengers. The study depended on primary data. The data was collected from the passengers who want to board or otherwise in Coimbatore junction. Coimbatore is an industrial city and an education hub and above all an upcoming IT centre. The data were obtained from the respondents by administering a questionnaire to elicit information on their socio-economic profile and their attitude towards the services provided by the Indian railways. The respondents include all sections of people who used railway service for personal purpose, official purpose or other purposes. The questionnaires are distributed to the respondents selected using convenient sampling by explaining the purpose of the study.

The collected data were statistically analyzed in order to ensure that the objectives of the study are achieved.

Data Covered

The issues covered in the study include the opinion recovery of rail passengers who on-board / off-board the trains are: profile of passengers, opinion of passengers on pantry car and catering facility provided by Southern railways, proper security arrangements given by the railway police force, passengers' comfort inside the compartments, excellent layout of platforms for restaurants, tea stalls, cool bars etc, amenities provided by the railways, concession given to various sections of the society, cleanliness of passengers waiting halls, platforms, compartments etc, arrangements of medical facilities for passengers provided by the railways, reservation facilities for passengers and approachability of railways staff including TTR. The data on these variables were collected using five point scale ranging from highly satisfied, satisfied, neutral, dissatisfied and highly dissatisfied.

Framework of Analysis

In order to achieve the objectives of the study an

analysis is made to understand the opinion of the passengers on various amenities. The statistical tools used are: Factor analysis and multiple regression.

- I. **Factor Analysis:** This helps to reduce the proposed factors into few, which represent a significant amount of the original one.
- II. **Multiple Regression:** This helps to identify the significant factors which determine the attitude towards railway customers'.

Survey Results

The socio economic profiles of the respondents are shown in the following table:

Table 1: Socio Economic Profile of the Respondents

Variable	Profile	No. of Respondents	Percentage
Gender	Male	194	77.6
	Female	56	22.4
Age	Less than 20 years	3	1.2
	20-30 years	76	30.4
	30-40 years	100	40.0
	Above 40 years	71	28.4
Educational Qualification	Upto HSC	70	28.0
	Graduate	67	26.8
	Post Graduate	61	24.4
	Professional	36	14.4
	Others	16	6.4
Occupation	Student	32	12.8
	Business	65	26.0
	Government	40	16.0
	Private	92	36.8
	Professionals	21	8.4
Monthly Salary	Below Rs. 5000	48	19.2
	Rs. 5001 – Rs. 10000	34	13.6
	Rs. 10001 – Rs. 15000	57	22.8
	Above Rs. 15000	111	44.4
Frequently Travel	Daily	19	7.6
	Weekly	27	10.8
	Fortnightly	29	11.6
	Monthly	53	21.2
	Others	122	48.8

It is observed from the above table that 77.6% of the respondents are male and the remaining 22.4% are female.

It is understood from the table that 40% of the respondents are belonging to the age group of 30-40 years, 30.4% of the respondents are in the age group of 20-30 years, 28.4% of the respondents are in the age group of above 40 years and others are less than 20 years.

The above table shows that 44.4% of the respondents are earning a monthly income of above Rs.15000, 22.8% earn Rs.10000 to Rs.15000, 19% of them are earning between below Rs.5000 and the remaining respondents belong to the income group of Rs.5000 to Rs.10000.

Regarding the occupation of respondents is concerned, 36.8% of the respondents are working in private organizations, 26% are doing business, 16% are government employees, 12.8% are students and the remaining are professionals like doctors, lawyers etc.

It is observed regarding the frequency of travel, 48.8% of the respondents travel rarely, 21% of the respondents are traveling monthly once, 11.6% of the respondents travel once in fort night, 10.8% travel weekly once and others travel daily.

Customers' Attitude Towards Indian Railway

In the changing scenario, the competitive strength is to be constantly improved to enable a firm to provide product / service in the market with quality at cheaper price than the competitor. Hence, the passengers' attitude is analyzed and the results are given in table 2 below:

It is understood from the above table that 36.4% and 20.4% of the respondents are satisfied and highly satisfied to the pantry car and catering facilities provided by southern railway and 1.2% and 17.2% of the respondents are highly dissatisfied and dissatisfied with the facility.

As far as proper security arrangement given by the railway police force, 26% and 5.2% are satisfied and highly satisfied respectively and 16.4% and 2.4% are dissatisfied and highly dissatisfied.

56.8% and 22.4% of the respondents are satisfied and highly satisfied respectively to the fact that passengers are carryout inside the compartment and only 3.2% of the respondents dissatisfied to the fact.

Regarding excellent layout of platforms for restaurant, tea stalls, cool bars etc. 22% and 6.8% of

Table 2: Customers' Attitude towards of Indian Railway

Factors		Highly Dis-satisfied	Dis-satisfied	Neutral	Satisfied	Highly Satisfied	Total
Pantry car and catering facility provided by southern railway (S1)	No.	3	43	62	91	51	250
	%	1.2	17.2	24.8	36.4	20.4	100
Proper security arrangements given by the Railway Police Force (S2)	No.	6	41	125	65	13	250
	%	2.4	16.4	50.0	26.0	5.2	100
Passenger's comfortness inside the Compartment (S3)	No.	-	8	44	142	56	250
	%	-	3.2	17.6	56.8	22.4	100
Excellent lay out of platforms for Restaurant, tea stalls, cools Bars etc(S4)	No.	9	53	116	55	17	250
	%	3.6	21.2	46.4	22.0	6.8	100
Amenities provided by the railways (S5)	No.	-	3	39	100	108	250
	%	-	1.2	15.6	40.0	43.2	100
Concession given to various sections of the society (S6)	No.	-	10	34	103	103	250
	%	-	4.0	13.6	41.2	41.2	100
Cleanliness of passengers waiting halls, platforms, compartments, etc (S7)	No.	-	7	54	122	67	250
	%	-	2.8	21.6	48.8	26.8	100
Arrangement of medical facilities for passenger provided by the railways (S8)	No.	14	56	123	49	8	250
	%	5.6	22.4	49.2	19.6	3.2	100
Reservation facilities for passengers (S9)	No.	5	35	70	123	17	250
	%	2.0	14.0	28.0	49.2	6.8	100
Approachability of railway staff including TTR (S10)	No.	6	8	36	129	71	250
	%	2.4	3.2	14.4	51.6	28.4	100

the respondents are satisfied and highly satisfied and 21.2% and 3.6% of the respondents are dissatisfied and highly dissatisfied to the fact.

It is a telling fact that 40% and another 43.2% of the respondents have been satisfied and highly satisfied to the various amenities provided by the railways.

As far as the concession given to various sections of the society 41.2% each of the respondents have been satisfied and highly satisfied.

48.8% and 26.8% of the respondents respectively satisfied and highly satisfied to the fact of cleanliness

of the waiting halls, platforms, compartments etc 19.6% and 3.2% of the respondents are satisfied and highly satisfied to the variable the medical facilities provided by the railway and 22.4% and 5.6% of the passengers are dissatisfied and highly dissatisfied to the fact.

As far as reservation facilities are concerned, 49.2% and 6.8% of the respondents have satisfaction and high level of satisfaction with the facility.

51.6% and 28.4% of the respondents are satisfied and highly satisfied with approachability of the railway staff including TTR.

Factor Analysis

The factor analysis is a powerful and useful statistical as an analytical approach to determine the underlying forces or factors among a large number of interdependent variable or measures. This method extracts common factor variables from a set of observations and groups the number of variables into a smaller set of uncorrelated factors which tell what variables belong together or which one virtually measure the same things.

This technique is used to identify the factors affecting passenger attitude towards southern railways from 250 respondents in the Coimbatore region. As a first step, the data are tested to know the whether it suits factor analysis. The following steps have been taken for the purpose:

- The correlation matrices are computed and examined. It reveals that there are 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) for individual variables are studied from the diagonal of partial correlation matrix (Table 3). It is found to be sufficiently high for all variables. The measure can be interpreted with the following guidelines: 0.90 or above, marvelous; 0.80 or above, meritorious; 0.70 or above, middling; 0.60 or above, mediocre; 0.50 or above miserable, and below 0.50, unacceptable.
- To test the sampling adequacy, Kaiser-Meyer-Olkin measure of sampling adequacy is computed, which is found to be 0.638. It is indicated that the sample is good enough for the study.

Table 3: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.638
Bartlett's Test of Sphericity	Approx. Chi-Square	264.830
	Df	45
	Sig.	0.000

- The overall significance of correlation matrix is tested with the Bartlett test of Sphericity for attitude of railway passenger (approx. chi-square = 264.830, which is significant at 0.000) as well as support for the validity of the factor analysis of the data set.

Hence, all these standards indicated that the data is suitable for factor analysis. For extracting factors we have employed 'principal components analysis' and 'latent root criterion and rotation method-orthogonal rotation with Varimax' was also applied. As per the latent root criterion, only the factors having latent roots or Eigen values greater than 1 are considered significant; and all the other factors with latent roots less than 1 are considered insignificant and disregarded.

Identification of Factors Affecting Attitude of Railway Passenger

After the standards indicated that the data are suitable for factor analysis, principal components analysis was employed for extracting the data, which allowed determining the factors underlying the relationship between a number of variables. The total variable explained suggests that it extracts one factor accounts for 58.948 percent of the variance of the relationship between variables (Table 4).

Loading on factors can be positive or negative. A negative loading indicates that this variable has an inverse relationship with the rest of the functions. However, Comrey (1973: 1346) suggested that anything above 0.44 could be considered salient, with increased loading becoming more vital determining the factor. All the loading in the present research are positive (Table 5).

Rotation is necessary when extraction technique suggests that there are two or more function. The rotation of factors is designed to give an idea of how the factors unlimitedly extracted differ from each other and to provide a clear picture of which item loads on which factor.

There are only four factors, each having Eigen value exceeding one. The Eigen values for four factors were 2.321, 1.273, 1.171 and 1.130 respectively (Table 4). The percentage of total variance is used as an index to determine how well the total factor solution accounts for what. The variable together represent index for the present solution accounts for 58.948 percent of the total variations for choosing a

Table 4: Extraction Method: Principal Component Analysis**Total Variance Explained**

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.321	23.214	23.214	2.321	23.214	23.214	1.877	18.774	18.774
2	1.273	12.726	35.940	1.273	12.726	35.940	1.451	14.507	33.281
3	1.171	11.708	47.648	1.171	11.708	47.648	1.427	14.272	47.553
4	1.130	11.300	58.948	1.130	11.300	58.948	1.140	11.395	58.948
5	.926	9.265	68.212						
6	.786	7.856	76.069						
7	.747	7.467	83.536						
8	.666	6.659	90.195						
9	.516	5.161	95.356						
10	.464	4.644	100.000						

Extraction Method: Principal Component Analysis.

Table 5: Extraction Method: Principal Components Analysis

	Communalities	
	Initial	Extraction
S1	1.000	0.544
S 2	1.000	0.402
S 3	1.000	0.633
S 4	1.000	0.576
S 5	1.000	0.624
S 6	1.000	0.612
S 7	1.000	0.671
S 8	1.000	0.474
S 9	1.000	0.736
S10	1.000	0.625

Note: 'S' stands for Variables

passenger attitude. It is pretty good extraction as it can economies the number of factors (from ten it has reduced to four factors) while we have lost 41.052 percent information content. The percentage of variance explained by factor one to four factors affecting the attitude towards railways are 23.214, 12.726, 11.708 and 11.350 respectively (Table 4). The table 5 tells as that after four factors are extracted is retained, the communality is 0.544 for variable 1, 0.402 for variable 2, and so on. It means that 54 percent of the variance of variable 1 is being accepted by the four extracted factors together. The proportion of variance on any one of the original variables, which is being captured by the extracted factor, is known as communality (Nargudkar 2002).

Large communalities indicate that a large number of variance has been accounted for by the factor solution. Varimax rotated factor analytic results for factor determining the attitude of the passengers is shown in table 6.

The four factors extracted have been shown in table 6 below:

Table 6: Name of the Factors

Naming of Factors	Name of the Dimensions	Label Loading	Name of the Problems	Factor Loading
F1	Amenities and Safety Measures	S2	Adequacy security arrangement	0.541
		S3	Passengers' comfort inside the train	0.653
		S4	Excellent lay out of platforms for Restaurant, tea stalls, cools Bars etc	0.539
		S8	Provisions of medical facilities	0.689
		S10	Approachability of railway staff	0.529
		S5	Amenities provided	0.511
F2	Facility for Reservation	S9	Adequacy of facilities for reservation	0.723
F3	Cleanliness	S7	Cleanliness for waiting halls, platforms, compartment, etc.	0.646
F4	Concession and Catering Facility	S1	Pantry car and catering facilities	0.587
		S6	Concession given to various sections of society	0.731

Factor 1: Amenities and Safety Measures

This factor describes the amenities and safety measures provided by railways. It is the most crucial factor which explains 23.214 of the variations and includes six variables S2, S3, S4, S8, S10 and S5.

Factor 2: Facilities for Reservation

It is the second important factor which covers adequacy of facilities for reservations.

Factor 3: Cleanliness

It is identified as cleanliness expected by the passengers in the waiting halls, platforms and compartments.

Factor 4: Concession and Catering Facility

It is last factor among the four factors identified and named as concession and catering facilities which includes pantry car and catering facilities and concession given to various relations of the society.

Regression Analysis

Multiple regressions are basically a predictive tool. The result is obtained by analyzing a set of independent variables to predict a dependent variable. The general equation for a multiple regression can be written as bellow:

$$Y = B_0 + B_1 X_1 + B_2 X_2 + B_3 X_3 + \dots + B_n X_n + E$$

Where B_0 = A constant, the value of Y when all X values are zero. B_1 = The slope of the regression surface of the response surface, and B represents the regression coefficient associated with each X_1 and E = An error term, normally distributed about a mean 0. For the purpose of computation, E is assumed to be 0.

The regression coefficient can either be stated in raw score units (the actual X values) or as standardized coefficients. In either case, the value of regression coefficient states the amount that Y varies with each unit change of the associated X variables, when the effects of all other X variables are being held constant. When the regression coefficient are

standardized, they are called beta weights (B), and their values indicate the relative importance of the associated X values, particularly are unrelated.

The above equation can be built either with all variables, specific combinations or a selected method that sequentially adds or removes variables. Forward selection starts with the constant and adds variables that results in the largest R square increase. Backward elimination begins with a model containing all independent variables and remove the variables changes R square the least. The independent variable that contributes the most in explaining the dependent variable is added first. Subsequent variables are included based on the incremental contribution over the first variables and whether they meet the criterion for entering the equation. Care should be taken to ensure that the independent variable must not be correlated among themselves, as it highly affects the overall result. This situation is called multicollinearity.

The factor analysis shows that some of the variables are highly correlated among each other. This leads to multicollinearity. The highlighted parameter under each factor is used to run the multiple regressions resulting that all the parameters are statically significant at 5% and at 1% level.

The results are shown in the following table 7.

Here, using the B value of the unstandardized coefficients, the following regression equation is formed:

$$\text{Attitude towards a particular variable} = -0.285 + 0.356 S3 + 0.135 S7 + 0.139 S2 + 0.148 S6 + 0.130 S4$$

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	152.187	14	10.871	9.862	.000*
Residual	534.605	485	1.102		
Total	686.792	499			

Dependent Variable: S5

The analysis of variance of multiple regression model for S5 indicates the overall significance of the model. The coefficient of determination R^2 value shows that the six variables put together explains the variations of amenities is adequate (S5) to the extent of 20.5 %.

Thus, it is concluded that the step wise multiple regression analysis (Partial Model) for the variable Y, dependent variable the amenities is adequate is

Table 7: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R ²
		B	Std. Error	Beta			
1	(Constant)	-0.285	0.224		-1.272	0.205**	0.296
	S3	0.356	0.060	0.342	5.897	0.000*	
	S7	0.135	0.054	0.138	2.530	0.012*	
	S2	0.139	0.051	0.154	2.710	0.007*	
	S6	0.148	0.050	0.160	2.944	0.004*	
	S4	0.130	0.046	0.158	2.828	0.005*	

a Dependent Variable: S5

*: Significant at 5%

**: significant at 1% level.

adequate (S5) has esteemed a functional relation between Y with the predictor variables S3, S7, S2, S6 and S4 and these five variables have significantly contributed to amenities is adequate is adequate (S5) to the extend of 29.6%. The model has excluded the other variables.

Findings

The following are the findings based on the present study:

1. The Indian Railways have to pay more attention towards Passengers' comfort inside the train, Cleanliness for waiting halls, platforms, compartment, etc., Adequacy security arrangement, Concession given to various sections of society, Excellent lay out of platforms for Restaurant, tea Stalls, cools Bars etc.
2. Provision of adequate amenities is the factor which has great influence over the other factors selected for the study, so the railway administration may concentrate its attention towards it.

Conclusion

In conclusions, protect their market share and viability, the railways have, different degrees, responded with a recognized management structure – that focuses on business and customers, improved asset and staff productivity, redefined service profiles to match changing customer requirements, targeting of higher – margin market segments and shedding of non-core activities. As per the present study the railways have to focus their attention towards the four factors like amenities and safety measurement, facilities for reservation, cleanliness and concession and catering facilities. Essentially, the railways have had to transform themselves to market-responsive entities in order to remain in business. The fundamental change has been that service is tailored to meet the specific needs of the customer, and pricing varies accordingly.

Bibliography

Books

- Gilbert A, Churchill Jr (1991), *"Marketing Research Methodological Foundations"*, The Dryden Press Fifth Edition, USA.
- Kothari C R (1985), *"Research Methodology"*, Wishwa Prakashan, New Delhi.

Journal

- Eboli, L. and Mazzulla, G. (2007). *"Service Quality Attributes Affecting Customer Satisfaction For Bus Transit"*, Journal of Public Transportation, Vol. 10.
- Fu, Linda and Xaviar, Y. (2007) *"A New Performance Index for Evaluating Transit Quality if Service"*, Journal of Public Transportation, Vol. 10.
- Gleave, S. D., (2000). *"Rail Passenger Quality of Service Valuation"*, Indian Journal of Service Management, Vol. VIII, No.2, pp 107-111.
- Vijay Durga Prasad (2007), *"Passenger Amenities of Indian Railways"*, Journal of Contemporary Research in Management, July – December, 2007.
- Yahesh and Indrajana (2006) *"Comprehensive Evaluation of the Degree of Railway Passenger Satisfaction Based on Fuzzy Factors"*, Journal of the China Railway Society, 28(1) 22-25.

Reports

- Jin Tao (2005). *"Research on the Evaluation System of Railway Passenger Service Quality"* Delhi University, 7-34.

Website

www.hinduonnet.com
www.indiatelecomnews.com
www.indianrail.gov.in
www.relianceinfo.com

OPTIMAL POLICIES FOR INTEGRATED INVENTORY SYSTEM FOR DETERIORATING ITEMS USING QUANTITY DISCOUNT IN PRICE-SENSITIVE DECLINING MARKET

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Nidhi Raykundaliya**

Abstract: This article deals with formulation of optimal ordering and pricing policy when units in inventory deteriorate at a constant rate. The demand is dependent on time and retail price. In collaborating scenario, it is observed that the vendor is more beneficial compared to buyer, a quantity discount pricing strategy is advantageous to attract the buyer to accept the joint decision. A negotiation factor is incorporated to share profit between the vendor and the buyer. Sensitivity analysis with the numerical example proves that the integrated total cost is very sensitive to deterioration rate and the price-sensitive parameter. The analysis establishes that the integrated strategy with quantity is beneficial to increase the profit of the supply chain.

Introduction

Due to inflation/recession, globalization of world, shrinking resources, quicker response, and customer's awareness, the individual players of the market started adopting integration of the supply chain. An effective supply chain network requires a collaborative healthy relationship between the vendor and the buyer. In effective supply chain, the players share complete information, resources and profit. This results increase in the joint profit.

Monahan (1984) analyzed an optimal quantity discount policy that maximizes the vendor's profit but at the buyer's end there was an additional cost. Lal and Staelin (1984) formulated a fixed order quantity model when discount is offered to benefit the buyer. Lee and Rosenblatt (1986) generalized Monahan's model to study the vendor's ordering and discount-price policy. Kim and Hwang (1988) developed an incremental discount-pricing schedule with multiple buyers and single price break. Chakravarty and Martin (1988) developed an integrated strategy to compute the discount price and cycle time for any desired

negotiation factor. Weng and Wong (1993) formulated a general all-unit quantity discount model to determine optimal sale price and cycle time. Weng (1995) developed the vendor's quantity discount to reduce the vendor's operating cost and boost up the buyer's demand when end-user demand is price-sensitive. Li et al (1996) formulated a lot-for-lot discount policy with price-sensitive demand. Wee (1998) developed a lot-for-lot discount pricing policy when units in inventory are subject to deterioration at a constant rate. As cited in Yang (2004), operating an integrated supply chain required (a) reengineering systems, (b) a long term and mutual benefit partnership between upstream and downstream, (c) complete knowledge of all players, (d) an accessible instant any data in the whole system, such as point-of-sale market and inventory information, through global market, (e) producing and ordering the required items just in time for their consumption to minimize the integrated total cost, (f) a global optimization instead of local optimization, (g) matching supply and demand, and etc.

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Yang (2004) developed an integrated optimal strategy mode for deteriorating item with quantity discount when demand is price-sensitive.

In this paper, the prevailing situation of decreasing demand due to recession is considered. An integrated pricing and ordering inventory model is developed for deteriorating items with quantity discount. The demand is considered to price-sensitive decreasing function of time. A negotiation factor is incorporated to share the profit between both players. Numerical example and sensitivity analysis are carried out to study the effect of model parameters on the joint total profit.

The paper is organized as follows: Three mathematical models with different assumptions are formulated in Section 2. Section 3 is about the solution procedures for the three models. The numerical example and sensitivity analysis are given in Section 4. The concluding remark is given in Section 5.

Mathematical Models and analysis

The proposed models are derived using following assumptions:

- The supply chain comprises of single vendor and the single buyer.
- The players have complete knowledge of each other's information.
- Inventory system deals with stocking single item.
- The replenishment rate is instantaneous and lead-time is zero or negligible.
- The demand rate is linear decreasing function of time and retail price.
- All-unit quantity discount is considered.
- Shortages are not allowed.
- Carrying cost is applicable to good units only.
- Deterioration of the units is considered only after its arrival into the inventory. There is no replacement or repair of deteriorated units.

Three scenarios are discussed. The first scenario does not consider the vendor buyer integration and quantity discount. The second scenario considers the vendor-buyer integration without quantity discount. The scenario 3 deals with the vendor-buyer integration and quantity discount simultaneously.

The variable parameters are as follows:

$i = 1, 2, 3$

T_{bi}	Buyer's cycle time for scenario i
n_i	Number of shipments from the vendor to the buyer per cycle for scenario i
T_{vi}	Vendor's cycle time for scenario i
p	Buyer's retail price
$R(t, p)$	Annual price-sensitive declining demand (say) $R(t, p) = a(1 - bt) - dP$ where $a > 0$ is scale parameter for demand, $0 < b < 1$ denotes the rate of change of demand with respect to time and $d > 0$ denotes price-sensitive demand parameter.

C_{b3} The buyer's purchase unit cost for scenario 3.

The buyer's related parameters are as follows:

$I_{bi}(t)$	Inventory level for scenario at any instant of time t .
A_b	Ordering cost for buyer, \$ per order
C_{bi}	The buyer's purchase unit cost for scenario i , $i = 1, 2$.
I_b	Inventory carrying charge fraction per annum per dollar.
TC_{bi}	Annual total cost for scenario i .
TP_{bi}	Annual total profit for scenario i .
S_b	Extra profit sharing for scenario 3 as compared to scenario 1 ($S_b = TP_{b3} - TP_{b1}$)

The vendor's related parameters are as follows:

$I_{vi}(t)$	Inventory level for scenario i at any instant of time t .
A_v	Set-up cost, \$ per cycle.
C_{vb}	Fixed cost to process each buyer's order.
C_v	Vendor's unit cost.
I_v	Inventory carrying charge fraction per annum per dollar.
TC_{vi}	Annual total cost for scenario i .
TP_{vi}	Annual total profit for scenario i .
S_v	Extra profit sharing for scenario 3 as compared to scenario 1 ($S_v = TP_{v3} - TP_{v1}$)

The other related parameter for both the vendor and the buyer are

- θ Constant deterioration rate of on-hand-stock, $0 < \theta < 1$.
 TC_i Annual total cost ($TC_{vi} + TC_{bi}$) for scenario i .
 TP_i Annual total profit ($TP_{vi} + TP_{bi}$) for scenario i .
 α Extra profit sharing negotiation factor between the vendor and the buyer.

The depletion of the inventory is due to the demand and the constant on-hand-stock deterioration. The buyer's inventory level at any instant of time is governed by the differential equation

$$\frac{DI_{bi}(t)}{dt} = -R(t, P) - \theta I_{bi}(t), \quad i = 1, 2, 3 \quad (1)$$

With boundary condition $I_{bi}(T_{bi}) = 0$, the solution of differential equation (1) is given by

$$I_{bi}(t) = \frac{a - dP}{\theta} (e^{\theta(T_{bi}-t)} - 1) - \frac{abT_{bi}e^{\theta(T_{bi}-t)}}{\theta} + \frac{abt}{\theta} + \frac{ab}{\theta^2} (e^{\theta(T_{bi}-t)} - 1) \quad (2)$$

Scenario1: inventory system without considering integration and quantity discount.

The total cost per unit time is given by

$$TC_{b1} = \frac{1}{T_{b1}} \left[A_b + C_{b1}I_b \int_0^{T_{b1}} I_{b1}(t) dt + C_b I_{b1}(0) \right] \quad (3)$$

And the total buyer's profit is

$$TP_{b1} = \frac{PI_{b1}(0)}{T_{b1}} - TC_{b1} \quad (4)$$

Taking the first derivatives of TC_{b1} with respect to T_{b1} and P , and setting it to zero, one has

$$\frac{\partial TP_{b1}}{\partial T_{b1}} = 0 \quad (5)$$

$$\frac{\partial TP_{b1}}{\partial P} = 0 \quad (6)$$

Since, (5) and (6) are highly non-linear, the two optimal variable T_{b1} and P denoted by T_{b1}^* and P^* are derived numerically.

$$\text{The vendor's replenishment time is set at } T_{v1} = n_1 T_{b1}^* \quad (7)$$

where n_1 is a positive integer.

Similarly, the vendor's inventory level is

$$I_{v1}(t) = \frac{a - dP}{\theta} (e^{\theta(n_1 T_{b1}^* - t)} - 1) - \frac{abn_1 T_{b1}^* e^{\theta(n_1 T_{b1}^* - t)}}{\theta} + \frac{abt}{\theta} + \frac{ab}{\theta^2} (e^{\theta(n_1 T_{b1}^* - t)} - 1) \quad (8)$$

Clearly, vendor's inventory level in (8) is decreasing exponentially. From (8) and (2), the vendor annual cost is

$$TC_{v1} = \frac{1}{n_1 T_{b1}^*} \left[A_v + n_1 C_{vb} + C_v I_v \left(\int_0^{n_1 T_{b1}^*} I_{v1}(t) dt - n_1 \int_0^{T_{b1}^*} I_{v1}(t) dt \right) + C_v I_{v1}(0) \right] \quad (9)$$

In the parenthesis of (9), the first two terms are related ordering costs, the third term is the inventory holding cost and the last term is the purchase cost.

$$\text{The vendor's annual total profit is } TP_{v1} = \frac{C_{b1} I_{b1}^* (0)}{T_{b1}^*} - TC_{v1} \quad (10)$$

The vendor's total profit in (10) is a function of discrete variable, n_1 . Thus, optimal policy is

$$\max_{n_1} TP_{v1} (n_1) \quad (11)$$

Since, n_1 is a discrete integer, the optimal value of n_1 , denoted by n_1^* , and must satisfy the following condition:

$$TP_{v1} (n_1^* - 1) \leq TP_{v1} (n_1^*) \geq TP_{v1} (n_1^* + 1) \quad (12)$$

When the vendor-buyer integration and quantity discount are not considered, the total profit of the vendor and the buyer is

$$TP_1 = TP_{b1} (T_{b1}^*, P^*) + TP_{v1} (n_1^*) \quad (13)$$

Scenario 2: inventory system with integration but not quantity discount.

The aim of vendor-buyer integration is to maximize the integrated total profit. The total cost of the buyer and the vendor are

$$TC_{b2} = \frac{1}{T_{b2}} \left[A_b + C_{b1} I_b \int_0^{T_{b2}} I_{b2}(t) dt + C_b I_{b2}(0) \right] \quad (14)$$

And

$$TC_{v2} = \frac{1}{n_2 T_{b2}} \left[A_v + n_2 C_{vb} + C_v I_v \left(\int_0^{n_1 T_{b2}} I_{v2}(t) dt - n_2 \int_0^{T_{b2}} I_{b2}(t) dt \right) + C_v I_{v2}(0) \right] \quad (15)$$

respectively.

The integrated total cost is the sum of (14) and (15). The buyer and vendor profits are

$$TP_{b2} = \frac{P I_{b2} (0)}{T_{b2}} - TC_{b2} \quad (16)$$

$$\text{and } TP_{v2} = \frac{C_{b2} I_{b2} (0)}{T_{b2}} - TC_{v2} \quad (17)$$

respectively.

We want to maximize the integrated total profit as

$$\max_i TP_2 (T_{b2}, P, n_2) = TP_{b2} (T_{b2}, P) + TP_{v2} (n_2) \quad (18)$$

Thus, the three variables T_{b2} , P and n_2 are to be optimized jointly rather than independently as in scenario 1.

Scenario 3: inventory system with integration and quantity discount.

It is assumed that the discount price, C_{b3} , is less than the original unit price, C_{b1} .

The buyer purchases

$$I_{b3}(0) = \frac{a - dP}{\theta} (e^{\theta T_{b3}} - 1) - \frac{abT_{b3}e^{\theta T_{b3}}}{\theta} + \frac{ab}{\theta^2} (e^{\theta T_{b3}} - 1) \quad (19)$$

per shipment. The buyer's and vendor's total annual costs are

$$TC_{b3} = \frac{1}{T_{b3}} \left[A_b + C_{b3} I_b \int_0^{T_{b2}} I_{b3}(t) dt + C_{b3} I_{b3}(0) \right] \quad (20)$$

and

$$TC_{v3} = \frac{1}{n_2 T_{b2}} \left[A_v + n_3 C_{vb} + C_v I_v \left(\int_0^{n_2 T_{b2}} I_{v3}(t) dt - n_3 \int_0^{T_{b2}} I_{b3}(t) dt \right) + C_v I_{v3}(0) \right] + \frac{(C_{b1} - C_{b2}) I_{b2}(0)}{T_{b2}} \quad (21)$$

respectively.

The last term of (21) is the increased cost of vendor when quantity discount is offered.

The total profit of the vendor and the buyer are

$$TP_{b3} = \frac{PI_{b3}(0)}{T_{b3}} - TC_{b3} \quad (22)$$

$$\text{and } TP_{v3} = \frac{C_{b2} I_{b2}(0)}{n_3 T_{b2}} - TC_{v3} \quad (23)$$

respectively.

The buyer's extra profit, S_b is defined as

$$S_b = TP_{b3} - TP_{b1} \quad (24)$$

and the vendor's extra profit, S_v is defined as

$$S_v = TP_{v3} - TP_{v1} \quad (25)$$

The integrated total profit in scenario 3 (TP_3) is more than the scenario 1 (TP_1) or scenario 2 (TP_2). Their relationship for positive S_b and S_v values is defined as

$$S_v = \alpha S_b, \alpha \geq 0 \quad (26)$$

When $\alpha = 0$, all extra profit sharing is for the buyer; when $\alpha = 1$, the extra profit sharing is equally distributed, A large α means that profit is in the favour of the vendor.

Thus, we have

$$\max_i TP_3(T_{b3}, P, n_3) = TP_{b3}(T_{b3}, P) + TP_{v3}(n_3) \quad (27)$$

Subject to $S_v = \alpha S_b, \alpha \geq 0$.

From (26) and (27), it can be seen that C_{b3} and TP_3 are functions of three variables, n_3 , T_{b3} and P .

Solution Procedure

For scenario 1, to determine the value of n_1 to maximize TP_1 (13), follow steps stated in (11) and (12).

For scenario 2, to determine the discrete value n_2 to maximize TP_2 (18), follow the steps stated below:

- For a given n_2 , set the partial derivatives of TP_2 with respect to P and T_{b2} to zero and determine values of P and T_{b2} . Denote it by $P(n_2)$ and $T_{b2}(n_2)$.
- Derive the optimal values of n_2 , denoted by n_2^* such that

$$TP_2(T_{b2}(n_2^* - 1), P(n_2^* - 1), (n_2^* - 1)) \leq TP_2(T_{b2}(n_2^*), P(n_2^*), (n_2^*)) \quad (28)$$

$$\text{And } TP_2(T_{b2}(n_2^*), P(n_2^*), (n_2^*)) \geq TP_2(T_{b2}(n_2^* + 1), P(n_2^* + 1), (n_2^* + 1)) \quad (29)$$

For scenario 3, we outline following procedure:

- From (26), C_{b3} can be expressed as function of three variables: T_{b3} , n_3 and P . Then substitute C_{b3} into (27).
- For a given n_3 , set the partial derivatives of TP_3 with respect to P and T_{b3} to zero to determine values of P and T_{b3} . Denote it by $P(n_3)$ and $T_{b3}(n_3)$.
- Derive the optimal value of n_3 , denoted by n_3^* such that

$$TP_3(T_{b3}(n_3^* - 1), P(n_3^* - 1), (n_3^* - 1)) \leq TP_3(T_{b3}(n_3^*), P(n_3^*), (n_3^*)) \quad (30)$$

$$\text{and } TP_3(T_{b3}(n_3^*), P(n_3^*), (n_3^*)) \geq TP_3(T_{b3}(n_3^* + 1), P(n_3^* + 1), (n_3^* + 1)) \quad (31)$$

Numerical example

The derived model is illustrated by the following numerical example where the parametric values are as follows:

Price-sensitive declining demand rate, $R(t, p) = a(1 - bt) - dP$ units per year.

Scale parameter, $a = 3000$

Rate of change of demand, $b = 10\%$

Price sensitive parameter, $d = 35$

Buyer's ordering cost, $A_b = \$ 100$

Buyer's carrying charge fraction per year per dollar, $I_b = 0.20$

Buyer's purchase unit price before price discount, $C_b = \$ 35$

Vendor's set-up cost, $A_v = \$ 6000$

Vendor's fix cost to process each buyer's order, $C_{vb} = \$ 100$

Vendor's carrying charge fraction per year per dollar, $I_v = 0.20$

Vendor's unit cost, $C_v = \$ 20$

Negotiation factor, $\alpha = 1$

Deterioration factor, $\theta = 5\%$

By applying the solution procedure stated in section 3, results are worked out and are presented in Tables 1-12. Table 1 shows the optimal solution for various scenarios when $\alpha = 1$ and $\theta = 5\%$.

Table-1: The optimal solution for various scenarios

Scenario i	i =1	i=2	i=3
P	60.304	55.82	55.77
d_i	851	972	681
C_{bi}	35	35	33.16
n_i	8	4	4
T_{bi}	0.126	0.243	0.245
TP_{bi}	20919	19886	21778
TP_{vi}	22524	24979	23383
TP_i	43443	45117	45162
$PETP_i$	0	3.85%	3.96%

$$PETP_i = (TP_i - TP_1)/TP_1.$$

For scenario 1, the optimal retail price is \$ 60.30, cycle time is 0.126 years and the corresponding annual demand is 851 units. The unit purchase price of the buyer is \$ 35. The buyer's total profit is \$ 20919. There are eight shipments from the vendor to the buyer per

cycle, resulting vendor's profit to be \$ 22524. The total profit of the supply chain is \$ 43443.

For scenario 2, the vendor and the buyer take joint decision. The buyer's optimal retail price is \$ 55.82 and cycle time is 0.243 years. The corresponding annual demand is 972 units. The buyer's, the vendor's and the integrated total profit are \$ 19886, \$24979 and \$45117 respectively. The increase in the integrated total extra profit in scenario 2 with respect to scenario 1 is \$ 1,674. The vendor gains \$ 2,455 and buyer loses \$ 1,033. To attract the buyer, the vendor offers some discount in the retail price. In agreement of equal sharing of the extra profit ($\alpha = 1$), the optimal unit discount price is \$ 33.16. the optimal cycle time is 0.245 years.

The increase in the integrated total profit from scenario 1 to scenario 3 is \$ 1,719. Here each player shares the same cost saving of \$ 859.5. The annual demand is of 681 units. Only integration results the percentage of extra total profit ($PETP_2$) to be 3.85%. If both the collaboration and the quantity discount are considered, the percentage of extra total profit ($PETP_3$) is 3.96%.

Table-2: Sensitive analysis for the demand scale parameter

Parameter	% changes	P	d_3	n_3	Cb_3	Tb_3	TP_1	TP_2 ($PETP_2\%$)	TP_3 ($PETP_3\%$)
a	-20%	47.2	959	4	32.5	0.316	16717	5827(-65.1)	22451(34.3)
	-10%	51.5	822	4	32.9	0.275	28762	30404(5.70)	30332(5.46)
	10%	60.0	1126	4	33.2	0.221	60736	62442(2.80)	62480(2.87)
	20%	64.2	1290	5	33.6	0.167	80627	82364(2.15)	82394(2.19)

Table-3: Sensitive analysis for the demand rate parameter

Parameter	% changes	P	d_3	n_3	Cb_3	Tb_3	TP_1	TP_2 ($PETP_2\%$)	TP_3 ($PETP_3\%$)
b	-20%	55.98	976	4	33.18	0.268	44761	46329(3.50)	46375(3.60)
	-10%	55.87	975	4	33.13	0.256	44089	45709(3.67)	45755(3.78)
	10%	55.67	973	4	33.12	0.235	42834	44503(3.89)	44595(4.11)
	20%	55.58	972	4	33.08	0.227	42257	44023(4.18)	44049(4.24)

Table-4: Sensitive analysis for the price-sensitive demand parameter

Parameter	% changes	P	d_3	n_3	Cb_3	Tb_3	TP_1	TP_2 (PETP ₂ %)	TP_3 (PETP ₃ %)
d	-20%	66.33	1097	6	33.26	0.149	18944	72985(285.2)	72955(285.1)
	-10%	60.45	1038	5	33.52	0.191	55742	57318(2.82)	57314(2.82)
	10%	51.97	935	5	33.17	0.213	33668	35440(5.26)	35470(5.35)
	20%	44.78	869	4	33.02	0.273	25793	27652(7.20)	27437(6.37)

Table-5: Sensitive analysis for the buyer's set-up cost

Parameter	% changes	P	d_3	n_3	Cb_3	Tb_3	TP_1	TP_2 (PETP ₂ %)	TP_3 (PETP ₃ %)
A_b	-20%	55.79	987	5	33.25	0.200	43495	45217(3.95)	45252(4.04)
	-10%	55.79	986	5	33.31	0.201	43490	45167(3.85)	45201(3.93)
	10%	55.76	974	4	33.17	0.245	43366	45076(3.44)	45121(4.04)
	20%	55.76	974	4	32.27	0.247	43406	45035(3.75)	45086(3.87)

Table-6: Sensitive analysis for the buyer's holding cost

Parameter	% changes	P	d_3	n_3	Cb_3	Tb_3	TP_1	TP_2 (PETP ₂ %)	TP_3 (PETP ₃ %)
I_b	-20%	55.73	975	4	33.23	0.247	43622	45289(3.82)	45418(3.9)
	-10%	55.75	974	4	33.19	0.246	43529	45203(3.84)	45243(3.93)
	10%	55.80	986	5	33.32	0.201	43389	45046(3.82)	45086(3.90)
	20%	55.82	986	5	33.30	0.199	43330	44976(3.79)	45016(3.89)

Table-7: Sensitive analysis for the buyer's purchase cost

Parameter	% changes	P	d_3	n_3	Cb_3	Tb_3	TP_1	TP_2 (PETP ₂ %)	TP_3 (PETP ₃ %)
C_b	-20%	55.76	986	4	30.80	0.245	51844	52626(1.50)	45198(12.8)
	-10%	55.76	974	4	32.08	0.245	47646	48816(2.45)	45188(5.16)
	10%	55.79	986	5	34.20	0.201	39263	41534(5.78)	45133(14.9)
	20%	55.79	987	5	34.87	0.201	35088	38062(8.47)	45119(28.5)

Table-8: Sensitive analysis for the vendor's ordering cost

Parameter	% changes	P	d_3	n_3	Cb_3	Tb_3	TP_1	TP_2 ($PETP_2\%$)	TP_3 ($PETP_3\%$)
A_v	-20%	55.85	978	4	33.30	0.221	44783	46409(3.63)	43501(2.86)
	-10%	55.81	976	4	33.23	0.233	44108	45747(3.71)	45788(3.80)
	10%	55.75	985	5	33.29	0.211	42852	44533(3.92)	44569(4.01)
	20%	55.71	984	5	33.24	0.219	42261	43972(4.04)	44011(4.14)

Table-9: Sensitive analysis for the fix rate C_{vb}

Parameter	% changes	P	d_3	n_3	Cb_3	Tb_3	TP_1	TP_2 ($PETP_2\%$)	TP_3 ($PETP_3\%$)
C_{vb}	-20%	55.79	987	5	33.37	0.200	43601	45217(3.71)	45225(3.72)
	-10%	55.79	986	5	33.35	0.201	43522	45167(3.78)	45200(3.85)
	10%	55.76	974	4	33.14	0.245	43365	45076(3.94)	45122(4.05)
	20%	55.76	974	4	33.11	0.246	43286	43286(4.04)	45082(4.15)

Table-10: Sensitive analysis for the vendor's holding cost

Parameter	% changes	P	d_3	n_3	Cb_3	Tb_3	TP_1	TP_2 ($PETP_2\%$)	TP_3 ($PETP_3\%$)
I_v	-20%	55.69	989	4	33.29	0.205	43683	45383(3.90)	45374(3.97)
	-10%	55.74	988	4	33.31	0.203	43563	45249(3.87)	45284(3.95)
	10%	55.81	973	5	33.18	0.243	43326	44998(3.85)	45042(3.96)
	20%	55.85	972	5	33.20	0.242	43220	44879(3.84)	44922(3.94)

Table-11: Sensitive analysis for the vendor's purchase cost

Parameter	% changes	P	d_3	n_3	Cb_3	Tb_3	TP_1	TP_2 ($PETP_2\%$)	TP_3 ($PETP_3\%$)
C_p	-20%	54.69	1013	4	32.54	0.241	46733	49133(5.14)	49186(5.25)
	-10%	55.23	993	4	32.86	0.243	45083	47103(4.48)	47152(4.59)
	10%	56.31	954	4	33.43	0.247	41814	43177(3.26)	43215(3.35)
	20%	56.85	935	4	33.66	0.249	40185	41280(2.72)	41312(2.80)

Table-12: Sensitive analysis for the deterioration rate

Parameter	% changes	P	d_3	n_3	Cb_3	Tb_3	TP_1	TP_2 (PETP ₂ %)	TP_3 (PETP ₃ %)
θ	-20%	56.87	935	4	32.54	0.247	43287	44945(3.83)	41117(-5.01)
	-10%	56.86	935	4	32.86	0.248	43365	45031(3.84)	41194(-5.00)
	10%	56.85	935	4	33.43	0.251	43522	45204(3.86)	41351(-4.98)
	20%	56.85	935	4	33.66	0.249	43601	45292(3.87)	41271(-5.34)

Table-13: Sensitive analysis for the negotiation factor

Parameter	% changes	P	d_3	n_3	Cb_3	Tb_3	TP_1	TP_2 (PETP ₂ %)	TP_3 (PETP ₃ %)
α	0	55.77	974	4	32.31	0.245	43443	45117(3.85)	45183(4.00)
	0.5	55.77	935	4	32.88	0.245	43443	45117 (3.85)	45169(3.97)
	10	55.77	935	4	33.83	0.245	43443	45117 (3.85)	45145(3.91)
	100	55.77	935	4	33.97	0.245	43443	45117 (3.85)	45142(3.91)

In Table 2, the demand scale parameter is changed. It is observed that PETP₃ decreases significantly. Increase in demand rate parameter in Table 3 shows that the integrated profit decreases. This is because of decrease in the discounted unit price offered to the buyer by the vendor. From Table 4, when the demand price-sensitive parameter increases, PETP₃ increases as well. This suggests logistic manager to approach for the integration and quantity discount when price-sensitive demand parameter increases.

From Tables 5, 6, 9, 10, 11 it is observed that the integrated total profit decreases significantly. This suggests that the responsible player should try to control these factors. Increase in buyer's purchase cost (Table 7), the vendor's ordering cost (Table 8), we observe that the integrated total profit increases. The change in the negotiation factor does not have any effect on the percentage change in extra profit.

Concluding remarks

In this study, the optimal cycle time and pricing policy are analyzed when the price-sensitive demand is decreasing with time. The collaborative model is developed for single-vendor and single-buyer. The

numerical example suggests that the integration and quantity discount result in an extra total profit gain of 3.96%.

When the negotiation factor is very large, the promotional scheme of price discount is insignificant and the integrated total profit is negligible. The increase in the deterioration rate decreases the integrated total profit, the vendor's replenishment time decreases. This results in higher retail price. The result of this research is applicable to efficient supply chain management.

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References

- Chakravarty, A.K., Martin, G.E., 1988. "An optimal joint buyer-seller discount pricing model". Computers and Operations Research, 15, 271-281
- Kim, K.H., Hwang, H., 1988. An incremental discount-pricing schedule with multiple customers and

- single price break* European Journal of Operational Research, 35, 71-79.
- Lal, P., Staelin, R., 1984. An approach for developing an optimal discount pricing policy. Management Science, 30, 1524-1539.
 - Lee, L. E., Resenblatt, M. J. , 1986. *A generalized quantity discount-pricing model to increase supplier's profits*. Management Science, 32, 1177-1185.
 - Li, S. X., Hung, Z., Ashley, A., 1996. *Inventory channel coordination and bargaining in a manufacturer-retailer system*. Annals of Operations research, 68, 47-60.
 - Monahan, J.P., 1984. *A quantity discount-pricing model to increase vendor profits*. Management Sciences, 30, 720-726.
 - Wee, H. M., 1998. *"Optimal buyer-seller discount pricing and ordering policy for deteriorating items"*. The Engineering Economist, 43 (2), 151-168.
 - Weng, Z.K., Wong, R.T., 1993. *"General models for the supplier's all-unit quantity discount Policy."* Naval Research Logistics, 40, 971-991.
 - Weng, Z.K., 1995. *"Modelling quantity discount under general price-sensitive demand functions: Optimal policies and relations"*. European Journal of Operational Research, 86, 300-314.
 - Yang, P.C., 2004. *"Pricing strategy for deteriorating items using quantity discount when demand is price sensitive"*. European Journal of Operational Research, 157, 389-397.
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A STUDY TO DETERMINE THE POTENTIAL ANTECEDENTS, TYPES AND CONSEQUENCES OF WORKAHOLISM IN MEDICAL PROFESSIONALS

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Abstract: *Stress is the constant companion of many medical professionals these days. Immense pressure pours in from all sides:*

- *From patients, who want to receive the very latest medical procedures;*
- *From insurance companies, who manage the ever-growing patient population with ever-shrinking reimbursements;*
- *From our culture, which expects medical professionals to be infallible at all times.*

Then there are those pesky but essential tasks to keep up with, such as continuing medical education and managing practice overhead. The pressure of “keeping up with the Joneses” and family expectations also keep them trying to be the best, the busiest, and the most profitable.

Today, patients have a choice of physicians, hospitals, healthcare centers etc; therefore, they must differentiate themselves from the pack or feel the competitive pinch. They must strategically plan their approach so that patients choose them. They must become adept at marketing strategies on top of the advanced medical knowledge they need to keep up with in this changing industry. This new competition has also forced them to look at his or her practice from the patient's point of view. An example is, whereas the physician wants to keep overhead low and processes simple; the patient is more demanding than ever. The prospective patient wants an aesthetically pleasing atmosphere, a courteous and friendly staff, and limited waiting time.

*Therefore, the medical professionals have been forced to re-evaluate their facility, staff, processes, and patient experience. This might be new to them who have not evaluated the practice from the patient's perspective. It can be daunting and expensive to revisit, revise, and remodel the entire operation. With all of these factors, it's no wonder that many they are feeling a different type of stress: to constantly push ahead of the competition so that revenue keeps coming in consistently. **It's a perfect setup for workaholism.***

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Introduction

Workaholism can be described as the inability to stop working. Whether you are in the office, at home, in bed, or socializing, if you find that you cannot stop thinking about work or talking about work then it is very likely that you are or you are about to become a workaholic. Until recently many people described workaholism as a respectable addiction, and half thought that it was an admirable attribute. However, the condition is now recognized as a serious problem and many theories have been put forward to try and better understand what motivates the workaholic.

Doctors, nurses and other medical professionals might be risking their own health and that of their patients by being dangerously overworked, in some cases laboring as many as 17 hours daily, according to a new study. There had been a number of cases in recent years where patient deaths, or serious injuries, were put down to bad judgment calls caused by doctor fatigue, according to a Science alert report. After a point being so tired has a similar effect to being drunk, so overworked health professionals are at a higher risk of making poor judgments, their reaction time slows and they face increased difficulties completing routine tasks.

This study aims to examine the potential antecedents and consequences of workaholism types among the medical professionals. Three workaholism types (Work Enthusiasts, Work Addicts, Enthusiastic Addicts) were compared. Antecedents included personal and work situation characteristics and personality factors. Consequences included work experiences, work outcomes and indicators of psychological well-being. The workaholic triad consists of three concepts, work involvement, feeling driven to work because of inner pressures and work enjoyment. Work Addicts score high on work involvement and feeling driven and low on work enjoyment; Work Enthusiasts score high on work involvement and work enjoyment and low on feeling driven to work; and Enthusiastic Addicts score high on all three components.

Work & Workaholics

Work is not just a small word but it's a very important part of our life. Right from our childhood, we are taught to work, whether its

home or school; to take up a job and work when we grow up. Some people work to live but some live to work and this is where the problem arises. As it is said, "All work and No play makes a person dull." This is quite true in today's circumstances where there is competition all around, greed for money and the desire for success.

This drive is so strong that people may tend to forget their families, their friends and even their own selves. Just like people get addicted to alcohol or drugs, these people get addicted to work. Work becomes the synonym for life to them. They only think about work and nothing else because working for long hours may fetch them more money, reputation and recognition. These people have compulsive and unrelenting need to work and are called as WORKAHOLICS.

4 Styles of Workaholism

Bulimic Workaholic Style: The motto of this style is, "Either I do it perfectly or not at all." Just as some people with eating disorders alternate between self-starvation and bingeing, the bulimic workaholic style involves cycling among procrastination, work binges and exhaustion. Bulimic workaholics often can't get started, and then scramble to complete the project by deadline, staying up for three nights straight before collapsing in exhaustion. Beneath the procrastination phase of the bulimic workaholic style is the fear that they will not do the job perfectly and intolerance for the emotions connected with making mistake. They are worrying obsessively about work- and kicking themselves for not doing it.

Relentless Workaholic Style: is characterized by the motto, "It has to be finished yesterday." People in this group get an adrenaline kick from tight deadlines and start things too soon rather than too thought, reflection and attention to details late. This style also is characterized by impulsivity; its participants tend to take on too much. They do not say no, set priorities, delegate or consciously decide to put anything on the back burner. They work too fast for careful. They often suffer distortions in self-image; underlying their relentless volunteering is often a grandiose sense of their unique competence and a sense of self-worth dependent on other's approval.

Attention-Deficit Workaholic Style: use the adrenaline of overwhelming work pressure as a focusing device. People involved in Attention-Deficit workaholic style live on the brink of chaos and get high from the rush of new ideas. They start a plethora of exciting projects that they never finish. Easily bored with follow through, they are the revved-up workaholics who click their nails on table tops, twiddle their thumbs in meetings and fidget or place about erratically. They live on the edge at work and plays gravitate toward high-risk jobs or activities. Unlike bulimic workaholics who can't start a project and want to do everything perfectly, Attention-Deficit Workaholics start lots of projects, do them carelessly and get too bored to follow through.

Savoring Workaholic Style: Is slow, methodical and overly scrupulous. Participants have trouble letting go of work; they get hooked, savoring a project the way some alcoholics might savor a fine wine. This is a style of consummate perfectionism: those employing it can't tell when the job is done down they fear the project is never good enough. They inadvertently prolong and create additional work then they realize they are close to completion. Because a project feels incomplete to them even when others feel it is finished, savoring workaholics have difficulty with completing old tasks and starting new ones

Types of Workaholism

There are three workaholism types (Work Enthusiasts, Work Addicts, Enthusiastic Addicts).

Work Addicts score high on work involvement and feeling driven and low on work enjoyment;

Work Enthusiasts score high on work involvement and work enjoyment and low on feeling driven to work;

And **Enthusiastic Addicts** score high on all three components.

Workaholism

Workaholism – an unhealthy inability to stop working is becoming more and more common. This is why Dr. Barbara Killinger in her best selling book *Workaholics* (Key Porter books) 1991, refers to workaholism as “the respectable addiction.”

Workaholics identify business with pleasure. They are the embodiment of the pleasure principle. They make up the class of the entrepreneurs, the managers, and the businessmen. They are the movers, the shakers, the pushers, and the energy. Without them, we have socialist economies, where everything belongs to everyone and, actually to none. In these economies of “collective ownership” people go to work because they have to, they try to avoid it, to sabotage the workplace, they harbour negative feelings. Slowly, they wither and die (professionally) – because no one can live long in hatred and deceit. Joy is an essential ingredient.

Workaholism is a big problem because, like any other addiction it can be very dangerous and can affect certain aspects of one's life. But who is a real workaholic? Workaholics usually spend a lot of time in their offices; some of them spend 60 to 70 hours a week there, and others stay even longer.

Being a workaholic doesn't just mean being a hard worker, says Robinson, a psychotherapist and professor at the University of North California who has been studying people's work habits for years. It means you've got a progressively worsening addiction like any other, in which work becomes the substance you use in an attempt to meet your unconscious psychological needs. Robinson calls workaholism the “best- dressed addiction,” because it's often rewarded-at least in the short term- and is seen as a positive attribute by people who don't understand the destruction it can cause. But are all hard workers workaholics?

Research Methodology

Objectives

The broad objectives of the study were:

1. To determine the potential antecedents of workaholism.
2. To identify the type of workaholism, if it exists in the medical professionals.
3. To examine the consequences of workaholism.

Sample Design and Sample Size:

A questionnaire was administered to the medical professionals at the **CONTACT PROGRAMME HELD AT INDRAPRASTHA**

APOLLO HOSPITAL, DELHI. The population consisted of 130 professionals, among which 50 people were chosen randomly and administered a questionnaire. Thus the sampling design became, **SIMPLE RANDOM SAMPLING.**

Analysis

A survey of 50 medical professionals was carried out. Five questionnaires were unfilled or inaccurate and thus had to be discarded. The detailed break up is as follows.

TOTAL NUMBER OF RESPONDENTS:	45
NUMBER OF FEMALES:	28
NUMER OF MALES:	17

31 out of 45 respondents were found to be workaholics, which makes it around 69%. Thus it is a point of concern, because more than half of the respondents were found to be workaholic. Whereas only 31% were Non Workaholic. This observation gave a clear picture that workaholism is no more a rare phenomenon that exists in people but a sure shot addiction to work that in turn has several negative consequences.

Potential Antecedents to Workaholism

On the basis of gender

It was found, that 23 out the 28 females taken as respondents, were workaholics, and only 8 out of 17 males were workaholics. That makes it 82.14% of the women being workaholic and 47.05%. This difference in percentage can also be attributed to the fact that women have dual responsibility on domestic as well as official front therefore they generally work more and hence it was interpreted, that **workaholism exists more in females as compared to the male counter parts.**

On the basis of age group

Amongst the 31 workaholics, it was found out that, 28 of them falls in the age group of 35 years and under i.e. nearly 90%, whereas a negligible number of people fell in other age groups. This observation can be attributed to the fact that people in young age are more active and thus take up more work than their counterparts in higher age groups.

On the basis of Marital Status

As far as the marital status is concerned, there was a very minute difference in the number of respondents falling in each of the category. Thus, it was inferred that people do not compromise on their career or work to their social and family life. This is an apparent quality of workaholics that they neglect their social life but not their Work life.

On the basis of Income Group

It was found that, 59% of the workaholic's falls in the category of the monthly income from 20k-30k. This observation is much obvious, that people tend to work more for salary hikes, better pay packages, and in process, become workaholics.

On the basis of Work Experience

It was found that maximum workaholics fall in the group of 1 to 5 years of work experience. This observation is also a well agreed one, because most of the people tend to take up more work and thus get extra involved into it, when in the entry level, or the initial stages of the career.

The type of workaholism to which the respondents belonged was found as:

It was found that a significant percentage of people (refer figure no.1) belonged to the category of **work addicts where they are surely involved to their work and also feel driven to it, but do not enjoy it, this is the worst form of workaholism.** Another significant point to note is, the second category that is those of **Work Enthusiasts, where people do no feel driven to work, was found only amongst 13% of the people, which infers that people still feel driven to their work, rather than involved.** The next category of Workaholics that is the Enthusiastic Addicts, who score high on all the three parameters. **They formed a substantial amount of percentage that accounts nearly about 39%.**

Consequences of Workaholism

- **Delegation:** It was observed that **81% of the people found it difficult to delegate**, which shows that they do not like to decentralize their work and insist on doing everything by themselves, which account for heavy work load

and thus workaholism among them.

- **Job Satisfaction:** The results showed, that Workaholics, love doing work and **72% of them were satisfied by their job, 19% were neutral but only a minimal of 9% said that they were not satisfied by their jobs.**
- **Type A Behavior:** The results showed that 35% of the people get irritated frequently, and 23 % of the people were neutral about it, thus when compared with people who disagreed on this front, the no of irritated people is high.
- **Beliefs and Fears:** 42% of the workaholics do not worry what others think about them, this shows that they are or they do neglect the social aspect of their lives. Whereas only 29% of them worries and the rest 29% was neutral about the social aspect.

Some more practical female doctor cases to identify the exact situation:

Case 1

Dolly Gupta a cheerful doctor in a well known hospital married for five years had infertility, where all her reports were fine and normal but was unable to conceive because of odd working hours and unmet demands of patients and family.

Case 2

Amita Naik, a doctor in Gyane department faced pretum delivery due to long working hours which did not allow her to take adequate rest in such situation.

Limitation of the Study

However we have tried our best in collecting the relevant information yet there are always present some limitations under which researcher has to work. Here are some limitations:

The sample size was 50, which is small and may not reflect a true picture and the area covered is Apollo Hospital only again a major constraint.

Conclusion

At the end of the study we can say that to determine the potential antecedents of workaholism. Gender, Age groups, Income groups,

work experience and hours worked turned out to be the major antecedents for workaholism.

- The female gender is suffering more from workaholism.
- The people in the lowest age group constituted the highest no. of workaholics.
- The people in the early or initial stages of their career faced workaholism more.

The present study also tried to identify the type of workaholism, if it exists in the medical professionals and it was found that a significant percentage of people belonged to the category of **work addicts where they are surely involved to their work and also feel driven to it, but do not enjoy it, this is the worst form of workaholism.** Another significant point to note is, the second category that is those of **Work Enthusiasts, where people do not feel driven to work, was found only amongst 13% of the people, which infers that people still feel driven to their work, rather than involved.** The next category of Workaholics, that is the Enthusiastic Addicts, who score high on all the three parameters. **They formed a substantial amount of percentage that accounts nearly about 39%.**

The following consequences of the workaholism as found out in the study were, inability to delegate, serious neglect of social life, a presence of irritation in the behavior, but among all the negatives, a positive that was observed was that, they are highly satisfied by their jobs and involved in their work.

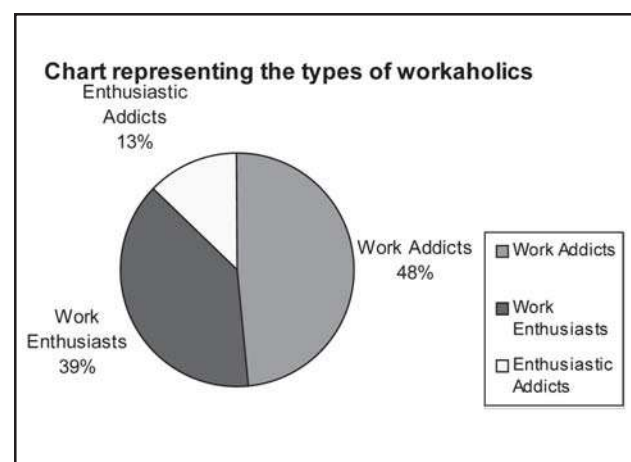


Figure No.1

References

- Burke, R. J., (2000), *“Workaholism in organizations: Psychological and physical well-being consequences”*. Stress Medicine, 16, 11-16.
- Robinson, Bryan, July/ August, (200), *“Chained to the Desk”* The Family Networker
- Schaufeli, W. B., Taris, T., & Bakker, A.B.(2008) *“Workaholism is working excessively and working compulsively”*
- Schweitzer, B. (1994) *“Stress and burnout in junior doctors”*. South African Medical Journal, 84, 352-354.



IMPLICATIONS OF AN AUGMENTED CPFR MODEL IN SUPPLY CHAIN MANAGEMENT

A.K. Varma*
S.K. Bansal**

Abstract: Globalization and increased use of IT have forced industry Pundits to create efficiency and effectiveness in supply chain activities by moving away from functional excellence to functional integration. They have been successful in discovering innovative means such as quick response (QR), electronic data interchange (EDI), vendor managed inventory (VMI), continuous replenishment planning (CRP) and efficient consumer response (ECR). But these have fallen short of expectations due to the ever increasing complexities of the modern supply chain. One of the most recent initiatives aimed at achieving true supply chain integration is collaborative planning, forecasting and replenishment (CPFR). CPFR has been recognized as a breakthrough business model for planning forecasting and replenishment. CPFR is a business process that aspires to break down the barriers between different players that traditionally exist in the supply chain. The result of this is a much more integrated and collaborative environment for the sharing of business information and effort to improve the supply chain performance.

Introduction

The global business environment is continuously facing increasing competitive pressures in a volatile economic environment. Obtaining and maintaining a competitive advantage has become more elusive and difficult due to global competition, industry consolidation, new channel development, and shorter product life cycles. Many firms have made tremendous efforts to overcome these challenges and establish an advantage through improved supply chain performance (Andraski, 2008). These supply chain improvement efforts initially started with the areas that the firm could control internally such as inventory management, process improvement, and quality. These initiatives gradually progressed externally to include collaboration between the firm and its suppliers as well as between the firm and its customers. Collaboration has become,

in a sense, the holy grail of supply chain improvement and has been referred to as the driving force behind effective supply chain management (Ellram and Cooper, 1990).

A collaborative partnership has been defined as an “inter-enterprise concept developed and practiced between multiple independent organizations in a vertical relationship within a supply chain (Saha, 2008). Since businesses are experiencing the limits of accruing business benefits out of supply chain management within their own boundaries, therefore these limitations have led organizations to focus on supply chains outside of their own organizational boundaries and bring in trading partners. With the advent of faster technologies in the late 1990’s these partnerships have become a more likely possibility. The concept of a “maturity model” has been applied in various ways to supply chain management. The

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Table 1: Supply Chain Continuum

Stage 4	Stage 3	Stage 2	Stage 1
Cross-Enterprise Collaboration	External Integration	Internal Integration	Functional Focus
Work is done with customers and suppliers to define a mutually beneficial strategy and cross-enterprise processes are enabled by information technology Real-time performance targets are set with both customers and suppliers	Practices are extended to interface with strategic customers and suppliers; associated information needs are identified Corrective actions are taken when performance falls below expectations	Division or company-wide processes are defined Cross-functional metrics are defined A well-defined demand/supply balancing process is in place	Planning and optimization is conducted within functions and / or departments Processes that cut across multiple functions are not well understood
Leaders	Challengers	Followers	

(Source: "Global Supply Chain Trends 2008-2010," PRTM)

following table shows the PRTM Supply Chain Maturity Model, with four phases of maturity in how companies manage their supply chains, particularly the level of collaboration with supply chain partners.

Working from right to left, an enterprise becomes more mature, graduating from being a "Follower" to a "Challenger" and ultimately a "Leader." At each level, there is more meaningful sharing and collaboration with supply chain partners.

What is CPFR

One of the most recent highly acknowledged collaboration initiatives aiming at achieving true supply chain integration is collaborative planning, forecasting and replenishment (CPFR). CPFR's underlying premise is that wider integration of firms within the supply chain will lead to a better focus on customers through the development of a single shared forecast of demand and a reduction of lead times. The benefits resulting from a successful application of CPFR include reductions in stock-outs, improved inventory management, shorter cycle times, increases in sales revenues, stronger relationships between trading partners, better overall system visibility and customer service, and improved cost structures. Other compelling benefits of utilizing CPFR include enhanced relationships, better category

management, improved product offering, reliable and accurate order (Hennel, 2002).

CPFR is a paradigm-breaking business model that takes a holistic approach to supply chain management among a network of trading partners. Approved as industry guidelines by the Voluntary Inter-Industry Commerce Standards (VICS) organization and the Uniform Code Council (UCC), CPFR has the potential to deliver increased sales, inter-organizational streamlining and alignment, administrative and operational efficiency, improved cash flow, and improved return-on-assets (ROA) performance. CPFR is not the first initiative aimed at increasing collaboration and information sharing between trading partners in order to achieve improvements in supply chain management. There have been a number of widely known initiatives started with this objective from time to time such as vendor-managed inventory (VMI), quick response (QR) and efficient consumer response (ECR). CPFR intends to ensure that the industry actually captures the benefits of inter- and intra-enterprise collaboration through a common, pragmatic approach. Rather than create a new standard, it leverages the legacy of existing standards in broad use through the retailing and consumer manufacturing industries to develop guidelines for collaborative business processes. CPFR

is envisioned as a platform- and vendor-independent environment where multiple parties can interoperate. Partners of different sizes and technical levels can collaborate through accessible technologies, including Internet and the Web, private Value Added Networks (VANs), dial-up, or other transport mechanisms. This communication is supported by formal standards, which evolve through an open process.

Interdisciplinary Relevance of CPFR

CPFR is in the first place an evolution and refinement of the original *Efficient Consumer Response* (ECR). ECR means the consequent optimization of the supply chain to the customers' needs by passing on information along the supply chain. The fundamental objective of ECR is the collaboration between all affected participants by the supply chain, the customer, retailer and supplier, respectively the appliance of technical and process standards (Zillgitt, 2005).

CPFR aims to enhance the use of ECR and to optimize the collaboration along the entire value chain for companies by bringing the methods and techniques of ECR in a holistic business model together. The conjunction of the separately recognized issues concerning the demand and supply side in

the ECR model, offer the possibility to achieve remarkable synergetic effects.

Concisely, CPFR displays "*an initiative among all participants in the supply chain intended to improve the relationship among them through jointly managed planning processes and shared information*". The aim of CPFR is achieved by the use of a common control process relating to all relevant planning, forecasting and replenishment issues. All activities of the CPFR process try to provide the highest availability of goods while optimizing the inventory (Zillgitt, 2005), improving the company's own position in the market and the optimization of its own value chain. Since the fundamental planning and forecasting of the process require an intensely information exchange, e.g. in logistics, sales management, marketing and finance planning, thus CPFR is a tool for comprehensive value chain management of an organization (Seifert, 2003).

It has been recognized as a breakthrough business model for planning forecasting and replenishment. CPFR as a business process aspires to break down the barriers between different players that traditionally exist in the supply chain. The result of this is a much more integrated and collaborative environment for the sharing of business information

Table 2: CPFR Methodology

Collaboration The main idea of CPFR is to achieve higher benefits in a partnership, by working together towards the same goal. This does not mean the stronger partner uses his power to dictate the terms of the collaboration, but having the common goal to satisfy as many customers as possible while gaining the highest profit for both parties.	Planning The word "planning" was added to the original Collaborative Forecasting and Replenishment model because the VICS group saw collaboration in terms of business and financial planning of all affected parties by the supply chain as a vital role in CPFR.
Forecasting Forecasting can be done by both, the vendor and the retailer, depending on the circumstances which party can produce more accurate, respectively valuable data (Peterson, 2003). By an optimized collaborative forecasting, the inventories and sales can be improved over the whole supply chain (Peterson, 2003). Especially, products depending highly on seasonal influences can be better analyzed by a collaborative forecasting.	Replenishment The sales forecasting are converted into order forecasts. Thus, supplier constraints such as order cycle time, lead-times, order minimums, case packs and chronic open-to-buy inhibitors need to be controlled. Moreover, the transportation planning is named by VICS as a "key lever" in replenishment.

and effort to improve the supply chain performance. The following table shows the CPFR methodology (Peterson, 2003):

Genesis of CPFR

In the early nineties, American retailers and consumer goods companies were struggling with stagnation of revenues, rising costs and an increase in productivity was scarcely realized. This often led to a negative impact on margins, contribution margins and profit on sales. Changes and real gains could only be accomplished through open cooperation partnerships for retailers and manufacturers.

CPFR originated in 1995 as an initiative co-led by Wal-Mart and consulting firm Benchmarking Partners. This initiative originally was called Collaborative Forecasting and Replenishment (CFAR) (<http://en.wikipedia.org/wiki/CPFR>). With assistance from Benchmarking Partners and IT firms (such as IBM, SAP, i2, and Manugistic), Wal-Mart and Warner-Lambert implemented the first pilot of CFAR to increase sales, reduce inventory, and improve the in-stock position of Listerine, the project's pilot product (Sherman, 1998). Since this project, CPFR has evolved and is a strategic initiative implemented by many companies throughout North America and Europe. VICS created guidelines for CPFR in 1998. Since the development and publication of these guidelines, over 300 companies have successfully implemented CPFR. The implementation of CPFR has also extended to industry sectors beyond retail, including high-tech industries. *Rosettanet*, a non-profit consortium of high-tech firms, has developed a collaborative forecasting standard for applying CPFR practices to that industry. Today, the VICS CPFR Committee works "to develop business guidelines and roadmaps for various collaborative scenarios, which include upstream suppliers, suppliers of finished goods and retailers, which integrate demand and supply planning and execution (<http://www.vics.org/committees/cpfr/>). CPFR enables trading partners to improve operational efficiency through a structured process of sharing and utilizing information across firm"level boundaries.

Brief Review of Literature on CPFR

There is a good amount of literature available on the issues related to CPFR at international level. The various prominent authors have thrown light on

various aspects of CPFR practices and have tried to capture the different problems faced in collaborative practices. Wognum and Faber (2003) presented an approach that can support the gradual building of knowledge on the process of collaboration. The approach, which results from the Esprit IV project 23286 FREE (Fast Reactive Extended Enterprise), can be viewed as a first step towards building a methodology to support management of collaboration. The concept of infrastructures for collaboration has been introduced stressing the integral nature of management of collaboration. Blomqvist and Levy (2006) propose that collaboration capability integrates the key elements in many closely related but semantically diverse conceptualizations. One of the major studies by Economist Intelligence Unit Limited in 2008 covering 19 different industries around the world revealed that

- Collaboration among business partners is, among other things, intended to help companies get closer to the customer.
- Companies are embracing collaboration both to reduce costs and to enhance revenue growth.
- The biggest challenge in collaborating with business partners is building trust.
- Technology is regarded as a key enabler of business relationships.

A study undertaken by Stiely and Katz in 2003 concluded that in the automobile sector, companies need to achieve higher levels of integration with supply chain partners and alignment of business strategy with the supply chain strategy by restructuring their business and by increasing their investment in IT. Kaushik (2009) reports a case study of Inter-organizational Systems (IOS) at Maruti Udyog Limited. This paper suggests an approach to IOS planning for the automotive industry by providing new insights into the existing literature on Critical Success Factors (CSFs) in the IOS domain. He examines two specific IOS initiatives in the MUL value and supply networks and presents a differentiated analysis of design elements (e.g., relationships, processes, Information Systems (IS) and change issues). It is also a best-practice case of how IOS initiatives can add value to the focal company and its business partners and provides support to the business relevance of inter-organizational investments.

In fact, it is very difficult to find out a firm that has not adopted any collaborative measure in one form or the other with their vendors, distributors, retailers, dealers, customers and co-firms. A good deal of techniques such as ECR, VMI, JIT (Just-in-Time) emphasize to enhance quality, reduce wastage and increase productivity. At the same time, efforts have been made to improve relations with suppliers, distributors, retailers and customers. The research undertaken at various levels in international arena has been summarized under four streams as below:

2002 demonstrated that in almost every sector CPFR pilots are conducted.

Figure 1 shows the wide range of allocation: Aerospace, automotive, agriculture, transportation, electronic, telecommunication or chemistry companies. CPFR can also be used in the paper, textiles, pharmaceutical, consumer or manufacturing industry. Even real estate, energy companies, financial services and consulting companies have also adopted and experienced

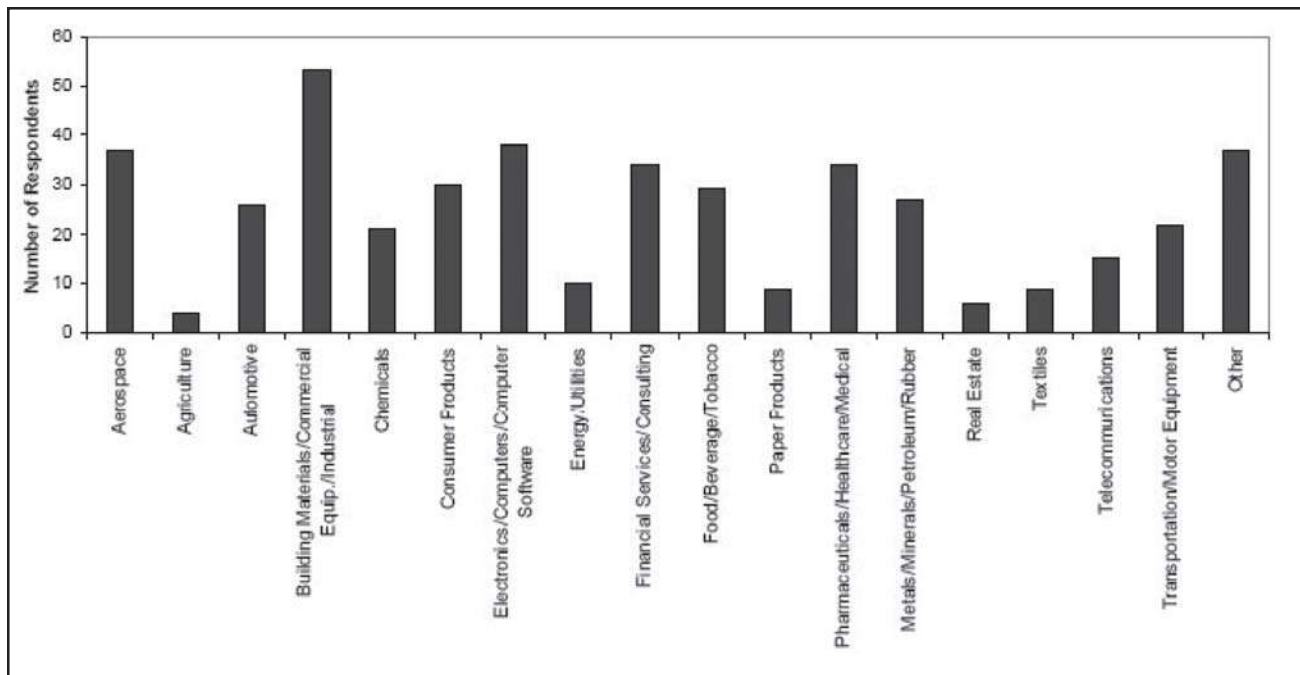
Table 3: Major International Research on CPFR

Streams	Research
First stream Definition and overview articles on the role of CPFR in competitive environment	Dyer et al. (1997), Birt (1999), Lapid (2000),
Second stream Normative studies done mainly by practitioners for institutionalizing CPFR in varied industries	Wognum and Faber (2003), Smith and Dickson (2003), Lin et al. (2003), Neubert et al. (2004), Kraines et al.'s, (2004), Jiang-Liang Hou (2004), Kuo et al. (2005), Alt et al. (2005), Bautzer (2005), Faraj and Alshawhi (2004), Oyelaran-Oyeyinka (2005)
Third stream Developing a basis for assessing the role of information sharing in implementing CPFR practices	Fornasiero and Zangiacomi (2006), Belzowski et al. (2006), Hardy, et al. (2006), Gardan et al. (2006), Volkmann and Tokarski (2006), Matopoulos et al. (2006), Blackhurst, et al. (2006), Chang et al. (2006), Yoon and Kwon (2006), Okongwu (2006), Littler (2006), Yuen Ling Chan et al. (2006), Oliveira and Zaiane (2006), Namin et al. (2006), Chaloping (2006), Kim and Mahoney (2006), Blomqvist and Levy (2006), and Paton (2007) Lauri Ojala (2006), Ling Li (2006),
Fourth stream Appraisal and successful implementation of CPFR on the basis of case studies and its role in new product development	Simatupang and Sridharan (2007), Bayazit (2007), Motohashi (2007), Pecar and Davies (2007), Msanjila and Afsarmanesh (2007), Hsieh and Chen (2007), Min and Yo (2008), Pisano and Verganti (2008),

Application of CPFR

CPFR initiatives started in the retail sector and the CPFR initiative of Wal-Mart is very well-known. The retailer has experimented with CPFR since 1995 and has had significant success in this regard and can be seen as a pacesetter. Seeing the success, many other sectors tried to transfer this to their own business. Interviews by the Supply and Value Chain Centre with managers involved in CPFR projects in

with CPFR. Most CPFR implementations have been in North America and Europe. In the USA alone and more than 100 CPFR programs are currently underway in Europe. Even Indian auto companies such as M&M, Maruti, Honda, L&T and many MNCs in India have started experimenting with CPFR. The following table shows some companies in different sectors that have implemented CPFR successfully.



(Source: Industry Directions, 2000)

Figure 1: Survey Metrics

Table 4: Applications of CPFR

Company	Benefits Accrued
Motorola, Wal-Mart and Sara Lee, Cisco, Living.com, Amazon.com, Dell Computers, JC Penny, Kmart, Federal Express, Kimberly-Clark, Nabisco and Wegmans, Solectron and Koda, Heineken, Coca-Cola FEMSA (KOF), Metro Group, Tesco, NASA, Condis, Delhaize, Elgeka, Eqos, Heinz, Hellas Spar Veropoulos, Henkel, JDA, Johnson & Johnson, Ketjuetu, Kimberley-Clark, Kraft, Marks & Spencer, Masterfoods, Nestlé, ONIA-NET, Procter & Gamble, SCA, Superdrug, Syncra, The Co-operative Group, Unilever, Valio, Vandemoortele, Wella, Woolworths, Hitachi	• Selection of the right trading partner • Senior Management Commitment • Achieving a Collaborative Culture / Organization • Communication and Coordination for Promotions • Selecting the right items • Progress Tracking • Sales Forecast • Forecast Accuracy • Enabling Technology • Reduced order cycle times • lower procurement costs • Smaller inventory and fresher products to consumers. Sales increase as well as reduction of inventory
Fuji Heavy Industries Ltd. Toyota, General Motors, Ford Mazda, Renault-Nissan Volkswagen, Hyundai-Kia, Daimler Chrysler, Honda, Peugeot-Citroën	• Increased demand-planning accuracy, • reduced stock-outs, • greater overall efficiency and better customer service,

Involved Departments

It is very important to know which departments are actively involved in CPFR. A survey conducted by the VICS organization showed that beside the Supply Chain department or Logistics, Sales, Customer Service, Inventory, IT, Finance, Operations, Executive Management, Trade Relations or Customer Development and Marketing are involved, too (Barratt et al, 2001).

Technology and CPFR

The CPFR process does not fundamentally depend on technology. But it uses common tools and processes to improve supply chain planning through accurate and timely information flow. Experiments show that Excel spreadsheets, internally developed software or third-party software are being used. However, specialized technology can make the CPFR process more scaleable. To facilitate the process, the technology has to be flexible across the industry, guarantee secure communication and should be extensible to all supply chain processes. Moreover, the sharing of historical data and forecasts, the interoperability with existing systems, the automation of the collaboration process and joint business plan, the possibility of revisions and the evaluation of exception situations should be possible (Barratt et al., 2001). These requirements have been successfully tested by the Uniform Code Council, Inc. (UCC) for the following companies' software. Participating vendors were i2 Technologies, Inc, IPNet Solutions, Inc., JDA Software Group, Inc., Logility, Inc., Manugistics Group, Inc., SAP, and Syncra Systems, Inc. The test was the first of its kind worldwide (KJR Consulting, 2002). Among the most used software today are mySAP, Manugistics CPFR Solution, Voyager Solutions, Oracle's J.D. Edwards Advanced Planning Solutions, Agile Anywhere, CLOExpress and JDA Software (Erman, 2002).

VICS CPFR Process Model

CPFR being a very successful collaboration model is being implemented at many enterprises along the globe. Over the past twelve years, CPFR guidelines have been published several times, both to provide a better understanding of CPFR and to point out the steps required for the CPFR implementation process. The original CPFR Model, which was published by the VICS Association in 1998, showed the CPFR implementation as a linear process divided in nine

steps with consumer at the end of this process. In order to adjust the CPFR Process Model to the changing global requirements and by gaining more and more implementation experience, the original CPFR model was revised by the VICS CPFR committee in 2004 as an interactive cycle of four main collaboration activities (known as augmented CPFR model). Furthermore, the crucial role of the consumer, on whom lays the focus of collaborate efforts, is demonstrated by placing it in the centre of the model.

The CPFR model (Figure 2) offers a general framework by which a buyer and seller can use collaborative planning, forecasting, and replenishing processes in order to meet customer demand. To increase performance, the buyer and seller are involved in following four collaboration activities listed in logical order.

1. **Strategy and Planning** – In this activity, the buyer and seller come to an understanding about their relationship and establish product and event plans.
2. **Demand and Supply Management** – in which customer demand and shipping requirements are forecasted.
3. **Execution** – the third collaboration activity involves placing, receiving, and paying for orders, and also preparing, delivering, and recording sales on shipments.
4. **Analysis** – for this activity, the execution step is monitored and key performance metrics are measured to work towards continuous improvement.

Annotation on the Collaboration Activities and Tasks

The augmented CPFR model breaks down the activities into further detail. Eight supplier and manufacturer collaboration tasks i.e. two sets of tasks, one for the supplier and one for the manufacturer are associated with each of the four activities listed above. The supplier and manufacturer tasks are called enterprise tasks and link business-to-business collaboration tasks to the entire enterprise operations.

1. Strategy and Planning

This activity appoints the basic rules for the collaboration between the manufacturer and the retailer. It determines both the product mix and

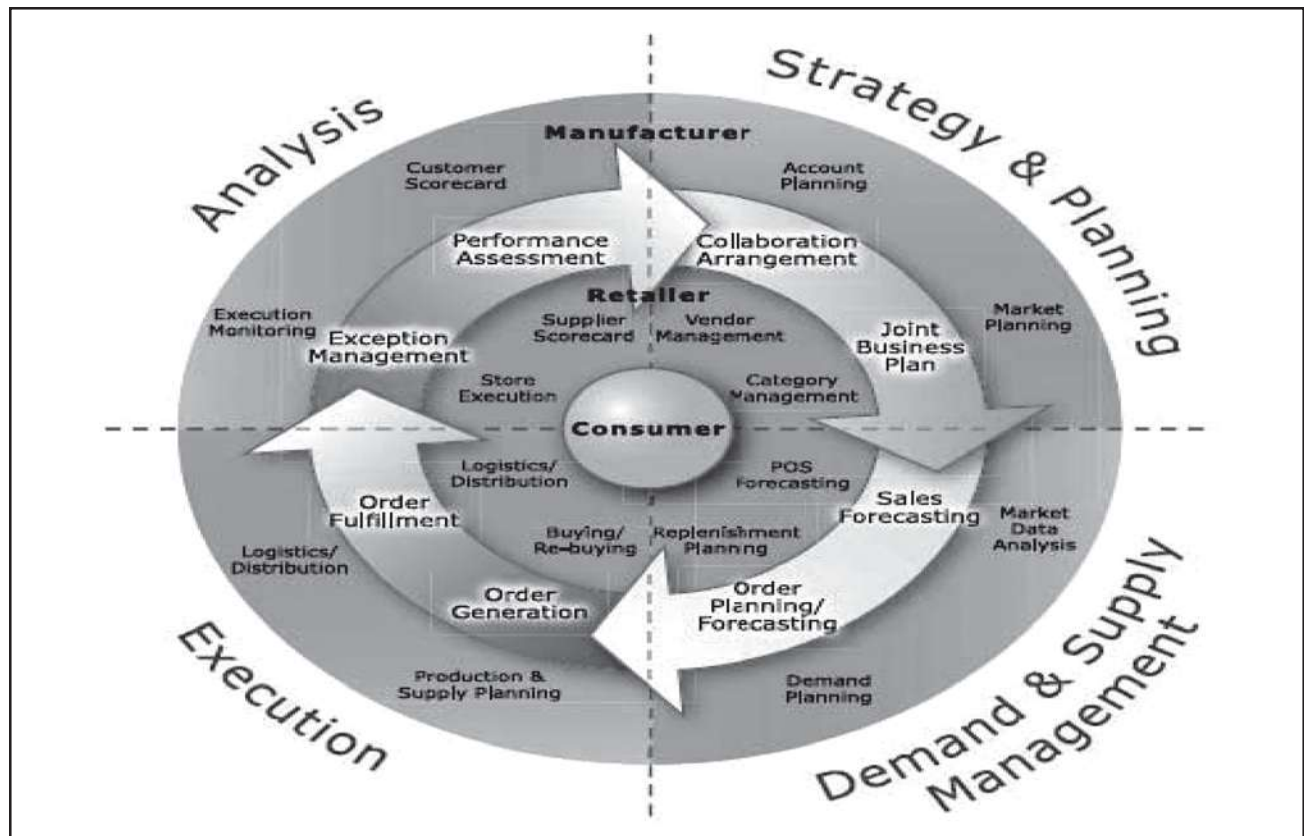


Figure 2: CPFR Model (Source: VICS, 2004)

placement and the event plans for the following period.

- *Collaboration Arrangement:* The business goals for the collaboration are set and the scope for relationship is defined. Furthermore the responsibilities, checkpoints and escalation procedures are assigned. The retailer task related to this collaboration task is *Vendor Management*, and the manufacturer task is *Account Planning*.
- *Joint Business Plan:* Important events that influence supply and demand are disclosed for the planning period. This includes for example promotions, inventory policy changes, store openings and closings respectively or product introductions (VICS, 2004). The retailer task associated with this is *Category Management* and the manufacturer task is *Market Planning*.

2. Demand and Supply Management

This part of the CPFR Model forecasts the customer demand, also referred to as point-of sale (POS) demand, and the order and shipment requirements.

- *Sales Forecasting:* The demand at the point-of-sale is projected by means of consumption data. Depending on the product, industry or trading partner the consumption data could be the retailer POS data, distribution centre withdrawals or manufacturer consumption data. It must be pointed out that planned events mentioned in the Business Plan have to be embraced in the Sales Forecasting (Bozarth, 2006). The retailer task here is *POS Forecasting* and the manufacturer task is *Market Data Analysis*.
- *Order/Planning Forecasting:* Based upon the sales forecast, the order forecast and the

delivery requirements are issued. Compiling the Order/Planning Forecast transit lead times, manufacturer's capacity limitations, inventory positions and other factors have to be considered (VICS, 2004). The associated retailer task is *Replenishment Planning*, and *Demand Planning* is the associated manufacturer task

3. Execution

Execution comprises all operational actions like place orders, prepare and deliver shipments, receive and stock products on retail shelves. Furthermore the record of sales transactions and the effort of payments are components of the Execution as well.

- *Order Generation*: Order forecasts are transitioned to firm demand. The retailer task related to this collaboration task is *Buying/ Re-buying*, and the manufacturer task is *Production and Supply*.
- *Order Fulfilment*: Products are produced, shipped, delivered and stocked for consumer purchase (VICS, 2004). In this case, both the retailer and manufacturer task is *Logistics/ Distribution*

4. Analysis

The task of this activity is to detect deflections that lead to exception conditions. Therefore, a monitoring of planning and execution activities is needed. The results gained by monitoring are aggregated and key performance metrics calculated. The retailer and the manufacturer share their insights and adjust their plans to achieve continuously improved results.

- *Exception Management*: It includes monitoring of planning and activities to arrange the exception conditions. Exceptions could arise both in sales and order forecast (VICS, 2004). The retailer task is *Store Execution* and the manufacturer task is *Execution Monitoring*.
- *Performance Assessment*: The calculating of key metrics is a crucial task in Performance Assessment. Key metrics are divided into two groups: the operational measures that include fill rates, service levels, forecast accuracy, lead times or inventory turns and the financial measures which could be costs or item profitability. Their calculating helps to

appraise the achievement of the business goals, to perceive new trends or to develop alternative strategies (Bozarth, 2006). The retailer task here is *Supplier Scorecard* and the manufacturer task is *Customer Scorecard*.

The model described here is a two-tiered model. However, this model can be extended to include more than two layers in the supply chain. VICS calls this N-tier Collaboration, which is a relationship that develops from retailers through manufacturers/ distributors to suppliers.

n-Tier Collaboration

The CPFR model can be extended to encompass more than two tiers of trading partners. N-tier collaboration is the term used to describe relationships that progress from retailers through manufacturers or distributors to suppliers. In other words, N-tier means applying CPFR to other parts of the supply chain (for example raw material suppliers and manufacturers) or to multiple trading partners within one tier (such as a manufacturer partnering with multiple retailers). Therefore, the supplier which provides the manufacturer is placed in an enclosing ring of the CPFR Process Model like shown below in the Figure 3.

Collaboration in the CPFR Process Model

CPFR is a key enabler behind synchronized supply chain strategies. By placing supply chain partner trading relations at the center of the replenishment decision making process, CPFR can provide competitive advantages to market leaders. CPFR can often be accomplished with minimum change to existing business processes using internet-based technologies (Sherman, 1999).

CPFR is a business practice that combines the intelligence of multiple trading partners in the planning and fulfillment of customer demand. CPFR links sales and marketing best practices, such as category management, to supply chain planning and execution processes to increase availability while reducing inventory, transportation and logistics cost. CPFR assumes a great deal of data sharing and exchange between partners in all steps. Data is necessary to measure the common metrics, to identify the exceptions in sales and order forecasts, and also is important to support decision making on the exception items. Therefore data integrity is almost a

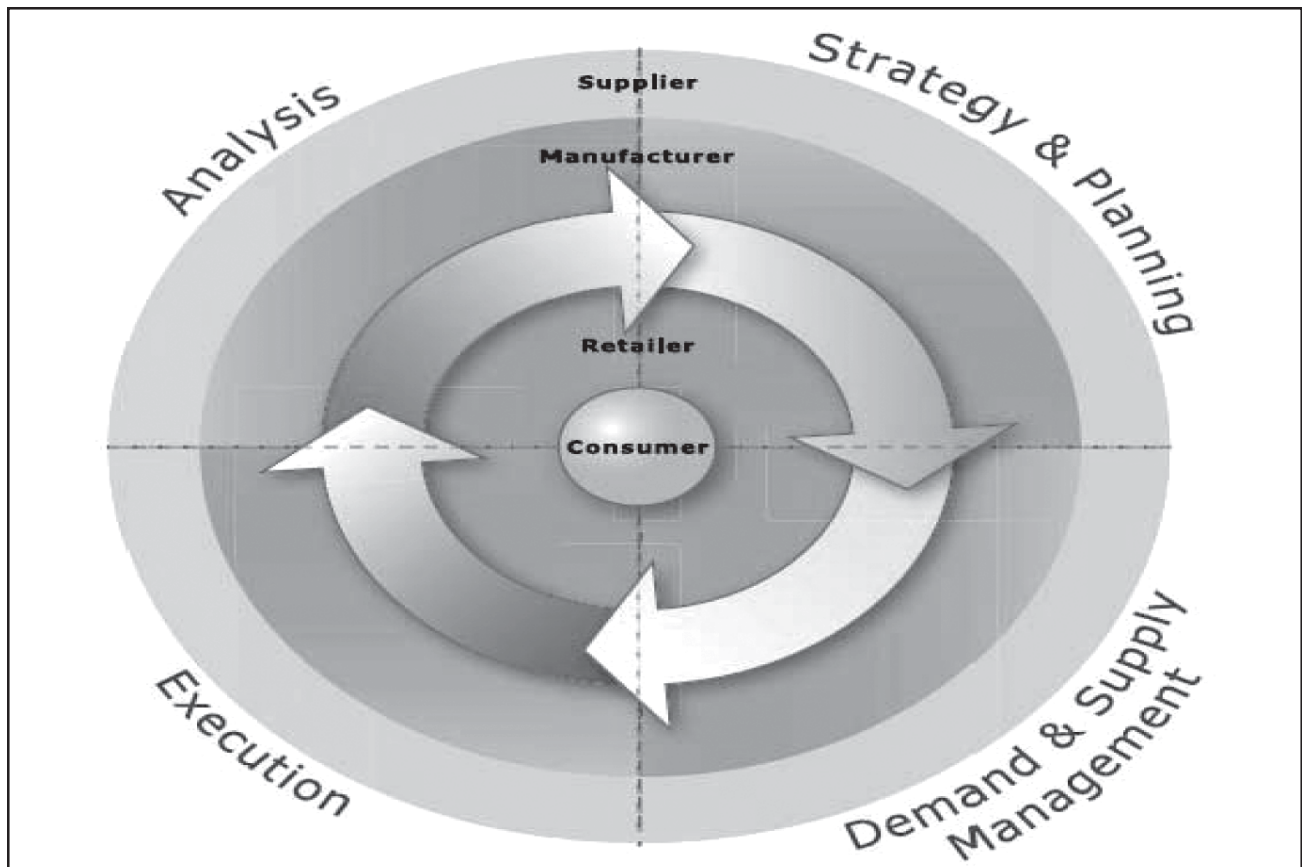


Figure 3: N-tier collaboration (Source: VICS, 2004)

must for these steps to fulfill their missions. As a result, frequent update of data is important to ensure that real-time information is exchanged between partners. The frequency of data update could be agreed upon between the partners to meet the need of their specific relationship. Ever since the release of the CPFR Guidelines and Roadmap, there has been steady increase in the number of companies implementing CPFR. In addition to the successes seen in the U.S. and European pilot implementations, CPFR has also gained increasing attention in other parts of the world as well.

Benefits and Challenges of CPFR

CPFR Benefits

CPFR creates a win-win situation between their trading partners if it is applied properly (Industry Directions and Syncra Systems, 2000). There are tremendous opportunities for the participants in demand and supply matters.

CPFR is based on a strong supplier – buyer relationship. The involved parties spend a lot of time together in CPFR meetings, such as Business Plan meetings, Forecast and Planning meetings etc. The more often they meet the stronger the relationship gets. As a result, both parties make a contribution to share internal company data to improve their Planning figures which is known as “Infopartnering” (Seifert et al.2005).

The joint planning and forecasting has an immediate influence on the quality of forecasts. The example of the German manufacturer Henkel and its retail customer Eroski endorses the above mentioned argument. 50 percent of Henkels’ and Eroskis’ sales forecasts had an average error of more than 50 percent. After having started a CPFR partnership in 1999, they achieved an average error of less than 20 percent with three quarters of their forecast figures. Furthermore, stock out levels could be reduced dramatically.

More accurate forecast figures lead to lower

inventory and backorder levels, that means by using CPFR the often mentioned bullwhip effect in the supply chain can be reduced

(Simchi-Levi et al., 2003). Furthermore, a close collaboration on planning and forecasting results in a more realistic business plan. That means that marketing decisions becomes more effective which has a direct effect on sales figures (VICS, 1999). In addition to the above mentioned points, various companies experienced some other benefits in terms of

- replenishment cycle times,
- stock rates for retailers,
- days of supply, inventory level and inventory turns,
- service level,
- and costs arising from production, planning and deployment (Industry Directions and Syncra Systems, 2000).

Summarily *“CPFR improves efficiency, increases sales, reduces fixed assets and working capital and reduces inventory for the entire supply chain, while satisfying consumers’ needs”* (Simchi-Levi et al., 2003). While it is obvious that demand visibility is improved by external collaboration but the importance of improving internal collaboration is often overlooked. Eventually, all successful CPFR practitioners find that the real monetary value is derived from improved internal collaboration (Oracle Corporation, 2006).

CPFR Challenges

The whole process of CPFR is based on sharing sensitive information with trading partners. One of the biggest threats is the misuse of this information (Drayer, 2002). Therefore, choosing the right trading partners is important. Besides having a trusting business relationship, the counterparts must have the required commitments and resources available. Otherwise CPFR will not be successful. With reference to the above mentioned CPFR Study of Industry Directions and Syncra Systems, more than 60 percent of the questioned manufacturers, retailers, wholesalers and distributors see even more difficulties in internal change followed by cost matters.

Nowadays, the whole CPFR process is done electronically. In this connection the introduction of new technology can become a barrier if the company does not provide the required funds. The same percentage of the respondents saw it as a challenge to roll out CPFR without having the required executive support. The executive board has to be fully behind it and CPFR has to become a priority within the organization which is often linked to a *“cultural shift and human capital investment”* (Industry Directions and Syncra Systems, 2000). If the company is able to overcome these barriers to success, CPFR offers significant business benefits.

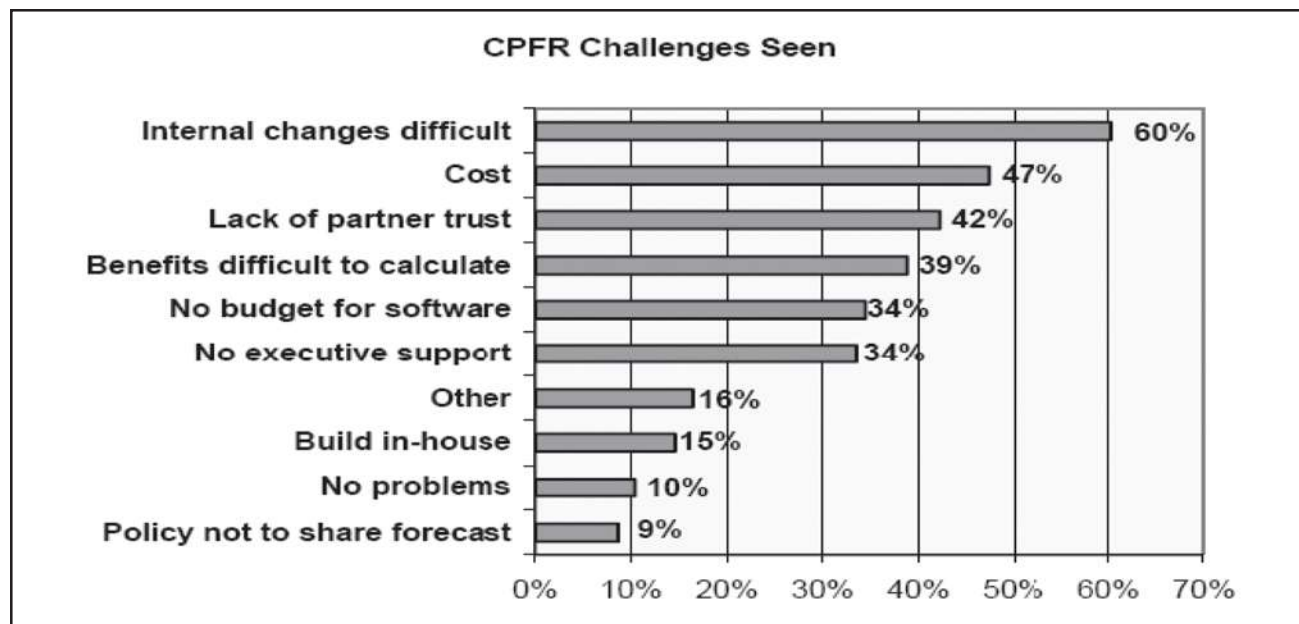


Figure 4: CPFR Challenges (Source: Industry Directions, 2000)

Critique of the New Model

Despite the advantages of the new CPFR model in various industries, there are some limitations to this model. The biggest problem is the sharing of confidential information. It is quite unrealistic that all members of the chain share all their data completely with all others, because they are apprehensive about the trustworthiness of suppliers. There is always a risk of forwarding developments to competitors by suppliers. Even if there were an agreement on a penalty fee, it would be hard to prove for the manufacturer that his partner supplier forwarded his data to the competitor. Moreover, development projects differ from each other and hence, a standardization of the processes at this point of time of the product life cycle is not possible. Furthermore, in order to get useful forecast information, the quality of the forecast data has to be improved. Another problem is that it is difficult to describe the replenishment process in detail with all possible activities in advance of the order process. In addition, the complexity of an auto part and the dependency on each single part in order to manufacture causes problems if the supplier has a lack of knowledge. Both partners should focus on collaborative work and conjoint solutions. However, sometimes it takes more time to discuss a solution with all partners than if only one partner develops a plan. The same situation can be found when problems occur. It is faster to solve them immediately instead of informing all clients. This could be interpreted as a weakness and therefore many companies keep such things to themselves.

Conclusion

The impressive improvements concerning the company's efficiency, sales increase as well as reduction of inventory figures point out potential benefits for companies in various sectors with the implementation of CPFR practices. Companies can no longer operate in isolation. Collaboration and mutual trust is likely to stay in the modern times despite many problems and limitations.

References

- Alt, Rainer; Gizanis, Dimitrios and Legner, Christine (2005), "Collaborative order management: toward standard solutions for interorganisational order management" *International Journal of Technology Management*, Vol. 31, No.1/2 pp. 78 - 97
- Andraski, Joseph C. and Haedicke, Jack (2003), "CPFR: time for the breakthrough? (Collaboration)." *Supply Chain Management Review*. Reed Business Information, Inc. (US). HighBeam Research. <<http://www.highbeam.com>>.
- Attaran, M., Attaran, S. (2007), "Collaborative supply chain management - The most promising practice for building efficient and sustainable supply chains" <http://emeraldinsight.com/Insight/ViewContentServlet?sessionId=9C6980ADE5D4A177242CD5F3EF447DFD?Filename=Published/EmeraldFullTextArticle/Articles/>
- Barratt, M., Oliveira, A. (2001), "Exploring the experiences of collaborative planning initiatives" URL:http://www.emeraldinsight.com/Insight/ViewContentServlet_Filename=_published_emeraldfulltextarticle_pdf_1570130304.
- Bautzer, Luiz R. (2005), "Bringing together knowledge about the product life cycle to improve inter-firm collaboration capabilities", *International Journal of Automotive Technology and Management*, Vol. 5, No.2 pp. 184 - 198
- Bayazit, Ozden (2007), "An examination of current collaborative supply chain practices", *International Journal of Business Innovation and Research*, Vol. 1, No.3 pp. 253 - 266
- Belzowski, Bruce M.; Flynn, Michael S.; Edwards, Morgan; Ban, Linda and Martin, Gregory (2006), "Supply chain management: new competitive realities in the automotive value chain", *International Journal of Automotive Technology and Management*, Vol. 6, No.4 pp. 387 - 405
- Birt, J.M. (1999), "In India Collaboration is the Key", *Supply Chain Management Review*, Fall, pp.13-15.
- Blackhurst, Jennifer ; Craighead, Christopher W. and Handfield, Robert B. (2006), "Towards supply chain collaboration: an operations audit of VMI initiatives in the electronics industry", *International Journal of Integrated Supply Management*, Vol. 2, No.1/2 pp. 91 - 105
- Blomqvist, Kirsimarja and Levy, Juha (2006), "Collaboration capability - a focal concept in knowledge creation and collaborative innovation in networks", *International Journal of Management Concepts and Philosophy*, Vol. 2, No.1 pp. 31 - 48

- Bozarth, Cecil (2006a), *"Demand and Supply Management. Supply Chain Resource Consortium"*, North Carolina State University. <http://scm.ncsu.edu/public/cpfr/4management.html>
- Chaloping-March, Minerva (2006), *"Collaboration towards social sustainability: the case of a mining corporation, its surrounding communities, and local government in Benguet, Philippines"*, International Journal of Environment and Sustainable Development, Vol. 5, No.2 pp. 109 - 125
- Chang, Carl K. ; Zhang, Jia and Chang, Kai H.(2006), *"Survey of computer-supported collaboration in support of business processes"*, International Journal of Business Process Integration and Management, Vol. 1, No.2 pp. 76 - 100
- Drayer, Ralph (2002) Interview with Ralph Drayer on CPFR, Business Process Automation and P&G's Deal with Wal-Mart. URL: http://www.cio.com/article/31239/Interview_with_Ralph_Drayer_on_CPFR_Business_Process_Automation_and_P_G_s_Deal_with_Wal_Mart
- Dyer, J.H.; Kale, P. and Singh, H. (2001), *"How to make Strategic Alliances Work"*, Sloan Management Review, Vol. 42(4), Summer, pp. 37-43.
- ECR Europe, 2002 European CPFR Insights. http://www.ecrnet.org/04-publications/blu_e_b_o_o_k_s/pub_2002_cpfr_european_insights.pdf. Erman, T. (2002) Seven Vendors Achieve CPFR® Data Interoperability in UCCsponsored Test. URL:http://findarticles.com/p/articles/mi_m0EIN/is_2002_August_6/ai_90163309.
- Faraj, I. and Alshaw, M. (2004), *"Global project collaboration in the construction industry: standardisation and integration"*, International Journal of Computer Applications in Technology, Vol. 20, No.1/2/3 pp. 26 - 41
- Fornasiero, Rosanna and Zangiacomi, Andrea (2006), *"Setting up e-platforms for collaboration in SME contexts"*, International Journal of Business Performance Management , Vol. 8, No.1 pp. 77 - 90
- Gardan, Yvon; Hillereau, Mael and Perrin, Estelle (2006), *"DIJA system: a CAD solution for collaboration between designers and manufacturers"*, International Journal of Product Lifecycle Management, Vol. 1, No.4 pp. 436 - 450
- Hardy, Cynthia ; Lawrence, Thomas B. and Phillips, Nelson (2006) , *"Swimming with sharks: creating strategic change through multi-sector collaboration"*, International Journal of Strategic Change Management , Vol. 1, No.1/2 pp. 96 - 112
- Kaushik, Anjali (2009). *"Interorganisational systems in an automotive supply network: the Indian case of Maruti Udyog"*, International Journal of Automotive Technology and Management, Volume 9, Number 4 / 2009, 394 - 414
- Kim, Sung Min and Mahoney, Joseph T. (2006), CPFR as a Relational Contract: An Incomplete Contracting Perspective, pp.1-44, URL: http://www.business.uiuc.edu/Working_Papers/papers/060102.pdf
- KJR Consulting (2002) CPFR Baseline Study – Manufacturer Profile. <http://www.retailwire.com/BrainTrust/ResourceDocs/>
- Kraines, Steven B. ; Komiyama, Hiroshi; Shigeoka, Hitoshi and Wallace, David R. (2004), *"Development of an internet-based collaboration platform and application to household waste plastic processing"*, International Journal of Technology Transfer and Commercialisation , Vol. 3, No.2 pp. 129 - 146
- Kuo, David Chien-Liang; Chen, Wen-Hsien and Smits, Martin T. (2005), *"SME-based collaborative supply chain management: the impact of information technologies"*, International Journal of Management and Enterprise Development , Vol. 2, No.3/4 pp. 360 - 373
- Lapede, L. (2000), *"True Measures of Supply Chain Performance"*, Supply Chain Management Review, July-August, pp. 8-26.
- Li, Ling (2006), *"The effects of information technology implementation on supply chain collaboration"*, International Journal of Internet and Enterprise Management, Vol. 4, No.2 pp. 118 - 134
- Lin, Julia; Fang, Shih-Chieh and Hsiao, Luke Y.C. (2003), *"The business strategies of technological collaboration: Taiwan electronic industry perspective"*, International Journal of Technology Transfer and Commercialisation, Vol. 2, No.2 pp. 111-127
- Littler, Dale (2006), *"Alliance enigmas"*, International Journal of Technology Management, Vol. 33, No.2/3 pp. 115 - 129

- Lothair (2001) Supply chain collaboration: close encounters of the best kind. *Business Week*, 26 March
- Matopoulos, Aristides; Vlachopoulou, Maro and Manthou, Vicky (2006), Exploring chain, network and cluster collaborative practices: implications for SMEs, *International Journal of Networking and Virtual Organisations*, Vol. 3, No.2 pp. 142 - 155
- Min, Hokey and 'Vincent' Yu, Wen-Bin, (2008), Collaborative planning, forecasting and replenishment: demand planning in supply chain management, *International Journal of Information Technology and Management*, Vol. 7, No.1, pp. 4-20
- Motohashi, Kazuyuki (2007), The changing autarky pharmaceutical R&D process: causes and consequences of growing R&D collaboration in Japanese firms, *International Journal of Technology Management*, Vol. 39, No.1/2 pp. 33 - 48
- Manilas, Simon Samwel and Afsarmanesh, Hamideh (2007), Modelling trust relationships in Collaborative Networked Organisations, *International Journal of Technology Transfer and Commercialisation*, Vol. 6, No.1 pp. 40 - 55
- Namin, Akbar Siامي; Shen, Weiming and Ghenniwa, Hamada (2006), Implementing enterprise collaboration using web services and software agents, *International Journal of Networking and Virtual Organisations*, Vol. 3, No.2 pp. 185 - 201
- Neubert, Gilles ; Ouzrout, Yacine and Bouras, Abdelaziz (2004), Collaboration and integration through information technologies in supply chains, *International Journal of Technology Management*, Vol. 28, No.2 pp. 259 - 273
- Norbridge (2001), " Supply chain collaboration and visibility: the results are beginning to show *Business Week*, 8 October Oracle Corporation (2006) Growing Revenue from CPFR and VMI: Building the Demand-Driven Supply Chain URL: <http://www.oracle.com/applications/scm/demantra/resources/growing-revenue-from-cpfrand-vmi-white-paper.pdf>. [22 October 2007]
- Okongwu, Uche (2006), Integration of Supply Chain Management systems, *World Review of Intermodal Transportation Research*, Vol. 1, No.1 pp. 24 - 44
- Oliveira, Stanley R.M. and Zaiane, Osmar R.(2006), A unified framework for protecting sensitive association rules in business collaboration, *International Journal of Business Intelligence and Data Mining*, Vol. 1, No.3 pp. 247 - 287
- Oyelaran-Oyeyinka, Banji (2005), Inter-firm collaboration and competitive pressures: SME footwear clusters in Nigeria, *International Journal of Technology and Globalisation*, Vol. 1, No.3/4 pp. 343 - 360
- Paton, Bruce (2006), Collaboration among industry, civil society, and government for sustainability: a framework for identifying opportunities, *Progress in Industrial Ecology, An International Journal*, Vol. 3, No.1/2 pp. 148 - 162
- Pecar, Branko and Davies, Barry (2007) A new technology paradigm for collaboration in the supply chain, *International Journal of Services Operations and Informatics*, Vol. 2, No.3 pp. 300 - 314
- Peterson, Michael J. (2003) CPFR®: The 21st Century's Most Powerful Process for Consumer Satisfaction <http://www.mikepetersonconsulting.com> SCRC Supply Chain Resource Cooperative (2000-2006) Collaborative Planning, Forecasting and Replenishment CPFR. <http://scm.ncsu.edu/public/cpfr/index.htm>
- Peterson, Michael J. (2003) CPFR®: The 21st Century's Most Powerful Process for Consumer Satisfaction <http://www.mikepetersonconsulting.com>
- Pisano, Gary P. and Verganti, Roberto (2008), Which Kind of Collaboration is Right for You?, *Harvard Business Review*, December, 2008, pp.60-69
- Sahay, B.S. and Mohan, R. (2003), "Supply Chain Management Practices in Indian Industry", *International Journal of Physical Distribution and Logistics Management*, Vol. 33 (7), pp. 583-606.
- Seifert, Dirk (2003) *Collaborative Planning, Forecasting and Replenishment: How to create a Supply Chain Advantage*. New York: AMACOM Books
- Sherman, Richard (1999), CPFR: Realizing the Promise of Efficient Consumer Response Through Collaborative Technology, *Ascet Volume 1*,

- Syncra Software, www.ascet.com/authors.asp?a_ID=138
- Shoshana, Cohen, "Global Supply Chain Trends 2008-2010" *PRTM*, 2008, page 4. Retrieved February 10, 2010 from http://www.prtm.com/uploadedFiles/Strategic_Viewpoint/Articles/Article_Content/Global_Supply_Chain_Trends_Report_2008.pdf
 - Simatupang, Togar M. and Sridharan, Ramaswami (2007), The architecture of supply chain collaboration, *International Journal of Value Chain Management*, Vol. 1, No.3 pp. 304 - 323
 - Simchi-Levi, David, Kaminsky, Philip and Simchi-Levi, Edith (2003) *Designing and Managing the Supply Chain*. TMH, New Delhi
 - Stiely, J.B., Katz, M.F. (2003) Virtually vertical: a supply chain model for the collaboration era' in Seifert, D. *Collaborative Planning, Forecasting, and Replenishment – How to Create a Supply Chain Advantage*. American Management Association, pp.331- 348
 - Syncra Systems Inc. and Industry Directions Inc. (2000) "The next wave of supply chain advantage: collaborative planning, forecasting and replenishment – CPFR survey findings and analysis". Available (<http://www.syncrasystems.com>, <http://www.industrydirections.com>
 - VICS (1999) CPFR Roadmap. Voluntary InterIndustry Commerce Solutions URL: http://test.uc-council.org/cpfr_pdf/06_3_Roadmap_To_CPFR.pdf
 - VICS (2004) Collaborative Planning, Forecasting and Replenishment (CPFR). Voluntary Interindustry Commerce Solution http://www.vics.org/committees/cpfr/CPFR_Overview_US-A4.pdf
 - Volkmann, Christine and Tokarski, Kim Oliver (2006), Growth strategies for young e-ventures through structured collaboration, *International Journal of Services Technology and Management*, Vol. 7, No.1 pp. 68 – 84
 - Wognum, P.M. and Faber, E.C.C. (2003), "Infrastructures for collaboration in virtual organizations", *International Journal of Computer Applications in Technology*, Vol. 18, No.1/2/3/4, pp. 210-224
 - Yoon, Han-Seong and Kwon, Ik-Whan G. (2006), "The roles of electronic marketplace for buyer-supplier relationship: collaborative system architecture", *International Journal of Services and Operations Management*, Vol. 2, No.4 pp. 335 - 351
 - Zillgitt, Andreas (2005), (CPFR). Prozeus. <http://www.prozeus.de/prozeus/daten/broschueren/cpfr/index.htm>

HRD CLIMATE AND ORGANIZATIONAL PERFORMANCE WITH FOCUS ON JOB SATISFACTION AS A CORRELATE: EXPLORATORY ANALYSIS

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Abstract: HRD climate helps the employees to acquire required competencies that would enable them to execute their present or future expected roles and aids in developing their capabilities for better Organizational Performance. Though the measures of OP are many ranging from financial to behavioural ones, but researcher has focused only on single measure i.e. Job Satisfaction because of dearth in amount of studies exploring this relationship. The present paper attempts to analyse and determine the relationship and impact of HRD Climate on Job Satisfaction as an OP measure in selected public sector organization. The study is based on the responses sought from 71 junior and middle level executives from various departments of a public sector undertaking (HMT Ltd.). The questionnaires relating to the HRD Climate (Rao and Abraham) and Job Satisfaction (C N Daftuar) was administered to the sample population and the findings indicate that HRD Climate has a definite impact on Job Satisfaction which in turn leads to the increased organizational performance.

Keywords: Human Resource Development Climate, OCTAPAC Culture, HRD Mechanisms, Job Satisfaction, Organizational Performance

Introduction

Globalization dominates the competitive horizon and entails new markets, new products, new mindsets, new competencies and new ways of thinking about business. A major challenge for any organization in this era of international competition seems to be 'survival and sustainability' amidst cut-throat competition. It is increasingly argued that the organizations, best able to meet the challenges will be those that can acquire and utilize valuable, scarce and inimitable resources (Barney, 1995). Human resources can fall into this category, particularly, if they are effectively deployed through appropriate human resource practices and management of organizational culture (Barney and Wright, 1998). Human resources being one of the

important factors of production, HRD is needed to develop competencies of individual employees through its various interventions.

But with the initiation of the process of globalization and opening up of Indian economy there have suddenly been major changes in the prima donna status of the public enterprises. They are now reeling under the threats of privatization. The persistence losses and inefficient working have forced the government to rethink about the revival of or to say goodbye to sick units. This trend is prevailing not only in India but the world over. In this context, the public enterprises have to cope up with the emerging environment. They must run fast. They must shed the stigma of being inefficient and being burden on the national exchequer. Different countries

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in the world have chosen different strategies, own paths and management styles to face this challenge. Japan has emerged as the leading nation with the unique style of management thanks to its overwhelming reliance on the use of major asset, viz., the human resource. The key to the whole matter in public enterprises in India is also to develop and position our human resources in such a way that organizations become strategic. Thus, there is a need to institutionalize the system of human resource development HRD in all public enterprises in order to improve their working as well as to make them operationally more productive. According to Y S Mahajan, "human resource being the most vital factor of production and labour productivity, a positive, forward looking, human resource development policy is a *sine-qua-non* for the efficiency and effectiveness of public sector employees. (Mahajan, 1996)

HRD as a concept demands a specific and congenial climate to take root. It enriches the work life in an organization and aims to link productivity with a sense of personal fulfilment. HRD involves all management decisions and practices that direct, affect or influence the human resource in the organization. In recent years the reason of greater emphasis is the belief that employees enable an organization to achieve its goals and the management and development of these resources is critical to an organization's success. (Schuler, 1992)

The success of HRD in any organization depends, to a large extent, on the existence of a favourable HRD Climate. HRD is more personnel-oriented than technology-oriented and believes that participation and communication would bring about greater commitment, efficiency, and growth of individuals.

Review of Earlier Studies

HRD encompasses the development oriented activities of the organization. For an individual to perform productively, the climate prevailing in the organization needs to be conducive for his development. Various research studies have been conducted to determine and analyse the factors affecting the HRD Climate prevailing in organizations.

K P Sai Venkateswaran (1997) in a note on Human Resource Development Climate, made a study based on the responses of 132 executives of a large PSU and concludes that early identification of

human resource potential and development of their skill represent two major tasks of human resource development. This can be achieved only when a conducive HRD climate prevails. The study found the existence of favourable HRD climate in the organization. **Krishna and Rao (1997)** carried out a comprehensive empirical study Organisational and HRD Climate in BHEL: An Empirical Study, and found that HRD climate in the organisation encouraged middle and senior managers to experiment with new methods and try out creative ideas. **A. Sharma and Pooja Purang (2000)** in their study Value Institutionalization and HRD Climate: A Case Study of a Navratna public sector organisation, found a positive relationship between value institutionalization and HRD climate in a large public sector organisation, meaning thereby that a better and more ethical environment of the organization shall lead to a better HRD climate for the organisation. **G V Chalam and L Srinivas (2005)** in their study Genderwise Perceptions and Attitudes on HRD Climate in Indian Banking Sector, examines the basic disagreement with respect to HRD Climate in the selected branches of SBI. **C Vijaya Banu. (2007)** in his study A Study on HRD Climate with Special Reference to Public Sector Cement Corporation, concluded that to survive and excel in the new economy, the HRD climate is of crucial importance to the Indian public sector organizations. **Jain, Singhal, and Singh (1996)** conducted a study, HRD Climate in Indian Industry, in two public sector organisations i.e. BHEL and NFL and concluded that the HRD climate is mainly a function of the effectiveness variables including individual efficiency, organisational efficiency and productivity, and the HRD variables including management policy on HRD, organisation development, role analysis and training. **Ishwar Dayal et.al (1996)** carried out a study of HRD Climate in Indian Oil Corporation. It was found that HRD Climate was positive for learning. **Gani and Rainayee (1996)** conducted a study in HRD Climate in Large Public Sector Organization in Kashmir and concluded that climate existing in the organization for employee development was picking up and it was further observed that compared to managerial personnel, workers were less sanguine. **Riyaz Rainayee (2002)** in a study on HRD Climate in Commercial banks found that the overall level of OCTAPAC values in the banks was perceived at a moderate level. **Pooja Purang** in a Comparative Analysis of HRD Climate in Public Private and

Multinational Organizations concluded that the Employee perceptions regarding the Human Resource Development Climate are significantly better in the private sector and MNC in comparison to the Public Sector Organization.

Most of the researchers have followed the typology, 'HRD Climate Survey' as developed by Rao and Abraham (1986). It had 38 items grouped under three categories: General Climate, OCTAPAC Culture and HRD Mechanisms to assess the level of HRD Climate. The *General Climate* items deal with the importance given to human resource development in general by the top management and line managers but also concerns good personnel policies and positive attitudes towards development. OCTAPAC Culture depicts the degree of Openness, Confrontation, Trust, Autonomy, Pro-action, Authenticity, Collaboration and the extent to which these values are promoted in the organization. HRD Mechanisms takes into account performance appraisal, potential appraisal, career planning, performance rewards, feedback and counseling, training, employee welfare, quality of work life, job rotation, self renewal and institution building, personal growth laboratories and worker education programmes, quality circles, task forces, and assignment groups, managerial learning network, organizational development etc. In the later days, researchers have made subtle changes to the instrument to fit their study. Later the researches shifted from not only analyzing the factors that contributed to the HRD Climate in an organization, but also on the effect that the climate had on the effectiveness of the organization. The impact of HRD practices on organizational level outcomes has gained importance as a research issue. The study conducted done by Jain, Singhal and Singh has shown encouraging results in this regard.

The researchers conducted studies to know the influence of the HRD Climate on the individual's attitudes and behaviours. **Eisenberger, Fasolo and Davis-LaMastro (1990)** found that the increased performance and positive work attitudes came from those employees who perceived that the HR department is concerned about them. From a practical point of view, this suggests that Job Satisfaction can be an important barometer of HRM effectiveness. **Rohmetra (1998)** found that there exists a positive relationship between developmental climate and the level of satisfaction of the employees. As per the study of **Kumar and Patnaik (2002)** HRD Climate had a

positive association with job satisfaction, which gives a view that the job satisfaction is a resultant of favourable HR practices. **Frederickson (1966)** **Lafollete & Sims 1975**, found that more consultative, open, employee-oriented employees generally result in more positive job attitudes. **Lyon & Ivancevich (1974)** in their study of a hospital, have found that different climate dimensions influence facets of individual JS for nurses and administrators. **Cawsay (1973)** has observed that JS increases as the individual perceives the climate as having more 'opportunities for advancement' and by **Insel and Moss (1974)** have shown that more precise predictions can be made about the person-environment interaction when the areas of concern are rather specific and delimited. Prediction of variables like satisfaction will improve by looking at the concept of environment in terms of various dimensions. According to **Payne and Pugh (1976)** an individual's needs, satisfaction and goals influence his perception of climate, while climate in turn effects the same satisfaction, goals and behaviour. **Forehand and Gilmer (1964)** outlines the perception of OC as being influenced by personality factors and their relationship with the satisfaction of one's needs.

It is inferred from the literature discussed that, the studies linking climate and satisfaction of employees was dominant.

Objectives of Study

In light of the domain for research, the study was undertaken:-

- i. To examine the nature of the HRD Climate existing in the organization.
- ii. To study the level of Job Satisfaction of the managers of the organization.
- iii. To critically review the relationship of HRD Climate and Job Satisfaction and subsequently the impact of developmental climate on job satisfaction of the individuals.

Hypothesis

Due to the lack of evidences in this area, the following set of null hypothesis was developed:

"There exists no relationship between HRD Climate and the level of job satisfaction of the managers in the organization".

Research Methodology

Data

A total of 100 managers were chosen randomly from various departments, functional areas of organization keeping in view their total strength and range of activities. Out of 100 to whom the questionnaires were distributed only 71 questionnaires were received completed in all respects. Therefore with 71% response rate the researcher has conducted this study.

Instruments

The HRD Climate Survey developed by Rao and Abraham (1990) at Centre for HRD Xavier Labour Relations Institute (XLRI, India) to survey the extent to which a development climate exist in organisations, was used in the present study. This instrument consists of 38 questions on a 5 point scale ranging from 5 (Always almost true) to 1 (Not at all true) to measure the elements of HRDC which can be grouped into 3 broad categories referred to earlier, i.e. general Climate, OCTAPACE Culture, and HRD Mechanisms.

Job Satisfaction Scale developed by C.N. Daftuar consisting of 19 items including 2 which measure separately overall satisfaction with the company and overall satisfaction with the work was used for the purpose. The respondents were asked to rate each statement on a five point scale ranging from 5 (strongly agree) to 1 (strongly disagree).

Reliability

Alpha (Cronbach's) reliability of the two scales used is

- HRD Climate Scale = .96
- Job Satisfaction = .95

This indicates a very high internal consistency, based on average inter-item correlation.

Statistical Measures

To analyse the results, various statistical measures such as Mean, Standard Deviation, Correlation and Regression analysis were performed through SPSS 18 and MS Excel 2007.

Analysis

HRD Climate

The item wise mean scores of the total sample of 71 executives are presented in the table 1. Since the questionnaire used 5 point scale, average mean score of 3 around indicate a moderate tendency on that dimension. Scores around 4 indicate a fairly good degree of existence. Here the overall score was 3.25 which indicate the existence of a just above average degree of HRD Climate. Examining the three major components of HRD Climate i.e. General Climate, HRD Mechanisms and OCTAPAC Culture the results indicates:

Table 1: Mean and Standard Deviation Results of 38 Item – HRD Climate Survey responded by 71 managers of a Public Sector Enterprise

HRD Climate Components	Item No.	Statements	HMT (N=71)	
			Mean	S.D.
GENERAL CLIMATE	1	The top management of this organization goes out of its way to make sure that employees enjoy their work.	2.6620	1.02739
	2	The top management believes that human resources are an extremely important resource and that they have to be treated more humanly.	3.3521	.98704
	3	Development of the subordinates is seen as an important part of their job by the managers/officers here.	3.3944	.91774
	4	The personnel policies in this organization facilitate employee development.	3.0845	1.06565

HRD Climate Components	Item No.	Statements	HMT (N=71)	
			Mean	S.D.
	5	The top management Is willing to invest a considerable part of their time and other resources to ensure the development of employees.	2.9718	1.08195
	6	Senior officers/executives in this organization take active Interest in their juniors and help them learn their job.	3.3521	1.05693
	7	People lacking competence in doing their jobs are helped to acquire competence rather than being left unattended.	3.1690	.86166
	8	Managers in this organization believe that employee behaviour can be changed and people can be developed at any stage of their life	3.5352	1.09324
	9	People in this organization are helpful to each other.	3.7887	.96976
	10	Employees in this organization are very informal and do not hesitate to discuss their personal problems with their super visors.	3.7183	.92864
	11	The psychological climate in this organization is very conducive to any employee interested in developing himself by acquiring new knowledge and skills.	3.5070	1.01240
	12	Seniors guide their juniors and prepare them for future responsibilities/ roles they are likely to take up.	3.3944	.97803
	13	The top management of this organization makes efforts to identify and utilize the potential of the employees	2.9577	1.12677
	18	People in this organization do not have any fixed mental impression/mental reservations about each other.	3.2817	.95891
Overall GC			3.29	.56450
HRD Mechanisms	14	Promotion decisions are based on the suitability of the promotee rather than on favouritism.	2.6620	1.12051
	15	There are mechanisms in this organization to reward any good work done or any contribution made by employees.	3.1549	1.10386
	16	An employee is appreciated by his supervisors when he does good work.	3.5915	1.00822
	17	Performance appraisal reports in our organization are based on objective assessment and adequate information and not on any favouritism.	3.2535	1.03811
	19	Employees are encouraged to experiment with and try out new methods and try out creative ideas.	3.1268	1.19439
	20	When any employee makes a mistake his supervisors treat it with understanding and help him to learn from such mistakes rather than punishing him or discouraging him.	3.4930	.96914
	21	Weaknesses of employees are communicated to them in a non-threatening way.	3.4789	.92364

HRD Climate Components	Item No.	Statements	HMT (N=71)	
			Mean	S.D.
	22	When behaviour feedback is given to employees they take it seriously and use it for development.	3.1127	.90316
	23	Employees in this organization take pains to find out their strengths and weaknesses from their supervising officers or colleagues.	2.9296	.97576
	24	When employees are sponsored for training, they take it seriously and try to learn from the programmes they attend.	3.4366	1.10496
	25	Employees returning from training programmes are given opportunities to try out what they have learnt.	3.2958	.99131
	26	Employees are sponsored for training programmes on the basis of genuine training needs.	3.3380	1.09471
	37	This organization ensures employee's welfare to such an extent that the employees can save a lot of their mental energy for work purposes.	2.8873	.90316
	38	Job-rotation in this organization facilitates employee development.	3.1690	1.06886
Overall HRDM			3.20	.62879
	27	People trust each other in this organization.	3.6761	.92234
OCTAPAC Culture	28	Employees do not feel afraid about their expression of/or discussion of their feelings with their superiors.	3.3239	.96769
	29	Employees are not afraid to express or discuss their feelings with their subordinates.	3.5634	.90605
	30	Employees are encouraged to take initiative and do things on their own without having to wait for instructions from supervisors.	3.1268	1.04101
	31	Delegation of authority to encourage juniors to develop handling higher responsibilities is quite common in this organization.	3.0845	1.07897
	32	When seniors delegate authority to juniors, the juniors use it as an opportunity for development.	3.3803	.88425
	33	Team spirit is of high order in this organization.	3.3944	1.10167
	34	When problems arise people discuss these problems openly and try to solve them rather than keep accusing each other behind the back.	3.4930	.89240
	35	Career opportunities are pointed out to juniors by senior officers in the organization.	2.7746	1.05826
	36	The organization's future plans are made known to the managerial staff to help them develop their juniors and prepare them for future.	2.9437	1.08084
		Overall OC	3.27	.57581
		OVERALL HRD CLIMATE	3.25	.53230

- Among the General Climate Dimensions the mean score for Item No.9 (3.78), 10 (3.71) and 8 (3.53) was found to be higher than other items which indicates that employees in this organization helpful to each other and are very informal and do not hesitate to discuss their personal problems with their supervisors and senior managers in this organization believe that employee behaviour can be changed and people can be developed at any stage of their life.
- Among the HRD Mechanisms category the mean score for Item No.16 (3.59), 19 (3.49) Item no. 20 (3.47) and Item No. 23 (3.43) was found to be higher than other items which indicates that the employees are quite satisfied with the appreciation and recognition programmes ,Learning and Development activities ,Feedback mechanisms and most importantly Training activities . This shows that company is having a reasonable level of development orientation and employees are contented with the same. On the other side the employees were quite unsatisfied with respect to the promotion decisions in the company (2.66).
- Among the OCTAPAC Values, the mean score for Item No.26 (3.67), 28 (3.56) and Item No. 33 (3.49) was found to be higher than other items which indicates that employees in this organization trust each other and they are not afraid to express or discuss the feelings with their subordinates, they confront their problem rather than accusing each other behind the back.

Job Satisfaction

The item wise mean scores of the total sample of 71 executives are presented in the table 2. Since the questionnaire used 5 point scale, ranging from 5 strongly agree to 1 strongly disagree. Here the overall score was 3.27 which indicate that job satisfaction level of managers is just above average. Examining the scores of the individual items of the JS Scale, the researcher found that the mean scores of the items no.1 (3.76), 5(3.70),4 (3.69) and 18(3.56) are higher than other items in the scale which indicates that the employees are highly satisfied with the availability as well as adequacy of opportunities to do different things from time to time which make use of their abilities along with this they are also contented with

the stability in employment .On the whole the results showed that people are happy with the work and the organization in general.

Relationship between Climate and Job Satisfaction

Mean score analysis of HRD climate and Job satisfaction of the organization reveal that a relationship exists between them. Correlation analysis was carried out to statistically test their relationship (Table 3). The result shows that a significant positive correlation of 0.786 exists between them. Therefore, it supports the hypothesis and makes clear that an improvement in HRD Climate is essential for improving the level of job satisfaction of the managers, which in turn will bring positive changes in Organizational Performance of the company.

Having observed that a positive correlation exists between the HRD Climate and JS, further analysis was conducted to find the relationship between the sub factors or dimensions of HRD Climate with JS(Table 3). The correlational analysis performed to analyse the relationship between HRD Climate Dimensions i.e. General Climate , HRD Mechanisms and OCTAPAC Culture and Job Satisfaction. The analysis showed that there exists a positive relationship between different components of HRD Climate and Job satisfaction. The correlation coefficient was .734 (JS*General Climate) ,.693 (JS*HRD Mechanisms) and .695 (JS*OCTAPAC Culture) respectively.

This proves that HRD Climate is a contributing/ influencing factor to increase the level of job satisfaction of the employees.

Impact of Climate on Job Satisfaction

Regression analysis was performed to explain the impact of HRD Climate on job satisfaction i.e. the amount of association. F -Value of 111.56 which is significant at 5% level of significance proves that the regression model is valid. (Table). The individual impact of HRD Climate dimensions on satisfaction cannot be interpreted in this analysis because of the existence of multi-collinearity and high inter-item correlation, which may distract the results. But however it can be said that job satisfaction is very much influenced by General Climate, HRD Mechanisms and OCTAPAC Culture in general. The results may differ according to the settings. It was found that 61% of the variance in job satisfaction is explained by the HRD Climate variables. Therefore

Table 2: Mean and Standard Deviation Results of 19 Item – Daftuar’s Job Satisfaction Scale responded by 71 managers of a Public Sector Enterprise

Items		Mean	S.D.
JS1	My job provides adequate opportunities to do different things from time to time.	3.7606	.86956
JS2	My job provides adequate opportunities to be “some body” in the community.	3.4085	.80316
JS3	My supervisor is quite competent in making decisions.	3.4648	.99758
JS4	My Job provides for stable employment in suitable ways.	3.6901	.97967
JS5	My job provides adequate opportunities to do something that makes use of my abilities.	3.7042	1.03364
JS6	My job provides fair Pay.	2.3662	1.09856
JS7	My job provides adequate opportunities for advancement on this job.	3.0423	.93253
JS8	I’m happy with the working conditions.	2.9155	1.06565
JS9	I’m happy with the way my co-workers get along with each other.	3.3803	.86794
JS10	My Job provides me a feeling of accomplishment.	3.4789	.90805
JS11	I’m happy with the General management of the company.	3.2113	1.06792
JS12	I’m happy with my past advancements’ in this organization.	3.2817	.92864
JS13	There are adequate opportunities for future growth (in efficiency)	2.8451	.98049
JS14	Social conditions are appropriate for the job with in the organization	3.2394	.94815
JS15	My work is suitably recognized in the organization.	3.3521	1.04333
JS16	I’m happy with the kind and amount of responsibilities assigned to me.	3.3803	.93145
JS17	I’m happy with the Company’s policies.	2.9577	1.07486
JS18	I’m happy with my work as a whole.	3.5634	.95218
JS19	I’m happy with my company/organization as a whole.	3.2394	1.11438
OVERALL JS		3.27	.53984

the null hypothesis that *there exists no relationship between HRD Climate and the level of job satisfaction of the managers in the organization* is rejected.

Conclusions and Implications

Thus on the whole, the researcher finds the existence of good HRD Climate in the organization according to the perceptions of managers sought through the scale constructed for measuring the same. The managers in general showed a favourable attitude towards HRD Policies and practices of the organization. They were satisfied with the developmental policies of the top management as well as contented with their work and the organization as a whole i.e. level of job satisfaction

was also good. Most importantly the researchers’ findings support the existing literature and add to the deficit literature existing which have attempted to explore the relationship of HRD Climate and Job Satisfaction in Indian Context. It was concluded that there is a significant relationship between JS and HRDC and any positive change in HRD Climate and its components will bring about positive changes in Job Satisfaction and in turn impact the Organizational Performance in positive manner.

However the findings of the present study indicate that there is a still substantial scope for improvement in various aspects of HRD in the organization as well as factors influencing JS. Some of these aspects along with broad suggestions are:-

Table 3: Correlation Results between Job Satisfaction and HRD Climate, its Components (General Climate, OCTAPAC Culture and HRD Mechanisms)

		HRDC	JS	GC	HRDM	OC
HRDC	Pearson Correlation	1	.786**	.887**	.912**	.901**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	71	71	71	71	71
JS	Pearson Correlation	.786**	1	.734**	.693**	.695**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	71	71	71	71	71
GC	Pearson Correlation	.887**	.734**	1	.664**	.729**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	71	71	71	71	71
HRDM	Pearson Correlation	.912**	.693**	.664**	1	.763**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	71	71	71	71	71
OC	Pearson Correlation	.901**	.695**	.729**	.763**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	71	71	71	71	71

**Correlation is significant at the 0.01 level (2-tailed).

Table 4: Results of Regression Model of HRDC on JS

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.786 ^a	.618	.612	.33612	.618	111.567	1	69	.000

a. Predictors: (Constant), HRDC

- The top management's commitment should be increased towards learning & potential development of its human resources in all its endeavours. The mean score of the items dealing with these aspects were 2.66, 2.97 and 2.95 which are below average.
- Management should also draw its attention towards bringing reforms in the Promotion policy (2.66) as well as the welfare practices of the organization (2.88), as the mean score is quite below average on these two HRD mechanisms.
- In general psychological climate in the organization should be improved and efforts should be initiated to make it conducive to the development of employees. Besides, there is an urgent need for restructuring the various personnel policies in the organization. Sound personnel policies that show high concern for

employees and emphasise equity and objectivity in appraisals would go a long way in creating a better HRD Climate in the organization. The management should also take a good look at the existing HRD mechanisms and explore the possibilities of introducing new ones.

- On account of satisfaction level of managers certain improvements derives the attention the organization needs to improve the working conditions, needs to revise the compensation packages as per the industry standards, career opportunities should be pointed out to employees ,company policies should be conveyed in a simplified manner and its interpretation should be checked through feedback mechanisms as the mean scores was low in these categories respectively (2.36, 2.91, 2.95 and 2.84)

In the end it must be emphasized here that since this study was carried out in a public sector organization, the findings of the study are not applicable to other types of organizations. Further, since the sample consisted only of managerial personnel, the findings may be generalised in other categories of employees, i.e. supervisors and workers, with caution. Although this study made an attempt in examining the potential impact of HRD Climate on Organizational Performance by concentrating on single variable i.e. just job satisfaction, but there are many other indicators of OP such as Financial Performance, Employee Turnover, Market Performance, Sales Turnover, Productivity which remains unconsidered. Thus, there is a scope for further research in this area. In general, this study contributes to the literature on HRD Climate and provides an additional insight to the individuals associated with the HR field.

References

- Barney J B and Wright P M (1998), "On becoming a Strategic Partner: The Role of HR in gaining competitive advantage", Human Resource Management, 37:31-46.
- Bhamidipati, Ravi and Makhijani, Rajer (2003), 'Changing Mindsets', Background Papers, AIMA 30th National Management Convention, September 15-17.
- Bhardwaj Gopa and Mishra Padmakali (2002) *HRD Climate: an empirical study among private sector managers* ,IJR July 2002,38(1)
- Cawsey, T. (1973) 'The interaction of motivation and environment in the prediction of performance and potential and satisfaction in the Life Insurance Industry in Canada'. paper presented at 16th Annual Midwest Academy of Management meeting, Chicago, Illinois, April,
- Eisenberger, Fasolo and Davis-Lamastro (1990), "Perceived Organizational Support and Employee Diligence, Commitment and Innovation", Journal of Applied Psychology,75:51-59.
- Forehand, G, & Von Gilmer, B(1964). *Environmental variations in studies of organisational behaviour*. Psychological Bulletin, 62, 362-381.
- Frederickson, N. (1966) *Some effects of OC administrative performance*', Research Memorandum RM-62-61, Educational to sting service.
- International Labour Organisation, (1997) *ILO Enterprise Forum*, Geneva 1996, 'Summary of Proceedings.
- Jain V K, Singhal K C and Singh V C (1997), "HRD Climate in Indian Industry", Productivity, 37(4) : 628-639.
- K P Sai Venkateswaran,(1997) *A Note on Human Resource Development Climate*, Vikalpa, Vol. 22 Issue 1 pp.51-53
- Kalburgi, M.S.(1984), *Human Resource Management*, McGraw Hill, Toronto
- Kumar S and Patnaik S P (2002), "HRD and Attributes of Teachers in JNVs", Indian Journal of Training and Development, 32(2):31-37
- Lawfollete, W.R.,and Sims,H.R.,Jr. (1975)'Is satisfaction redundant with OC ?',Organizational Behaviour and Human Performance, 13, pp. 257-278
- Lewlyn L.R. Rodrigues, (2004) *Correlates of Human Resource Development Climate Dimensions: An empirical study in engineering institutes in India*. South Asian Journal of Management, Vol 11 Issue 2 pp 81.
- Murthy, P.V.R., & Gregory, J.X.(1989), "Relevance of Japanese HRD practices in Sundaram Clayton," In T.V.Rao, K.K.Verma, A.K.Khandelwal, & E.Abraham (Eds), *Alternative Approaches and Strategies of H.R.D.*, Rawat Publications.

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- Pattanayak, B.(1998),*Corporate H.R.D.,Excel Books*, New Delhi, pp 26-40.
 - Payne, R & Pheysey, D (1971). *CG Stern's organizational climate index Organizational Behaviour and Human Performance* 18,45-62.
 - Rainayee Riyaz (2002), "*HRD Climate in Commercial banks: An Empirical study*", *The Business Review* Vol 9 No.1 September.
 - Rao,T.V. and Abraham,E.(1985), "*HRD Climate in Indian Organizations*" in T.V.Rao "*Readings in HRD*", Reprint 1999 Oxford & IBH Pub.Co.Pvt.Ltd.
 - Rohmetra,Neelu (1998) "*Towards creating a learning organization-the HRD Climate Focus*"*Pradigm*,Vol2 No.1 July 1998, 56-63.
 - Sonal Saxena,(2006), *Human Resources Development Climate in Indian IT Companies*, ICFAI Journal of Management Research ,Feb,2006.
 - Srimanarayan M.,(2007) *Human Resource Development Climate in Dubai Organizations*, *IJIR*,Vol 43 No. 1 July 2007,pp 1-13.
 - Srimannarayana M., (2001), *Human Resource Development Climate in a Software Organization*, *HRD Newsletter*,Vol. 2 Issue 3 pp.6-14
 - Tanuja Aggarwala,(2002), *Innovative HR Practices and Human Resource Development Climate : a comparison of automobile and IT Industries*. Udai Pareek,Osman-Gani Ramnarayan and T.V.Rao(Ed) *HRD in Asia*, Oxford & I.B.H, New Delhi, pp.3-10.
 - Venkataratnam, C.S..(1999) (ed.) '*HRD for Adjustment at the Enterprise Level*', Participants Manual, ILO.
 - Verma, Madhurendra K. (2000) '*Nurturing Change Through Your Human Assets*,' Sage India.
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SEMANTIC WEB: ONTOLOGY BASED WEB

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Abstract: As the barriers of distances in networking are removed through Internet technology. It is the time to have new era in the field of database, AI and IR and web. This is coming up in the form of semantic Web .The word semantic define 'meaning'. As the semantic database is the latest trend in database technology and it is incorporating the new generation of knowledge representation and Information Retrieval for Semantic Web. This paper presents the in depth discussion on Ontology based web, the transition from HTML to OWL .Information Retrieval system and Semantic web.I will also be discussing the different techniques used in IR systems for Semantic Web.

Introduction

Technology changes in AI also change the phenomena of Internet search. As AI emerges with new knowledge representation tools and techniques and thus new generation web search also revolutionized with the upcoming "Semantic Search Engine". Semantic Web Search is a search engine for the Semantic Web.

Semantic web is defines as web with meaning. To be meaningful (semantic), information must be logical. For an entire worldwide web of information to be semantic (meaningful) the entire web of information must be structured according to what is called **universal logic**[21]. Semantic web will be used to make web pages machine readable so that they can perform more of the tedious work involved in finding, sharing and combining information on the web without interference of humans.

Objective of semantic web is to combine information from multiple sources. The vision of the "Semantic Web" is to have all public (www) 'data' encoded in a way that ANY application program can use it – even programs that have no encoding to anticipate the meaning of the data.

Information retrieval technology has been vital to the success of the Web. For semantic web documents or annotations to have an impact, they

will have to be compatible with Web based indexing and retrieval technology These annotations will provide metadata about the documents as well as machine interpretable statements capturing some of the meaning of document content

Transformation from HTML to OWL

WWW Language—HTML

Now a day's information in computer can be loosely divided into documents and data. Documents like articles, messages, reports, and brochures are read by humans. Data, like calendars, address books, playlists, and spreadsheets are presented using an application program which lets them be viewed, searched and combined in many ways. Currently Web pages are stored in HTML HTML is full of tags that can be used to represent a visually-abstract content, but these were designed to markup pages, so they contain semantics about paragraphs, tables, images, but they cannot markup things like invoices, mathematics formulas, car spare parts, etc.

Example of HTML code:

```
<H1>Introduction to AI</H1>
<UL><LI>Teacher: Frank van Harmelen
<LI>Students: 1AI, 1I
<LI>Requirements: none
</UL>
```

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Metadata

Metadata is data about data. HTML brought the **<meta>** tag to allow page authors to help indexing of the page by placing keywords that specified the page content. The best search engine make extensive use of these tags, when available, to categorize the information. Metadata will not be displayed on the page, but will be interpretable by machines. Metadata tags, for example

```
<meta name="keywords" content="semantic,
Intelligent web, Web 3.0">
<meta name="description" content="New research
in web">
<meta name="author" content="Shikha Singh">
```

Metadata provide a method by which computers can categories the content of web pages. But still that does not provide powerful approach to search engines. So the new language was introduced to provide advantage over HTML i.e. XML.

Why XML?

(eXtensible Markup Language)

XML does not specify fixed tag set. In fact XML is really a meta-language for describing markup languages. In other words, XML provides a facility to define tags and the structural relationships between them. Since there's no predefined tag set, there can't be any preconceived semantics. All of the semantics of an XML document will either be defined by the applications that process them or by style sheets. XML is considered to be the basis for all semantic web languages – the “machine code” of the new generation web[12].

An XML document is parsed in two levels.

- **Well-formed.** A XML document is well formed if it is having start tag(<>) and its corresponding end tag(</>).
- **Valid.** A valid document additionally conforms to semantic rules, either user-defined or in an XML schema, especially DTD; e.g. if a document contains an undefined element, then it is not valid; a validating parser is disallowed from processing it.

Now lets take example of XML tags.

```
<course date=" " ">
<title>...</title>
```

```
<teacher>
<name>...</name>
<subject>....</subject>
</teacher>
<student>..</student>
</course>
```

It can be shown in tree like structure, which will become the basis for search in web.

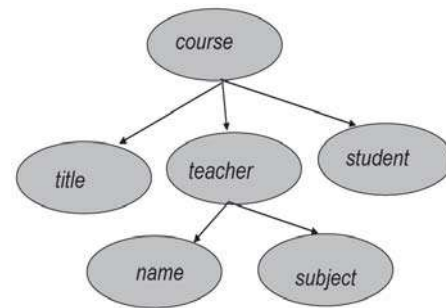


Fig 1: tree representation of XML

Any XML document whose nested tags form a balanced tree is a well-formed XML document. Furthermore it is possible to enforce constraints on which tags should be used, and which nesting of these tags is allowed. In XML 1.0 this is done in a Document Type Definition (DTD)

Limitations in XML

Let us suppose we want to express the following fact:

Shikha Singh is a lecturer of Computer Science

There are various ways of representing this sentences in XML .Three possibilities are

```
<course name="Computer Science">
  <lecturer>Shikha Singh</lecturer>
</course>
```

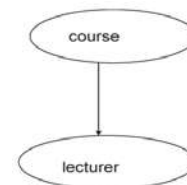


Fig 2: Graph for lecturer and course

```
<lecturer name="Shikha Singh">
  <teaches>Computer Science</teaches>
</lecturer>
```

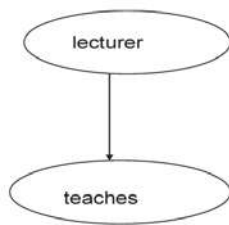


Fig 3: graph showing link of lecturer and teaching

- Here in all the statements, same relationship is shown but there is no specification to show relationships, it is up to the application to understand itself. So, there is no standard way of assigning meaning to tag nesting.
- XML is aiming at the structure of documents and does not impose any common interpretation of the data contained in the document. This is the major limitation of XML: since XML just describes grammars there is no way of recognizing a semantic unit from a particular domain of interest.
- If the files are defined by a DTD or Schema, the files will not be extensible.

In a nutshell, this means that XML is very suitable for data interchange between applications that both know about what the data is, but not in situations where the addition of new communication partners occurs frequently.

XML Schema

An XML schema describes the structure of XML document, typically expressed in terms of constraints on the structure and content of documents of that type, above and beyond the basic syntactical constraints imposed by XML itself. An XML schema provides high level of abstraction to the view of the document.

Different languages are developed to describe XML schema like DTD (Document Type Definition) etc. Two other very popular, more expressive XML schema languages are XML Schema (W3C) and RELAX NG.

RDF(Resource Description Framework)

The limitations of relationship associated with the XML are overcome by RDF. XML describes the *syntax* and RDF describes the *semantic*.

- Syntax: the structure of your data
- Semantics: the meaning of your data

Syntax being the science of how signs can be put together to create sentences. *Semantics* being how these signs relate to the world so that one can give the sentence a truth value.

Lets take the above sentence i.e

Shikha Singh teaches computer science.

The above sentence is referring to three things. One person named *Shikha Singh*, second course named *computer science* and the relationship between them i.e teaches. There are many ways to represent the same relationship i.e you can write in English, French, Spanish Java or in XML. But all of them will be describing the same thing but in different syntax.

As I referred above XML describes the syntax of the document and RDF describes the semantics. So RDF can be written in many ways like RDF/XML, N3, N-Triple or as Turtle.

RDF describes the framework for meta-data of web document. RDF is used to describe relationship between different Entities in the world.

RDF provides information like title, author, modification date, content, and copyright information of a Web page

The RDF data model can be said to have resemblance with entity-relationship diagram. The RDF data model, however, does not provide method for declaring the properties, nor does it provide any mechanisms for defining the relationships between the properties and other resources. That is the role of RDF Schema.

RDFS Schema

For describing any Resource there is requirement to say certain things about certain kinds of resources. For describing bibliographic resources, for example, descriptive attributes including "author", "title", and "subject" are common. For digital certification, attributes such as "checksum" and "authorization" are often required. The declaration of these properties (attributes) and their corresponding semantics are defined in the context of RDF as an *RDF schema*. A schema defines not only the properties of the resource (e.g., title, author, subject, size, color, etc.) but may also define the kinds of resources being described (books, Web pages, people, companies, etc.).

By definition

RDF schema is a semantic extension of RDF. The RDF schema language is used for declaring basic class and types when describing the terms used in RDF and are used to determine characteristics of other resources, such as the domains and ranges of properties.

The 'rdfs' namespace is used here to define core vocabulary, and is identified by the URI reference <http://www.w3.org/2000/01/rdf-schema#>. This specification also uses the prefix 'rdf' to refer to the core RDF namespace

<http://www.w3.org/1999/02/22-rdf-syntax-ns#>.

RDF/XML

RDF is not designed for being displayed to people. XML language used by RDF is called RDF/XML. RDF uses XML to describe metadata so that information can easily be exchanged between different types of computers using different types of operating systems and application languages.

RDF/RDFS allows anyone to write their own name-space document (a 'schema'). This defines properties and classes in some application domain.

These form vocabularies which can be used globally for sharing the meaning of tags

Along with its formal semantics, RDF data structure is effectively modeled using a directed graph. In RDF data model the metadata statements are represented as triples: nodes are used to represent two parts of the triple, and the third part is represented by a directed link that describes the relationship between the nodes. The triples are stored in a logical network.

Triple is defined as (subject, predicate, object) for instance (Shikha Singh, teaches, computer science)

RDF identifies everything as URI (Uniform Resource Identifier) which gives a uniformity in accessing anything on the web. This URI could link to a machine or human readable definition, or the URI could merely serve as a unique identifier with no real link to information content

RDF triple can be taken as (Resource, property, value).

- A Resource is anything that can have a URI, such as "<http://www.abc.com/RDF>"

- A Property is a Resource that has a name, such as "creator" or "homepage"
- A Property value is the value of a Property, such as "Shikha Singh" or "<http://www.abc.com>"

Property value can either be literal or another URI. Let's look at some example statements to get a better understanding:

Statement:

"The creator of <http://www.abc.com/RDF> is Shikha Singh".

- The subject of the statement above is: <http://www.abc.com/RDF>
- The predicate is: creator
- The object is: Shikha Singh

So here property value is literal (string).

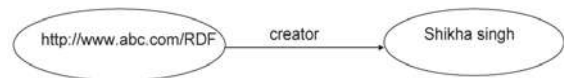


Fig 4: RDF triple with object as literal value

Statement: "The homepage of <http://www.abc.com/RDF> is <http://www.abc.com>".

- The subject of the statement above is: <http://www.abc.com/RDF>
- The predicate is: homepage
- The object is: <http://www.abc.com>

In the above example the property value is URI.



Fig 5: RDF triple with object as URI

Root Element

<rdf:RDF> is the root element of an RDF document. It defines the XML document to be an RDF document. It also contains a reference to the RDF namespace:

Description

rdf:Description is a container for information about a resource identified by the about attribute. In this case each resource is a book, its identification

(URI) is its name. Each book has an author and the specified number of pages.

Source (RDF/XML document)

```
<rdf:RDF
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-
    syntax-ns#"
  xmlns:lib="http://www.zvon.org/library">
  <rdf:Description about="Matilda">
    <lib:creator>Roald Dahl</lib:creator>
    <lib:pages>240</lib:pages>
  </rdf:Description>
  <rdf:Description about="The BFG">
    <lib:creator>Roald Dahl</lib:creator>
    <lib:pages>208</lib:pages>
  </rdf:Description>
  <rdf:Description about="Heart of Darkness">
    <lib:creator>Joseph Conrad</lib:creator>
    <lib:pages>110</lib:pages>
  </rdf:Description>
  <rdf:Description about="Lord Jim">
    <lib:creator>Joseph Conrad</lib:creator>
    <lib:pages>314</lib:pages>
  </rdf:Description>
  <rdf:Description about="The Secret Agent">
    <lib:creator>Joseph Conrad</lib:creator>
    <lib:pages>249</lib:pages>
  </rdf:Description>
</rdf:RDF>
```

Author	Title	Pages
Roald Dahl	Matilda	240
Roald Dahl	The BFG	208
Joseph Conrad	Heart of Darkness	110
Joseph Conrad	Lord Jim	314
Joseph Conrad	The Secret Agent	249

Table I : output of RDF/XML

Graphical representation of XML and RDF

Lets take the example of xml schema (ABC1)

```
≤Person≤
  ≤name>shikha singh≤/name>
  ≤mbox>ss@yahoo.com≤/mbox>
  ≤knows>
    ≤Person>
```

```
    ≤name>Deepti≤/name>
    <mbox>deepti@yahoo.com
    ≤/mbox>
  ≤/Person>
  ≤Person≤
    ≤name>Jonathan Story≤/name>
    ≤mbox> Jonathan.Story@eg.edu
    ≤/mbox>
  ≤/Person>
  ≤/knows>
≤/Person>
```

Next see ABC2 showing additional information

```
≤AddressBook>
  ≤Person>
    ≤name>Jonathan Story≤/name>
    ≤mbox>Jonathan.Story@eg.edu≤/mbox>
    ≤address>
      ≤Country>France≤/Country>
    ≤/address>
  ≤/Person>
  ≤Person>
    ≤name>Tim Bray≤/name>
    ≤mbox>Tim.Bray@eg.Com≤/mbox>
    ≤address>
      ≤Country>Canada≤/Country>
    ≤/address>
  ≤/Person>
≤/AddressBook>
```

Now we can have transformed statements of XML into *N3 relations* of ABC1.

```
[ a :Person;
  :name "shikha singh";
  :mbox ≤mailto:ss@yahoo.com>;
  :knows [ a :Person;
    :name "Deepti";
    :mbox ≤mailto:deepti@yahoo.com>
  ];
  :knows [ a :Person;
    :name "Jonathan Story";
    :mbox
      ≤mailto:Jonathan.Story@eg.edu>
  ];
] .
```

The above relations can be shown as a graph as below.

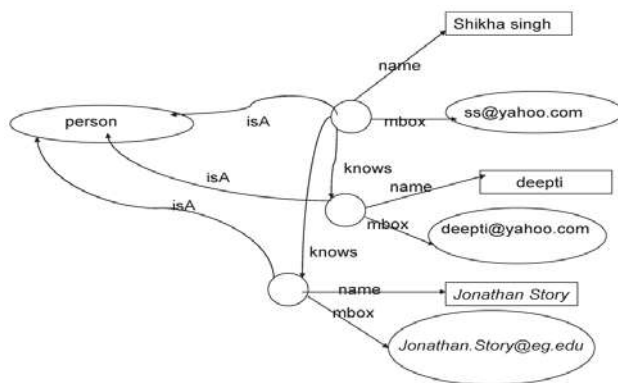


Fig 6: RDF statements of ABC1 schema

Now the ABC2 can be shown as *N3 relation* as below:

```
[ a :Person;
  :name "Tim Bray";
  :mbox ≤mailto:Tim.Bray@eg.com≥
  :address [ a :Address;
    :country "Canada"@en
  ] ]
[ a :Person;
  :name "Jonathan Story";
  :mbox ≤mailto:Jonathan.Story@eg.edu≥
  :address [ a :Address;
    :country "Franc≥@en
  ]
].
```

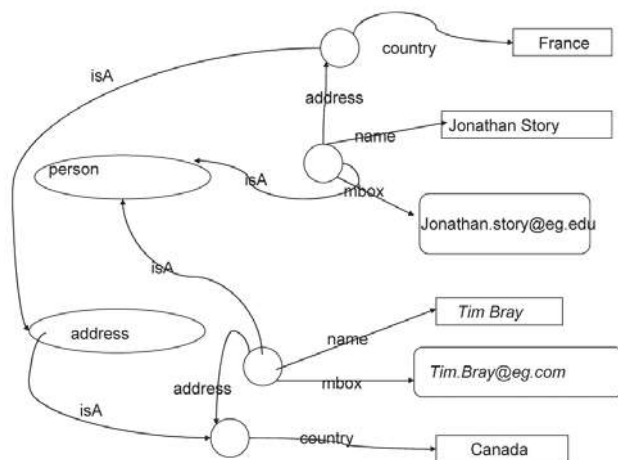


Fig 7: RDF triple graph of ABC2

RDF data Model

Now lets take the statement as below:

Shikha singh is teacherof Rahul Thakur.

RDF statement is

http://www.abc.com/s.singh is teacherof http://www.abc.com/r.thakur.

both statements shows the same relationship but in different manner. The above statement can be expressed in RDF data model as

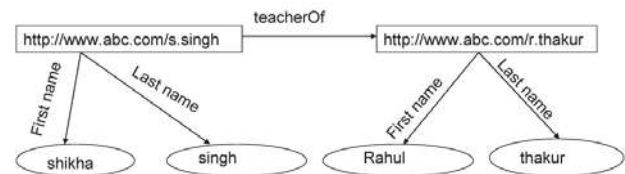


Fig 8: RDF data Model

Here in above example statement shows subject and predicate both are having properties as *first name* and *last name* with literal values .

Layered structure of RDFS

The RDF data model can be transformed in layered structure of RDFS and its namespace. As I have mentioned earlier that RDFS specifies the schema for RDF and it also specifies classes and properties to be used in RDF modeling. So using those classes and properties , the above example can be shown as a layered structure.

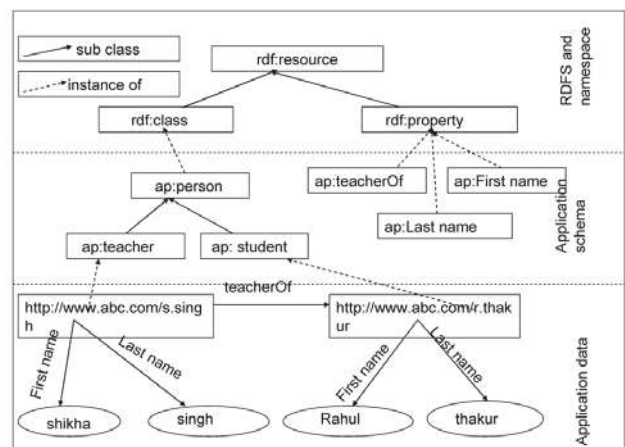


Fig 9: RDF model and RDFS structure

Again the RDF is having certain limitations in terms of vocabulary for specifying the metadata and their relationships, which is overcome by introduction of *Ontology*.

Ontology

The term ontology has different meaning in different terms.

In general ontology represents an idea or concept. It is a kind of model depicting a concept. Ontology is knowledge representation showing model consists of properties and relationship.

In philosophy, ontology is defined as metaphysics, which deals with the nature of reality- of what exists.

In computer science ontology is a conventional representation of a set of concepts within a domain and the relationships between those concepts. Ontology provides hierarchical structure of concepts.

An 'Ontology' is an agreed on, shared, common understanding of a domain written as an explicit, formal specification[7].

Ontology is defined as classification of things. It bequeath a better organisations of relationships. It categorises the object or things in the world according to specifications. It provides better understanding of relationships.

As RDF used to define the metadata , Ontology defines the relationships.

Lets take the same example of describing a book.

Book

hasPart chapter

Chapter

hasElement page

Page

hasElement paragraph

So the information regarding a book can be represented as above or as below.

book

hasTitle text
hasDescription text
hasSubject descriptor

hasDatePublished date

These are the simplest way of writing the ontologies.

Basics components of Ontology in any field are:

- Classes
- Attributes
- Relationships
- Rules
- Restrictions
- Axioms

Classes can be expressed as domain of the problem or we can say it specify the kind of thing, or collection of objects etc.

Attribute are used to represent set of properties which a thing poses or characteristics.

Relationship shows the link between classes or individuals or it describes how classes are related to each other.

Rules define the logical inferences that can be taken from an assertion.

Restriction specifies the conditions under which a statement can be true.

Axioms defined the logical form of assertions.

There are two "kinds" of ontology: representation ontology (axiomatization of basic operations used in many applications) and application ontology which are domain specific.

OWL (Web Ontology Language)

W3 has endorsed a language to define ontologies and is called as OWL[9].OWL is mainly based on two semantics: OWL DL and OWL Lite semantics are based on Description Logics, which have attractive and well-understood computational properties, while OWL Full uses a novel semantic model intended to provide compatibility with RDF Schema. OWL ontologies are most commonly serialized using RDF/XML syntax. OWL is considered one of the fundamental technologies underpinning the Semantic Web, and has attracted both academic and commercial interest.

Structure of Semantic Web

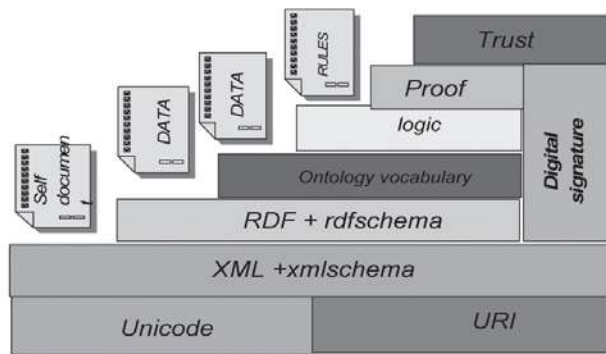


Fig 10: semantic architecture in layer

The upper layers are:

Logic Layer: creates new pieces of knowledge information by applying assertions to existing web data.

Proof Layer: validates information so that it can be accredited. Ontologies will be retrieved from the Semantic Web and processed locally to create and provide proofs for other machine processes in the Semantic Web.

Trust Layer: Digital signatures will have to be applied to all layers from the RDF Layer up to the Proof Layer, validating the results of each component. This is the reason why the Semantic Web also has the Web of Trust moniker.

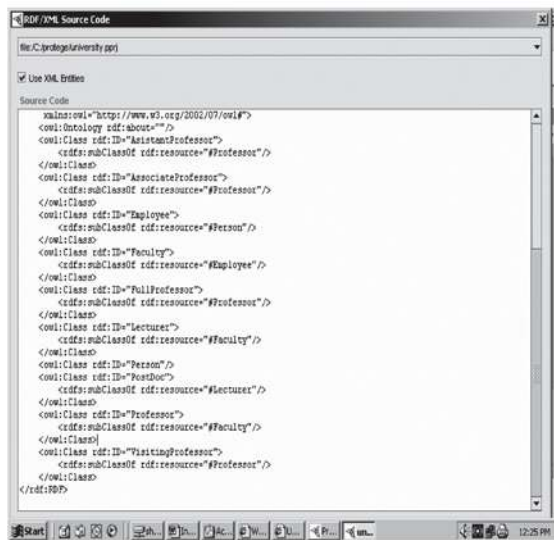


Fig 11: Example of Ontology written in OWL/RDF format

Related Work

All ready study conducted on comparison of ontology and other formalism and which describe as

1. *Ontologies vs. XML Schema:* In general, XML Schema is proposed as a mechanism to define the syntax for XML documents.

Because data can be encoded in different ways using XML, this allow parties to agree on a defined structure and labeling for the exchange of data [12]. While XML Schemas define the structure of the document, they do not define any meaning. Ontologies on the other hand are formalized in a way that limits possible interpretations. In particular, on the basis of possible interpretations, an OWL-aware tool can tell that two classes or individuals are equivalent or different. While XML and XML-Schema have strength in exchanging data, ontologies are used to exchange information.

2) *Ontologies vs. Database Schema:* Database schemas can be distinguished into the conceptual and the physical Schema and logical schema. The physical schema results from the mapping of the conceptual schema to physical storage objects—e.g. tables of a relational database. In particular, a conceptual database schema mostly reflects only a single or a limited viewpoint—namely that of its creators. When requirements change, the viewpoint and the schema respectively need to be modified.

Ontologies in general are required to be shared, that is, reflect multiple viewpoints (domain ontologies in particular).

A domain ontology does not need to be modified to meet changes in requirements but can be flexibly used to model any data requirements related to a particular domain. An important distinction between ontologies and database schemas is their behavior at runtime. After being translated to physical tables, the ontology is also available for retrieval and inferencing of new facts at runtime. The ontology can potentially increase semantic interoperability not only of the resources exchanged among systems but also of the data stored in physical databases. For instance, the formal descriptions of two differently labeled concepts may yield the same interpretations and so the corresponding tables can be inferred as containing semantically the same data despite the different table names. Therefore, when queries are formulated using ontology concepts, they can be processed also by

external systems that may use different labels for the elements of the physical schema.

Information Retrieval in Semantic web

Different techniques are being used to extract data from semantic web. As data is stored in many forms like XML and RDF or in the form of RDBMS etc. in semantic web. Here I am discussing about two languages for IR i.e XQuery and SPARQL which have already developed.

A query language that uses the structure of XML intelligently can express queries across all these kinds of data, whether physically stored in XML or viewed as XML via middleware. This specification describes a query language called XQuery, which is designed to be broadly applicable across many types of XML data sources.

The SPARQL Protocol and RDF Query Language (SPARQL) is a query language and protocol for RDF. XQuery is a language to query a document, SPARQL is a tool to query the world[19].

An XQuery can only query one document. RDF helps you to extract the content of many documents[25], as a set of facts, drop them in one big container, and query that container in one go, essentially allowing one to make relations between facts stated in different documents. This is the fundamental difference between these two technologies, and why they are both needed.

Relational OWL

Currently all databases are based on relational theory, so there is need arises to develop a relational OWL for the semantic web so as to relate current web databases with futuristic semantic database. So relational OWL have been developed[27].

Relational OWL is a Semantic Web-based representation format for relational data and schema components, which is particularly appropriate for exchanging items among remote database systems or to expose relational data on the Semantic Web. OWL, originally created for the Semantic Web enables us to represent not only the relational data itself, but also a part of its interpretation, i.e. knowledge about its format, its origin, its usage, or its original embedment in specific frameworks. So formulation of relational OWL from current RDBMS will be like this statement as given below.

Database has tables.

Tables has columns.

Tables are identified by primary key.

Foreign key refer to primary key of another table.

So graphical representation of this kind of Ontology is relational OWL. Jena toolkit is being used for the development of such OWL.

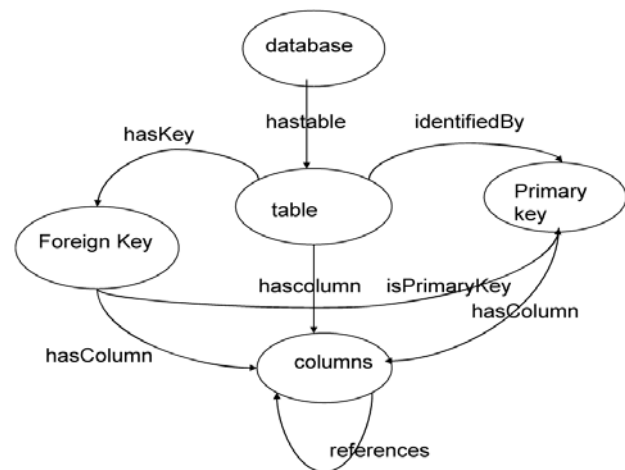


Fig 12: relational OWL of RDBMS

Jena is based on java and uses JDBC for database connectivity. It converts the relational RDF/OWL into RDBMS and also convert data extracted from RDBMS into relational RDF/ OWL representation.

Discussion and Future Work

In this paper I have discussed about a new age of web and that is semantic web. So how transformation has been taking place from HTML to OWL. Here I have discussed various KR of data in semantic web and how current database can be connected with the futuristic semantic web. As semantic web is the future web, which will provide meaningful information without wastage of time. I have discussed already developed query language for semantic search. My future work will be based on development of query language for joining of multiple ontologies and implementation of RDBMS concepts of constraints etc.

References

- Lee. Berners- T, Hendler J., and Lassila, O., 2001. "The semantic web," Scientific American, vol. 284, no. 5, pp. 34-43

- Lopez.X and Stephens.S, March 2006 "Semantic Data Integration for the Enterprise,". [Online]. Available: [http://www.oracle.com/technology/tech/semantic technologies/pdf/semantic grid wp 0603.pdf](http://www.oracle.com/technology/tech/semantic%20technologies/pdf/semantic_grid_wp_0603.pdf)
- Schreiber.G., Akkermans .H., Anjewierden A., Hoog de R., Shadbolt .N., W. V. de Velde, and B. Wielinga, 2000. "Knowledge Engineering and Management: The Common KADS Methodology" MITpress
- Musen M. A. 1998., "Domain ontologies in software engineering: Use of protégé with the EON architecture," Methods of Information in Medicine, vol. 37, pp. 540–550,
- O'Corcho, A. Gómez-Pérez, M. Fernández-Lopez, and M. Lama, 2003, "ODE-SWS: A semantic web service development environment," in Proceedings of SWDB'03, The first International Workshop on SemanticWeb and Database, I. F. Cruz, V. Kashyap, S. Decker, and R. Eckstein, Eds., pp. 203–216.
- Haller A., Cimpian .E., Mocan .A., Oren .E., and Bussler .C., 2005 "WSMX - A semantic service-oriented architecture," in ICWS. IEEE Computer Society, , pp. 321–328.
- Knublauch.H., 2004. "Ontology-Driven Software Development in the Context of the Semantic Web: An Example Scenario with Protege/OWL," 1st International Workshop on the Model-Driven Semantic Web (MDSW2004),
- Brodie.M., Bussler.C., Brujin de J., Fahringer T., Fensel .D., Hepp .M., Lausen .H., . Roman D, Strang .T., Werthner .H., 2005, " Semantically Enabled Service Oriented Architectures: A Manifesto and a Paradigm Shift in Computer Science," DERI TR-2005-12-26, Tech. Rep..
- Gruber. R. T., , 1993. "A translation approach to portable ontology specifications," Knowledge Acquisition, vol. 5, no. 2, pp. 199–220
- Uschold . Gruninger .M. , 2004. "Ontologies and semantics for seamless connectivity," SIGMOD Record, vol. 33, no. 4, pp. 58–64
- Dean. M and Schreiber.G., (2004) "OWL Web Ontology Language Reference. W3C Recommendation," World Wide Web Consortium Latest version: <http://www.w3.org/TR/owl-ref>, vol. 7.
- "XML schema part 1: Structures, W3C recommendation," W3Consortium, May 2001. [Online]. Available: <http://www.w3c.org/TR/xmlschema-1/>
- Shadbolt .N., Lee.Berners-T., and Hall.W, , 2006. "The semantic web revisited," IEEE Intelligent Systems, vol. 21, no. 3, pp. 96–101
- Wolstencroft .K., Lord.P., Taberner .L., Brass. A., and Stevens.R., 2006 "Protein classification using ontology classification," in ISMB (Supplement of Bioinformatics), pp. 530–538.
- Singh.I., Stearns.B., and Johnson M., June 2002 "Designing Enterprise Applications with the J2EE Platform" Second Edition. Addison- Wesley Professional,. [Online]. Available: [http://java.sun.com/blueprints/guidelines/designing enterprise applications 2e/titlepage.html](http://java.sun.com/blueprints/guidelines/designing_enterprise_applications_2e/titlepage.html)
- Riehle.D., Tilman.M., and Johnson.R. , October, 2000, "Dynamic Object Model," Proceedings of PLoP2000. Technical Report# wucs-00-29, Dept. of Computer Science, Washington University Department of Computer Science.
- Volkel.M. and Sure. Y, Nov, 2005. "RDFReactor- from ontologies to programmatic data access," Proceedings of the International Semantic Web Conference- Demo Session, Galway, Ireland,
- Horrocks .I., Patel-Schneider. P., Boley .H., Tabet. S., Grosof .B., and Dean .M., 2004. "SWRL: A Semantic Web Rule Language Combining OWL and RuleML," W3C Member Submission, vol. 21
- Motik .B. and Sattler .U., November, 2006. "A Comparison of Reasoning Techniques for Querying Large Description Logic ABoxes," Proc. of the 13th International Conference on Logic for Programming Artificial Intelligence and Reasoning (LPAR 2006), Phnom Penh, Cambodia.
- Tran .T., Cimiano .P., and Ankolekar .A., , 2006. "Rules for an Ontologybased Approach to Adaptation," in Proceedings of the 1st International Workshop on Semantic Media Adaptation and Personalization, Athen, Greece
- Stefan Decker, Frank van Harmelen , Jeen Broekstra Michael Erdmann, Dieter Fensel, Ian Horrocks, Michel Klein, Sergey Melnik "The Semantic Web - on the respective Roles of XML and RDF"

- Kendall Grant Clark, Lee Feigenbaum "SPARQL Protocol for RDF " W3C Recommendation 15January2008 <http://www.w3.org/TR/2008/REC-rdf-sparql-protocol-20080115/>
 - Cristian Pérez de Laborda and Stefan Conrad "Relational OWL - A Data and Schema Representation Format Based on OWL" Conceptual Modelling 2005, Second Asia-Pacific Conference on Conceptual Modelling (APCCM2005); pp 89-96
 - Cristian Pérez de Laborda and Stefan Conrad,2005 "Querying Relational Databases with RDQL"; Berliner XML Tage; pp 161-172
 - Semantic Web Activities at the Databases and Information Systems"Group Dorf - <http://www.dbs.cs.uni-duesseldorf.de/RDF/>
 - Jena : A Semantic Web Framework for Java – "http://jena.sourceforge.net/"
 - "Relational.OWL - v 0.1 beta" <http://dbs.cs.uni-duesseldorf.de/RDF/docs/ROWLApp/>
-
-

RELATIONSHIPS AMONG SELECTED DEMOGRAPHIC FACTORS AND EMPLOYEE SATISFACTION LEVEL IN INDIAN BPOs

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Abstract: *The BPO industry has always been characterized by ungodly hours, monotonous job, low perceived value, dispirited efficiency resulting to high attrition level. Notwithstanding the ever rising attrition rate, it has become critical for the companies to satisfy their employees in order to retain them. This paper aims at determining what and how demographic factors are related to the level of employee satisfaction of the BPO employees. The study follows a descriptive correlational design. For this a questionnaire was sent to 200 BPO employees to gather data, of which 143 were found usable. Focused group interviews were also taken to get the true picture and to support the result from the quantitative analysis done. Based on the data so collected, it was found that significant relationship relationships existed between the employee satisfaction constructs and the demographic factors of gender and age. Other factors like tenure, marital status and income level also had certain relationship with employee satisfaction. Significant relationships have been determined at the $p < 0.5$ level.*

Introduction

A consistently high level of employee motivation and commitment are the key factors in developing a positive working environment for any business. When a business like that of a BPO, is characterized by unusual work hours, never-ending night shifts; high work targets; repetitive nature of work; pressure to work on metrics; non-negotiable metrics; irate customers and insufficient holidays, it becomes all the more important and crucial to have motivated and satisfied employees who can add to the growing revenues of the company. Employees may be satisfied with some aspects of jobs, while being dissatisfied with others. According to Gupta et al. (2008) mounting dissatisfaction among the employees leads to straining out of motivation in

them, which in turn results in dispirited efficiency, hence their leaving the job. According to Poling (1990), the best predictor of job satisfaction is when the employees' personal values match those of the organization.

When considering job satisfaction, demographic variables should be considered to thoroughly comprehend the possible factors that lead to job satisfaction and dissatisfaction. Herzberg, Mausner, Peterson, and Capwell (1957) recognized several characteristics of satisfied/dissatisfied workers. They indicated that morale tend to be high when people are new in their careers. It then decreases during the next few years and remains at a relatively low level until workers are in their late twenties or early thirties. At this time, job satisfaction levels begin to escalate;

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and continues to rise through the remaining years of an employee's career. The same trend is found in regard to a worker's length of service. Workers begin with high morale, which drops during the first year and remains low for a number of years. Then as length of service increases, job satisfaction levels tend to rise. Especially when we talk of a firm like that of a BPO, it becomes all the more important to review the environment in which it grows. According to Budhwar et al, the Indian BPO industry's focus was on creating a well-built and steadfast platform, using technology as a selling point, thus cashing on the success of the Indian software industry of the late 1990s. In such a case, where BPO jobs were being sold like hot cakes, a special scrutiny of the demographic profile of the employees became the need of the hour.

Concerning gender, there are no simple conclusions about the differences between males and females and their job satisfaction levels. Some studies reviewed by Herzberg et al. (1957) indicate that males are more satisfied with their jobs, while others indicate that females are more satisfied. There wasn't much clarity in the relationships between satisfaction level and education also. Furthermore, these studies showed that workers with more education have a higher job satisfaction level, while other studies indicate that workers with more education have a lower job satisfaction level. Other studies showed no relationship between the two. Herzberg et al. (1957) suggested that a clear conclusion cannot be drawn concerning job satisfaction and its relationship to marital status, number of dependents, number of previous occupations, or ethnicity.

In a research study done on Wal-Mart employees about employee satisfaction, it was seen that there were three major predictors of job satisfaction: thinking all employees are treated equally by their boss, sex (females were more satisfied than males), and employees seeing themselves having a future in their present job. Factors hypothesized to be significant predictors of job satisfaction, such as education level and age, did not turn out to be significant at all. A similar study was done on agricultural education teachers in Ohio, Cano and Miller (1992b) found that the teacher's age, years in current position, total years teaching, and degree status were not significantly related to overall job satisfaction. In general, both males and females were equally satisfied with their jobs. These findings are quite similar to a later study of the same nature by

Castillo, Conklin, and Cano (1999). The findings from these two studies (Cano & Miller, 1992b; Castillo et al., 1999) implied that older or younger teachers were not necessarily more or less satisfied with their jobs. In addition to this, the tenure of the teachers had a positive impact on job satisfaction. The longer a teacher remained in the profession the less was the impact on the overall job satisfaction level. A study done by Scott et al, (2005) on Extension Agents showed low relationships between gender and job satisfaction constructs which included growth satisfaction, job security satisfaction and satisfaction with pay. It further stated that other demographic factors like age, marital status and education were not related to any of the job satisfaction constructs for Extension agents.

A study was done on academic professionals in tertiary institutions in Zimbabwe to determine the factors affecting job satisfaction. Among the various demographic factors, gender, number of dependents and tenure were considered. According to Chimanikire et al, (2007) the probability of job satisfaction is lower for females than male employees. The value for the job status of the respondents in this study implied that employees with permanent posts were more satisfied with their jobs than those with temporary posts. It even stated that job satisfaction increases in the presence of a satisfactory income. Less experienced lecturers were more likely to be satisfied than those with greater work experience. In the same study it was revealed that the salary variable is statistically significant for job satisfaction. Lecturers with higher salary tend to be more satisfied with their jobs than those who draw lower salaries. This was consistent with Sur et al (2004) study of tourism employees in Turkey who pointed out that income was an essential factor affecting job satisfaction. It also stated that probability of job satisfaction is lower for females than male employees. Previous researchers such as Varca et al. (1983) found out that at higher occupational levels, men showed greater satisfaction because of greater opportunities for development.

In a study done by Hallock et al. (2004), to determine the possible demographic and attitudinal correlates of employee satisfaction with an ESOP, it was revealed that there was not a considerably strong relationship between employee demographics like age, educational level, job salary, job satisfaction, job classification and supervisory responsibility and employees' satisfaction with the ESOP. Certain

employee demographics are positively associated with employee satisfaction with the ESOP. Age and job tenure are significantly correlated with ESOP satisfaction whereas education and ESOP satisfaction has a significant negative correlation.

However, the literature is quite divergent and diverse. Some studies indicate that there is a bleak relationship between gender and employee satisfaction whereas some studies show string conclusions about females having higher satisfaction than males or vice versa. Besides gender, there is also quite diversity in the conclusions drawn by various researchers on the parameters of demographic factors and their correlation with employee satisfaction. Factors like age, marital status, qualification and salary have unlike correlations.

Purpose and Objectives

The purpose of this study was to determine what demographic factors were related to the level of job satisfaction of BPO employees. The specific demographic factors addressed in this study were:

- Gender
- Age
- Marital status
- Educational Qualification
- Tenure
- Income Level

Methods and Procedures

Population

The population for this descriptive correlational study was all BPO employees employed in the BPO sector in Noida. ($N = 143$). This included agents at the job floor.

Instrumentation

BPO agents' level of job satisfaction was obtained utilizing a questionnaire specifically designed for extracting information about demographics of the respondents and their level of job satisfaction. The age was boxed in four brackets i.e. 18 to 24, 24 to 28, 28 to 32 and 32 and above. Statements were rated on a 5-point rating scale ranging from strongly disagree to strongly agree. These were used to measure the various aspects of job satisfaction. These included six major factors which affect the level of job satisfaction for an individual. The factors include

nature of job, company culture, security and growth, relationship with colleagues, Salary and other related HR Policies, and Supervision. We limited our study to only three of the factors and named them as satisfaction constructs. They were job security satisfaction, growth satisfaction, and pay satisfaction.

Data Collection

Data was collected from 200 BPO employees in Noida region. Of the 200 invited to participate in the study, 187 responded to the survey for an overall response rate of 93.5%. Due to incomplete data or participants choosing not to participate, 143 surveys were usable, making the final usable response rate 71.5%.

Data Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS® Version 16.0 for Windows). Descriptive statistics, including means and standard deviations, were used to summarize the data. Frequencies and percentages were reported for the demographic data. Means and standard deviations were computed for the job satisfaction constructs. Pointbiserial correlation coefficients (r_{pb}) were calculated to determine the relationships between the job satisfaction constructs and gender, race, marital status and his tenure. Significant relationships were determined with an a priori alpha level of .05.

Results

Population Description

Descriptive Statistics was used to analyze the demographic pattern of the sample size. As reported in Table 1, the age of the respondents varied from 19 years to 34 years and the mean came out to be 23.75, with standard deviation as 3.905. Since most of the respondents hailed from middle level, their salaries did not have much of a range. The mean salary was 2.17 lakhs per annum. Another important criteria selected in the demographic profile was the tenure of the employees; and the result showed 13.69 months as the average period of stay in this organization.

Age

Low significant relationships were found between age and satisfaction with job security ($r_{pb} = .023$), and satisfaction with pay ($r_{pb} = .060$). There was a

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Age	143	19	34	23.75	3.905	15.246
Current Salary	143	1.35	3.50	2.1717	.50234	.252
Months since Hire	143	8	25	13.69	4.591	21.074

considerable relation between growth satisfaction and age. After examining the scatter plots for the relationships between age and these three constructs, it was found that employees within the age bracket of 18 and 21 rated growth satisfaction, satisfaction with job security, and satisfaction with pay higher than the ones whose age were more than 25. The mean for the first age bracket (18-22) was 444.84 out of 600; for the second age bracket (22-26) it was 439.76, for the third one (26-30) it was 426.55 and for the last bracket (30-34) it was 424.52.

Gender

Low significant relationships were found between gender and growth satisfaction ($rpb = .17$), satisfaction with job security ($rpb = .00864$), and satisfaction with pay ($rpb = .183$). After examining the scatter plots for the relationships between gender and these three job satisfaction constructs, it was found that females rated growth satisfaction, satisfaction with job security, and satisfaction with pay higher than males.

Marital Status

No significant relationships were found between marital status and the job satisfaction constructs. Neither of the two statuses i.e. married and single had any considerable relationship with job security

($rpb = -0.104$), growth ($rpb = -0.313$) and pay satisfaction ($rpb = .282$). However, the relationships between marital status and total job satisfaction showed a higher mean in case of single employees.

Education

Again, no significant relationships were found between the demographic factor and the job satisfaction constructs. The only low relationship found was between education and satisfaction with pay ($rs = -.068$). All other relationships were negligible.

Tenure

Relationships were found between tenure and the job satisfaction constructs. All relationships were negligible, except for the significant relationship with satisfaction with growth ($rpb = .10$).

Income Level

The relationships which were found between the income level and three job satisfaction constructs were not much of significance. The relationship between income level and job security satisfaction was considerable ($rpb = .22$), and satisfaction derived from pay ($rpb = .28$) but was negligible in case of growth satisfaction ($rpb = .012$).

Table 2: Average Job Satisfaction (on 600)

Age		Gender		Marital Status		Income		Qualification		Tenure	
18-22	444.84	Male	428.47	Single	440.23	1lac-2lac	440.345	12+	449.7	0-1	437.87
22-26	439.76	Female	449.92	Married	427.46	2lac-3lac	435.18	Graduate	436.95	1 to 3	445.51
26-31	426.55					3lac-4lac	434.17	Post Graduate	417.65	3 to 5	Not Available
31-35	424.53					More than 4 lac	Not Available			more than 5	Not Available

As evident from Table 2, clear findings can be concluded about average job satisfaction among the BPO employees in various categories under demographic features. Highest JS was seen in the age bracket of 18 – 22. Females showed more JS than males in various constructs. Single employees tend to be more satisfied with their jobs as compared to married ones. This finding was further supported with some firsthand information as received from the respondents that married employees come with more expectations in salaries and challenges in job profile. Therefore, the single employees showed more satisfaction with their jobs than the married ones. Another interesting fact that was revealed from this study that the employees within the salary bracket of 2-3 lac showed maximum job satisfaction. As the salary increased, their expectations from the job profile, the designation, crave for recognition also expands, which ultimately leads to decrease in job satisfaction. BPO was always marketed as a low profile job, wherein people with average qualification, graduates, undergraduates and even post graduates are associated with it. Maximum satisfaction was shown by employees who are under graduates. The reason is simple, with the increase in qualification, demands for better salaries and more challenging jobs also increase, thus job satisfaction is crippled because of many extrinsic and intrinsic factors. And finally, employees with 1-3years of tenure in the present organization showed maximum job satisfaction. Well talking of job satisfaction also reminds us of the various factors that mount to job dissatisfaction. Minimizing these factors, may also assist in increasing the score of job satisfaction. Other set of reasons identified for job dissatisfaction in BPOs, is the lack of recognition, incongruity with the culture or direction of the company, lack of stimulation about the growth prospects, poor relationships with co-workers and also unfair treatment by their boss (Mishra, 2007).

Conclusions

The results of this study can only be inferred to this specific BPO firm in Noida. Low relationships were observed between gender and the job satisfaction constructs of growth satisfaction, satisfaction with job security, and satisfaction with pay. Females rated all three of these constructs higher than males, indicating a higher level of satisfaction with personal learning and growth opportunities at work, job security, and compensation. Previous

studies have shown similar findings (Bowen et al., 1994; Riggs & Beus, 1993). However, even though the literature indicates a relationship between gender and job satisfaction, some studies are inconclusive regarding whether males or females are more satisfied (Herzberg et al., 1957). In contrast, other studies have shown that gender is not related to job satisfaction (Cano & Miller, 1992a; Cano & Miller, 1992b; Castillo & Cano, 1999; Castillo et al., 1999; Nestor & Leary, 2000).

Age was not related to any of the job satisfaction constructs for this set of BPO employees. This conclusion is consistent with other studies (Andrews, 1990; Cano & Miller, 1992a; Cano & Miller, 1992b; Castillo & Cano, 1999; Castillo et al., 1999). However, several studies have shown a relationship between age and job satisfaction, indicating that older workers are more satisfied with their jobs than younger workers.

Marital status was not strongly related to any of the job satisfaction constructs for them. However, single employees showed more job satisfaction than the ones who are married. Several studies have shown a relationship between marital status and job satisfaction, indicating that married agents are more satisfied with their jobs than singles.

Education was not significantly related to any of the job satisfaction constructs for BPO agents. Other researchers have found this same conclusion (Cano & Miller, 1992a; Cano & Miller, 1992b; Castillo & Cano, 1999; Castillo et al., 1999; Herzberg et al., 1957). However, the literature does indicate a relationship between education and job satisfaction, even though studies are inconclusive regarding whether or not workers increase or decrease their job satisfaction when they increase their educational level (Herzberg et al., 1957). Even so, some studies do indicate that increasing one's educational level increases his or her level of job satisfaction (Andrews, 1990; Berns, 1989).

This study is only specific to one big BPO firm in Noida. Though the results can be induced generically for the entire whole industry, yet special care need to be taken of certain environmental factors that affect a business. The results can be utilized to design the work, training, compensation, career graph and job profile of the employees based on their demographic factors. This study need to be replicated time and again so as to infer the latest trends as such behavioral practices are majorly influenced by attitudes, thoughts and societal trends.

References

- Budhwar, P, Luthar, H. and Bhatnagar, J (2006) *"The Dynamics of HRM Systems in Indian BPO Firms."* Journal of Labor Research Vol. XXVII, No. 3
- Cano, J., & Miller, G. (1992a). *An analysis of job satisfaction and job satisfier factors among six taxonomies of agricultural education teachers* [Electronic version]. Journal of Agricultural Education, 33(4), 9-16
- Cano, J., & Miller, G. (1992b). *"A gender analysis of job satisfaction, job satisfier factors, and job dissatisfier factors of agricultural education teachers"* [Electronic version]. Journal of Agricultural Education, 33(3), 40-46.
- Castillo, J. X., & Cano, J. (1999). *"A comparative analysis of Ohio agriculture teachers' level of job satisfaction"* [Electronic version]. Journal of Agricultural Education, 40(4), 67-76.
- Herzberg, F., Mausner, B., Peterson, R. O., & Capwell, D. F. (1957). *Job attitudes: Review of research and opinion*. Pittsburgh, PA: Psychological Service of Pittsburgh.
- Mehta, A. et al. (2006) *"Challenges and opportunities of Business Process Outsourcing in India."* Journal of Labor Research Vol. XXVII, 3.
- Misra, P. (2007) *"Increasing Rate of Attrition in BPO."* Management and Labor Studies Vol. 32, 1.
- Poling, R. L. (1990). *Factors associated with job satisfaction of faculty members at a land-grant university* (Doctoral dissertation, The Ohio State University, 1990). *Summary of Research in Extension*, 5, 143.
- Scott M, Swortzel K., Taylor W, (2005) *The Relationships between selected demographic factors and the level of job satisfaction of Extension Agents* Journal of Southern Agricultural Education research Volume 55, Number 1
- Sen Gupta, S and Gupta, A (2008) *"Vicious Circle of Attrition in the BPO Industry"* The Icfai Journal of Organizational Behavior Vol. VII No. 2.



WOMEN INVESTORS' PERCEPTION TOWARDS ONLINE TRADING IN TAMILNADU WITH SPECIAL REFERENCE TO COIMBATORE DISTRICT

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Abstract: A good financial system provides the intermediation between savers and investors and promotes faster economic development. An investment share requires a careful evaluation of factors related to the economy, industry and the company. This analysis is called fundamental analysis. An investor is surrounded by many factors in her consideration of making investments. She is interested in liquidity of her assets. She is also interested by the fact that there is an increasing number of women working in the organization. 1. To identify the demographic profile of women investors. 2. To identify the factors influencing the women investors while making investment. 3, To suggest suitable measure to protect the interest of women investors. In this study the researcher used **Descriptive research**, which is concerned with describing the characteristics of a particular individual or of a group. The primary data's have been collected from women investors. The data's were collected using interview schedule method. The interview schedule for women investors is prepared in such a way that they are able to express their opinions freely and frankly. In this research researcher has selected Coimbatore District. There are many sample designs from which the researcher chooses in this study **Convenience Sampling design**. In order to find out association between factors associated with financial decision-making of women investors, two-way table according to their factor group was framed. Chi-square test is applied to them to find out the association between the selected variables and financial decision-making perception of women investors. The data collected is based on the questionnaire the results of which will vary according to the opinions of individuals. The study is based upon prevailing investor's behaviour. The women investor may change according to time, fashion, technology, development etc. It could be seen from this that the calculated value is less than the table value at 5% level thus the null hypothesis is accepted. Hence it is clear that there is no association between savings per month and time taken for investment decision. Basic knowledge must be given to the investors about all types of investment; so that the investor can make a better choice that best suits their investment plan.

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Introduction

The emerging economic environment of competitive markets signifying customer's sovereignty has profound implications for the savings and their investment in India. Investment means a person's commitment of funds towards his future life. It is an economic activity. It refers to acquisition of assets which generates income. It means the diversification of money towards investment and thereby increasing productivity of a nation. Investment means parking of one's idle funds in income generating assets.

The term investment refers to funds invested in various securities, consisting of Government and Semi-Government securities, Loans, Debentures of Local authorities, such as Port Trusts, Municipal Corporations and debentures and shares and debentures of companies. Investments represent legal claims of various securities, such as Bonds, shares, Debentures etc., and are assets of special nature. Investments are freely bought and sold in the stock exchange through banks and brokers, who charge a small amount of commission for their services. An investment means the use of money to earn more money by way of interest, dividend or capital appreciation. Well planned investment alone can ensure regular income, capital appreciation and can be used to meet the financial requirements of investors. The dynamics of economic growth provide various opportunities for investors to invest their money in different types of securities.

Now, the present women, who is equally employed, through their education have knowledge about various aspects of investment and as a result they invest in various investment avenues such as shares, debentures, mutual funds and bank deposits.

Indian savings market has been expanding over the period and there is a steady increase of household savings. Moreover, general profile of women investors is changing in tune with time. But they lag in various spheres of investment such as awareness and preference of investment. So, attempt has been made by the researcher to identify the factors influencing women investors' perception to evaluate the level of awareness among women investors and to analyse the preference of women investor towards various investment outlets

Since 1951, the Indian capital market has been broadening slowly. The volume of savings and

investments, have started showing steady improvement. Many types of encouragement and tax relief exist in the country to promote savings. Several steps have been taken to protect the interest of investors. An important indicator in the growth of capital market is the growth of joint stock companies and corporate enterprises.

One of the notable features of development of Indian capital market in the 1990's has been the growth in the number of investors. Estimates about the investors' population vary from 22 million to 40 million. An important indicator in the growth of capital market is the growth of joint stock companies and corporate enterprises. As on 31-3-98 there were more than 2,00,000 companies with a paid up capital of nearly Rs.1,37,959 crores and every upward trend in the market brought new investors. Similarly down trends have driven away the investors. The current scenario in the new issue market is an example of increasing apathy of investors. It is stated that the knowledge of investors about stock market suffered due to the indiscreet decision made by them.

Statement of the Problem

An investor is surrounded by many factors in her consideration of making investments. She is interested in liquidity of her assets. She is also interested by the fact that there is an increasing number of women ready to invest in online share trading. Increase in working population proper planning for life span and longevity have ensured the need for balanced investments. The investor must be careful in determining their investment channels. This study is conducted to discover the factors associated with financial decision making of women investors. How much amount is invested? And what channels are selected to invest the funds? What factors are involved? And how much time is taken for decision making?

Review of Related Literature

Shanmugam. R and S.P. Muthuswamy (1998) conducted a study titled "Decision Process and individual investment". In their study they stated that the time spent on investment analyses is inadequate. Moreover, the investors in shares are mainly from salaried group, young and mostly first generation investors. Time is an important factors associated with the financial decision making of investors. They also stated that the share selection is

not sophisticated.

A study of middle class investors preferences for financial instrument in greater Bombay by P.K. Bandgar (2000) stated that most of the female investors also prefer to invest in risky securities for future investments as compared to male investors. More over the female investors were highly educated as compared to male investors. The study revealed the middle class investors in Bombay have higher monthly income than male investors.

Re-Positioning A Leading Stock Broker **Kint Dorwin (1988)** in his study, the strategic manner of the largest American discount security broker, describes how a comparatively young firm took steps to reposition itself in the market so as not to be caught unaware by the problems of encroaching maturity. The lessons of the exercise are; listen to the customer, examine the competition and stake out the ground you intend to hold in the future.

Merging Service Quality And Service Satisfaction – An Empirical Test Of An Integrative Model Ko de Ruyter, Jose Bloemer and Pascal Peeters (1997) in their study, Recent research linking service quality and service satisfaction has raised issues which require conceptual and empirical elaboration. Among these are conceptual overlap as well as distinctions between these two customer judgments, the role of expectations and perceptions and questions whether service satisfaction is super ordinate concept quality or vice versa. In this article, an integrative model is presented in which both concepts and their antecedents are delineated on the basis of conceptual advances made in the services marketing literature recently.

Share trading On The Web: A Comprehensive Review Of Design Specification Across The Globe Robert Hudson, Kevin Keasey and Kevin Lttler (2000) in their study, they had given rapid increase, over the past couple of years, of share dealing services available on the web. This paper describes the findings of a research study into the design specifications of web- based share trading sites. The purpose of the research is to highlight the key features of net trading sites across the globe and to identify best of breed examples of the features. The research is based on the latest available literature and a review of the majority of sites across the globe. With this background in mind, the paper offers the first comprehensive review of the type of features that are available on net trading sites across the globe.

Objectives

1. To identify Demographic profile of women investors
2. To identify the factors influencing the women investors while making investment.
3. To give the suggestions to women investors to improve the quantity of the investment.

Research Design

Research design constitutes the blue print of collection, measures and analysis of data. In specific terms, a research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research prose with economy in procedure. Here in this study the researcher used **Descriptive research**, which is concerned with describing the characteristics of a particular individual or of a group.

Sources of Data: The study has used only primary data. The primary data have been collected from women investors. The data were collected using interview schedule method. The interview schedule for women investors is prepared in such a way that they are able to express their opinions freely and frankly.

Secondary Data: Secondary data here has been collected from newspapers, magazines, websites and general discussion with local municipal government officials.

Sampling Design: Type of universe: The first step in developing any sample design is to clearly define the set of objects, technically called the Universe, to be studied. The universe can be finite or infinite. In finite universe the number of items is certain, but in case of an infinite universe the number of items is infinite i.e., we cannot have any idea about the total number of women investors

Sampling Unit: A decision has to be taken concerning a sampling unit before selecting sample. Sampling unit may be geographical one such as state, district, village, etc., In this research researcher has selected coimbatore District.

Source List: It is also known as 'sampling frame' from which sample is to be drawn. It contains the names of all items of a universe. In this study source list not available, researcher has to prepare it. Each Taluk has selected 30 women investors. Five taluk

viz., Pollachi, Udumalai, Coimbatore North, Coimbatore south and Mettupalayam

Size of Sample: This refers to the number of items to be selected from the universe to constitute a sample the size of sample should neither be excessively large, nor too small. It should be optimum. An optimum sample is one which fulfills the requirements of efficiency, representative ness, reliability and flexibility. As such, budgetary constraint must invariably be taken into consideration when we decide the sample size as 150.

Parameters of interest: In determining the sample design, one must consider the question of the specific population parameters which are of interest. In this study it is **Women investors**.

Budgetary constraint: Cost considerations, from practical point of view, have a major impact upon decision relation to not only the size of the sample but also to the type of sample. This fact can even lead to use of this study, **non- Probability sample**.

Sampling procedure: Finally, the researcher must decide the type of sample he will use i.e. he must decide about the technique to be used in selecting the items for the sample. There are many sample designs from which a researcher chooses in this study **Convenience Sampling design**.

Statistical Tools and Techniques

The collected data have been analysed with the help of tools like simple percentage method and Chi-square test.

Simple Percentage Method

Simple percentage analysis refers to a ratio. With the help of absolute figures it will be difficult to interpret any meaning from the collected data, but when percentages are found out then it becomes easy to find the relative difference between two or more attributes.

$$\text{Percentage} = \frac{\text{No. of Respondents}}{\text{Total Number of Respondents}} \times 100$$

Chi-Square

Chi-Square Test is an important test among the several tests of significance. Chi-Square is symbolically written as χ^2 (pronounced as Ki Square).

It is a statistical measure used in the context of sampling analysis for comparing a variance to a theoretical variance.

Chi square test enables us to explain whether or not two attributes are associated. Chi- square is calculated as follows,

$$\chi^2 = \sum \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

O_{ij} = observed frequency of the cell in the i^{th} row and j^{th} column.

E_{ij} = expected frequency of the cell in the i^{th} row and j^{th} column.

As a non parametric test it can be used to determine a categorical data. It is used to make a comparison between theoretical population and actual data.

Degree of freedom plays an important part in using the chi-square distribution and tests are based on it. The degree of freedom is worked out as follows

$$\text{d.f} = (c-1) (r-1)$$

where 'c' means number of columns and 'r' means number of rows.

Variable

Independent Variable: Time taken for investment making decisions

Dependent Variable: Age, Marital status, Educational qualification, Occupation, Monthly Income, Status in the family, family members, Number of dependents, Family income, Savings, etc.

Hypotheses

In tune with the objectives of the study, the following hypothesis has been framed.

1. There exists no association between **age** and time taken for investment decision.
2. **Marital status** does not influence the time consumption for investment decision.
3. There is no association between **Educational qualification** and time taken by investor for investment decision

4. **Occupation** does not influence time consumption for investment decision.
5. There is no association between **monthly income** and time taken for investment decision
6. **Status in the family** does not influence the time taken by investor for investment decision.
7. There is no association between **family members** and time taken for investment decision.
8. **Number of dependents** does not influence time consumption for investment decision
9. **Family income** per month does not influence time consumption for investment decision
10. **Savings** per month does not influence time consumption for investment decision.

Limitations of the Study

The analysis of the present study has been carried out based on the information collected from the investors who are residing at Coimbatore district alone. The data collected is based on the questionnaire, the results will vary according to the opinions of individuals. The study is based upon prevailing investor's behaviour. The women investor may change according to time, fashion, technology, development etc.

Women Investors Profile

The profile of women respondents have been grouped into investors' profile and investment profile. For the purpose of this study, the age of women respondents has been classified into three categories namely those whose age is below 30, between 31 and 40 years and those who are above 41 years treated as young, middle and old category respectively. With regard to formal education, the sample women investors have been classified into three categories namely school, graduation, post graduation and professional category. The sample women investors were involved in various occupation like Agriculture, Business, professional, Employed, Unemployed. On the basis of their marital status, sample women investors have also been classified and studied in two groups such as married and un married. In respect of monthly income, the women respondents have been classified into three level

namely low (below Rs. 10,000), middle (between Rs. 10001 and Rs.20,000) and high (above Rs.20,001).

Investment Profile

Investment related variables include age, income, educational qualification, number of family members, number of dependents, occupation of the respondents and savings of the respondents, they are dependent variables in this study. Time taken for making investment decision (within hour, within week, within few days and more than a week). In this study mentioned investment means online trading. General profile of women investors is changing in tune with time. But they lag in various spheres of investment such as awareness and preference of investment. So, an attempt has been made by the researchers to identify the factors influencing women investors' behaviour to evaluate the time taken for the investment decision.

Table 1: Age group of the respondents

Age	No. of the respondents	Percentage of the respondents
Up to 30	58	39
31-40	54	36
Above 41	38	25
Total	150	100

Source: Primary Data.

From the Above table no. 1 age of the respondents reveals that the majority 39 percent of the respondents belong to up to 30 years age group, followed by 36 percent of the respondents belong to 31 -40 years of age, 25 percent of the respondents are above 41.

H₀: Null Hypothesis

There exists no association between age and time taken for investment decision.

H₁: Alternative hypothesis

There exists association between age and time taken for investment decision.

Table 1.1: Age of the respondents and time taken for making investment decision

Age	Within Hour	Within Few Days	Within Week	More Than A Week	Total
Up to 30	9	12	29	8	58
31-40	9	13	27	5	54
Above 41	16	9	11	2	38
Total	34	34	67	15	150

Source: Primary Data

This table shows the association between age and the time taken by investor to make investment decision. There are 58 investors whose age is up to 30. Out of 58 respondents, 9 of them take investment decision within an hour, 29 of them are taking investment decision within a week. 12 of them taking decision within few days and 8 of them take more than a week to make investment decision. Likewise, out of 54 respondents, 27 of the investors take decision within a week. 13 of them take decision within few days 9 of them take decision within hour and 5 of them make more than a week to take investment decision.

Similarly, out of 38 respondents 16 of them take investment decision within an hour, 9 of them take decision within a few days, 2 of them take more than a week to take investment decision and 11 of them make a decision within a week.

Table 1.1.a

Factor	Chi-square		DF	Significance
Age	Calculated	Table	6	5%
	14.4	12.6		

Source: Primary data

From the table it is clear that as the calculated χ^2 values more than the table value at 5% level, the null hypothesis is rejected. Hence it could be inferred that there exists an association between age and time taken for investment decision.

Table 2: Marital status of the respondent

Marital status	No. of the respondents	Percentage of the respondents
Married	105	70
Unmarried	45	30
	150	100

Source: Primary Data.

From the Above table no.2, marital status of the respondents reveals that the majority 70 percent of the respondents belong to Married, followed by 30 percent of the respondents belong to Unmarried.

H₀: Null Hypothesis

Marital status does not influence the time consumption for investment decision

H₁: Alternative hypothesis

Marital status influence the time consumption for investment decision

Table 2.1: Marital Status vs Time Taken

Marital status	Within hour	Within few days	Within week	More than a week	Total
Married	30	23	44	8	105
unmarried	4	11	23	7	45
Total	34	34	67	15	150

Source: Primary data

This table exhibits the association between marital status of investors and the time taken for investment decision. From the unmarried group, there are 45 investors, 4 of them take decision within an hour. 11 of them take decision within a few days, 23 of them take decision within a week and 7 investors who take more than a week to make investment decisions fall under third group. In the married sector there are 105 investors, out of them 44 take decision within a week, 30 of them are taking decision within an hour, 23 of them are taking decision within a few days and 8 of them are taking more than a week to take investment decisions.

Table 2.1.a

Factor	Chi-square		DF	Significance
	Calculated	Table		
Marital Status	8.06	7.81	6	5%

Source: Primary data

It is clear from the table that the calculated χ^2 value is more than the table value at 5 % level, the null hypotheses is thus rejected. Hence it could be inferred that there exhibits an association between marital status and the time taken for investment decision.

Table 3: Educational Qualification of the respondents

Educational qualification	No. of the respondents	Percentage of the respondents
Up to HSC	17	11
UG	48	32
PG	74	49
Professional	11	8
Total	150	100

Source: Primary Data.

The above table shows that 49 percent of the respondents are belonging to PG Qualification followed by 32 percent of the respondents belonging to UG qualification, 11 percent of the respondents belonging to Up to HSC and 8 percent of the respondents belonging to professional qualification.

H₀: Null Hypothesis

There is no association between Educational qualification and time taken by investor for investment decision

H₁: Alternative hypothesis

There is association between Educational qualification and time taken by investor for investment decision

Table 3.1: Educational qualification and time taken for investment decision

Educational qualification	Within hour	Within few days	Within week	More than a week	Total
Up to HSC	10	3	4	0	17
UG	12	9	24	3	48
PG	10	21	34	9	74
Professional	2	1	5	3	11
Total	34	34	67	15	150

This table exhibits the association between educational qualification and time taken by the investor for investment decision. Out of 74 investors who are post graduates, 10 of them take investment decision within an hour, 21 of them take investment decision within a few days and 34 of them decide their investment channels within a week and 9 of the investors takes more than a week to decide their channels. Similarly, out of 11 investors, 2 of them decide their investment channels within an hour. Only one investor takes decision within a few days. 5 of them make decision within a week and only 3 of them take more than a week to take investment decision.

Table 3.1.a

Factor	Chi-square		DF	Significance
	Calculated	Table		
Educational status	23.2	23.6	6	5%

Source: Primary data

It is shown from the table as calculated χ^2 value is less than the table value at 5% level, the null hypothesis is accepted. Hence it could be inferred that there is a association between educational qualification and time taken by the investment decision.

Table 4:

Occupation	No. of the respondents	Percentage of the respondents
Agriculture	5	3
Business	22	15
Professional	11	7
Employed	104	70
Unemployed	8	5
Total	150	100

Source: Primary Data.

The above table shows that 70 percent of the respondents are employed followed by 15 percent of the respondents who are in business, 7 percent of the respondents who are professionals, 5 percent of the respondents who are unemployed and 3 percent of the respondents who are in Agriculture.

H₀: Null Hypothesis

Occupation does not influence time consumption for investment decision.

H₁: Alternative hypothesis

Occupation influence time consumption for investment decision.

Table 4.1: Occupational status for time taken making investment decision

Occupation	Within hour	With in few days	With in week	More than a week	total
Agriculture	4	0	1	0	5
Business	6	7	9	0	22
Professional	3	1	5	2	11
Employed	21	25	46	12	104
unemployed	2	1	5	0	8
Total	36	34	66	14	150

To study the association between occupation and the time taken for investment decision, the total investors are broadly classified in to five groups.

In the business group, there are 22 investors, 6 of the investor takes investment decision within hour, 7 of the investors takes decision within few days 9 of the investors decide their investment channels within a week. None of them takes more than a week to decide their channels.

In the employed group, there are 104 investors, 21 of them takes investment decision within hour 25 of them takes investment decision within few days. 46 of them decide their investment channels within a week. 12 of the investors takes more than a week to decide their investment channels.

Table 4.1.a

Factor	Chi-square		DF	Significance
Occupation	Calculated	Table	6	5%
	16.3	28.3		

Source: Primary data

From the above table it is clear that as the calculated χ^2 value is less than table value at 5% level the null hypotheses is accepted. Hence it could be clear that there is no association between occupation and time taken for investment decision.

Table 5:

Monthly Income	No. of the respondents	Percentage of the respondents
Upto Rs.10000	110	73
10,001 to 20,000	31	21
Above 20001	9	6
Total	150	100

Source: Primary Data.

From the above table shows that the 73 percent of the respondents are monthly Income up to 10,000, 21 percent of the respondents are belong to 10,001 to 20,000 and 6 percent of the respondents are above 20,001.

H₀: Null Hypothesis

There is no association between monthly income and time taken for investment decision

H₁: Alternative hypothesis

There is association between monthly income and time taken for investment decision

Table 5.1: Monthly income and time taken for investment decision

Monthly income	Within hour	Within few days	Within week	More than a week	Total
Up to Rs.10,000	24	22	52	12	110
Rs.10,000-Rs.20,000	10	10	10	1	31
Above Rs.20,001	0	2	5	2	9
	34	34	67	15	150

This table shows the association between investors monthly income and time consumption for making investment decision.. Out of 110 investors, 24 investors take investment decision within an hour, 22 of them decide their channels within a few days, 52 of them take decision within a week. 12 of them

take more than a week to decide their investment channels

Second group consists of 31 investors, out of 31, 10 of them decided their investment channels within a week. 10 of them take decision within a few days. 10 of them take decision within an hour. Only one investor takes more than a week to decide her investment channels.

Table 5.1.a

Factor	Chi-square		DF	Significance
	Calculated	Table		
Occupation	10.07	18.5	6	5%

Source: Primary data

It could be clear from this table that the calculated χ^2 value is less than the table value at 5% level, the null hypothesis is accepted. Hence it is clear that there is no association between monthly income and time consumption for decision making.

Table 6:

Status in the family	No. of the respondents	Percentage of the respondents
Head of the family	14	9
Member of the family	136	91
Total	150	100

Source: Primary Data.

The above table shows that 91 percent of the respondents are belonging to the member of the family category and 9 percent of the respondents are Head of the family.

H₀: Null Hypothesis

Status in the family does not influence the time taken by investor for investment decision.

H₁: Alternative hypothesis

Status in the family influences the time taken by investor for investment decision.

Table 6.1: Status and time taken for making investment decision

Status in the family	Within hour	Within few days	Within week	More than a week	Total
Head of the family	6	1	7	0	14
Member of the family	29	33	59	15	136
35	34	66	15	150	

Source: Primary Data.

The above table shows the association between status in the family and time taken for investment decision. There are 14 investors in the first group. Out of 14 investors, 6 of them take decision within an hour. Only one investor decides her investment channels within a few days. 7 of them take decision within a week. None of them take more than a week.

Out of 136 investors, 29 of them decide their investment channels within an hour, 33 of them take investment decision within a few days. 59 of them take investment decision within a week, 15 of them take more than a week to decide their investment channels.

Table 6.1.a

Factor	Chi-square		DF	Significance
	Calculated	Table		
Status of family member	5.83	12.8	6	5%

Source: Primary data

It could be inferred from this table that the calculated chi-square value is less than at 5% level the null hypotheses is accepted. Hence it is clear that there exists no association between status in the family and time taken for investment decision.

Table 7: Family members of the respondents

Family members	No. of the respondents	Percentage of the respondents
Up to 2	13	9
3-4	107	71
Above 5	30	20
Total	150	100

Source: Primary Data.

From the above 71 percent of the respondents have 3-4 members in the family, 20 percent of the respondents are belong to above 5 and 9 percent of the respondents have up to 2 members in their family.

H₀: Null Hypothesis

There is no association between family members and time taken for investment decision.

H₁: Alternative hypothesis

There is association between family members and time taken for investment decision.

Table 7.1: Family members and time taken for investment decision

Family members	Within hour	Within few days	Within week	More than week	Total
Up to 2	1	5	6	1	13
3-4	25	26	46	10	107
above 5	8	4	14	4	30
Total	34	35	66	15	150

Source: Primary Data.

This table exhibits the association between family members and the time taken for investment decision. Based on this factor, there are three groups. In the second group, there are 107 investors who have 3 to 4 family members. Out of 107 investors, 25 of them take investment decision within an hour, 26 of them take investment decision within a few days, 46 investors decide their channels within a week and 10 of them take more than a week to decide their investment channels.

There are 30 investors in the last group in which the investors' family members are above 5. Out of 30 investors, 8 of them take investment decision within an hour, 4 of them takes investment decision within a few days, 14 investors decide their investment channels within a week and 4 investors take more than a week to decide their investment channels.

Table 7.1.a

Factor	Chi-square		DF	Significance
Family members	Calculated	Table	6	5%
	23.21	12.6		

Source: Primary data

It is clear from this table that the calculated χ^2 value is more than the table value at 5% level the null hypothesis is rejected. So there is association between family member and time consumption for investment decision.

Table 8: Number of the Dependents

Number of Dependents	No. of the respondents	Percentage of the respondents
0-2	96	64
Above 2	54	36
Total	150	100

Source: Primary Data.

From the above table, 64 percent of the respondents have to 0-2 dependents and 36 percent of the respondents have more than 2 dependents.

H₀: Null Hypothesis

Number of dependents does not influence time consumption for investment decision

H₁: Alternative hypothesis

Number of dependents influence time consumption for investment decision

Table 8.1: No. of dependents and time taken for investment decision

No of dependents	Within hour	Within few days	Within week	More than a week	Total
0-2					
above 2	1816	2311	4423	114	9654
Total	34	34	67	15	150

This table exhibits the number of dependents and time taken for investment decision. In the first group there are 96 investors, 44 of them take decision within a week and 23 of the investors takes decision within a few days.

In second group there are 54 investors whose family dependents is above 2. Out of 54 investors, 16 of them take decision within an hour and 23 of them take decision within a week.

Table 8.1.a

Factor	Chi-square		DF	Significance
	Calculated	Table		
Dependents	2.64	12.6	6	5%

Source: Primary data

In this table the calculated χ^2 value is less than the table value at 5 % level the null hypothesis is accepted. So it is clear that there is no association between number of dependents and time taken for making investment decision.

Table 9: Family Income of The Respondents

Family income	No. of the respondents	Percentage of the respondents
Up to Rs. 20,000	96	64
Above Rs.20,001	54	36
Total	150	100

Source: Primary Data.

From the above 64 percent of the respondents earn up to Rs.20,000 as family income and 36 percent of the respondents earn above Rs.20,001.

H₀: Null Hypothesis

Family income per month does not influence time consumption for investment decision

H₁: Alternative hypothesis

Family income per month influences time consumption for investment decision

Table 9.1: Family income and time taken for investment decision

Family income	Within hour	Within few days	Within week	More than a week	Total
Up to Rs. 20,000	29	25	55	11	120
Above Rs. 20,001	6	8	12	4	30
Total	35	33	67	15	150

Source: Primary Data.

This table shows the association between family income per month and time taken for investment decision.

In the first group there are 120 investors whose family income is up to Rs. 20,000. Out of them, 29 take decision within an hour, 25 of them take investment decision within a few days, 55 of them take investment decision within a week and 11 of them take more than a week to take investment decision.

In the second group there are 30 investors whose family income ranges above Rs. 20001. Out of 30 investors, 6 of them take investment decision within an hour. 8 of the investors take investment decision within a few days, 12 of them decide their investment channels within a week and 4 of them take more than a week for their decision.

Table 9.1.a

Factor	Chi-square		DF	Significance
	Calculated	Table		
Family Income	4.55	7.81	6	5%

Source: Primary data

It is clear from this table that the calculated χ^2 value is less than the table value at 5% level, the null hypotheses is accepted. Hence it could be clear that there is no association between family income per month and time taken for making investment decision.

Table 10: Savings of the Respondents

Monthly savings	No. of the respondents	Percentage of the respondents
Upto Rs.1000	32	21
Rs.1001 – 2000	49	32
Rs.3001 – 4000	19	14
Above Rs.4001	50	33
Total	150	100

Source: Primary Data.

From the above table 33 percent of the respondents belong to above 4001 of the savings of monthly income followed by 32 percent of the respondents belong to 1001 – 2000, 13 percent of the respondents belong to 3001 – 4000 and 21 percent of the respondents belong to up to 1000 monthly savings category.

H₀: Null Hypothesis

Savings per month does not influence time consumption for investment decision

H₁: Alternative hypothesis

Savings per month influences time consumption for investment decision

Table 10.1: Savings and time taken for making investment decision

Savings per month	Within hour	Within few days	Within week	More than a week	Total
Up to Rs. 1000	12	8	10	2	32
Rs. 1001-3000	6	11	24	8	49
Rs. 3001-4000	5	4	7	3	19
Above Rs. 4,001	11	11	25	3	50
	34	34	66	16	150

Source: Primary data

The above table shows the association between savings per month and time taken for investment decision. The second group consists of 49 investors whose savings range from Rs.1001 to Rs.3000. Out of them 6 of the investors' take decision within an hour. 11 of them take investment decision within a few days. 24 of them take decision within a week and 8 of them take more than a week to decide their investment channels

The last group consists of 50 investors whose savings is above Rs.4,001. Out of 50, 11 of them take investment decision within an hour, 11 of the investors take investment decision within a few days, 25 of them takes decision within a week and 3 of them take more than a week to decide their investment channels.

Table 10.1.a

Factor	Chi-square		DF	Significance
	Calculated	Table		
Savings	14.2	23.6	6	5%

Source: Primary data

It can be seen from this table that the calculated λ value is less than the table value at 5% level the null hypothesis is accepted. Hence it is clear that

there is no association between savings per month and time taken for investment decision.

Findings of the study

- ❖ It is found that 39 percent of the respondents belong to up to 30 years age group.
- ❖ It is found that 70 percent of the respondents are married, while 30 percent of the respondents are Unmarried.
- ❖ It is found that 49 percent of the respondents have PG Qualification.
- ❖ It is revealed that 69 percent of the respondents are employed followed by 15 percent of the respondents being in business.
- ❖ It is clear that 73 percent of the respondents get a monthly Income of up to Rs.10,000.
- ❖ It is clear that 91 percent of the respondents are a member of the family and 9 percent of the respondents are Head of the family.
- ❖ It is found that 64 percent of the respondents have 0-2 dependents and 36 percent of the respondents have above 2 dependents.
- ❖ 64 percent of the respondents get up to Rs.20,000 family income and 36 percent of the respondents get above Rs. 20,001.
- ❖ It is clearly shown 33 percent of the respondents get above Rs. 4001 as monthly savings, 32 percent of the respondents get between Rs. 1001 – Rs. 2000, 13 percent of the respondents get between Rs. 3001 – Rs. 4000 and 21 percent of the respondents get up to Rs. 1000 as monthly savings of the respondents
- ❖ It is clear that as the calculated λ value is more than the table value at 5% level, thus the null hypothesis is rejected. Hence it could be inferred that there exists an association between age and time taken for investment decision.
- ❖ It is clear from the study that the calculated λ value is less than the table value at 5% level, the null hypotheses is thus accepted. Hence it could be inferred that there exhibits no association between marital status and the time taken for investment decision.
- ❖ It is shown by the study that the calculated λ value is more than the table value at 5% level,

the null hypothesis is thus rejected. Hence it could be inferred that there is an association between educational qualification and time taken by the investment decision.

- ❖ Since the calculated λ value is less than table values at 5% level the null hypotheses is accepted. Hence it could be clear that there is no association between occupation and time taken for investment decision.
- ❖ It could be clear from the study that the calculated λ value is less than the table value at 5% level, thus the null hypothesis is accepted. Hence it is clear that there is no association between monthly income and time consumption for decision making.
- ❖ It could be inferred from the study that the calculated λ value is less than the table value at 5% level the null hypotheses is accepted. Hence it is clear that there exists no association between status in the family and time taken for investment decision.
- ❖ It is clear from the study that the calculated λ value is more than the table value at 5% level; hence the null hypothesis is rejected. So there is an association between family member and time consumption for investment decision.
- ❖ Since the calculated λ value is less than the table value at 5 % level the null hypothesis is accepted. So it is clear that there is no association between number of dependents and time taken for making investment decision.
- ❖ It is clear from the study that the calculated λ value is less than the table value at 5% level, thus the null hypothesis is accepted. Hence it is clear that there is no association between family income per month and time taken for making investment decision.
- ❖ It could be seen from the study that the calculated λ value is less than the table value at 5% level, thus the null hypothesis is accepted. Hence it is clear that there is no association between savings per month and time taken for investment decision.

Suggestions

1. Awareness should be created among the women especially among rural women.

2. Investment opportunity's benefits must be given more importance in rural areas by conducting awareness programs.
3. Information and advice related to investment should be given to the women investors.
4. Investment articles, journals and T.V. shows can be increased so that investors are more interested and take good care of the investment opportunities.
5. Basic knowledge must be given to the investors about all types of investment; so that the investors can make a better choice that best suits their investment plan.
6. Advertisement in newspaper can easily attract more investors.
7. The women investors must be careful while making investments. Investors must consider all factors while investing their hard-earned money.
8. Time is a crucial factor. Investors should not take very long to make investment decisions. Similarly they should not take a decision within a short period. The decision must be taken within the proper time.
9. Individual women investors must see the source of financial information regularly. Women investors must diversify their portfolio in different companies to avoid risks. They must take good care while making investment decisions.

Conclusion

In this research, the researcher studied the following factors associated with the investment decision Age, Marital status, Educational qualification, Monthly income, Status, family members, number of dependents, family income and savings these factors closely influence the investment decision of the investors. The study revealed that Investment is of greater importance among younger age group people when compared to the old age people. So awareness must be given to them in order to improve their investment and stay happy. Financial decision-making process of women investors is also an important one. The investors' time consumptions for taking investment decision play a vital role in investment process. They should not take much time to decide their investment channels. And at the same

time they must be very careful while investing their money.

Bibliography

- Bhole, L.H., *"Financial Markets and Institutions"*, Tata-McGraw Hill Publishing Co.Ltd., New Delhi, 1982, p. 360.
- Davis, Yeoman, *"Company Finance and the Capital Market – Effects of firm size"*, Cambridge University Press, P.135.
- Gupta, L.C., *"The changing Structure of Industrial Finance in India"*, Oxford University Press, London, 1969.
- Bhalla, V.K. *"Investment Management"*, S.Chand & Co. Ltd., New Delhi, 1982.
- Clark Francis, J., *"Investment Analysis and Management"*, McGraw Hill, (2nd edn.) U.S.A., 1976, P.710.
- Jones, C.P., Tuttle and Heaton, *"Essentials of Modern Investments"*, Ronald Press Co., New York, 1977, P.452.
- V.Gangadhar and G.Ramesh Babu , *"Investment Management"*, Anmol Publications PVT. Ltd., New Delhi ,2003.
- International journal of information management, Volume 20. Issue1, February 2000,

Websites

www.nseindia.com
www.bseindia.com
www.equitymaster.com

RURAL BUSINESS MANAGEMENT IMPERATIVES FOR SUSTAINABLE GROWTH

Rajesh Bajaj*

Abstract: *The Indian rural markets are currently undergoing a massive transformation. Basic contributions have come in from Government initiatives in the form of Infrastructural facilities, Health and Education and Administered pricing for farm inputs and outputs. Rural population, which was surviving under shortages of life sustaining necessities, is able to afford for personal needs after food and necessary clothing. Disposable income, even with the lower strata of the population is contributing toward generating the demands from rural sector for goods and services. Per capita demand may be low as of now, but massive population makes it an interesting bouquet of business opportunities. Practical difficulties do exist in transacting the business, but early lead by some of the business houses with innovative planning and concerted initiatives; would generate a long term market share for them. There are no two views on the fact that in very near future, business potential from rural sector is going to surpass the urban sector. For business managers, now is the time to realign their strategies and accord a serious slot to the Rural Business Management in their plans.*

In Indian context, the word “Rural” strikes an image of basket of rarities and deprivations in any imaginable field of civilized living. Frame which appears in our mental horizon is predominantly cluttered with dusty narrow unpaved lanes with open sewage, small thatched hutments, semi - dressed and under - nourished children and adults. Pre – independence, this was the scenario in our villages and almost 80% of our population was living under such inhuman conditions; with no access to bare minimum necessities, which are mandatory for human survival. Average longevity at 47 years, nearest medical help may be was 100 kms away – with commuting time may be 24 hours or more, with no semblance of communication facilities, even in emergency.

Post independence, mitigation of rural adversities was the first priority of the national

leaders. This called for building up of infrastructure facilities with major priorities fixed on Irrigation, Agro inputs and Education. During 60s, Mrs. Indira Gandhi; then Prime Minister of India initiated actions towards enhancement of agro outputs. This brought in the era of Green Revolution and over a period of time, a country dependent upon foreign donors for food, became self dependent in a time span of 25~30 years.

Green revolution propelled by all around farm related initiatives brought in extensive change in our villages. Though initially, beneficiaries were the farmers with large land holdings; overall improvement started coming in, due to infrastructural growth.

On a parallel front, industrial growth in the country provided huge employment opportunities to working hands. This brought in migration of

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large number of unemployed youth from villages to urban areas. Exposure to urban life, access to the educational facilities, medical support etc. brought in extensive amount of awareness amongst the rural population. Consequently, Government had to accord priority to health and education sectors for rural population. With Government subsidies on Power, Water, Agro inputs and financial support to marginal farmers, rural spectrum started showing appreciable improvements.

Industrial growth and economic liberalisation initiated in 1990s, brought in its share of improvements in farm outputs and remunerations. This started showing the signs in enhancement of income for rural population. This also brought in the improvement in living standard of rural habitats, with disposable income being available for consumables and lower end durables.

During last 20 years, with communication and IT revolution in the country, awareness gap between rural and urban population has started narrowing down. This has given rise to the appreciable demands from rural population, generating huge amount of business opportunities.

Some of the major business houses took note of this transformation at an early stage and took lead in integrating rural markets in their business plans. To quote a few examples – ITC, HUL, HSBC, PEPSI, Coke, some of the nationalized Banks and many more. This provided them with virgin markets, ready to patronize their branded products. With the Govt. initiatives in the form of infrastructural facilities viz. motorable road linkage to the villages with population of 500 or more people in plains and 250 or more in hilly terrain, rural electrification projects and satellite communication and entertainment facilities getting established, gap between rural and semi – urban living standards are getting eliminated.

Stage has come, when the rural habitations are not being seen as farming hubs only. Some of the corporate have taken initiatives to establish hi – tech projects in rural areas, based on easy availability of factor inputs. Agro farming comprising of basic cereals only, has now got extended to niche product farming like rare fruits, vegetable and flowers; which were being imported so far. This got further augmented with fish and meat farming for domestic, as well as; for export

markets. Easy financial support from the banks, provided job and business opportunities to cottage industry. All these cash crops and additional income to artisans, have given considerable amount of disposable income to the rural population to generate massive demand for products and services from rural sector, which was unimaginable so far.

Qualitative treatment meted to rural business potential is getting suitably substantiated by the changing economic indices relevant to rural sector. Following quantitative data would be further corroborating the demand potential available in rural sector.

From the above text, it is quite evident that rural India is under transformation stage and it is happening at a very fast pace. Supporting factors, which have been catalyst to this mammoth change and imperative to sustain it in future with encouraging level of YOY growth are:

- (a) **Rural Infrastructure:** Main contribution being from irrigation, Electric Power Supply and Communication linkages viz. Roads and Telecommunication networks.
- (b) **Rural Finance:** Crucial role played by Regional and Rural banks for Agro financing and finance for Cottage Industry.
- (c) **Rural Marketing:** Initiatives from private sector in activating the distribution channels and government policies regarding distribution of Agro inputs.
- (d) **Rural Human Resource Mgmt.:** Initiatives from Government and Role of NGOs in basic education and Vocational training.
- (e) **Rural Health:** Establishment of primary health Centers and education to rural population on sanitation and Hygiene.
- (f) **Government Initiatives:** Subsidies on Agro Inputs and Administered pricing for Agro outputs.
- (g) **MNC Initiatives:** Co-operative farming and supply of Hi-yield seeds.
- (h) **Corporate Social Responsibility:** Rural welfare programmes and adoption of villages.
- (i) **Rural Technology:** Role of Bio-Tech in farming and Rural specific Innovations on products and service deliveries.

Sl. No.	Parameter	Source	Urban sector	Rural sector	Remarks
1.	Population	Census 2001	286.1 Mn	742.5 Mn	-
2.	No. of Settlements	OECD	5980	538000	-
3.	Literacy Rate *Male *Female	Min. of HRD	82% 63%	63% 32%	-
4.	GDP – Per Capita (2009-10)	Indian Budget (2010-11)	Rs. 89094	Rs. 9000	Derived
5.	No. of Households	Census 2001	53 Mn	128 Mn	Derived
6.	Households with income > Rs. 45000 per annum	NCAER Survey	8.74 Mn	16.45 Mn	-
7.	Mkt. Size - FMCG	Ibef – Indian Bazar	Rs. 1285000 Mn	Rs. 550000 Mn	Projection for 2013
8.	Mkt. Size - Durables	Ibef – Indian Bazar	Rs. 940000 Mn	Rs. 50000 Mn	(2008 – 09)
9	Agro Inputs		—	Rs. 450000 Mn	-

It is very necessary that initiatives taken on all the above sectors are maintained with full sincerity and speed. In fact, in our democratic set up; awakening has taken place already in rural sector and it is the rural population, who is going to force the legislature to provide requisite infrastructure their growth. This never stopping wheel has started churning out the economic prosperity in rural area, which would have the spin off effect on creation of massive demands and business opportunities.

There is no denial to the fact that there are practical difficulties in certain areas and absolute rupee value of the business is not commensurate with total rural population. With infrastructure support being further ramped up, demand is likely to shoot up in near future. Moreover with urban markets getting saturated, only avenue available for business expansion is the Rural Markets. It is up to the business managers of today, to work out innovative strategies to claim their share in the

huge opportunity in front of them in the form of untapped and virgin markets. With technology at their support, product modifications to suit rural needs and deliveries without any service compromise, would definitely give them an early lead. This eventually would result into customer loyalty for a long time to come and better brand acceptability in rural markets, with continuous revenue streams.

Conclusion

Rural market, catering to 72.2% population of the country, with appreciable population already above the mid income or above segment, offers a huge business opportunity. With literacy rate on upward trend in rural sector, movement for transformation is unstoppable. It is matter of time only, when rural business is going to be more lucrative than the urban. Business leaders, who take this wakeup call seriously now, are going to be beneficiaries in due course of time.

References

- P Kotler, et. al., Marketing Management, (Pearson Prentice Hall, New Delhi 2007)
- V S Ramaswamy and S Namakumari, Marketing Management, (Macmillan India Ltd. New Delhi 2006)
- Rural-Urban Linkages and Pro-Poor Agricultural Growth: www.oecd.org/dataoecd/25/8/36562896.pdf
- The great **Indian** bazaar - The **Indian FMCG** sector: www.ibef.org/economy/consumermarket.aspx
- Census Data -2001: www.censusindia.gov.in/

CONNECTIVE LEADERSHIP AND WOMEN ENTREPRENEURS: AN INTEGRAL APPROACH

Gautam Budha Sitaram*

Abstract: *Effective running of a business firm will require a balance between two different and often contradictory approaches: management and leadership. Rapid changes in both internal as well as external environment with respect to technology, govt. policies, customer demands, workers' expectations, etc. will require excellent entrepreneurial leadership skills. The women entrepreneurs should follow the connective leadership approach, which includes power direct achieving style, social instrumental style, and relational achieving style depending upon the situational demands. The women entrepreneurs in 21st century are to be successful because of giving much more attention on management of intellectual capital, creation of self organizing networks, proper counseling and guidance, balance of power, expertise knowledge and clearly defined organizational goals.*

Introduction

Human, physical and financial resources determine economic growth and development of a country. But an abundance of natural and physical resources, machinery and capital may go underutilized or misused, if human resource factors are not properly cultivated and managed. Therefore the objective of any planned development is to develop human resources to their optimum utilization. The present situation demands for rapid industrialization, which brings social and economic development of the society at large. In India, major portion of the female community were involved with domestic works as a result their entrepreneurial skills and abilities were not properly utilized for the development of the nation. The entrepreneur denotes a person who discharges the entrepreneurial functions of coordination, organization, supervision, risk bearing, high need for achievement, problem solver, setting goals and reaching these goals by one's own efforts (McClelland, 1961).

An entrepreneur is one who is willing and able to initiate and successfully manage for a length of

time an activity that involves at least some degree of personal and organizational risk. Pareek and Nadkarni (1978) viewed that an entrepreneur is one who initiate and establish an economic activity or enterprise. From these, it can be stated that the entrepreneur is perceived as an individual having certain ability and potential which will help in thinking about the business activities, initiating, establishing, running and lastly managing an enterprise. Initially an enterprise may originate in the shape of a small shop and along with time it may be developed as an industry with sophisticate technology. So an entrepreneur takes the challenges to carry out the activities for the success and survival of the enterprise by integrating his/her attitudes, values, behaviour and leadership abilities.

The emphasis was given for the promotion of women entrepreneurship after the 1970s with the introduction of the women's decade. The government of India declared the year 2000-01 as the Women Empowerment Year by keeping in view the social and economic well being of the female community. But majority of women do not undertake

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entrepreneurial ventures. There is need to strengthen and streamline the role of women in the development of various sectors by harnessing their powers towards nation building and to attain accelerated economic growth. As the environment is conducive and perfect atmosphere exists, women have to come forward to utilize their potential in a productive way. Gainful employment of women is identified as a major entry point in promoting their economic conditions (Chinnadurai, 2005). Now a day some young women entered the fields of industry, public service as well as business and are successful in these fields. According to 2001 census, the female population was 48.2 per cent of the total population but their participation in economically productive activities is often underestimated. For last two decades, women's work participation rate has been increased from 22.73 percent in 1991 to 28.6 percent during 2001. This is the right time to encourage and guide women to organize business and services to enable them to join business and services in large numbers.

Factors affecting the degree of women entrepreneurship

The factors which are blocking the degree of women entrepreneurship are as follows:

a. Orthodox Society

The society or family is not permitting them to work in the organizations which are situated in a long distance. Still now men dominated over women in every aspect of their life. Even the educated and potential women are simply involved with the household activities, which cause wastage of skills and resources.

b. Lack of support from men

Situations demand the proprietor has to stay with management to solve the complex problems or to take some important decisions as a result she may have to stay up to late night. As a result men dislike it so that conflict will arise among the couples and the results are the separation, divorce, etc.

c. Low level of Literacy

Low level of education is another important barrier to the entry of women in the entrepreneurship sector. The low literacy leads to lack of awareness and courage to get into employment field.

d. Lack of proper guidance and counselling

Govt. of India has declared a number of schemes and programmes for the socio-economic development of women at various levels irrespective of caste, class, place, etc. But due to lack of proper guidance and counselling these provisions and facilities are unknown for majority of women who are the actual beneficiaries.

e. Difficulties in availing of loan schemes

Women are not willing to ask for the property rights from their parents and their husband's family because of the binding family relation and social custom and tradition prevail in the society. This condition does not permit women to avail any benefit from the financial institutions.

Connective leadership as the driving force behind entrepreneurship

Contrary to traditional beliefs, female leadership is no longer an underestimated. Viewed from the perspective of global inter dependence, it contains the seeds of connective leadership, a new integrative model of leadership more suited to the dramatically changing workplace of the twenty-first-century. To address the complex demands of the 21st century workplace, organizational leadership will need to reflect certain behaviours to which females traditionally have been socialized, but which many of them are being urged to abandon to ensure their occupational success.

Connective leadership is a process to influence individuals not only to their own tasks and ego drives but also to those of the group and community that depend upon the accomplishment of mutual goals. It is such type of leadership that connects individuals to others and others' goals using a broad spectrum of behavioral strategies (Gilligan, 1982). It proceeds from a premise of connection and recognition of networks of relationships that bind society in a web of mutual responsibilities. This new integrative form of leadership not only encompasses both transactional and transformational behaviours but also stretches its practitioners beyond individualism and charisma, even beyond competition and collaboration (Gardner, 1990). Connective leadership, which connects individuals' creativity to their tasks and visions, to one another, to the immediate group and the larger network, empowering others and instilling

confidence, represents a crucial set of strategies for success, not only in the workplace but also in the external environment.

Leadership styles

For effective management of the enterprises, women entrepreneurs or proprietors were implementing the following leadership styles to influence the behavior of the individuals towards the desired goal on the basis of the situational demands.

Power direct achieving style

Leaders who prefer the power direct achieving style may delegate tasks to others; they retain strict control over both the targeted goals and the means to their accomplishment. They do not attract and unite their followers simply by the creativity and worthiness of their own dreams & goals but draw the attention of the followers by identifying the external threats.

Social instrumental style

Leaders who use social instrumental strategies understand relationships and networks as vital for accomplishment of the objectives of the organization. They do things through other people, selecting specific individuals for specific tasks.

Relational achieving style

This style of leadership required by an interdependent environment involves an orientation towards others & their special goals. It contains three components like contributory, collaborative and vicarious- that encompass such inclinations or affiliations. Women entrepreneurs should take responsibility in order to keep the work group together with clarity of roles of the followers. Hence women excel in collaborating, contributory and mentoring behaviour, all-important aspects of connective leadership.

Connective Leadership for Effective Management

Development will be used to acquire new viewpoint so that the organization can become more competitive. Development of the women proprietors for the success of the business is an important issue in the competitive business environment. The role

that HRD needs to excel is by making greater efforts in effectively developing the soft skills. This includes such subjects as diversity, communication & people skills that allow people to understand each other and develop good team skills. This should be the number one priority of HRD to build real teams for the organizational excellence. It will help the women entrepreneurs in a number of ways such as: to define a clear objective; to attract the good people into the right jobs; to build teams which create synergy and to fulfill the customers demands in a very competitive environment.

So it is the responsibility of the entrepreneurs to develop the people to acquire new horizons, technologies and viewpoints. It enables leaders to guide their organizations towards new expectations by being proactive rather than reactive. It enables workers to create better products, faster services and more competitive organizations. In the new work dynamic, job centered leadership is being replaced by worker centered leadership which has the potential to drastically alter the role of an effective leader. There is some justification for regarding the follower as the most crucial factor in any leadership event. Followers affect the strength of a leader's influence, the style of leader's behaviour and the performance of the group through which many leadership functions are carried out is critical to workers for production, rewards, morale and work satisfaction.

Successful women entrepreneurship in people centered cultures

The growing importance of women in business has developed successful leaders at all levels is being aided by the increasing filled by women. In business, female think as a change from traditional, goal oriented and hierarchical models of interaction to more caring and familiar one. Since women tend to think differently than men, they interact with employees differently, in what has been called a more people-centered way. It has been seen that the typical female manages information, emotions and relationships differently than the typical male. If cross-functional collaboration is the medium for managing innovations then women were most comfortable with facilitating discussion and smoothing organizational conflicts. In twenty first century, women between the ages of twenty five and thirty five will have more education than their male counterparts; it appears that women may just have

the right and adequate skills for the evolving new economy. So the organizations run by women do not take the form of traditional hierarchical pyramid but a network system, where leaders reach out, not down, to form an interrelating matrix built around a central purpose.

In general men view job performance as a series of individual transactions with subordinates, with rewards given for good work and punishment meted out for substandard performance. But women on the other hand, encourage employees to align their self interests by identifying with the group (Rosner, 1990). These leaders share power, encourage participation and recognize their presence in more significant way. This people centered way favoured by women stems from a belief that allowing employees to contribute and to feel important is a win-win situation. One of the reasons women are better leader is that the essence of what women leaders do is to interact with people. They do all the things that good leaders do, men or women, but women seem to actively work harder to make their interactions with associates positive for everyone involved. More specifically, they share power and information, enhance others self worth by listening and get others excited about the task at hand. The effective and dynamic leadership lead towards successful women entrepreneurship due to the following factors:

i) Managing Intellectual Capital

As other skill management leaders will need to master is effectively utilizing intellectual capital by identifying followers' skills and abilities. Developing human capital and converting it into useful products and services is first becoming the critical executive skill of the age.

ii) Creating Self-Organizing Networks

An organization's knowledge worker operates on four levels within a networked organization, social interaction, advanced technical skills, an understanding of business process and self-motivated and directed teams. When decision-making authority is coupled with peer collaboration, managers find an increase in self-motivated creativity. So managing a network organization, where knowledge is a strategic advantage, means that how workers are viewed and how they are developed will be the key to long-term corporate success.

iii) Counseling of the Workmen

When team members face problems while carry out their work, they seek guidance and advice from their leaders. The problem may be technical or emotional in nature.

iv) Using Proper Power

Leader has to exercise power and authority over the subordinates as per the demand of the situation. Exercise of power needs to stimulate positive response from the subordinates.

v) Knowledge and Intelligence

One most important requirement of a leader is to have required knowledge of human behaviour, psychological and professional competence. In order to develop competency, the leader also must update continuously and keep renewing.

vi) Clearly defined Goals

Actions without clear-cut directions lead nowhere. That is why there is very little achievement in spite of a lot of movement in life. Hence, a leader needs to be very clear in mind about what to achieve, how to achieve and then reinforce it by a strong will power and conviction.

Concluding Remarks

Running a business will require a balance between two different and often contradictory approaches: management and leadership. In the competitive business environment, executive leadership matters more than ever before. Rapid changes in both internal and external environment with respect to technology, govt. policies, customer demands, workers' expectations, etc. will require excellent entrepreneurial leadership skills. The job of an executive is to articulate vision. Leaders need to communicate a shared picture of the future that fosters genuine commitment and motivation. Leadership must be augmented through attention to details on roles, performance measures and reviews but always with an eye on proactive strategy rather than reactive strategy. Entrepreneurs' charts a course for control, stability and practicality with the other eye on the day-to-day operations, the customer and market share (Sinha, 2003). Balancing these two requirements is vital for the success of every business enterprise. Interactive leadership relies heavily on

communication skills. It is about creating the space for dialogue and thinking together for the common good. It requires a level of maturity in which both leader and followers should work together for betterment of the organization. Leaders should ensure about a constant dialogue with the subordinates over future directions and resolving the tensions between competing and often opposing ideas. So interactive leadership is all about creating an emotional connection with people. One of the reasons why women are finding their way into more and more leadership jobs is that they tend to know better how to create webs of inclusion and environments for open communication. While these skills may come more naturally to women, they may be the most important ingredients for success in the 21st century as male dominated organizations are struggling for survival.

References

- Chinnadurai, R., (2005), "Women Entrepreneurship and Service Sector", *Kurukshetra*, Vol. 54, No. 1, November. PP, 56-72
- Gardner, John W., (1990), *On leadership*, New York, Free Press.
- Gilligan, Carol (1982), *In a Different Voice: Psychological Theory and Women's Development*, Harvard University Press. PP, 105-114
- McClelland, D.C., (1961), *The Achieving Society*, D.Van Nostrand Reinhold, New York. PP, 34-67
- Pareek, U; Nandkarni. (1978), "Development of Entrepreneurship: A Conceptual Model", In *Developing Entrepreneurship*, T.V. Rao & Udai Pareek(Eds), Learning System, New Delhi.84-104
- Rosner, Judy B., (1990), "Ways Women Lead", *Harvard Business Review*, November-December. PP, 56-65
- Shinha, Poonam (2003), "Entrepreneurship in the North East India: Motivation, Social Support & Constraints", *Indian Journal of Industrial Relations*, Vol. 38, No.04, April, PP. 15-45

ECONOMIC PROSPECTIVE OF MEDIA MANAGEMENT IN REFERENCE WITH ETHICS AND MARKET FORCES

Sudhir K. Rinten*

Abstract: *There is a big gap in the business of Media Industries and the realization of the society about the same. We think that media should be ethical enough to fulfill the responsibility of the business, but there is a big question of business requirement and the balance of market forces for the same. This paper will give a model to make balance between market forces, media and their ethical prospective.*

Introduction

Mass Media is midas touch now a days. Livelihood to habits, role models to destination, even our thinking is being affected by the media. . Now a day's media is not a mere source of information but is mind & mood manager too. No house, mind, work or step can be identified without the interference of the media. We cannot find a single episode of life without media; birthday parties to religious ceremonies all are adopted from the media. Our bedrooms to bathroom are all captured by the media approach. All these have been possible only due to professional attitude of media.

In this LPG era no one can tolerate financial requirement of any industry. Media Industries are also a part of this Privatized, global & liberalized (LPG) world. Although there is a big difference between a Condom making Company and a Media Company, but both are industries at first level, both require financial assets, HR, Supply chain and they have to satisfy their customers at the very first level.

Industries have to survive in the market. Every industry has its own characteristics and requirements. Those necessities of survival lie between, financial requirements, ethical support, HR Management, Supply Chain Management etc.

According to **Michel Porter's 5 Factor model** there are five major factors, which causes an industry.

1. Bargaining Power of customers.

2. Bargaining Power of Suppliers.
3. Entry Barriers
4. Exit Barriers
5. Threats from substitute products.

Media industries also have such barriers in the same pattern as per its own requirements. Media is not a missionary activity today. It has been evolved and proved by the total capital involvement and return from the market. Thus market has a pressure on the media organizations also.

1st Bargaining Power of Customers – These factors includes target audiences and their fulfillments & advertisers requirements. Now media content is like a product, and it is the prime necessity of media industry to fulfill the needs of their audiences. If any organization of this industry will not able to saturate the thrust of audiences that will be obsolete. In another hand advertisers are also a market force to regulate media organizations in their proper functioning. They are lifeline breathers in terms of capital. But they just want their products to be placed in the popular programmes. This popular programmes concept (game of TRP) again goes to the end of audiences.

2nd Bargaining power of Suppliers – These factors include supply chain of the media like circulation department, cable operators, DTH service providers etc. In fact these barriers are basically dependent on the availability, space etc. They are

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outcome of such phenomena in which a supplier can affect the availability and accessibility. Although it is very much dependent on the suppliers but customer demand (Audience requirement) can nullify this factor if these will be exposed to the customers.

3rd Entry Barriers – These barriers are such barriers, which basically, oppose the start of any industry. As per Indian constitution each and every individual citizen can start any media industry but its not very easy task. In Indian economy at very first level of media emergence it was so easy to start a newspaper, but now a days it's the boom of media culture and this industry requires much more capital, human resources (even a skilled one), satellite and transmission licenses (for broad cast medium). So these are lengthy processes and if a media organization will be in function that will require a good back up.

4th Exit Barriers – These barriers are basically such kind of barriers, which will hold a person, to be in the same trade where he is. In media organization nobody can leave his job due to ideological and technological exit barriers. A journalist wants to be a journalist and costly infrastructure will not give any chance to media industries to be shifted some where else. Even it cannot be utilized anyhow. Satellite hiring, V-SAT, ENG devices all are too costly and cannot be utilized somewhere. Thus a media industry cannot switch over and it is a necessity to be in the market positively otherwise it will be ejected and ruined.

5th Competitors – There are lots of media houses in the industry, that's why a media organization should fulfill all the necessities and requirements of media organizations. Other wise the will be superseded.

Above mentioned market forces mostly governs any media organization. Over the years media industries and societies both have undergone drastic changes. Their relationship has also changed. No one can imagine a society without media interference. No doubt after globalization media sector has been converted from missionary activity to industrial form, then a big challenge occurs to establish and survive in the Industrial environments. Audience's starts behave like customers. This was a big market force and industry is libel to bother about. Second market force was of advertisers. Advertising sector is developing 22 percent per annum. In year 2007-08 this sector will be of **Rs. 16, 00,000 lakhs**. This sector

involves 0.52 percent of GDP. Such a big budget cannot be ignored by the industry, and if it will be ignored, it will ruin the media sector.

Now the matter of ethics; the word **Ethics** is derived from the Greek word '**Ethos**' which means '**Customs**'. Ethics is defined as the normative science of conduct of human beings living in societies. It is a science, which judges this conduct to be right or wrong, to be good or bad.

It is the science of 'ought', what we should do. Ought to derivatively mean customs. What we should do is followed by 'is', which explains what is done. When an action happens it is put to moral judgment of ethics.

Socrates is regarded as the founder of philosophy of ethics. He expressed his views as '**virtue of knowledge**'. He believed that to understand the nature of goodness it was a necessary condition to live a good life. With the development of society, the definition of ethics changed.

Philosophers like **Plato and Aristotle** followed Socrates. The modern philosophers like **J.S. Mill, T.H. Green, Butler, and Sidgwick** named ethics as normative science. With the passage of time different views about ethics emerged. Some thinkers, like Greek Sophists maintained **that the difference between right and wrong was merely subjective**, depending upon the attitude of the individual making moral judgment.

Some like **J.S. Mill and Sidgwick** maintained that the difference between right and wrong depends on the result of our actions and particularly on their power of satisfying our desires and causing pleasure to others and us.

Today the issue of ethics demands a new definition. There is a debate between two systems of ethics i.e. customary and reflective morality.

Customary morality is meant that stage of ethical development in which a man considers to be right, those conduct which are approved by the standards or customs of the social group to which he belongs. The force of public opinion is the most important factor leading to maintenance of customary morality. It is the natural tendency of sympathy, imitativeness and suggestibility that makes us do what our neighbors approve because nothing is more unpleasant than ostracized from ones tribe.

Reflective morality is meant that stage of moral

development through which men formulate moral judgments on the basis of a reflective evaluation or principles and the careful examinations of facts in their relation to human life. The presets of the past are too rigid to apply to the guidance of conduct under new situations. As exceptional circumstances and new difficulties arise, men are required to reflect upon customs and laws, reflection is thus added. **It is sometimes important to ask not what was done in the past but what the present demands.** Changes in conduct according to the present demands are essential for development.

Media Industries can be ethical if they are financially sound to meet their objectives. Now, ethics and values of any society lie between socio-cultural norms and conditions. These social factors are being changed as per the modernization approach of the society. No doubt media will be affected as per the socio-cultural changes of the society. Affect of this Globalize, Privatized and Liberalized world can be seen on the socio-cultural behavior of the country. Now a day a movie like *satyam Shivam Sundaram* or *Ram Teri Ganga Maaili* will not be problematic for the societies as they were at the time of release. Now love marriages are acceptable, we can accept a girlfriend or boyfriend of our wards. Although these things are very small but they are actually a big reflection of the socio cultural changes and their moral changes.

In society like India where socio-cultural aspect depends on ritual, and reflective actions, where Hindu, Muslim, Sikhs & different Dravid societies and communities are living in the same area and following different customs, it will be so rational on the scale of morality and ethical values.

Lets imagine about marriage with first **cousin**. Is it possible in Hindu tradition? Is it will be ethical, but what about Muslim tradition in the same case. Don't you think that will be an appropriate option, and will be an ethical move also? No body will think to marry his niece in northern Indian region but is not true that in several southern regions it is the top priority life mate?

Answers of these questions will sketch a scene of such morality and ethical boundaries where we can find a lot of differences and it again proves the concept **It is sometimes important to ask not what was done in the past but what the present demands in contemporary scenario.**

These changes can be observed in all the societies. So, reflective ethical part is more important to design a message.

There are two major things one the driving force bargaining power of audiences, their requirements and their fulfillment along with reflective changes of the societies and moralities.

So we can say that 'market force' is the force of development, force of the culture, force of the current main stream. No media organization can go beyond the audience's demand. If our society will not accept a value like 'Neel N Nikki' it will be ejected from the scene.

Our early media sector was running on the basis of missionary ideological forces. There were no options and societies were bound to access those forms only. Today myth of missionary activities has been changed. Media is Info-tainment provider. We can hear Raju Srivastava on radio or view any Ahasan Qurashi on TV channels.

If audiences are ready to accept any program or if they wish to hear any programme it will be responsibility of communicator to provide this to their audiences.

Now the question of availability and accessibility will arise on the minds, but it's a fact that there are more than 100 TV channels 10 Radio Channels 20 Newspapers and around 15 periodical in each and every geographical area. Now it is up to the audience what he will access. Receivers are having major power to change media content as per their demand. Remember the days of last millennium when India today used to publish a column *Duniya Rang Rangili*. That column contained semi nude pictures from the world. After a number of letters to editor the column was withdrawn from the publication within 6 months. Now the same periodical is publishing such pictures but there is no objection raised by the audiences.

It's very clear now if I will change the channel, TRP of the same will go down or if I will say to my Hawker to drop any other news paper or periodical circulation of the same will go up. If TRP or Circulation of any media is going high, it proves the acceptability of the programmes by the customers and industry is able to meet out the objective related to 1st market force 'Bargaining power of audiences'.

Today all media houses that we are criticizing for ethical values, are performing well. It means they

are providing content. Now it is very clear that we have to reframe our ethical parameters as per reflective morality concept that is **"It is sometimes important to ask not what was done in the past but what the present demands."**

Suggestions

Our early media sector was unorganized and missionary. The person who were controlling media organizations were much more dedicated towards their **Customary morality** is meant that stage of ethical development in which a man considers to be right, those conduct which are approved by the standards or customs of the social group to which he belongs. The force of public opinion is the most important. As per this view also then social requirements/ values and their reflections were of such kind where they were able to continue with their profession. Market forces were present but not in such strength. Industry was not in the shape of today's.

Our media sector was not in the form of industry but still working as following model. Where media organizations are in the core and societies, ethical values, market forces etc. all are in the periphery. A company has to cooperate with all these factors and their reflective moralities. (Fig-1).

Today ethical values have been changed. Media sector is industry now. It can be categorized in to three segments as per contemporary requirements. (Fig-2).

1. Hard core Ethical Segment- that is the first circle of the model and contains two major pillars of media industry. A- Audiences & B- Advertisers. Media organizations should be much more ethical to these fellows at the first level.

2. Rational Segment- This segment contains ethical values in relation to their human resources, Pressure groups, Market forces and competitors. Although these four figures are very important for any industry but in media industry they are being connected on behalf of moral values.

3. Social Segment- This segment contains society, country, economy and our surroundings. A media organization should be ethically responsible for these things. Yes it is true that the ethics of this segment will come after Hard core and Rational segment.

These segments will show appropriate concentration of ethical values in the favor of media industries and media professionals. No one can say that media should not think about their professional ethics or about their customary ethics. As per this model of ethics any media can balance both

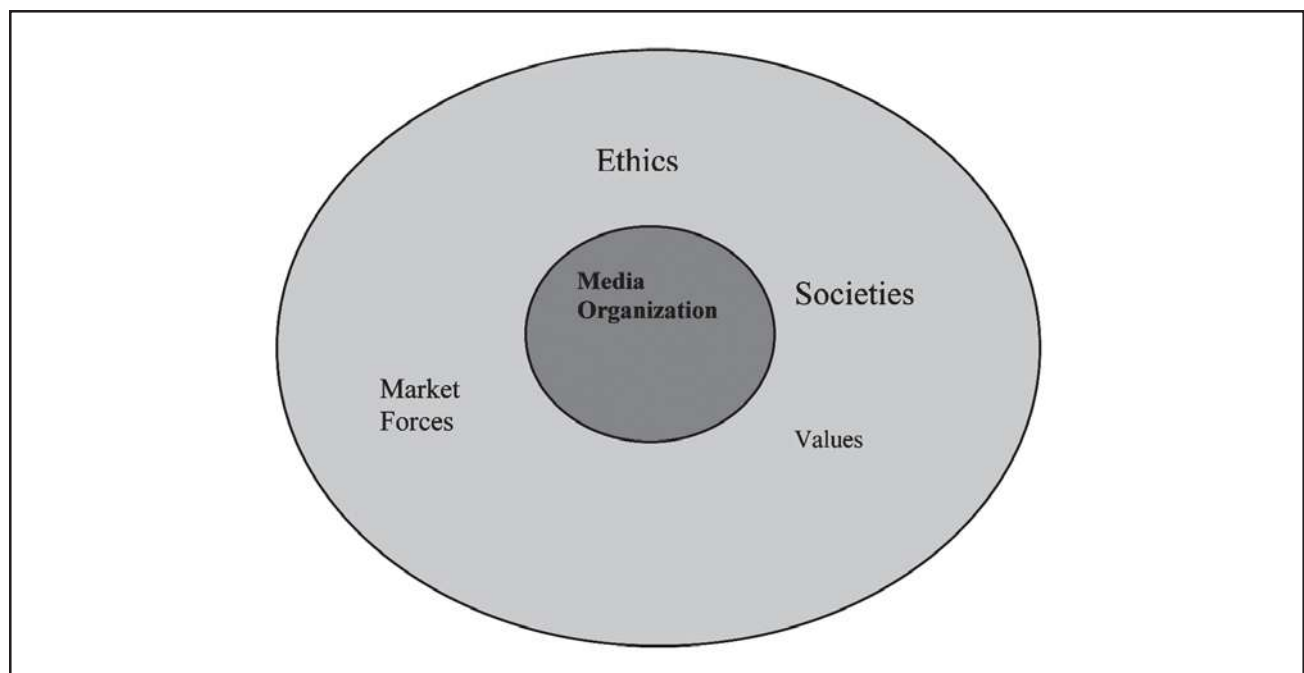


Fig-1

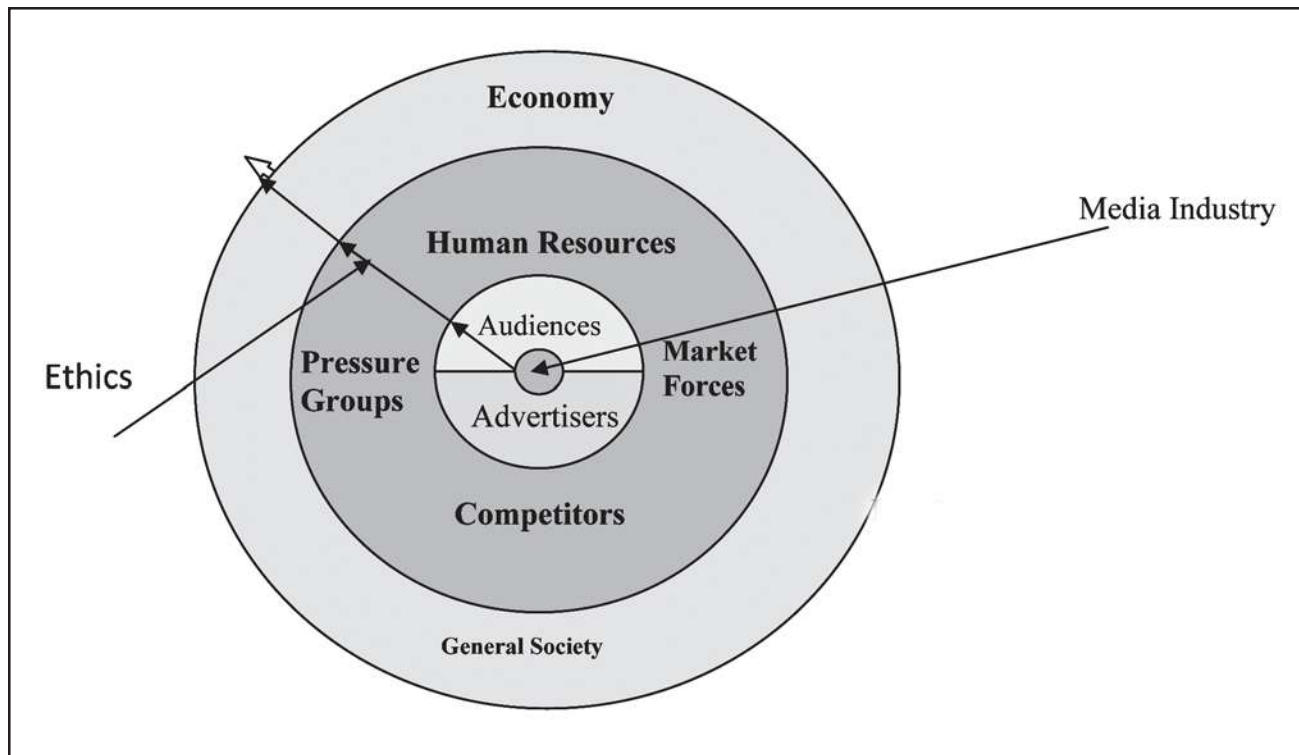


Fig-2

customary and reflective moralities. This can provide a passage of resettlement of media ethics and values.

Bibliography

- Singh Dr Y. P. (2007), *Accounting and Financial Management for IT Professionals*, New Age Publication, New Delhi Pg 76-79.
- Kumar Keval J. (2003), *Mass Communication in India*, Jayco Publications, New Delhi, Pg 120-139.
- Rinten Sudhir K. (2007), *Media ethics and responsibilities*, associatedcontent.com.

- Rinten Sudhir K. (2007), *Concept of community radio in the development of rural entrepreneurs*, associatedcontent.com.

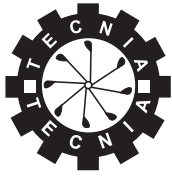
- Rinten Sudhir K. (2007), *Message designing: rural Vs Contemporary approach*, associatedcontent.com.

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Sub: Call for papers for publication in "Tecnia Journal of Management Studies"

Dear Sir

The Advisory Board and Editorial Board thank all contributors and readers for making "Tecnia Journal of Management Studies" an outstanding success. The Journal has been granted International Standard Serial Number (ISSN) on the basis of its high quality contents. The eighth issue has been received well by one and all. The issue contained articles likes Motivational Patten for Entrepreneurship among Engineering Management & Pharmacy Students: A Comparative, Strategies to improve sales of Handloom Products with special reference to Pauducherry, A study on Organisational climate with special reference to Engineering Industries in Coimabatore, From Competencies to Organisational Performance-An Empirical study, Motivational and Managerial Behavior: A Study of Managers in Banks, Strategies Marketing for Higher Education, Challenges for Indian Economy during Global Recession, Case Study Method: For Training and Case- Writing, Takaful-An Overview.

The Ninth issue, Volume 5, No.1 is submitted. We take this opportunity to invite original research articles from faculty members and research scholars. The articles may be based on summary of Ph. D thesis recently completed, Post doctoral research, any other related research work, current business development etc. One may send case studies and book reviews also. The detailed guidelines for contributors are enclosed herewith.

To encourage participation from all the faculty members the Management has decided to confer a certificate of appreciation and a token honorarium of Rs. 1000 to the authors for the best Research papers accepted and published in the Journal.

The message may kindly be circulated among all faculty members, research Scholars & Concerned authors. An early response will be appreciated.

With best Regards.

Sincerely yours

Dr. Nirmal Singh
 Editor

Guidelines for Contributors

General Instructions:

The manuscripts should be error free to the maximum extent possible. Along with the manuscript, author(s) should provide declaration that the article is the original work of the author(s) and that it has not been published or submitted for publication anywhere else.

Authors are requested to submit the manuscript (hardcopy) along with a softcopy (CD-ROM) using MS Word processing package. The soft copy of the manuscript may also be sent through e-mail* with attachment.

The selection of papers for publication will be based on their originality, relevance and clarity, the extent to which they advance knowledge, understanding and application and their likely contribution towards inspiring further research and development.

The articles will be sent to the evaluation board for approval and only the selected articles will be published. Authors may be asked to revise and resubmit the manuscript based on the referees' comments. Unaccepted papers will not be sent back. Copyright of all accepted papers will vest with the journal.

Guidelines: Based on American Psychological Association (APA) Style Manual:

1. Manuscripts must be typed on one side of the page in 12-point font on A-4 size paper in double-space, with the margins of 1.5 inches on all sides to facilitate editing and styling. All text, including abstract, quotations, notes and references should be typed in double-space.
2. The page number must be on all pages of the paper, including the title page. Use Arabic numerals and position the page number one inch from the right hand edge of the paper, in the space between the top edge of the paper and the first line of text.
3. The title of the paper must be typed in upper and lower case letters, and is centered between the left and right margins and positioned in the upper half of the page. If the title is two or more lines in length, double-space between the lines.
4. The manuscript must include a reference list at the end, which list the articles, books, etc. cite in the paper. The reference list must be double-spaced, and in alphabetical order.
5. The manuscript should be sent along with a cover page containing article title, author's name, designation, official address, contact address, phones, fax numbers, and e-mail address. Details of the author's name and other information **should not** appear elsewhere in the manuscript.
6. The cover letter should indicate the title, the names, addresses, phone, fax numbers and e-mail addresses of two or three relevant reviewers for your paper. These may or may not be considered by the Editorial Advisory Board.
7. Articles should not ordinarily exceed 5000 words exclusive of charts, tables and other graphics. Present each figure and table on a separate sheet of paper, gathering them together at the end of the article. Use short and crisp titles and headings in tables and figures. Include a mention of each figure or table in the text itself in the margin where the figure or table should go.
8. Abstract (between 150-200 words) outlining the purpose, scope and conclusions of the paper. No abstracts are required for review essays or case studies.
9. Quotes should be cited accurately from the original source, should not be edited and should give the page numbers of the original publication.
10. Notes should be numbered serially and presented at the end of the article.
11. No stop after abbreviations (ISO, USA, BBS, MBA etc.) Use stop after initials (B.P. Singh).
12. Only those book reviews will be accepted that pertain to Business Management or allied disciplines. The book review must contain the title of the book, author's name, publisher's name, year of publication, price, ISBN etc. The review should not normally exceed 2000 words.
- 13(A) Rules for citing the **books** on the reference list.
 - a) Use the author's surname and initial(s) only. Do not use first names, degrees, and the like.
 - b) Cite all authors listed for the book in the order they are listed.
 - c) Follow the author's name with the year of publication. Year of publication will be in parentheses.
 - d) The title of the book is next and it is italicized. Only the first word in the title or any proper name should be in upper case.
 - e) The place of publication follows.
 - f) The publisher of the book is listed last followed by a period (.).
 - g) Space must be after periods that separate the parts of the citation and after the periods of the initials in personal names.

*Manuscripts and all editorial correspondence should be addressed to: The Editor, Tecnia Journal of Management Studies, Tecnia Institute of Advanced Studies, 3, PSP, Institutional Area, Madhuban Chowk, Rohini, Delhi-110085, e-mail: journal.tecniaindia@gmail.com

- h) Often, no single example from the manual will fit your citation exactly; in that case follow the closest example possible or combine appropriate elements from two examples.
- i) In edited books, pagination should be mentioned in parenthesis immediately after the title of the book.

References: Books (Citation)

Zeithaml, V.A., Parasuraman, A. & Berry, L.L. (1990). *Delivering Quality Service: Balancing Customer Perceptions and Expectations*: p.18. New York: The Free Press.

Edited Book

Harrington, D.M. (1990). The Ecology of Human Creativity: A psychological perspective. In Runco, M.A., & Albert, R.S., (Eds). *Theories of creativity* (pp. 143-169). Newbury Park, CA: Sage.

Book by a Corporate Author

Committee of Public Finance. (1979). *Public finance*. New York: Pitman.

13(B) Rules for citing the periodical articles on the reference list.

The Reference section appears at the end of the paper and lists all the research materials, which have been used.

- a) Use the author's surname and initial(s) only. Do not use first names, degrees, and the like.
- b) Cite all authors in the Reference list in the order they are listed with the source.
- c) Following the author information, give the date of publication in parentheses.
- d) For weekly and daily periodical/magazines such as newspapers and popular magazines, cite the year, month and day.
For monthly article/magazine, cite the year and the month.
For the professional journals, cite only the year.
- e) The title of the article follows. Only the first letter of the first word of the title or subtitle or any proper name appearing in the title should be in upper case.
- f) The title of the journal (in italic) comes next, followed by the volume number, and if appropriate, the issue number.
If the journal uses continuous pagination, i.e., it runs page numbers throughout a year or volume; no reference to an issue number is needed. In that case, the title of the journal is italicized, as well as the volume number.
- g) If the journal is re-paged issue by issue, i.e., each issue has a page number 1, then the issue number must follow the volume number. The issue number is in parentheses but is not italicized.

- i) The next part of the citation is the pagination. The page designation p is **not** used except when citing newspaper articles.
- j) If the journal is from an electronic database, retrieval information must be included which states the date of retrieval and the proper time of the database.
- k) For more than one publication in one year by the same author, use small lower case letter to distinguish them.

References: Articles (Citation)

Weekly Magazine/Article:

Singh, N. and Srinivasan T.N. (2005, May 21-27). Foreign Capital, Deficits and Growth. *Economic and Political Weekly*, XL, (21), 2196-2197.

Monthly Magazine/Article:

Gupta, K. (2005, May). Durables: On a Fast Track. *Pitch* 11(8), 42-50.

Professional Journal (continuous pagination)

Taylor, M.A. & Callahan, J.L. (2005). Bringing creativity into being: Underlying assumptions that influence methods of studying organizational creativity. *Advances in Developing Human Resources*, 7, 247-270.

(Re-paged issue)

Prasad, T. (2005). Mandi: A Field Sales Campaign for Teaching Personal Selling Skills through Experiential Approach. *IIMB Management Review Advances in Developing Human Resources*, 17(1), 87-94.

13(C) Other References (Citation)

Newspaper article

Maira, A. (2005, February 25). Putting humanity into capitalism. *The Economic Times*. P.16.

Computer Software

Soldan, T.J. & Spain J.D. (1984). Population growth [Computer software]. City, state (2 letters): Conduit.

Electronic Database

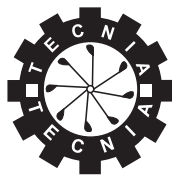
U.S. Department of Labor (1991). What work requires of schools. Retrieved August 15, 24, from <http://wdr.doleta.gov/SCANS/whatwork/whatwork.pdf>

Paper Presentation

McCollum, E.E. & Callahan, L.L. (22, November). *The narrative assessment interview: The use of a psychoanalytic tool to evaluate a leadership development program*. Paper presented at the American Evaluation Association Conference, Washington, DC.

Ph.D. Thesis

Antony, D. (2005) "*Human Resource Development Practices and their impact on Organizational Effectiveness (A Study of Selected Industrial Organizations)*", Ph.D. Thesis, University of Delhi, Delhi.



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