SFIMAR RESEARCH REVIEW

in association with

University of Mumbai

SFIMAR RESEARCH REVIEW (SRR)
Journal of St. Francis Institute of Management and Research

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Editorial...

We are happy to announce the publication of volume 14 issue 2 of the journal, "SFIMAR Research Review" in association with University of Mumbai. This is a half yearly journal with an ISSN number (0975-895X). The Journal is published with an objective to disseminate information based on application in various segments of Management. It is felt that this publication can help in encouraging and promoting indigenous management research. It is also considered a platform to share ideas, views and experiences of Management Practitioners, Researchers, and Academicians at National as well as International level.

The current issue of this journal contains seven papers on research work done by researchers.

Dr. Saloni Desai in her study tries to assess the attitude level of the hospital staff regarding disaster preparedness at Navi Mumbai region. The study concluded that the intervention was effective in improving Attitude score of the participants. There has to be continuity and practices need to be followed on regular intervals. Implementation and updating of Disaster management Plan is vital for all hospitals.

Dr. Rupa Shah in her paper tries to understand impact of surrogate advertising and different factors promoting surrogate advertising. Factors like attitudes, moods, motives, interest etc. that affect the attitude of consumers towards the surrogate advertisement.

Ms. Shilpa Peswani and Dr. G. Ramesh in their paper attempts to identify contribution of listed Indian companies towards CSR activities based on the norms and regulations prescribed by the Company's Act 2013. It also attempts to identify the most preferred CSR activity among the activities listed by the Government based on the CSR expense incurred by the companies.

Dr. Natika Poddar and Ms. Alina Machado in their paper study an analysis of the financial operations and performance of the companies for the period of five years that is from 2015 to 2019. This study is provided an assessment and analysis of the profitability, liquidity and solvency position and financial performance of the pharma companies.

Dr. Samta Jain and Dr. Namrata Mehta, in their paper aims at studying the pros and cons of rewards when not given to the right person. Employees perform at the level at which the organization rewards them. People continue to do what they have been rewarded for doing. This is a form of positive reinforcement. Managers must know what rewards mean the most to which employees in order to be the most effective.

Dr. Shrawankumar Roongta in his research paper aims at reviewing and analysing the approach and strategies adopted by Indian firms to survive and thrive in the modern era of the fourth industrial revolution. Indian manufacturing companies are keen to adopt digital technologies and have partnered with the world's leading technology firms to transform their business functions.

Dr. Kavitha Venkatachari in her study help us to understand that apriori algorithm is the best algorithm and it takes less execution time and it gives the strong association rules. By this association rule we can get the relationships between one item and several important attributes. From the visualization tools to show the results helping to give decision proposals of the grocery item.

I hope readers will like the contents of the current issue. I thank all the scholars and supporting personnel who made this publication a reality and request everybody to help continue this publication uninterrupted.

Dr. Sulbha S. Raorane.
Editor

TO ASSESS ATTITUDE LEVEL AMONG DIFFERENT CADRES OF HOSPITAL STAFF REGARDING DISASTER PREPAREDNESS AT NAVI MUMBAI REGION

* Dr. Saloni Desai

ABSTRACT

In Today's, digital era of 21st century, we often come across news highlighting all sorts of natural as well as man-made disasters. The victims need hospitals as most important shelters for refuge. Hospital provides care for sick with the help of its doctors, nurses and staff members. It is vital for hospital to be safe from disasters; hence hospital disaster preparedness is very important subject. As per Indian Disaster Management Act, 2005, hospital staff training is mandatory for all hospitals. This is the need of the hour. Many studies have contributed in the field of disaster preparedness however very limited studies are conducted for Navi Mumbai region.

The present study is planned to assess the Attitude level of the hospital staff regarding disaster preparedness. Ten selected hospitals of Navi Mumbai region representing corporate, teaching and government hospitals were included in the study for the evaluation of objectives. Samples of 150 hospital staffs were surveyed for the present study. For finding out the association or non-association between the relevant variables, T-Test, ANNOVA was used.

Keywords: Disaster preparedness, Hospital staff, Attitude

Introduction

"The earth provides enough resources to satisfy human need and not just the greed"   ….
Mahatma Gandhi

One should remember these words of Mahatma Gandhi and must resolve to minimize and simplify needs since the environment is serving the basic requirements. Greek Philosopher Empedocles [1], as well as Indian mythologies state that the universe consists of five base elements - the earth, fire, air, sun, and water. From all these elements if the greed exceeds our need, it is bound to result in a terrible imbalance also known as 'pralay". This may be in form of earthquake, volcanoes, cyclones, floods etc.

Implications for the Study / Problem Identification:

Hospital safety is the basic right of the community. Hence it is expected that during an emergency situation, hospital and its staff members must be aware of their roles and responsibilities. Recent Kerala Flood is the live example of disaster in South India. Hence for better preparedness, Training should be imparted on regular intervals for safety practices in hospitals. Current study justifies how the Navi Mumbai hospitals are prepared to tackle the disaster in present era.

Aim of the Study

To study and assess level of disaster preparedness for selected hospitals of Navi Mumbai.

Objective of the Study

1.   To assess the Attitude level among different

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cadres of hospital staff regarding disaster preparedness before and after the training at selected hospitals of Navi Mumbai

Hypothesis Framed For the Study: Hypothesis Tested at $p < 0.0001$ level of significance.

H01: There is no significant difference between mean score of Attitude of the participants of selected hospitals regarding the disaster preparedness.

H1:There is significant difference between mean score of Attitude of the participants of selected hospitals regarding the disaster preparedness.

Research Methodology

Research Approach: A quantitative approach was used for this study.

Research Design: Pre-experimental - 1 Group [Pre-test-Intervention – Post-test] time series observation.This study was an interventional design, involving the health care workers at selected hospitals of Navi Mumbai. In order to meet the study objective and research problem, a quantitative data was collected and analysed with the help of pre-validated checklist.

Variables: the independent variables were training of hospital staff and conducted at hospitals with demonstration on fire safety. Dependent variables were Attitude questionnaire and score allotted to staff members' pre and post training.

Sample Size: Convenient sampling techniques were used for the selection of hospitals and participants. These participants were divided into cadres as per their designation. Hospital accessible population for the present study are the key people in the hospital who have information regarding hospital disaster preparedness. They were allotted by Hospital management and have given their consent to participate in study.

Criteria for Sample Selection

- Inclusion Criteria

1. Large hospitals located in Navi Mumbai, having 100+ beds

2. The hospitals who have given permission to conduct the study.

3. Participants available on the day of training and permitted by hospital administration.

4. Participants who were willing to participate in the study.

- Exclusion Criteria

1. Dental hospitals and Ayurvedic hospitals in Navi Mumbai

Ethical Approval

The research was approved by MGM Ethical committee for research on human subjects. Ethical committee clearance certificate, reference letter were shown to approach the hospitals for the survey.

Tools and Techniques

Applied standard tool (Creswell, 2006:5)

Informed Consent:

Formal Official permission for administering the questionnaire and checklist was taken from 10 hospitals under study located in Navi Mumbai region

Tool Validity:

The tool was given to validation at MGM Tool Validation committee. After the incorporation of final changes, there was an agreement among the member regarding the contents listed in the tool.

Reliability:

Tool Reliability was done by Cronbach' Alpha correlation coefficient method for reliability values.

Reliability Result Tool:

The reliability for knowledge questions was established using the Cronbach' Alpha co relation coefficient. The reliability was found to be 0.968. Since the calculated values were above 0.7 the tools were found to be statistically reliable. The Cronbach's alpha values were found to be 0.798 indicating the value of relevance used for the study

Period of Data collection and training: The data collection was done for 10 hospitals of Navi Mumbai as [December 2016 to March 2018 = 16 months period.]

Administration of the Training: DM training with demonstration on Fire Safety, after the pre-test participants were given training on disaster management with live demonstration on fire safety.

Post-test: Tool 1, Tool 2, Tool 3.

Participants Attitude score - Post-test was conducted

after pre-test and training on the same date after interval of 1 month, 2 month and thereafter gap of 6 months duration.

SPSS Statistical Techniques software version = 21 was used for Statistical Analysis

Review of Literature:

India is the seventh largest country in the world with total area of 3,287,283 square kilometres [2]. Its Geo climatic conditions give rise to disasters such as flood, drought, cyclone, earthquake and landslides of various intensities [3]. According to NDMA Policy GOI [4] major objective to build partnership with society as stake holders. Devastating hospital tragedies in India as listed in during 2001 to 2016 in the URL [5]. As per Indian Disaster Management Act, 2005, enacted policies and plan for disaster preparedness [6]. We as a community does not hold the power to stop the disaster, however certainly we can plan in advance for reducing the impact of disasters for protecting the resources for future generations[7]. To avoid fatal accidents, advance disaster planning and practices are the best tool for controlling the disasters [8]. NABH is the main body covered under the Quality Council of India [9]. In United States of America's statutory regulations, all hospitals should be accredited by JCAHO [10].Red Cross classifies disasters related to earth quake and volcano eruptions based on human habitats [11].

Section A: Demographic profile of the participants

Table No. 1: Distribution of Hospitals under the Study N = 10.

Sr. No.	Hospitals Category	Frequency
1	Corporate Hospitals	4
2	Teaching Hospitals	3
3	Government Hospitals	3
	Total	10

Interpretation: Table 1, majority of hospitals participated in study were corporate hospitals 4(40%).

Table No.2: Distribution of participants as per positions held in hospital. N = 137

Sr. No.	Category	Frequency
1	Administrative Staff	47
2	Nurses	40
3	Class IV Employees	30
4	Paramedical Staff	20
	Total	137

Interpretation: As per table 2, majority of the participants were in the category of Administrative staff, 47 (34%). This group comprised of Medical Superintendents, Administrators, In-charge Nursing personnel, In-charge Security personnel and Fire Safety Officers.

Table No. 3: Distribution of participants as per gender. N= 137

Sr. No.	Category	Frequency	Percentage
1	Male	58	42%
2	Female	79	58%
	Total	137	100%

$X2 = 0.396; p > 0.001$

Interpretation: As per table no.3, majority of the participants were females 79(58%). Out of which 33 female participants were from corporate, 24 from teaching hospitals and 22 from government hospitals.

Table No. 4: Distribution of the participants as per their Age N= 137

Sr. No.	Category	Frequency	Percentage
1	18-20 years	2	2%
2	21- 30 years	43	31%
3	31-40 years	43	31%
4	41-50 years	34	25%
5	51-60 years	10	7%
6	60+ years	5	4%
	Total	137	100%

$X2 = 19.466; p < 0.001**$

Interpretation: As per table no.4, majority 43(31%) of the participants were in the age group of 21-30 years and 31- 40 years, respectively. This shows that middle age hospital staff 21-40 years of hospital staff group participated in the study as majority group.

Table No. 5: Education level of the participants. N= 137

Sr. No.	Category	Frequency	Percentage
1	Degree	30	22%
2	Diploma	64	47%
3	HSC	11	8%
4	SSC and Below	32	23%
	Total	137	100%

$X2 = 15.573; p > 0.001 *$

Interpretation: From the above table 5, it is evident that majority of the hospital staff 64(47%), were Diploma holders in education level.

Table No. 6: Work experience of the participants.

Sr. No.	Category	Frequency	Percentage
1	Less than 10 years	94	69%
2	More than 10 years	43	31%
	Total	137	100%

X2 = 11.355; p > 0.001 **

Interpretation: With regard to work experience, as per table no. 6, majority 94(69%) participants were having work experience less than 10 years. These include 45 participants from corporate hospitals, 29 participants from teaching hospitals and 20 participants from government hospitals.

Section B

Determination of Attitude score of the participants for disaster preparedness

Attitude: This section presents the data on determination of pre and post-test attitude score obtained by the participants. Attitude score is categorized as positive and negative attitude arbitrarily as follows.

Score Grading: (Arbitrary)

Frequency %> 50% = Positive Attitude: Frequency% <50% = Negative Attitude

Table 7: Distribution of participants as per their level of Attitude Score towards Disaster Preparedness: N=137.

Particular	Pre-test (F)	%	Post-test 1(F)	%	Post-test 2(F)	%	Post-test 3(F)	%
Positive	71	52%	102	74%	106	77%	85	62%
Negative	66	48%	35	26%	31	23%	52	38%
Total	137	100%	137	100%	137	100%	137	100%

The total attitude score obtained by the participants were arbitrarily classified into positive and negative attitude levels of grading as follows.

Score Grading: (Arbitrary)

Frequency %> =50% = Positive Attitude: Frequency% <=50% = Negative Attitude

Interpretation: The data presented in table 7, indicated that in baseline pre-test score, majority of the participants 71(52%) had (Positive attitude), during post-test 1, it was improved to majority of participants 102(74%) had (positive attitude); and during post-test 2, majority 106(77%) participants had positive attitude.

During post-test 3, after 6 months score declined from 106(77%) to 85(62%) participants (had positive attitude), seems to be a burnt out effect.

Section C

Effect of intervention on pre-test and post-test Attitude score of participants (N= 137)

Category wise analysis of Attitude level of participants

Category 1: Administrator (Medical Superintendent, Hospital Administrator, in- charge Nursing, In-charge Security, Fire Safety Officer)

Table 8: Analysis of Attitude Before and After Intervention for Disaster preparedness among Administrator at Navi Mumbai Hospitals (Paired t test) N = 47

Pair No.	Particulars	Mean	S.D.	t-value	df	p-value
A	Pre-test	6.91	1.365			
	Post-test 1	7.49	1.159	7.273	46	0.001**
	Post-test 2	7.70	1.159	9.188	46	0.001**
	Post-test 3	7.19	1.362	2.780	46	0.001**
B	Post-test 1	7.49	1.159			
	Post-test 2	7.70	1.159	3.149	46	0.003**
	Post-test 3	7.19	1.362	2.837	46	0.007**
C	Post-test 2	7.70	1.159			
	Post-test 3	7.19	1.362	5.984	46	0.001**

* P<0.001@ 0.01 level of significance

Interpretation : From table 8, the data depicts that, pre-test attitude mean score was 6.91+1.365, after the intervention, during post-test 1, mean score was 7.49 + 1.159, during post-test 2, mean score was 7.70 +1.159, during post-test 3 mean score of administrator was 7.19 + 1.362.

Difference in the mean score of pre-test with post-test 1, post-test 2 and post-test 3 was highly significant at p<0.001 level. Also post 1 with post-test 2 was highly significant at p<0.001 level. Post-test 2 with post-test 3 was also highly significant at p<0.001 level of significance. Post-test 2 with post-test 3 was also highly significant at p<0.001 level.

Hypothesis Testing: Hypothesis Tested at p<0.0001 level of significance

A p-value less than 0.001** is statistically significant. It indicates strong evidence against the null hypothesis; therefore, researcher will reject the null hypothesis, and accept the alternative hypothesis that is Research Hypothesis as :

H1: There is significant difference between mean score of Attitude of the participants of selected hospitals regarding the disaster preparedness

Category 2 (Nurses) from 4 departments of hospitals (Casualty+ General +ICU+ Maternity)

Table 9: Analysis of Attitude Before and After Intervention for Disaster Preparedness among Nurses at Navi Mumbai Hospitals (Paired t test) N = 40

Pair No.	Particulars	Mean	S. D.	t-value	df	p-value
A	Pre-test	4.93	1.859			
	Post-test 1	5.68	1.623	6.389	39	0.001**
	Post-test 2	5.80	1.488	6.488	39	0.001**
	Post-test 3	5.30	1.556	2.360	39	0.001**
B	Post-test 1	5.68	1.623			
	Post-test 2	5.80	1.488	1.955	39	0.058**
	Post-test 3	5.30	1.556	3.553	39	0.001**
C	Post-test 2	5.80	1.488			
	Post-test 3	5.30	1.556	0.662	39	0.001**

Interpretation: From table 9, the data depicts that for nurse category, pre-test attitude mean score was 4.93 + 1.859, after the intervention, during post-test 1, mean score was 5.68 +1.623, during post-test 2, and mean score was 5.80 + 1,488, during post- test 3 mean score of nurses was 5.30 + 1.556.

For Nurse category, difference in the mean score of pre-test with post-test 1, post-test 2 and post-test 3 was

highly significant at p< 0.001 level. Also post 1 with post-test 2 was highly significant at p<0.05 level. Post-test 2 with post-test 3 was also highly significant at P<0.001 level of significance. Post-test 2 with post-test 3 was significant at p<0.001 level.

Category 3: Paramedical Staff: (In charge Pharmacy, In Charge Laboratory)

Table 10: Analysis of Attitude before and after intervention among paramedical staff at Navi Mumbai Hospitals (N = 20)

Pair No.	Particulars	Mean	S. D.	t-value	df	p-value
A	Pre-test	3.95	1.191			
	Post-test 1	4.85	1.040	7.285	19	.000**
	Post-test 2	5.15	1.089	8.718	19	.000**
	Post-test 3	4.65	1.348	4.765	19	.000**
B	Post-test 1	4.85	1.040			
	Post-test 2	5.15	1.089	2.854	19	0.0010**
	Post-test 3	4.65	1.348	1.285	19	0.214 NS
C	Post-test 2	5.15	1.089			
	Post-test 3	4.65	1.348	4.359	19	0.001**

** P<0.001@ 0.01 level of significance

Interpretation: From table 10, the data depicts that for paramedical staff category, pre-test knowledge mean score was 3.95 + 1.191, after the intervention, during post-test 1, mean score was 4.85 + 1.040, during post-test 2, mean score was 5.15 + 1.089, during post-test 3 mean score of nurses was 4.65 + 1.348.

For paramedical staff category, difference in the mean score of pre-test with post-test 1, post-test 2 and post-

test 3 was highly significant at p<0.001 level. Also post-test 1 with post-test 2 was highly significant at p<0.001 level. Post-test 2 with post-test 3 was also highly significant at p<0.001 level of significance. However, post-test 1 with post-test 3 was not significant since there is a wide time gap.

Category 4: Class IV Employees(Ward boy, Housekeeping Staff)

Table 11: Analysis of attitude among class IV Employees (N = 30)

Pair No.	Particulars	Mean	S.D.	t value	df	P value
A	Pre-test	3.23	1.006			
1	Post-test 1	4.17	0.986	14.000	29	0.001**
2	Post-test 2	4.30	0.877	10.0016	29	0.001**
3	Post-test 3	3.80	0.761	3.616	29	0.001**
		4.58	1.089	11.719	136	0.001**
B	Post-test 1	4.17				
	Post-test 2	4.30	0.877	1.439	29	0.161 NS
	Post-test 3	3.80	0.761	2.626	29	0.014*
C	Post-test 2	4.30	0.877			
	Post-test 3	3.80	0.761	5.385	29	0.001**

Interpretation : From table 11, the data interprets that for Class IV employees category, pre-test knowledge mean score was 3.23+ 1.006, after the intervention, during post-test 1, mean score was 4.17 + 0.986, during post-test 2, mean score was 4.30 + 0.877, during post-test 3 mean score of class IV employees was 3.80 + 0.761.

For Class IV employee category difference in the mean score of pre-test with post-test 1, post-test 2 and post-test 3 was highly significant at p<0.001 level. Post-test 1 with post-test 2 was not significant. Post-test 1 with post-test 3 was highly significant at p<0.001 level. Post-test 2 with post-test 3 was also highly significant at p<0.001 level of significance. Post-test 2 with post-test 3 was also significant at (p<0.001) level.

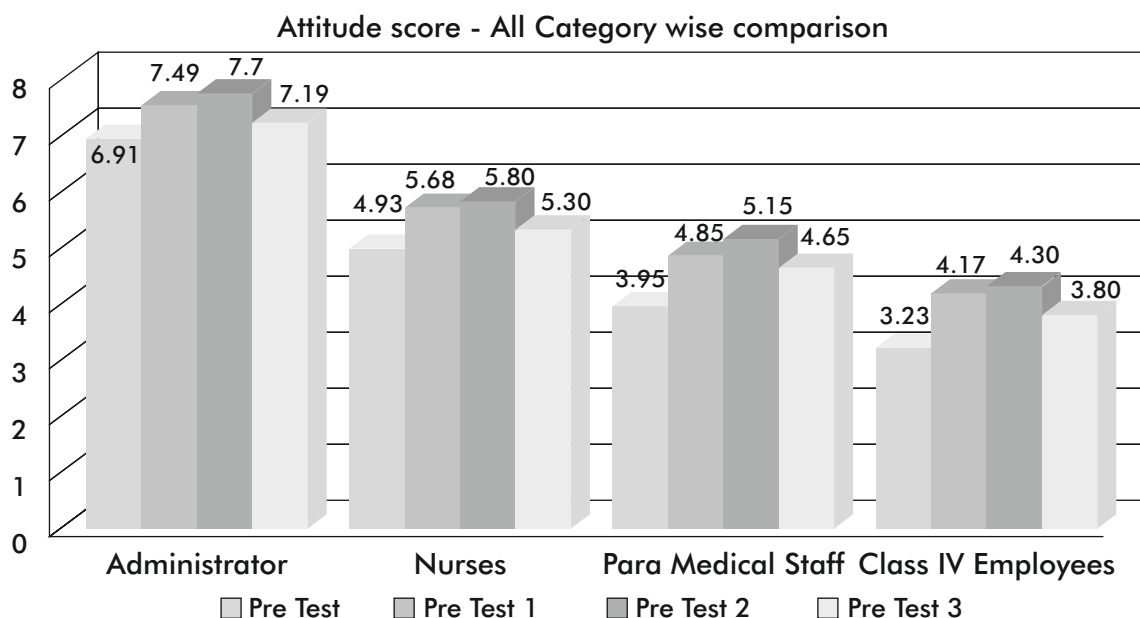Figure 1: All Category comparison of mean score of Attitude

** P<0.001@ 0.01 level of significance

Interpretation:

Figure 1, interprets that the level of Attitude of Hospital staff category, Administrator is higher at post-test 2 with mean score 7.7, as compared to Nurses at post-test 2 with mean score of 5.8, and Paramedical staff at post-test 2 with mean score of 5.15 and also in comparison with Class IV employees at post-test 2 with mean score 4.30.

Conclusion

The study concluded that the intervention was effective in improving Attitude score of the participants. There has to be continuity and practices need to be followed on regular intervals. Implementation and updating of Disaster management Plan is vital for the disaster related saviour for all hospitals, non-compliance should be penalised. Every hospitals staff should be trained periodically.

However, there is a room for improvement. Risk and hazards are supposed to be identified on periodic intervals for hospitals. Disaster Plan implementation must be made mandatory for all hospitals, non-compliance should be penalised. Every staff should be trained periodically in safety and evacuation drill, table top exercises and first aid training. Workshops and refreshers program must happen more often and should be linked to performance appraisal for better participation and compliance. Disaster Preparedness with innovative technology and research should be the first priority with all types of support from authorities for bright future of the country.

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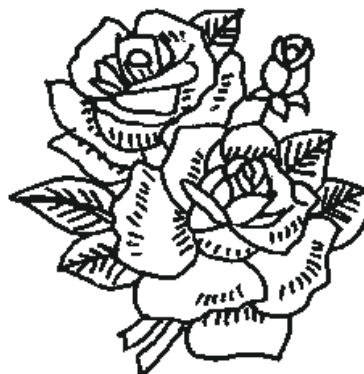
AN ANALYSIS OF SOCIAL MEDIA MARKETING WITH REFERENCE TO SURROGATE ADVERTISEMENTS ON GLOBAL LEVEL

* Dr. Rupa Shah

ABSTRACT

'Surrogate Advertising' is a form of advertising which is used to promote banned products like cigarettes and alcohol, The banned product (alcohol or cigarettes) may not be projected directly to consumers but rather masked under another product under the same brand name, so that whenever there is mention of that brand, people start associating it with its main product (the alcohol or cigarette). It is an effective way of communicating the value of a product or service with large exposure to target consumer. It uses different types of appeals to connect to consumers spread across the globe. It is just a strategy used to generate top of the mind recall. While this continued helping them to promote their liquor through this route as many companies did not even modify the existing advertisements and instead just replaced the text and voice-overs. This is what is challenging about surrogate advertisement as for ethical business practices one should not mislead consumers especially young generation to lean towards drinking alcohol.

Keywords: Personality, brand, image, celebrities, companies, purchasing behaviour.

Introduction

The central issue of the ethical discussion in the present study is regarding the attitude of targeted consumers towards the practice of surrogate advertising vis-à-vis their psychographic profile towards advertising in general. The psychographics of the target audience are important to be discussed since they are the final evaluators of advertising. The study concludes that surrogate advertising is not perceived positively by the various sections of the society. Though there were some positive perceptions found for this practice, on the whole, the attitude of most of the targeted consumers, i.e., the respondents were more dominating towards the negative side for the surrogate advertising and they consider it to be an unethical practice.

The ethical perception of the targeted consumers affect the acceptability of surrogate advertisements and hence, the attitude of the consumers towards it, with majority of these consumers considering it as immoral and unethical. The implications thus, are left for the advertisers to modify and redesign their advertising strategies in accordance to the consumer psychographics, so that they can find a way out which is more ethical and positive for the society or their target market rather than resorting to surrogate advertising.

When consumers look at advertisements, they associate these with banned products. Hence, such products are indirectly advertised, and therefore, influence their behaviour. There is no doubt that the hidden call for alcohol consumption behind the surrogate advertisements is not escaping the eyes of viewers of the world's fourth highest liquor consuming country. Hence, surrogate advertising defeats the very purpose of banning liquor advertisements.

Review of Literature

Cook, Guy; (2001) stated that Advertising is a buyer's guide for both consumers and industrial purchasers,

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providing the formal with news of new merchandise and special prices the latter with information about new materials, equipment and technology.

PR others , Lisa ; (1998) stated that advertising is itself a cultural product and companies should use ethics as it increasingly affects social attitudes, defines social roles, and influences cultural values. Influenced by these factors advertising evolved and developed a particular profile in western industrialised society in the 20th Century as a means of stimulating the consumption of products generated by new and expanding industries.

P.K. Bhargav, (2011) sates that advertising creates confusion in the minds of the people. Advertisements may inculcate bad habits among the viewers which has a bad effect on our culture. Sometimes advertisement exploits the sentiment of 'status symbol'. This unnecessarily creates a desire for satisfaction with ego protracted of the individual. Status conscious people are often motivated by advertisements by their advertisers' unethical practices.

Parulekar Ajit Arun (2005), in his paper examines the impact of surrogate advertising of alcohol brands on their brand equity. The purpose of the study was masked through the experimental design in order to minimize manipulation effects. In the main study, subjects were sequentially exposed to television ads, one ad at a time, of the 20 brands used in the pre-test. The findings of the paper support the notion that brand equity will be least affected in consumers with prior consumption experience, ad exposure or brand knowledge of the alcohol brand.

Research gap

The literature review is an integral part of any research work. The main objective of the literature review was to understand the research that has been done in the area. Thus after reviewing the available literature, it was observed that not much literature and research papers are available on Advertising Ethics and Surrogate advertising. Hence the researcher found that there is a gap for the research. Therefore the researcher has undertaken the study to bridge the gap and it will contribute to fill the research gap which exists as of today.

Objectives of the Study

This study deals with a variety of objects related to Advertising Ethics and Surrogate advertising. The

researcher has considered following objectives for this study. The detailed explanations of the objectives are given below.

1) To understand the impact of Surrogate advertising.

2) To study the various factors promoting surrogate advertising.

3) To study the various aspects of culture and adapting it with the various changes that has an impact due to the advertising patterns.

4) To suggest some measures for the development of positive impact of advertising on consumers.

Hypothesis of the Study

Ho   Surrogate advertising does not have a negative impact on the society.

H1   Surrogate advertising has a negative impact on the society.

Research Methodology

• The present empirical study has been done mainly from the secondary data and primary data for depth investigation. All the information data and opinion are collected which has a direct or indirect relevance to the information like official publications and research journals. The sample size taken was 250 respondents.

SAMPLING TECHNIQUE

The sampling technique adopted was the random sampling technique.

SOURCES OF DATA COLLECTION

1. PRIMARY DATA: Structured Questionnaire (120 respondents) & Formal Interview

2. SECONDARY DATA: Books, Journals & Websites.

DATA ANALYSIS AND INTERPRETATION

Chart 1:-Descriptive Statistics:

	Mean	SD
Advertising trends are changing rapidly.	3.52	1.442
Advertisements have influenced our lives.	3.20	1.472
Are the impacts of advertisements significantly reflected in modern our trends?	3.56	1.417
Are we influenced by the foreign ads?	3.44	1.474
Does advertisements affect consumer behaviour?	3.36	1.469
Advertisements affect the buying habits of consumers.	3.96	1.207
Society affects the way a consumer gets attracted towards any product.	3.72	1.400
Your company provide these customers that they can't obtain elsewhere.	3.48	1.475
Advertising affect the economic condition of consumer.	3.80	1.291

Chart 2 : One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Product characteristics	25	3.3600	1.49666	.29933
Pricing	25	3.2800	1.56844	.31369
Distribution	25	3.4400	1.52971	.30594
Service	25	3.6000	1.32288	.26458
Communication with their customers	25	3.5600	1.29357	.25871
Strengths	25	3.5600	1.22746	.24549
Weaknesses	25	3.5600	1.22746	.24549

Interpretation: From Chart 1 and 2 we can interpret that since p-value for the one sample t-test is less than that of 0.05 indicates that the average score obtained for Advertisements affect the buying habits of consumers, Society affects the way a consumer gets attracted towards any product and Advertising affects the economic condition of consumer is significantly on the strongly agree side. Indicating that respondents do significantly agree to Advertisements affect the buying habits of consumers, Society affects the way a consumer gets attracted towards any product and Advertising affect the economic condition of consumer but for all others the mean score is more than 3 but not significant.

Fig.1

Impact of Celebrities endorsing Surrogate products

Fig.1

Impact of Celebrities endorsing Surrogate products

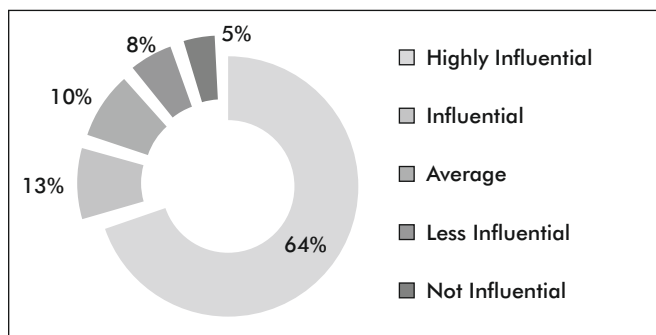| Highly Influential	64
Influential	13
Average	10
Less Influential	8
Not Influential	5

FIG.2

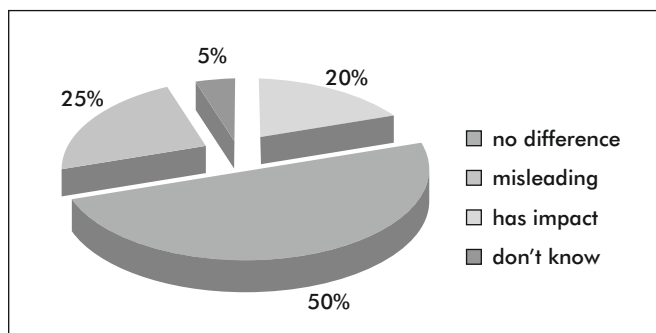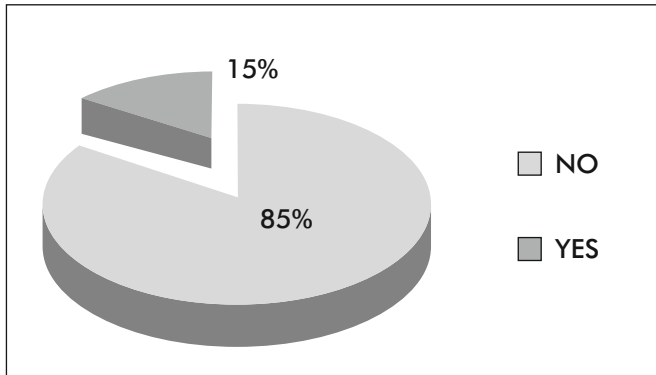Viewers' perception on surrogate advertising

FIG.3

Are Surrogate advertisements ethical?

Ethics and Social Responsibility

Advertising has to respect the laws of the land. Ethics and social responsibility play a major role in any society. Advertisements may be legal in the sense that it does not violate any law. But still it may err morally or ethically. Advertisers have always faced ethical dilemmas. Ethics in advertising, as in other aspects of social life is a complex issue. What something that one person considers ethical, the same another may consider unethical. Every day advertising professionals must make complex decisions about what can and ought to be said in advertisements. Clients want to make the strongest claims possible for their brands, but the border between the possible and the unethical must be constantly negotiated to sell the product or service.

The Present Scenario

Attention is a mental state indicating some level of awareness, that the mind is engaged, and that it is focused on something; in other words, tuned in. Many advertising messages simply wash over viewers without any attention being paid to them. Another problem is divided attention, when the audience is doing something else and is only half listening or half watching the ad. Many ads get half the mind and one eye. Accordingly, if the ad does not get noticed, it is very difficult, then for the message to make any impression. Therefore, most advertising is designed to be intrusive. Moreover, when more messages are presented to people than they are able to concentrate on, they have to sort out the messages some way. We filter out the items that do not interest us and that we do not agree with, and we simply do not pay any attention to those messages. Moreover, advertising has affected not

morality but the cognitive style with which people process and understand messages. Cognitive style was defined as the mode in which, and the degree to which, the senses are used in processing information.

LIMITATIONS OF PROJECT

- Limited Sample Size (250)
- This study is restricted to the geographical limits of Mumbai.
- Limited period of survey

Findings & Sugesstions

1) The study will help to enlist various perceptual factors (like attitudes, moods, motives, interest etc.) that affect the attitude of consumers towards the surrogate advertisement.

2) The study will help to understand whether the advertising of surrogate of the same brand leads to recall the original product.

3) The study also hopes to reveal whether the youth will still be attracted to buy these products by viewing the surrogate advertisement even though the original products are harmful to the health of the consumers.

4) The study will help to understand the impact on the minds of youth who can get attracted to consume the original product as they are endorsed by celebrities (where in they actually increase the cost of the product by using celebrities in the advertisements.)

5) The study will explain whether the youth actually develops a habit of drinking/ smoking by watching these advertisements.

Conclusion

The world of advertising has come a long way. Some people describe it as an untrue, misleading and obscene. Advertising industry has been facing a lot of criticism in the recent times as the advertising practices have not always been ethical. In today's competitive market, due to free allowances, the advertisers are sometimes following the unethical practices to fight the competition. For many years, the advertising industry has practiced, promoted voluntary self-regulation. Most advertisers and the media recognize the importance of maintaining consumer trust and confidence. The body

of self-regulation in advertising is widening day by day. Even the code of ethics drawn up by the Advertising Standards Council of India (ASCI) do not have much impact. They do not provide solutions to every ethical dilemma. Advertising is an important and legitimate means for the seller to awaken interest goods and services. The success of advertising depends on public confidence; hence no practice should be permitted that tends to impair this confidence. The present research contented that half of the Indian advertisements are through unethical ways of persuading consumers towards their product. The study also argues that the adolescents are easily misled by the advertisements. The guidelines and the codes laid down by Advertising Standard Council of India have ruled over. The interpretation and analysis of the survey and the hypothesis have been proved through data analysis.

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CSR ACTIVITIES CONDUCTED BY CORPORATE INDIA

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ABSTRACT

'Over the years, Corporate Social Responsibility (CSR) has gained wider implications than mere philanthropy. This paper attempts to identify contribution of listed Indian companies towards CSR activities based on the norms and regulations prescribed by the Company's Act 2013. It also attempts to identify the most preferred CSR activity among the activities listed by the Government based on the CSR expense incurred by the companies. The authors have provided the findings and recommendations on the basis of descriptive and inferential analysis of their study of listed companies.

Keywords: Corporate social responsibility, philanthropy, social responsibility

Introduction

Businesses have realized that in order to continue flourishing, they have to adopt a more holistic and inclusive business model. Along with the goal to maximize the shareholder's wealth, corporates are expected to discharge their societal obligations. They are expected to do more than merely provide jobs and contribute to the economy through taxes. Contributing to the social capital is increasingly seen as a necessary part of doing business. There is also an increase expectation that companies will be more open, more accountable and be prepared to report publicly their social and environmental performance. From receptive activities to sustainable initiatives, corporates have to clearly display their ability to make a significant difference in the society and improve the overall quality of life. In the current social situation in India, it is difficult for one single entity to bring about change, as the scale is colossal. Corporates have the know-how, strategic thinking, manpower and cashflow to facilitate extensive social change. Hence, effective partnerships between corporates, NGOs and the government can place India's social development on a faster track. The essence of CSR is not only in building sustainable businesses, which in turn create healthy markets but also in developing communities, societies and its economies. The important driving forces for CSR are creating a

synergy of ethics, a cohesive society and a sustainable global economy where markets, labor and communities are able to function in a well-organized manner.

There are mixed reactions in the outcome of the relationship between social responsibility and profitability/financial performance. While some study indicates a positive relationship (Griffin & Mahon, 1997, McGuire, Sundgren & Schneeweis, 1988, Waddock & Graves, 1997), some studies indicate negative relationship (Bromiley & Marcus, 1989, Wright & Ferris, 1997). Some other studies also indicate no relationship (Aupperle, Carroll & Hatfield, 1985). It is worthwhile to mention in support of this that the Stakeholder theory provides a framework for investigating the relationship between Corporate Social Performance (CSP) and Corporate Financial Performance (CFP). (Ruf, Muralidhar, Brown, Janney & Paul, 2001)

CSR is not a new concept in India. Corporate conglomerates like the Tata , the Aditya Birla, Reliance from among the private players and Indian Oil Corporation from among the PSUs have been involved in serving the community ever since their inception. Many other organizations have been giving aids/contributions/donations and organizing charity events. Currently, CSR in India has gone beyond merely charity and contributions/donations, and is

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approached in a more organized manner. It has become an integral part of the corporate governance disclosures under Director's report in the Annual Report of a company.

Research Problem

It is a universal truth that companies are run by its management. However, it has been observed that there is a patterned shift in the way management run the companies. The shift is from profit maximization to profit optimization and shift in accountability from shareholders to stakeholders. Companies are now expected to focus on 'triple bottom line' that is not only financial but also social and environmental (ecological) aspects of business. Many companies who are under the eligible category as per the criteria set by the Government of India, have exhibited non-compliance of the CSR mandate of attaining 2% of the three years average profit. It is indeed a problem and we are trying to identify the percentage of companies included in the Nifty 500 index that have compliant or not complaint the mandatory norms laid by the government of India.

Need for the Study

With the government mandate in the Companies Act, 2013, companies should document the CSR activities executed by them in the Annual Report. This has made CSR an organized function of the organization. A CSR Policy and a CSR Committee guide the CSR function of the organization. The need for the study is to identify, segregate and prepare a report which at a glance can give a pen picture about the companies who have spent more than or equal to the mandatory 2% and those companies who have defaulted in this compliance in spite of falling under the eligible categories of companies.

Objectives of the Study

The objectives of our study are as follows:

1) To analyze the CSR activities undertaken by the companies listed on the National stock exchange's Nifty 500 benchmark index based on the Indian Government's CSR Mandate detailed in the Companies Act, 2013.

2) To identify the most preferred CSR activity based on the amount spent on the various CSR activities

3) To provide suggestions to companies so that they can enhance their ambit of CSR activities.

Rationale for taking up the project and its interdisciplinary relevance.

With the new legislation implemented from year 2014-15, CSR activities are compulsory for companies with a turnover more than INR 500 crore. The study will help to understand the current perspective of the corporate towards CSR. It will also assist the companies to comprehend the CSR guidelines and CSR activities so that they can enhance the functioning of their CSR cell. It would also help the education sector to design a course for teaching CSR to students at the school, graduate and post-graduation level.

Review of Literature and Development in the field

According to Shinde, 2005, globally, there has been a growing realization towards contribution to social activities with a desire to improve the immediate environment. The legendary JRD Tata who continuously laid a great deal of emphasis to go beyond any normal business activity, pointed out that there were many ways in which industrial and business groups can contribute to public welfare beyond the scope of their regular activities. He believed that apart from donating funds for good causes, an organization can use their own financial, managerial and human resource to offer task forces for executing direct relief and rebuilding measures. As a consequence, the community development and social welfare program of the premier Tata Company, Tata Iron and Steel Company started the concepts of "Social Responsibility."(Gupta, 2007)

Organization for Economic Cooperation and Development (OECD) was a pioneer in establishing the concept of CSR and came up with guidelines for MNC in 1976 with a purpose of improving the investment climate and encourage positive contribution by corporate. Several Governments have initiated measures to encourage CSR reporting. Some of the measures have been incentivizing companies who voluntarily report their CSR activities and mandating CSR Reporting. In 2007, Government of Malaysia delivered a regulation to mandate all publicly listed companies to publish their CSR initiatives in their Annual Report on 'comply or explain' basis. In 2009, Denmark mandated CSR reporting asking all state-owned companies and all those companies with total assets worth more than 19 million, revenues more than 38 million and employees more than 250, to report their social initiatives in their Annual Financial Report. A law

namely, Grenelle II, passed by France mandates integrated sustainability and financial reporting of all companies listed on the French Stock Exchange including subsidiaries of foreign companies located in France and unlisted companies with sales revenue of more than 400 million and having more than 2000 employees. Another important milestone in CSR is the Corporate Responsibility Index, which challenged and supported large organizations to integrate responsible practices in the course of business.

As indicated earlier, the growing understanding towards contribution to social activities was not only a desire but a need to improve the immediate environment (Shinde, 2005). It has also been observed that companies that pay genuine consideration to the principles of socially responsible behavior have been favored by the public and preferred for their goods and services. Gradually, it began to be accepted, at least in theory that business had to share a part of the social overhead expenses. Customarily, it had discharged its responsibility to society through patronages for education, medical facilities, and scientific research among other objects. The important reform at that time was that industry accepted social responsibility as part of the management of the enterprise itself.

The past decade of the 21st century witnessed a significant shift away from charity and traditional philanthropy towards more direct engagement of business in mainstream development and concern for disadvantaged groups/people in the society. Internally, it was the "corporate will" and externally, the "increased governmental and public expectations" has driven this shift (Mohan, 2001). According to CEC, Commission of the European Communities (2001), being socially responsible means not only fulfilling legal expectations, but also going beyond compliance and investing 'more' into human capital, the environment and the relation with stakeholders.

CSR Mandate in India

Indian Companies Act, 2013 has introduced many new provisions which also comprises of a CSR mandate. Ministry of Corporate Affairs (MCA) has notified it under Section 135 and Schedule VII of the Companies Act, 2013 as well as in the provisions of the Companies Rules, 2014 (Corporate Social Responsibility Rules) which came into effect from 1st April 2014.

Section 135 of the Companies Act, 2013 provides the conditional limit for applicability and execution of the CSR activities to a Company i.e. (a) Net worth of the company to be INR 500 crore or more; (b) Turnover of the company to be INR 1000 crore or more; (c) Net profit of the company to be INR 5 crore or more during immediately preceding financial year. Besides, as per the CSR Rules, the provisions of CSR are not only applicable to Indian companies, but also to branch offices and project offices of a foreign company in India.

Every company that qualifies the conditions on CSR spend, requires to spend at least 2% of its average net profit for the immediately preceding 3 financial years on CSR activities. In addition, the qualifying company is required to constitute a committee (referred as CSR Committee) of the Board of Directors (referred as Board) consisting of 3 or more directors with one of them as independent director. CSR is no longer taken just as an addition, but a key differentiator .

This definition of CSR assumes significance as it allows companies to engage in projects/programs relating to activities enlisted under Schedule VII. However, flexibility is permitted to the companies by allowing them to choose their preferred CSR engagements that are in conformity with the CSR policy.

Activities under Corporate Social Responsibility (CSR): The activities that can be done by the company to achieve its CSR obligations include (a) Eradicating extreme hunger and poverty, (b) Promotion of education, (c) Promoting gender equality and empowering women, (d) Reducing child mortality and improving maternal health, (e) Combating HIV, AIDS, malaria and other diseases, (f) Ensuring environmental sustainability, (g) Employment enhancing vocational skills, (h) Social business projects, (i) Contribution to the Prime Minister's National Relief Fund (PMNRF) or any other fund set up by the Central Government or the State Governments for socio-economic development and relief and funds for the welfare of the SC, the ST, other backward classes, minorities and women and such other matters as may be prescribed. In a research conducted in 2013, the environment dimension emerged as the most important factor (Pachar & Singh, 2013).

Disclosures under CSR: It was studied that the reporting practices range from sophisticated and well-established system to "a brief mention of Corporate Social Responsibility (CSR)" in the Director's report. Although CSR reporting will continue to improve

universally, the information it contains would need to be standardized (Richa & Singh, 2010). As per the format provided by the mandate, the companies have to exhibit in the Director's Report, the following:

1) CSR Project or Activity identified by the Company/Organization

2) Sector in which the CSR project or activity is covered with reference to Schedule VII

3) Location of local area, district and state where projects or activities undertaken.

4) Annual Budgeted expenditure against each project or activity that the company undertakes

5) Actual amount spent on the projects or activities (Direct expenditure on the project/ activities as well as other overheads incurred)

6) Detail of whether the amount was spent directly or through an implementing agency or partner.

While the expenditure to be incurred on conducting CSR activities is not compulsory, the reporting is compulsory. If the company does not spend the prescribed budgeted amount, then the company needs to give reasons for not spending. The amount spend by companies on CSR activities is meagre compared to the investments made by the government in social development but the purpose is to bring the expertise of management, innovation and updated technology available at the corporate level for the development of the country. In fact, CSR is no longer just an addition, it is a significant differentiator.

Research Methodology

Research Design: Exploratory and Descriptive research

Sampling Design:

a) Universe of study: Companies listed on National Stock Exchange (NSE) of India and included in Nifty 500 index.

b) Sampling Technique: Probability sampling

c) Sample size: 500 companies

d) Target Respondents: Representative of CSR Committee of Companies

e) Period of data collection: 2014-15 to 2016-17 financial year (3 years)

Type of Data and Collection

Secondary Data collected from Director's Report published in the Annual report of NSE listed 500 companies as was available on 30th September 2017 for past 3 years. The Annual Reports were taken from the company's website. These companies are a good representation of Indian Corporate as they belong to 18 different sectors as per the NSE sector classification.

Primary data was collected through survey of 50 companies using a standard structured questionnaire. Principal Component Analysis (PCA) was used with the help of Maxstat software.

After analyzing the CSR activities as mandated by the government of India, a set of 7 broader activities were comprehended (see Table 1A).

Table 1A
Corporate Social Responsibility(CSR) activities

As mandated by Govt. of India		As comprehended for the study	
1)	Promotion of Education	I)	Spread of Education
2)	Combating HIV, AIDS, malaria and other diseases	II)	Progression of Healthcare
3)	Reducing Child Mortality and improving maternal health		
4)	Employment enhancing vocational skills	III)	Livelihood Enrichment
5)	Eradicating extreme hunger and poverty		
6)	Promoting gender equality and empowering women	IV)	Socio Economic Development
7)	Promoting Social business projects		
8)	Ensuring environmental sustainability	V)	Ensure environmental sustainability
9)	Contribution to the PMNRF or any other fund set up by the Central Government or the State Governments for socio-economic development and relief	VI)	Contribution to Government authorized funds
10)	Contribution to funds for the welfare of the SC, the ST, other backward classes, minorities and women	VII)	Assorted (Miscellaneous)

Source: Tabulated data

Table 1B lists the sectors to which the sample companies belong:

Table 1B: Sectors which the companies belong:

Industry	No. of companies	%
AUTOMOBILE	28	6%
CEMENT & CEMENT PRODUCTS	17	3%
CHEMICALS	16	3%
CONSTRUCTION	38	8%
CONSUMER GOODS	70	14%
ENERGY	35	7%
FERTILIZERS & PESTICIDES	12	2%
FINANCIAL SERVICES	80	16%
HEALTHCARE SERVICES	5	1%
INDUSTRIAL MANUFACTURING	43	9%
IT	29	6%
MEDIA & ENTERTAINMENT	16	3%
METALS	20	4%
PAPER	2	0%
PHARMA	36	7%
SERVICES	29	6%

TELECOM	9	2%
TEXTILES	16	3%
	501	100%

Source: Tabulated data

Data Analysis & Findings

The result of the descriptive analysis of CSR activities carried out by the sample companies is appended in Table 2.

It is observed in Table 2 that the percentage of expenditure incurred by all sample companies taken together is highest on Promotion of healthcare (33%, 35%, and 22% in the year 2015, 2016 and 2017 respectively) but most of the companies prefer to spend on Contribution to Government through donations to various Funds (31%, 18% and 22% being the median in the year 2015, 2016 and 2017, respectively). So, the most preferred activity where CSR expenditure is incurred is on Contribution to Government through donations to various funds while all companies taken together spent highest on Promotion of Healthcare in the society.

Table 2: Descriptive Analysis

Descriptive Statistics	Promotion of Education	Promotion of healthcare	Livelihood enhancement	Ensuring environmental sustainability	Socio Economic Development	Contribution to Govt. through donations to various Funds	Miscellaneous
Mean(2015)\	1.25	2.10	1.32	1.07	1.11	0.95	1.54
Mean(2016)	1.92	2.33	1.85	1.21	0.77	1.08	2.17
Mean(2017)	1.87	1.51	1.82	1.60	1.20	4.80	3.71
Median(2015)	0.12	0.11	0.09	0.11	0.12	0.31	0.09
Median (2016)	0.17	0.16	0.20	0.14	0.13	0.18	0.19
Median(2017)	0.20	0.16	0.20	0.07	0.10	0.22	0.15
Amount (Rs. in Cr) spent by all companies							
(2015)	1256	1732	1338	295	268	70	245
(2016)	1821	2334	1495	397	209	96	335
(2017)	1838	1351	1248	558	299	192	573
% of expenditure on an activity							
(2015)	24%	33%	26%	6%	5%	1%	5%
(2016)	27%	35%	22%	6%	3%	1%	5%
(2017)	30%	22%	21%	9%	5%	3%	9%

Source: Calculated data

Inferential Analysis

The paper has defined hypotheses and used paired T Test to test the hypotheses. The expenditure on CSR activities for year 2015, 2016 and 2017 are analyzed separately.

Statement of Hypotheses I

H0: There is no significant deviation between the actual expenditure of the company and the budgeted expenses incurred on various CSR activities in the years 2015, 2016 or 2017

H1: There is a significant deviation between the actual expenditure of the company and the budgeted expenses incurred on various CSR activities in the years 2015, 2016 or 2017.

Table 3 displays the correlation between actual and budgeted CSR expenses.

Table 3 : Correlation

	2015		2016		2017	
2015	Budgeted Expenditure	Actual Expenditure	Budgeted Expenditure	Actual Expenditure	Budgeted Expenditure	Actual Expenditure
Actual Expenditure	1		1		1	
Budgeted Expense	0.97	1	0.98	1	0.98	1

Source: Calculated data

Table 3 indicates a very strong correlation between Actual expenditure and Budgeted expense on CSR. The Paired T Test analysis is appended below in Table 4

Table 4: Paired T Test Analysis

		2015	2016	2017		
	Budgeted	Actuals	Budgeted	Actuals	Budgeted	Actuals
Mean	968.6243	743.19	1189.676	955.2057	999.7271	865.51
Variance	880942.7	453897.5	1543586	822461.9	491948.9	380296.8
Observations	7	7	7	7	7	7
Pearson Correlation	0.974699		0.986997		0.983265	
Hypothesized Mean Difference	0		0		0	
df	6		6		6	
t Stat	1.866146		1.646985		2.413238	
P(T<=t) one-tail	0.055636		0.07533		0.026171	
t Critical one-tail	1.94318		1.94318		1.94318	
P(T<=t) two-tail	0.111272		0.15066		0.052343	
t Critical two-tail	2.446912		2.446912		2.446912	

Source: Calculated data

The Table 4 T Test analysis shows that the Probability value for the T Test as 0.11 in 2015, 0.15 in 2016 and 0.052 in 2017 which is greater / equal to the significance value of 0.05 and therefore it is statistically insignificant. Hence we accept the Null hypothesis (H0). This indicates that there is a no significant deviation between the actual expenditure of the company and the budgeted expenses incurred on various CSR activities.

Interpretations

1. Actual Expenditure and budgeted expenses incurred on various CSR activities are positive and strongly correlated.

2. From the measure of the mean, it is evident that although the average expenditure on promoting healthcare among the companies is the highest, this

expenditure is not uniform or strongly concentrated towards the average expense among the companies.

3. There is a no significant deviation between the actual expenditure of the company and the budgeted expenses incurred on various CSR activities.

Summary of findings of data collected from Annual reports of the companies for the years 2015, 2016 and 2017:

1) 100% of the sample companies have published the information about their CSR spending in the Annual report, drafted their CSR Policy and deployed a CSR Committee.

2) The sample companies have conducted CSR activities within the ambit of guidelines given by the government.

3) An analysis of CSR reports of companies presents the following:

   i. 12%, 18% and 19% of the companies have spent 2% or more of their 3 years' average profit on CSR activities as of 2015, 2016 and 2017 respectively.

   ii. 61% companies have spent less than the prescribed CSR expenditure

      a) 30% of the companies have spent 1% -1.9% of their 3 years average profit on CSR activities.

      b) 31% of the companies have spent less than 1% of their 3 years average profit on CSR activities.

4) The explanation provided by sample companies for not spending the mandated 2% of 3 years average profit are summarized below:

   i) Few projects required management approvals, legal approvals and few other projects were not sanctioned.

   ii) As many projects were undertaken on large scale, they had to be conceptualized, strategized and later implemented. This required time which extended beyond a year and so the fund allocated for CSR could not be spent.

   iii) Many companies' Committee intended purposeful implementation of CSR activities. They had to identify the project, plan the implementation and build the infrastructure. These all activities required time.

   iv) Many projects took off in phased manner. 100%

budget allocation was made for these projects but the expenditure had to be incurred in a phased manner.

   v) Few other companies did not have the resource to identify the CSR area and few others were loss making.

This shows that in the first year of applicability of CSR concept, the corporates were yet preparing their foundation for conducting the activities in a full-fledged manner.

5) Majority of the companies have conducted the CSR activities through outsourced agency. Few companies have established their own Trust/ Foundation. The external agency is mostly an NGO with a definite purpose. Very few companies have involved their employees in conducting CSR activities.

6) Promotion of Healthcare is the most preferred activity as approx. 85% of the sample companies spent a part of their CSR expenditure on promoting health care services. Also, a major share of the total CSR expenditure incurred by all the 100 companies taken together is on Promoting Health Care. Hence Promotion of Health is the most preferred CSR activity in terms of spending.

The rank for each activity as in Table 5 has been derived on the basis of the percentage of expenditure incurred by the sample companies on a particular CSR activity out of the total CSR expenditure. In a study conducted in 2015 (& Kaur, 2015), 88% of the sample companies have spent on Health and education which is similar to our study. The Rank as per our study is as follows:

Table 5: Ranking of CSR Activities on the basis of % of CSR Expenditure

Activity	Rank in 2015	Rank in 2016	Rank in 2017
Promotion of Health	I	I	V
Promotion of Education	III	II	II
Socio Economic Development	IV	VI	VI
Livelihood Enhancement	II	III	III
Ensuring environmental sustainability	V	IV	IV
Contribution to Government through donation to various Funds	VI	V	I

Source: Tabulated data

Managerial Implications

Before the CSR Mandate, the CSR activities of the firms depended upon the nature of their industry and restricted to the area where the firm was located (Rai S., 2014). It was largely driven by factors such as cost minimization and "visibility" among the consumers. Now according to the Companies Act 2013, it is not only mandatory for the firms to spend 2% of their average profit of last 3 years in CSR activities but also to spend the money on the activities as mandated by the Act. However, as per our study, many companies have not expended the entire sum to be spend on CSR activities with an explanation that as the sum is huge, it needs proper planning for productive execution. They also indicated that they require time to identify the social activities where there is 'need' so that their contribution to the society results in positive change in the life of people. This argument is reported by Handique M. (2008), that many Indian companies have made little progress in reporting development projects. The findings of the study gives a list of specific activities conducted and its strategies adopted by the sample companies. This can be referred by the mangers of firms which have either carried out very less CSR activities or have not commenced their activities, as guideline to formulate their CSR strategies.

Recommendations

As per the Company Act 2013, the companies need to analyze the requirements of the society and then initiate the CSR activities. The list of the findings in serial no.6 provides the most frequently conducted CSR activities by the top 500 companies in India.

In view of the above, we recommend the companies who have not initiated any CSR activities or carried our minimal activities to consider the list provided in the findings (serial no.6) as guideline to fulfill the mandate.

Future Scope

The future scope of this research identified is as follows:

1) Value addition through analysis of impact on the society of CSR activities can be studied rather than expenditure incurred.

2) A standardized format (CSR Index) for measuring the impact of a CSR activity can be created.

3) This study is exploratory and descriptive design and can be extended to causal research design.

Conclusion

The study has analyzed the CSR activities and expenditure incurred by the sample companies. It identified the most preferred CSR activities and sub activities among those mandated by the Government by some top companies and created a framework of possible activities for other companies. This study would guide those companies who are yet to open their score or have done very little in the CSR aspect, and help to join the CSR bandwagon and move forward in their CSR standings.

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A STUDY ON PERFORMANCE ANALYSIS OF TOP PHARMA COMPANIES IN INDIA

* Dr. Natika Poddar and ** Ms. Alina Machado

ABSTRACT

'The ratio analysis technique is the process of identifying the financial strength and weaknesses of a firm by properly establishing the relationship between the items of profit and loss account and balance sheet. This report is an analysis of the financial operations and performance of the companies for the period of five years that is from 2015 to 2019. This report will provide an assessment and analysis of the profitability, liquidity and solvency position and financial performance of the pharma companies. In the analysis, financial ratios were used to gain a critical review of the specific areas of assessment of a company's performance. The ratios were able to provide a clear view of the overall performance of the companies.

Keywords: Pharmaceutical, Laboratories, performance, Ratios

Introduction of Indian Pharmaceutical Industry

In 1930, the first pharmaceutical company was started in Calcutta, called Bengal Chemicals and Pharmaceutical Works' which still today is one of the 5 government owned drug manufacturers. India is home to 3000 pharma companies with a strong network of over 10,500 manufacturing facilities.

India is the largest provider of generic drugs across the world, occupying 20% share in global supplies by volume. Apart from this India is the source of 60000 generic brands across 60 therapeutic categories and manufactures more than 500 different Active Pharmaceutical Ingredients (API's).

The export of pharma products is one of India's core strengths. The cost of production in India is almost half of that in Europe and one third of that in US. The Indian Pharmaceutical industry accounts for about 2.4% of global pharmaceutical industry in value terms. Generic drugs form the largest segment of the pharmaceutical industry in India with 70% market share. Over the counter medicines constitute around 21% of the market while patented drug has a 9% share. India is currently among the top 20 global medical device markets and the 4th largest medical device in Asia.

Indian pharmaceutical industry provides over 50% of global demand for various vaccines, 401% of generic demand in United States and 25% of all medicines in United Kingdom. Presently, over 80% of the antiretroviral drugs used globally to fight (Acquired Immune Deficiency Syndrome) AIDS are supplied by Indian pharmaceutical firms. Sales of Multinational companies grew by 8.3% in 2018. Indian firms received 304 (ANDA) Abbreviated New Drug Application approval from the US Food and Drug Administration (USFDA) in 2017.

Indian pharmaceutical sector was valued at US $ 33 billion in 2017. Indian pharmaceutical Industry grew by 9.4% year on year in 2018. Indian drugs are exported to more than 200 countries across the world, with the US as the key market. Investment made by Indian pharma companies in research and development increased from 5.3% in financial year 2011-12 to 8.8%

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of sales in 2017-18. Increased expenditure on research and development and low cost production led to competitive pharma export due to which export reaches to US $ 17.27 billion in the financial year 2017-18.

Literature Review

Sharma and Reddy (1985) in their study have identified the factors influencing liquidity by conducting a study on the liquidity position of pharmaceutical companies for a period of eight years. They concluded that government policy with respect to input and output has significant influence on the liquidity position of the company.

Debasish Sur and Kaushik Chakraborty (2006) in their study on financial performance of Indian pharmaceutical industry, have concluded that the industry has been playing a very significant role in increasing life expectancy and in decreasing mortality rate. It is the 14th largest in value terms and 5th largest in terms of volume, globally. They compare six companies' financial performance for the period of ten years using relevant statistical tools.

Tiwari and Parray (2012), explained analysis of financial statements of Ranbaxy Ltd. in detail. They provided insights into two widely used financial tools, common size statement analysis and ratio analysis. Their objective was to help the reader understand how these tools should be used to analyze the financial position of a firm.

Sheila and Karthikeyan (2012) studied Indian pharmaceutical firms in terms of profitability. They found that Cipla was the best company having strongest financial performance among all the selected companies. They also have found that ROE & ROI are the most comprehensive measures of profitability of a firm.

Sinha Birendra and Dr. Deepika Singhavi (2015) conducted research project on liquidity and profitability analysis of pharmaceutical companies of India for the period of seven year. They found out that in the initial years, profitability was not quite encouraging, but later after 2009 the companies started showing positive trends in profitability.

Bhavik Swadia (2018), concluded that in the early years of pharma companies' the gross profit margin ratio was high and in subsequent years this ratio greatly reduced. It seems that the high cost of companies' COGS led to decrease in profits. And pharma companies had a very good financial position in 2008, while the weakest financial position of all time in 2015.

Need for the Study

Ratio analysis helps us to compare financial performance of the firm in terms of risk, profitability, solvency and efficiency. Interpretation of the financial statement is essential for all internal and external stakeholders of the firm.

Ratios like account receivable turnover, fixed asset turnover and industry turnover ratio can be compared with other peers of the same industry and helps to analyze which firms are better managed as compared to the others; and it also helps to compare company's current performance with its past performance.

Profitability ratio helps to determine how profitable a firm is. Ratios like Return on Assets and Return on Equity helps to understand the ability of the firm to generate earnings. Liquidity determines whether the company can pay its short- term obligations or not.

Objectives of the Study

- To compare liquidity profitability and solvency of the selected companies
- To compare company's current performance with its past performance
- To compare cash conversion cycle of selected companies

Scope of the Study

Scope of this project is confined to the comparative study of top pharma companies using ratio analysis. Comparative financial analysis is done with top four companies on the basis of market capitalization for the period of five years that is from 2014-15 to 2018-19.

Research Methodology

The data collected is secondary data. This study is quantitative in nature as it deals with the main aim that is to find relevant conclusions through the financial statement analysis. The data is taken from annual reports of all the four companies, their websites, past research papers and some business news websites are also used.

Introduction of selected companies

Based on market capitalization (as on 27th January 2020), top four pharma companies chosen for comparison are as follows:

1. Sun Pharmaceutical Industries Ltd. market cap = Rs. 107418.23 crores

2. Divis Laboratories market cap = Rs. 50760.25 crores

3. Dr. Reddy's Lab. market cap = Rs. 50315.25 crores

4. Cipla Ltd. market cap = Rs. 36933.29 crores

1. Sun Pharmaceutical Industries Ltd.

Sun Pharmaceutical Industries is an Indian multinational pharmaceutical company headquartered in Mumbai, Maharashtra that manufactures and sells pharmaceutical formulations and active pharmaceutical ingredients primarily in India and the United States. It was incorporated in Kolkata in the year 1983, it commenced operations as a partnership firm by Dilip Shanghvi and his family.

It was listed on the stock exchange in the year 1994. Sun Pharma is India's largest (by market capitalization) and the world's 5th largest specialty generic pharmaceutical company. The company manufactures and sells high quality, affordable medicines in over 150 countries across 6 continents.

Sun pharmaceuticals has an intellectual capital of more than 2000 scientist and invests over 7%-8% of its annual revenues in Research and Development. The company has over 48 manufacturing facilities across the globe. 30 of their brands are among the top 300 pharma brands in India.

The company markets its pharmaceutical formulations as generics and branded generics in India and all major international markets. Over 72% of Sun Pharma sales are from overseas markets. The US is its single largest market, accounting for almost 60% of its turnover.

2. Divis Labs:

Divis Laboratories limited is an Indian multinational pharmaceutical company based in Hyderabad, Telangana, India. Founded in 1990, has been established for more than 29 years and is among the top pharmaceutical companies in India.
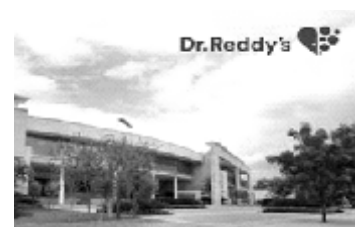
Divis is recognized as a 'Reliable Supplier of generic APIs (Active pharmaceuticals ingredients)' and custom manufacturer to big pharma companies and is among the top API manufactures in the world. It offers high quality products to over 95 countries.

11,000 highly trained professional across departments and 350 scientists at Divis work together to bring world class products to customers. Divis is a public limited company listed on Indian stock exchange with a revenue of Rs. 5036 crores for the year 2018-19.

The company's export constituted 87% of gross sales. It's major markets are Europe and America. The company has 4 manufacturing units in India with 32 production blocks, it has 4 R&D centers in India.

3. Dr. Reddy's Laboratories:

Dr. Reddy's Laboratories is an Indian multinational pharmaceutical company based in Hyderabad, India. It started its operations in 1984 as a supplier to Indian drug manufacturers. This company founded by Anji Reddy, previously worked in the mentor institute Indian Drugs and Pharmaceutical Limited, of Hyderabad, India.

Dr. Reddy's Lab. manufactures and markets a wide range of pharmaceuticals in India and overseas in over 25 countries through its three businesses-pharmaceutical services and active ingredients, Global generics, and Proprietary products. Its major markets include India, USA, CIS, Russia and Germany, UK, Venezuela, South Africa, Romania and New Zealand.

About 86% of Dr. Reddy's Laboratories sales are from overseas markets. North America is its single largest market, accounting for about 47% of its turnover.

The company has 190 medications and 60 Active Pharmaceutical Ingredients (APIs) for drug manufacture, diagnostic kits, critical care, and biotechnology products. Company also has intellectual capital of more than 1200 scientists, 23 manufacturing facilities (17 in India and 6 in USA, UK and China) supported by 5 technology development centers, 2 integrated product development facilities and 3 R&D centers.

4. Cipla ltd.

Cipla is an Indian multinational pharmaceutical and biotechnology company with headquartered in Mumbai, India. It was founded in 1935 as the chemical, industrial and pharmaceutical laboratories.

Cipla has 34 manufacturing facilities in India. Its formulations are sold in more than 170 countries including United States, Canada, Europe, Africa, Australia, Latin America and middle east region.

Cipla's portfolio includes more than 2000 products across multiple therapeutic categories, and has played important role in HIV/ AIDS treatment. It is one of the leading manufacturer of ARV (Anti-Retroviral) drugs in the world.

Comparative Analysis

Different ratios of Sun Pharma, Divis Labs and Dr. Reddys Lab are calculated and compared with each other. The list of ratios which are used for comparison are as follows:

For comparing liquidity; Current ratio, Quick ratio and working capital turnover ratio are selected.

For checking profitability; Net profit margin, Gross profit margin, Operating profit margin, Return on Equity and Return on total assets are taken.

And for solvency; Debtors turnover ratio, Debtors collection period, creditors turnover ratio, creditors payment period and Inventory turnover ratio are selected.
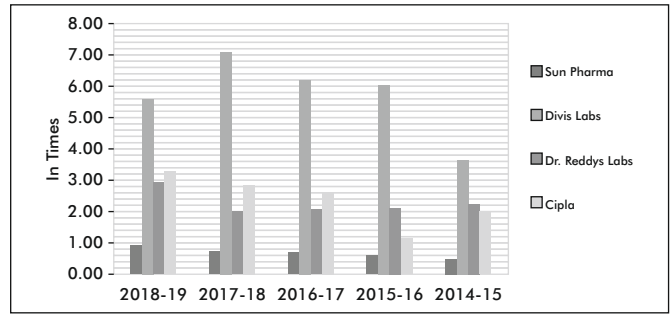
Current Ratio

Current ratio indicates solvency position of the business. It shows relationship between current assets and current liabilities.

Current Ratio = Current Assets/ Current Liabilities

Current Ratio	2018-19	2017-18	2016-17	2015-16	2014-15
Sun Pharma	0.91	0.70	0.65	0.61	0.48
Divis Labs	5.58	7.11	6.16	6.04	3.62
Dr. Reddys Labs	2.90	1.91	2.02	2.10	2.22
Cipla	3.29	2.82	2.61	1.14	1.95

(Table 1: Current Ratio)

(Fig. 1: Current Ratio Graph)

Comments:

- For Divis Labs current ratio is above the standard i.e. 2, which means the company is well positioned to cover its current or short-term debts but unable to manage its excess funds properly. In 2015-16 its current ratio almost doubled; this was due to increase in its other current assets and decrease in short-term provisions.

- Sun Pharma's current ratio is much below the standard; this indicates that the firm may have difficulty in meeting its current obligation.

- Dr. Reddy's Lab. and Cipla's current ratios are near to the standard which indicates they have good working capital management.

- Dr. Reddy's current ratio is decreasing over the years except in 2018-19. This was because in 2018-19 there was increase in their current investments and Inventories whereas short term borrowings decreased.

Quick Ratio

Quick ratio indicates relationship between quick assets and quick liabilities. Quick assets are those assets which can easily be converted into cash immediately without a loss of value.

Quick ratio= Quick Assets/ Quick liabilities

Quick liabilities= Current liabilities – Bank o/d – Pre received Income

Quick Assets= Current Assets – Inventory – Prepaid Expenses

Quick Ratio	2018-19	2017-18	2016-17	2015-16	2014-15
Sun Pharma	0.58127	0.39221	0.33135	0.2772	0.21367
Divis Labs	3.75391	5.88576	4.6277	4.42275	2.33936
Dr. Reddys Labs	2.27903	1.52014	1.59138	1.74751	1.85655
Cipla	1.23792	1.03261	0.58022	0.30605	0.50351

(Table 2: Quick Ratio)
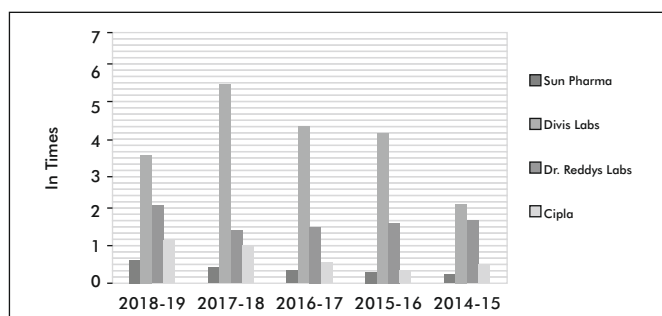
(Fig. 2: Quick Ratio Graph)

Comments:

- Quick ratio for Dr Reddy's Lab. and Cipla Ltd. is near to the standard throughout the study period which indicates their immediate solvency position is good; means their liquid assets are at least equal to their liquid liabilities.

- For Sun Pharma it is lower than the standard, which means its liquid assets are not sufficient to pay off its liquid liabilities.

- For Divis Labs. quick ratio is much above the standard, which shows company is well positioned in managing its immediate cash requirements; it indicates their instant debt paying capability is highly satisfactory but the liquid assets remain idle.
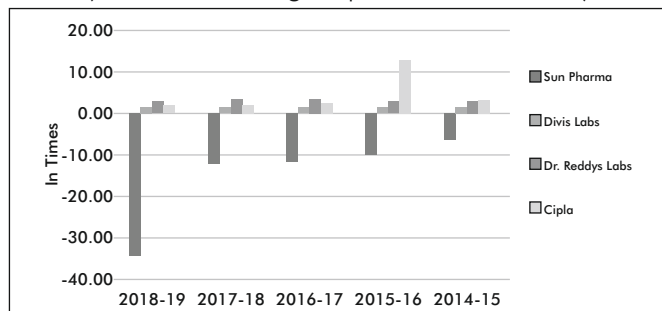
Working Capital Turnover Ratio

This ratio indicates that how well the company is utilizing its working capital to support given level of sales. High turnover ratio indicates that the company is being extremely efficient in managing its short-term assets and liabilities to support sales.

Working Capital Turnover Ratio= Net Sales/ Net Working Capital

WC Turnover Ratio	2018-19	2017-18	2016-17	2015-16	2014-15
Sun Pharma	-33.55	-11.61	-10.53	-10.23	-5.65
Divis Labs	1.26	0.97	1.20	1.45	1.53
Dr. Reddys Labs	2.63	3.29	3.25	2.92	2.60
Cipla	1.85	2.10	2.59	12.72	2.96

(Table 3: Working Capital Turnover Ratio)

(Fig. 3: Working Capital Turnover Graph)

Comments:

- It can be observed that working capital turnover ratio for Sun Pharma was negative throughout the study period; this was because its current assets which were much lower than its current liabilities.

- In case of negative working capital, it could be good as a company with negative working capital funds its growth in sales by effectively borrowing from its suppliers and customers.

- Working capital turnover ratio is relatively high for Dr. Reddy's Lab. whereas it is relatively low for Divis Laboratories.

- For Cipla Ltd there was a sudden increase in WCTR in 2015-16, this was because of increase in its short borrowings and other current liabilities which resulted in low net working capital.
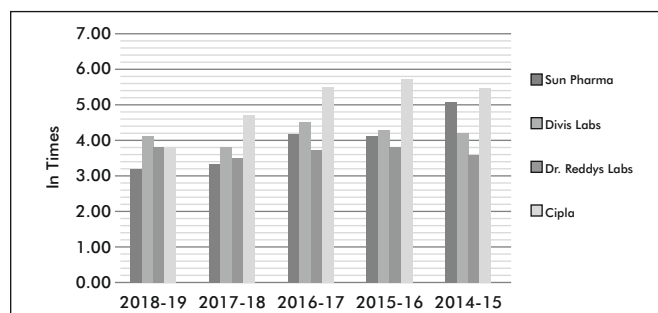
Debtors Turnover Ratio

Debtors turnover ratio also known as receivables turnover ratio is obtained by dividing net credit sales during a period by average amount of debtors. Debtors turnover ratio simply measures how many times the debtors are collected during a particular period of time. This ratio is helpful in evaluating the liquidity of receivables. This ratio measures the speed of collection and it is used for comparison purpose.

Debtors Turnover Ratio = Net credit sales/ Average Debtors

Debtors Turnover	2018-19	2017-18	2016-17	2015-16	2014-15
Sun Pharma	3.23	3.33	4.16	4.12	5.14
Divis Labs	4.13	3.75	4.50	4.28	4.18
Dr. Reddys Labs	3.86	3.50	3.71	3.75	3.64
Cipla	3.86	4.73	5.48	5.75	5.46

(Table 4: Debtors Turnover Ratio)

(Fig. 4: Debtors Turnover Ratio Graph)

Comments:

- As we can see the debtors turnover ratio for all the companies is decreasing over the years, which is not a good sign.

- As compared to other companies this ratio is high for Cipla Ltd, which indicates it has good management of debtors.

- Higher the debtors turnover ratio lower will be the debtors collection period.

Debtors Collection Period

In accounting, the term debtors collection period indicates the average time taken to collect trade debts. It shows the average number of days necessary to convert receivables into cash. Higher the debtors turnover ratio lower will be the debtors collection period. Lower the collection period, better it is.

Debtors Collection Period= 12 or 52 or 365/ Debtors T/O Ratio

Debtors Collection	2018-19	2017-18	2016-17	2015-16	2014-15
Sun Pharma	3.72	3.61	2.88	2.92	2.34
Divis Labs	2.91	3.20	2.67	2.80	2.87
Dr. Reddys Labs	3.11	3.42	3.24	3.20	3.30
Cipla	3.11	2.53	2.19	2.09	2.20

(Table 5: Debtors Collection Period)
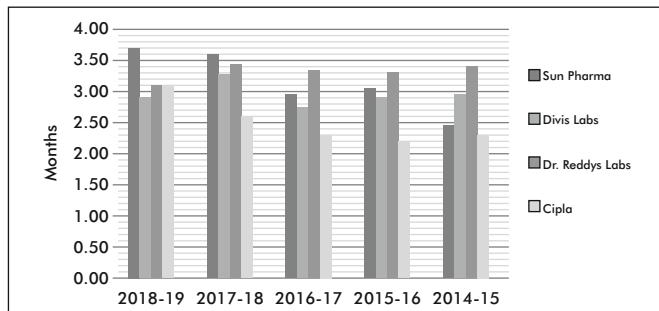
(Fig. 5: Debtors Collection Period Graph)

Comments:

- As debtor's turnover ratio is decreasing for all the companies, the debtors collection period is also increasing.

- Cipla Ltd. requires comparatively less time to collect debtors, which indicates that company is managing its debtors efficiently as compared to its competitors.

- For all the companies, collection period has increased in 2017-18, and decreased in 2018-19 except for Divis Labs.
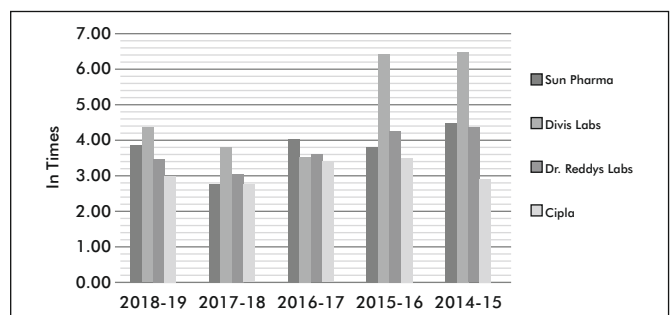
Creditors Turnover Ratio

Creditors turnover ratio also known as accounts payable turnover ratio is obtained by dividing net credit purchases during a period by average amount of creditors. Creditors turnover ratio simply measures how many times the creditors are paid during a particular period of time. This ratio is helpful in evaluating the liquidity of creditors.

Creditors turnover Ratio= Credit Purchases/ Avg. Trade Payable

Creditors Turnover	2018-19	2017-18	2016-17	2015-16	2014-15
Sun Pharma	3.85	2.80	4.05	3.79	4.46
Divis Labs	4.35	3.77	3.56	6.41	6.47
Dr. Reddys Labs	3.49	3.06	3.61	4.25	4.34
Cipla	3.01	2.74	3.40	3.50	2.94

(Table 6: Creditors Turnover Ratio)

(Fig. 6: Creditors Turnover Ratio Graph)

Comments:

- Ideally the creditors turnover ratio is supposed to be low as lower the creditors turnover ratio higher the creditors payment period.

- Ratio for Cipla is lower as compare to other companies for all the five years, which is good sign for them. Whereas ratio was higher for Sun pharma.
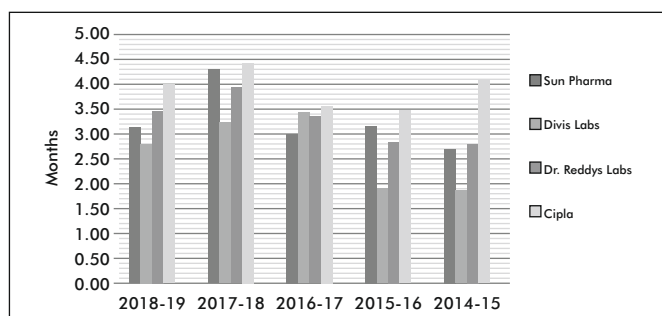
Creditors Payment Period

In accounting the term creditors payment period indicates the average time taken to pay the suppliers. Lower the creditors turnover ratio higher will be the creditors payment period. Higher the payment period, better it is.
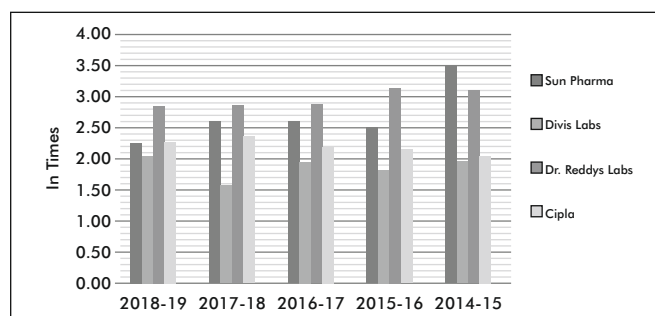
Creditors Payment Period= 12 or 52 or 365/ Creditors T/O Ratio

Creditors Payment	2018-19	2017-18	2016-17	2015-16	2014-15
Sun Pharma	3.11	4.28	2.96	3.16	2.69
Divis Labs	2.76	3.18	3.37	1.87	1.86
Dr. Reddys Labs	3.44	3.92	3.32	2.82	2.76
Cipla	3.98	4.37	3.53	3.43	4.09

(Table 7: Creditors Payment Period)

(Fig. 7: Creditors Payment Period Graph)

(Fig. 8: Inventory Turnover Ratio Graph)

Comments:

- Cipla has comparatively higher creditors payment period which is a positive sign while Divis Labs. has relatively less creditors payment period.

- For Divis Laboratories creditors payment period increased by approx. 48% from 2015 to 2019 which is a positive indicator, followed by Dr. Reddy's Lab. i.e. 25% approx.

- While comparing debtors collection with the creditors payment, situation is good for Cipla Ltd. as difference between Creditors payment and Debtors collection is high, followed by Dr. Reddy's Lab.

- Divis Lab's. Debtors collection period is more than their creditors payment period; it means their credit management is not good.

Inventory Turnover Ratio

This is one of the efficiency ratio and measures number of times inventory is sold and replaced during the year. It measures company's efficiency of turning inventory into sales. It shows how effectively inventory is managed by comparing cost of goods sold with average inventory for a period.

Inventory Turnover Ratio= COGS/ Average Inventory

Comments:

- It has observed that Dr. Reddy's Lab has highest inventory turnover ratio as compared to other three companies. This is due to lowest level of inventory maintained.

- This indicates that Dr. Reddy's Lab was able to convert its existing inventories into sales leading to cash generation.

- Divis Labs. has maintained low inventory turnover among other companies followed by Cipla over the last five years, which indicates inefficient inventory management among the well-off companies.

- Divis Labs. has maintained high inventory levels. It's a negative sign as it suggests heavy investments blocked in procuring the assets, coupled with zero returns.

- Among these three companies Dr. Reddy's Lab is the leader in costing and inventory management.
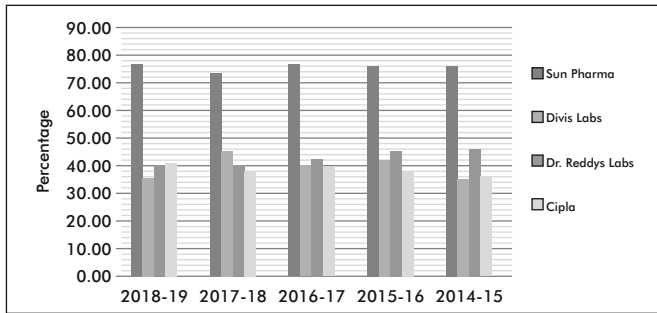
Gross Profit Ratio

Gross profit indicates trading profit of a business. Gross profit ratio is a profitability ratio that calculates the percentage of sales that exceeds the cost of goods sold.

Gross Profit Ratio= Gross Profit/ Net Sales*100

Inventory Turnover	2018-19	2017-18	2016-17	2015-16	2014-15
Sun Pharma	2.23	2.61	2.59	2.50	3.48
Divis Labs	2.04	1.57	1.94	1.83	1.96
Dr. Reddys Labs	2.84	2.84	2.87	3.13	3.09
Cipla	2.26	2.34	2.25	2.16	2.05

(Fig. 8: Inventory Turnover Ratio)

GP Ratio	2018-19	2017-18	2016-17	2015-16	2014-15
Sun Pharma	80.84	77.69	80.85	80.63	80.17
Divis Labs	37.48	47.82	42.21	44.71	36.53
Dr. Reddys Labs	42.10	42.35	44.77	48.11	48.37
Cipla	43.45	40.06	41.08	39.43	37.59

(Fig. 9: Gross Profit Ratio)

(Fig. 9: Gross Profit Ratio Graph)

Comments:

- Gross Profit ratio is high for Sun Pharma. This is because its trading expenses are much lower as compared to sales. It means their productivity is good.

- Cipla has low gross profit margin amongst these companies, except in 2018-19 when it was low for Divis Labs.

- It can be seen that gross profit margin for Divis Labs. decreased by approx. 22% in the year 2018-19. This was because of increase in their cost of goods sold.
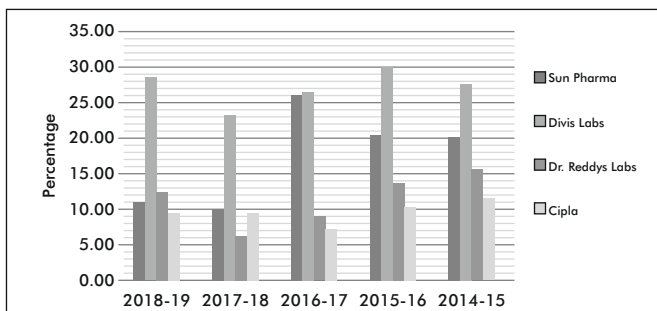
Net Profit Ratio

It shows relationship between net profit and sales of a company. It does not make any difference between operating expenses and non-operating expenses. This ratio is used to measure overall profitability and efficiency of a company.

Net Profit Ratio= Net Profit/ Net Sales*100

Net Profit Ratio	2018-19	2017-18	2016-17	2015-16	2014-15
Sun Pharma	11.19	10.13	26.13	20.28	20.11
Divis Labs	28.16	23.03	26.16	29.87	27.44
Dr. Reddys Labs	12.39	6.42	8.93	13.62	15.67
Cipla	9.65	9.62	7.22	10.30	11.45

(Table 10: Net Profit Ratio Table)

(Fig. 10: Net Profit Ratio Graph)

Comments:

- Net profit ratio is high for Divis Labs. over the years. It means their overall profitability is good. And it is followed by Sun pharma.

- The overall profitability is less for Cipla Ltd. throughout the study period. This was because the company is spending more on its non-operating expenses.

- There was a major decrease in Sun Pharma's net profit for the year 2017-18 i.e. approx. 60% as compared to previous year. This is due to decrease in their sales.
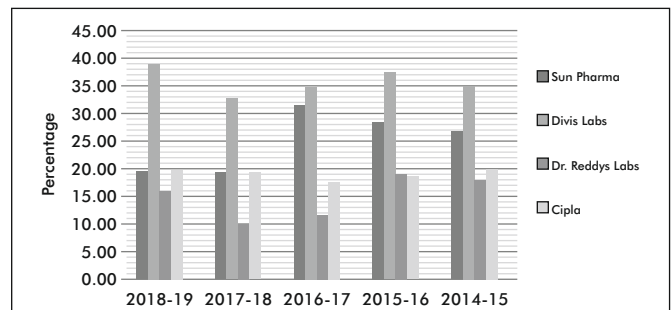
Operating Profit Margin

Operating profit margin is a measure of profitability. It measures how much revenue is left after taking into consideration cost of goods sold as well as operating expenses.

Operating Profit Margin=Operating Profit/Net Sales*100

Operating Profit	2018-19	2017-18	2016-17	2015-16	2014-15
Sun Pharma	19.45	19.03	31.50	27.89	26.46
Divis Labs	38.69	32.37	34.48	37.06	34.61
Dr. Reddys Labs	15.48	10.06	11.48	19.01	17.63
Cipla	19.34	19.24	17.63	18.30	19.74

(Table 11: Operating Profit Ratio)

(Fig. 11: Operating Profit Ratio Graph)

Comments:

- In the above table we can see that operating margin for Divis Labs. is high as compared to other companies.

- Operating profit margin for Dr Reddy's Labs. is low over the years. This is because company is spending more on its operating expenses.

- Sun Pharma's operating profit decreased by 40% approx. in 2017-18; this was because of decrease in their sales.
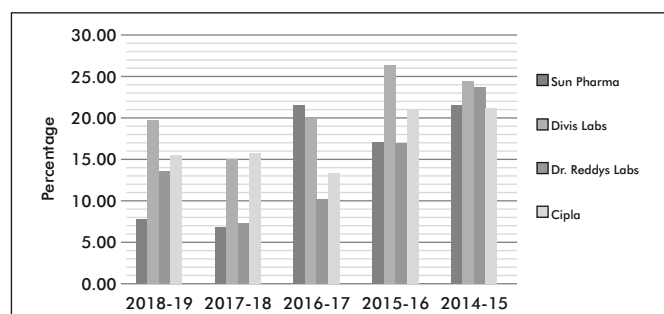
Return on Equity

The return on equity ratio or ROE is a profitability ratio that establishes the relationship between net profit available to equity shareholders and amounts of capital invested by them. It measures the ability of a firm to generate profits from its shareholders' investment in the company.

Return on Equity= Net Income/ Shareholders Equity

ROE (%)	2018-19	2017-18	2016-17	2015-16	2014-15
Sun Pharma	7.75	6.91	21.39	17.15	21.45
Divis Labs	19.44	14.80	19.79	26.22	24.36
Dr. Reddys Labs	13.59	7.26	10.25	16.77	23.71
Cipla	15.37	15.67	13.27	20.93	21.22

(Table 12: Return on Equity)

(Fig. 12: Return on Equity Graph)

Comments:

- Return on Equity was more for Divis Labs. but it is closely competed by Cipla Ltd. in 2017-18 and by Sun Pharma in 2016-17, due to increase in their sales.

- Due to decrease in sales in 2017-18, there was a downturn in their profits, therefore Return on Equity decreased in 2017-18 for all the companies. Cipla Ltd. was an exception.

- Sun Pharma's ROE decreased by 68% approx. in 2017-18; this was because of decrease in their sales.

Return on Total Assets

The return on assets indicates how effectively company can earn a return on its investment in assets. Return on Assets gives investor, manager or analyst an idea about how efficiently a company's management is using its assets to generate earnings.

Return on Assets= NPAT/ Total Assets*100

ROE (%)	2018-19	2017-18	2016-17	2015-16	2014-15
Sun Pharma	4.96	4.10	12.76	10.19	11.19
Divis Labs	16.83	12.93	17.22	22.97	19.33
Dr. Reddys Labs	8.48	4.05	5.76	10.34	12.56
Cipla	11.53	12.12	10.84	16.23	17.16

(Table 13: Return on Assets)
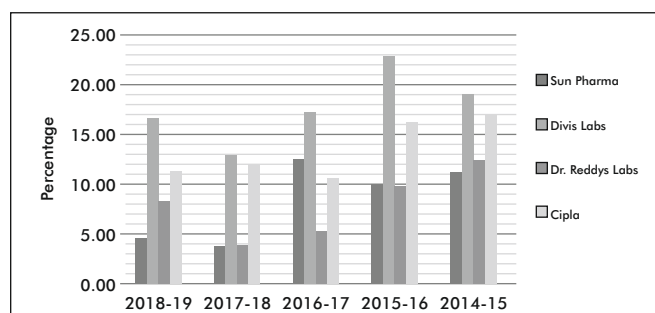
(Fig. 13: Return on Assets Graph)

Comments:

- Return on Assets was more for Divis Laboratories throughout the study period, which indicates they are generating more on total assets employed.

- But ratio is low for Sun Pharma except in 2016-17, as there was increase in their net profit in 2016-17.

- Sun Pharma's ROTA also decreased by 68% approx. in 2017-18, due to decrease in their sales.

Cash Conversion Cycle

Cash Conversion Cycle shows the amount of time the company takes to convert its investment in inventory into cash.

Cash Conversion Cycle = Inventory holding period + Debtors collection Period – Creditors Payment Period

Sun Pharma					
	2018-19	2017-18	2016-17	2015-16	2014-15
Inventory Holding Period	5.38029	4.59889	4.63884	4.80048	3.44653
Debtors Collection Period	3.71642	3.60816	2.88163	2.91551	2.33624
Creditors Payment Period	3.11477	4.2802	2.96002	3.16312	2.69
Cash Conversion Cycle	5.98195	3.92685	4.56044	4.55287	3.09277

(Table 14: Cash Conversion Cycle of Sun Pharma)

Divis Labs					
	2018-19	2017-18	2016-17	2015-16	2014-15
Inventory Holding Period	5.88294	7.66206	6.19486	6.55781	6.11728
Debtors Collection Period	2.90611	3.19697	2.66722	2.80474	2.86788
Creditors Payment Period	2.75667	3.18455	3.37473	1.87108	1.85562
Cash Conversion Cycle	6.03239	7.67449	5.48736	7.49147	7.12954

(Table 15: Cash Conversion Cycle of Divis Labs)

Dr. Reddys Labs					
	2018-19	2017-18	2016-17	2015-16	2014-15
Inventory Holding Period	4.22106	4.22201	4.17412	3.83258	3.88907
Debtors Collection Period	3.10968	3.42414	3.23724	3.19958	3.30112
Creditors Payment Period	3.4391	3.92404	3.32028	2.82331	2.76218
Cash Conversion Cycle	3.89165	3.72211	4.09108	4.20885	4.42801

(Table 16: Cash Conversion Cycle of Dr. Reddy's Lab)

Cipla					
	2018-19	2017-18	2016-17	2015-16	2014-15
Inventory Holding Period	5.30554	5.13219	5.32386	5.54869	5.8607
Debtors Collection Period	3.10986	2.5348	2.18988	2.08713	2.19629
Creditors Payment Period	3.98479	4.37359	3.53459	3.42937	4.08558
Cash Conversion Cycle	4.43062	3.2934	3.97914	4.20644	3.9714

(Table 17: Cash Conversion Cycle of Cipla)

Cash Conversion Cycle
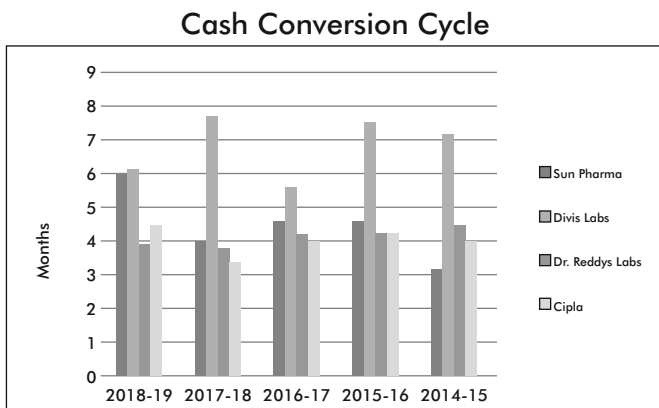
(Fig. 14: Cash Conversion Cycle)

Comments:

- Cash conversion cycle shows the amount of time company takes to convert its investment in inventory to cash.

- Positive Cash Conversion cycle shows that the company requires the financing to cover the period of time before they receive payments from Debtors.

- Cipla Ltd. relatively requires less time to convert amount invested in inventory to cash, which is a good sign for the company.

- Comparatively Divis Laboratories takes more time to convert its investment in inventory to Cash.

Findings & Interpretation

Dr. Reddy's Lab. and Cipla have good working capital management, whereas Sun Pharma might be facing difficulty to pay off its short-term obligations.

- Working capital turnover ratio is high for Dr. Reddy's Lab and Cipla which indicates that the company is being extremely efficient in managing its short-term assets and liabilities to support sales.

- While comparing debtors collection with the creditors payment, situation is good for Cipla Ltd. as difference between Creditors payment and Debtors collection is high, followed by Dr. Reddy's Lab. Which indicates they are getting more time to pay off their creditors.

- Dr Reddy's Lab. is a leader in inventory management as it has highest inventory turnover ratio.

- Gross Profit ratio is high for Sun Pharma. This is because its trading expenses are much lower as compared to their sales.

- Net profit ratio has been high for Divis Labs. over the years. It means overall profitability is good, followed by Sun Pharma.

Limitations

- Conclusion is drawn by analysing five years data only.

- Inadequacy of required data is another constraint. Therefore, data is taken with certain assumptions.

- Definitely time is the main constraint. There are more than 30 ratios but all the ratios are not taken into account due to time constraint.

- Only four companies are chosen for the study.

Future Scope

Only few liquidity and profitability and solvency ratios are considered due to time constraint, so the study can be further extended by analysing all other ratios such as valuation ratios etc. to know the performance of the company and to compare them with their competitors. Study can also be extended by analysing the data of more than five years.

Conclusion

It has been observed that in terms of liquidity Dr Reddy's Lab. is better off as compared to other competitors.

- Whereas in terms of profitability Divis Laboratories is having good position as its Net profit margin, Operating profit margin, ROA and ROE is high.

- While Cipla Ltd. is leader in creditors management, it means its solvency position is good.

- While comparing cash conversion cycle, Cipla Ltd. relatively requires less time to convert amount invested in inventory to cash, which is a good sign for the company.

Recommendation

Sun Pharma has low current ratio, so it should increase its current ratio where it can meet its short-term obligations smoothly.

- Divis Lab's Debtors collection period is more than its creditors payment period; means their credit management is not good. So, it should try to collect money quickly from its debtors.

- Divis Labs also has low inventory turnover ratio, so the firm should try to reduce the stock by increasing sales.

- Overall profitability is less for Cipla as compared to its competitors, so it can increase its profit by controlling its expenditure; like it can reduce its direct material cost by purchasing from another supplier etc.

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DO REWARDS MOTIVATE OR ELSE : A STUDY OF THE PUBLIC AND PRIVATE SECTOR EMPLOYEES

* Dr. Samta Jain and ** Dr. Namrata Mehta

ABSTRACT

'In an organization Rewards can help create the right employee - management team environment. Also create an atmosphere that is encouraging and favorable to achieving the contributions and efforts an organization need. But sometimes, same rewards and recognition when awarded to the employees who give finishing touch in his/her job, creates an environment of chaos among employees who really worked very hard.

It is through the organization's reward system that good employees are attracted to the organization; they decide to stay within the organization and then consciously decide to perform well. Employees perform at the level at which the organization rewards them. People continue to do what they have been rewarded for doing. This is a form of positive reinforcement. Yet managers must know what rewards mean the most to which employees in order to be the most effective. This study aims at studying the pros and cons of rewards when not given to the right person. A detailed knowledge of the topic is gained by secondary research backed by primary data.

Keywords: *Monetary Rewards, Non- Monetary Rewards, Recognition.*

Introduction

Businesses must constantly adapt their strategies and goals to address the dynamic forces of the shifting challenges and opportunities of global markets, the organizational upheaval of mergers and acquisitions, and the rapid evolution of productivity tools and technologies. One critical-but frequently overlooked-dimension of this process of renewal is the impact of organizational change on employee motivation and behavior: Executives, operational chiefs and personnel managers must ensure that their systems of rewards and recognition are carefully aligned with overall strategic and operational goals. Rewards and recognition systems misaligned with corporate objectives can result in behavior that is not anticipated or desired by management.

The challenge, then, is to assess and implement an incentive system that motivates employees to act in support of strategic and operational objectives. But how does an operational manager or executive know when they have the right rewards and recognition program, or if the one they have implemented is still having the desired effect? In addition to measuring progress of employee performance toward corporate goals, well-defined performance measurement systems help gauge employee reception, understanding and buy-in for reward systems. This critical feedback can help managers make adjustments necessary to drive improvements and avoid the unanticipated behaviors and actions that negatively impact corporate goals.

Rewards and Recognition

Rewards and Recognition programs honor both individuals and teams who go the extra mile to serve their departments. Recognition of employees' achievements is one of the most important factors to motivate employees. Employees who perform exceptionally well expect that their contributions will be recognized and that they will be appreciated by the top management. Over the decades, reward and recognition systems have been adopted by numerous

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organizations – private or public. There are myriad ways by which employees can be appreciated. Also, one special type of reward may not motivate everyone equally.

These individuals and teams, who give so much of themselves, help support, would like to encourage and assist managers and supervisors to reward and recognize their employees.

Awards Programs:

- Spot Awards
- Team Achievement Awards

Everyday Recognition and Rewards

Employee recognition has always been an important part of any organization. By creating a culture of recognition, employees become more engaged. Engaged employees are happy, loyal, and productive. Everyday there is an opportunity to recognize someone for their service without spending a lot of money. Informal rewards are the icing on the cake that keeps employees motivated, engaged, and coming back for more.

Low or No Cost Recognition ideas

- present certificate of appreciation for a job well done at a staff meeting
- nominate department employee of the month
- allow staff to take classes and improve skills
- send a handwritten note of thanks for the completion of a challenging task
- send flowers to an employee's family thanking them for sharing their loved one with Caltech during the preparation of an important project
- make time to stop and chat with your staff
- encourage participation in Campus activities
- send an employee to a conference
- participate in a flexible work schedule

Type of reward

- Monetary: This includes hard dollar incentives in the form of bonuses or raises individuals or groups may receive for satisfactory or above work performance. It is an external motivation. When human motives are stimulated by external rewards we say that the motivation is extrinsic. We can say

that extrinsic factors drive an individual to perform a task for the sake of tangible rewards rather than their interest in it.

- Non-monetary: These rewards are what many managers think of in relation to promotions, high-profile job assignments, or other form of soft recognition. It is an internal motivation. When a person is motivated on his / her own, out of his / her interests, desires or likes which originate from within him / her. This motivation is said to be intrinsic. People may motivate here by the inherent nature of the activity, pleasure of mastering something new or the natural consequences of the activities.

Whether the reward is monetary or non - soft or hard, it should be tailored to the individual or group by determining what would be best personally and proportionally, as well as bringing pleasure to the recipients.

Comparison of Monetary and Non-Monetary Incentives

Monetary and non monetary incentives differ in their roles, effectiveness and appropriateness. From the above mentioned intrinsic and extrinsic motivation, it can be seen that intrinsic motivation is much stronger than extrinsic one when it comes to motivating employees in the long run. And this is because of the fact that the employees under intrinsic motivation will keep on performing better day by day as long as they find their work interesting and satisfying at the same time. But this does not mean that extrinsic motivation should not be used completely but it is just not the way for the long run. It is because that extrinsically motivated employee will only find their job interesting as long as they are been rewarded which can be either positive or negative. Also if you want to increase their performance then they need to be given more rewards than before which if not given, they get de-motivated. Also if an employee is given extrinsic reward then they will be no longer intrinsically motivated. Thus is really vital to motivate employees intrinsically by explaining them that how the work will help them develop and by encouraging them by giving challenging work, in a way by giving responsibility and recognition for any work done. This will in turn motivate and enhance them for their future tasks and to meet long term goals successfully. So it can be concluded that a balance between monetary and non monetary incentives should be used to satisfy the varied needs of the employees.

Problems with Monetary Incentives

- Monetary incentives usually encourage compliance and achievement of difficult targets instead of encouraging creativity, innovation and foresight which are more important in the long run.

- Employees lose their creativity in the long run in situation of excessive monetary rewards.

- Employers also may use monetary incentives as an extrinsic rather than an intrinsic motivator. In other words, associates are driven to do things just for the monetary reward versus doing something because it is the right thing to do. This can disrupt or terminate good relationships between employees because they are transformed from co-workers to competitors, which can quickly disrupt the workplace environment.

- Monetary incentives can even drive the employees to falsely reporting their achievements.

- Huge monetary incentives given to middle managers are seen as a hook to retain them which may make them work counterproductively.

Advantages of Non-Monetary Incentives

Memory Value: The value of an honorary or informal recognition award, whether it's a plaque, a mug, or a similar item, is longer-lasting than cash since cash is spent and gone, whereas the recognition items remain on employees' desks or in their homes.

Trophy Value: Nonmonetary awards can often be shown to co-workers and friends as a trophy given in appreciation of good work. A check or a bank statement is generally something that employees don't display.

Flexibility: The type of nonmonetary recognition given can be designed to emphasize particular organizational or team goals. For example, a mug or a tee-shirt with the team's logo could be awarded to a team that has accomplished a short-term goal on time. The award recognizes good performance and promotes teamwork.

Cash Awards Cost More: A study of private sector awards found that employers spent less money on nonmonetary awards than cash awards. However, the survey also found that employers reported about the same level of performance improvement with cash and nonmonetary awards and that the awards held approximately the same perceived value.

More Socially Acceptable to Acknowledge: Most people are uncomfortable bragging about cash, but enjoy talking about their new golf clubs or trip. With tangible non-cash incentives being visible and socially acceptable to praise, question, or bring up, there is no need to go out of one's way to call attention to them. By providing a better means to indirectly call attention to the award and what was accomplished to earn it, the value of earning a non-cash incentive is enhanced relative to the cash value of the incentive.

Three P's of rewards and recognition

Rewards should be:

- Personal by determining whether they prefer private or public recognition and communicating with the individuals involved to see what they prefer, whether it is an award, a gift, time-off, or money.

- Proportional by balancing the size or type of reward with the individual or group contribution and accomplishments as it relates to organizational goals.

- Pleasurable means making things fun and entertaining through the event in which rewards are given or by the selection of a creative reward.

When looking at recognition, mangers should look at the internal and external benefits for the recipients. Internal benefits include the feeling of pride and satisfaction a person or team may get from a job well-done and their personal motivators for continuing to do well. External benefits would relate to what can be seen, touched, or used by the individual or team. These types of recognition are used to reinforce a particular behavior in the recipients. They also may provide a short-term benefit to the manager by increasing the level of motivation or good behaviors from the recipients of the recognition.

Both internal and external recognition must be promptly given with precise and principled acknowledgment of why it is being given.

Recognition should be:

- Precise by giving individual or group detailed information on relevancy of what was done, as well as acknowledging when, where, why, and how it was done.

- Principled by showing sincere and honest acknowledgment of an individual or group that supports organizational beliefs and values through their commitment and accomplishments.

- Prompt by giving well-timed acknowledgment as soon as possible after the event has occurred or action has been completed

It is generally viewed that Reward and Recognition (RR) system enhances positive environment at the work places. RR system elicits better performance and keeps workers focused on their job duties. Lack of reward and recognition is cited as one of the main reasons behind employee turnover. Urichuk writes:

"If you want to avoid losing your best employees, and encourage others to do better, recognizing them publicly may save yourself time and money and having to find and retrain a new staff. ...It may be hard to believe, but recognition is the most powerful motivator of all."

Reward and Recognition programs are important in order to retain well qualified employees and actively engage them in satisfying customers, managing scarce resources, and improving performance. Rewarding and recognizing positive results is an important factor in retaining employees. People enjoy working and tend to thrive in organizations that create positive work environments – environments where they can make a difference.

The SMART Concept

Using Jim Brintnall's description of "What Makes a Good Reward?", Jim says it's got to be SMART. That means that rewards should be:

Sincere: Above all else, a good reward should reflect a genuine expression of appreciation. Token acknowledgements leave something to be desired.

Meaningful: To endure a motivating influence, rewards should be aligned with the values, goals, and priorities that matter the most.

Adaptable: The diverse workplace demands alternatives. Consider creative options to keep program fresh. No single reward format works for everyone all the time. Recognition should be adapted and valuable to the receiver.

Relevant: Some personal dimension is essential to a good reward. No matter how formal or informal,

expensive or affordable, the relevance of any recognition will be improved with a personal touch - - it's a little thing that makes a big difference.

Timely: It is important that rewards respond to the behavior they are intending to reinforce. Don't let too much time pass or the reward may be devalued and credibility eroded.

Total Reward Concept

Bearing this in mind, employers frequently consider both financial and non-financial rewards together as means of attracting and retaining employees. Holistic rewards packages of this type are described as Total Reward. At it's simplest; Total Reward can be described as "all the investments an organization makes in its workforce and everything that the employees value in working for the employer". And, in that respect, it could be said that all employers have a total reward package of sorts. However, Total Reward is about maximizing the benefits of rewards packages for employers and employees alike. Thus, Total Reward is better defined as: A reward strategy that brings additional components such as learning and development, together with aspects of the working environment, into the benefits package. It goes beyond standard remuneration by embracing the company culture, and is aimed at giving all employees a voice in the operation, with the employer in return receiving an engaged employee performance. However, while it is recognized that an holistic approach to rewards is necessary, this report has a specific focus on the tangible non-monetary benefits that reward employees for their service and are aimed at reaping benefits for employers in terms of improved recruitment, retention, performance and, in the case of local authorities, better outcomes for service users. It does not therefore consider remuneration or those benefits in relation to building skills and creating direct opportunities for progression, but deals solely with those rewards that focus on the health and wellbeing of the individual.

A survey is conducted to study the impact of rewards and recognition on employees. And also to find out:

- Whether the employees are happy with their reward policy or not.

- Is an employee feels if s/he is under-rewarded.

- If another employee is rewarded instead of their place.

- Is there any change in the motivation level of employees or not.

For this purpose 4 companies were considered. Two of them are under public sector (Life Insurance Corporation of India (LIC), Bharat Heavy Electrical Limited (BHEL) and two private sector Accenture and IBM. The number of respondents taken in this survey is 25 from each organization. Thus total number of samples in this survey is 100. After this the Content Analysis was done. Our analysis revealed that public sector follows formal reward policy and private sector has informal reward policy. Organizations like LIC, Accenture and IBM follows non-monetary reward policy and BHEL follows monetary reward policy. All the three organizations involve employees' suggestions in their reward scheme except Accenture.

In response to the whether the impact of rewards on motivation level is positive there were contrasting results from the Public and the Private sectors.
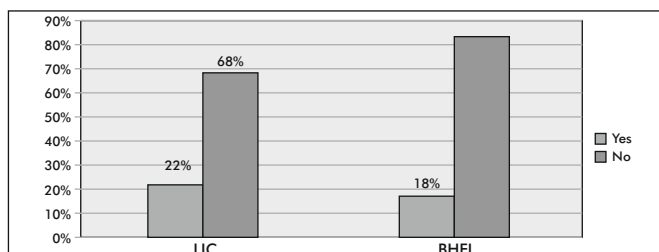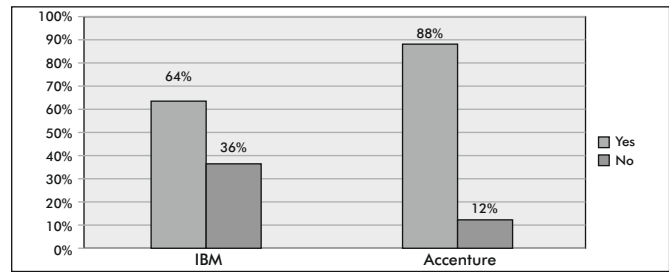
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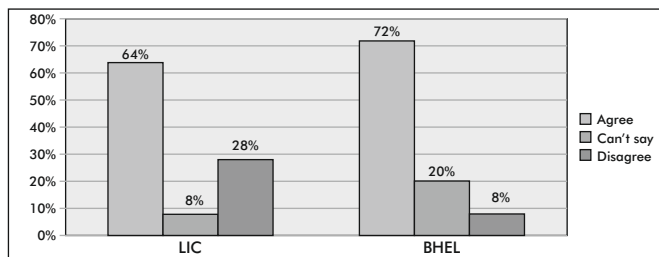
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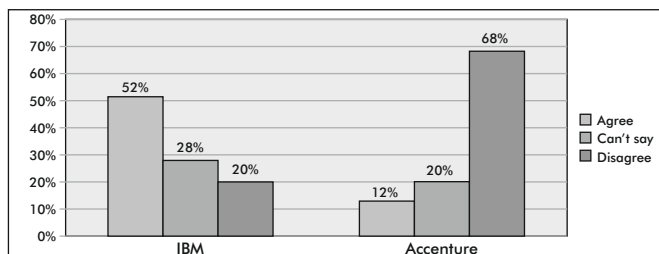
On the adequacy of rewards in the two sectors, respondents of private sector feel more under-rewarded as com pared to the employees of the public sector. This can be better explained by the graphs given below
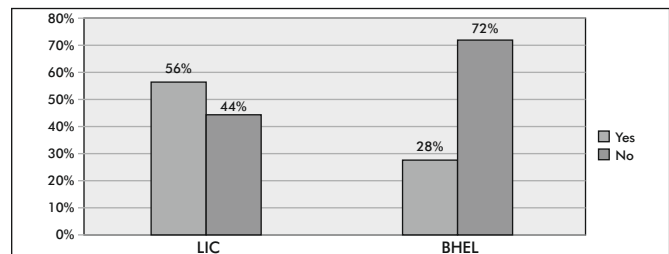
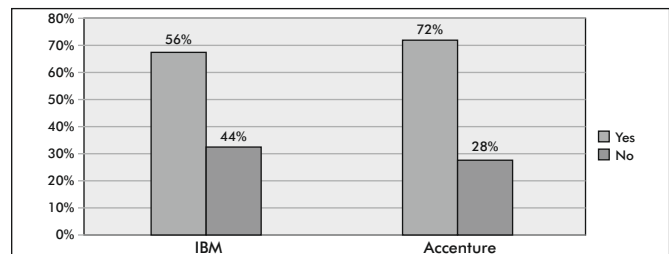### Public Sector

Private sector

In response to the fact that the employees in the organizations felt that somebody else is rewarded instead of them, the public sector has responded as under:

Public Sector

Private sector

The Rationale behind the responses

- Lack of transparency in reward system.

- Reward process is very slow.

- Rewards are announced but finally not awarded to the employees.

- Due to large team size, individual efforts are neglected.

- Hard work is not recognized and if recognized than only a mail is dropped in their mail box.

- High targets are given to achieve rewards which are quite tough to achieve.

- No rewards are given at all.

- Due to large number of employees, rewards are given to only few selected employees.

- Department wise rewards are given instead of with that of an employee's ability.

In an organization Rewards can help create the right employee - management team environment. Also create an atmosphere that is encouraging and favorable to achieving the contributions and efforts an organization need. But sometimes, same rewards and recognition when awarded to the employees who give finishing touch in his/her job, creates an environment of chaos among employees who really worked very hard.

It is through the organization's reward system that good employees are attracted to the organization, decide to stay within the organization and then consciously decide to perform well. Employees perform at the level at which the organization rewards them.

People continue to do what they have been rewarded for doing. This is a form of positive reinforcement. Yet managers must know what rewards mean the most to which employees in order to be the most effective. An inappropriate reward has also been offered. This mismatch of reward with the individual may have the same ultimate effect as giving no reward at all.

Therefore, the manager must know each employee and what rewards will effectively motivate them. In addition, the manager must be constantly aware of the rewards available in the organization. To compensate for rewards not available, the manager must be creative and work within the boundaries of the organization to create a menu of rewards for staff members.

Recommendations

- Transparency should be there in reward system.

- Audit & analysis of reward system.

- Appreciation of both the employees.

When an employee is satisfied with the rewards and recognition given to his/her, it will leads to a healthy work or organizational culture. Employees in the organization would be able to work in more effective and efficient manner. And, for an organization it is very much necessary to satisfy its employees. Rewards and

recognition scheme is not wholly responsible for this but, plays a vital role in employee satisfaction.

Now, there should be a proper mechanism or rather a model to look after the rewards system of an organization. With the help of this model, an organization would be able to reduce the chances of giving rewards to wrong employee and also the chances of under rewarding an employee gets reduced.

Employee suggestions & scheme

Firstly, scheme of the rewards are identified i.e. whether the organization wants to give on the spot award or team recognition award or both. And also, the employee suggestions regarding rewards should be considered. A reward that is motivating for one employee may not be motivating for some other employee. These two elements together form a reward system of an organization.

System audit

After that, auditing of the rewards system should be done by the audit committee of the organization. It will see the various matters such as

- Set guidelines or frame work for the rewards

- Transparency in the reward system.

- Consideration of employee suggestions.

- Loopholes in the system, if any and give suggestions to rectify them.

Cost benefit analysis

Next step is to do the cost-benefit analysis of the rewards. Rewards and recognition should be given in such a manner that it doesn't increases the cost of the organization.

Delivery of rewards on time

There should not be a long gap between the announcement and the actual delivery of the rewards. If this happens, than the reward system will loose its credibility.

Employee feedback

For any system to be successful, feedback is very important. Here also, employee feedback is very important to improve the reward system. Organization should seek feedback for the change in their motivational level, satisfaction level. If the organization receives negative feedback on these two elements than,

it should re-work on its award and reward policy to satisfy its employees and hence to improve their motivational level.

Mechanism to improve Reward system within an organization

- Develop an on-line database/archive of award write-ups (separated into two categories: winners and others). This archive will serve several purposes: provide model nominations for others to use, let everyone see what types of activities are rewarded, and how the range of nominations within each time period affect the competition.

- Make The Reward System transparent. The mass e-mail that announces the winners should also list other nominees, what they were nominated for, and the criteria used for selecting the winners. Office directors should maintain basic accountability/transparency through quarterly reports that are shared with their staff and also listing awards, recipients, and activities awarded.

- Make the application/nomination process easier. Develop an online, simplified, automated process.

- There needs to be timely turnaround for rewards. Require that all awards be decided and presented within 30 days from nomination.

- Needs to have a point person responsible for all activities related to awards and recognition, including years of service anniversaries and retirements.

- Correlate the time and effort needed to nominate someone with the size and level of the award (i.e., simplify the application process for lower level awards.).

- Continue to send out automated e-mail reminders to everyone about nominating peers, employees, and managers.

Conclusion

It is important to remember that developing and implementing a meaningful, cost-effective reward system is one of the crucial challenges facing organizations today. Reward programs are pivotal in developing a unified, strategic approach to organizational motivation. When handled poorly, reward programs frustrate employees and drain organizational resources. When employees feel they are not being rewarded as they deserve, motivation may suffer, leading to resentment and low morale.

Celebrating employee achievements reinforces contentment at work, elicits better performance, and keeps workers focused on job duties. With today's competitive global economy, organizations are desperately searching for ways to foster employee loyalty and commitment to quality work. Employees respond to praise by working harder and increasing their contributions to the organization. But individuals who work hard and feel unappreciated will likely cut back on their efforts. Unmotivated employees are likely to meet only minimum performance standards.

Since recognition inspires loyalty and commitment, as well as encouraging better standards of service, an organization can benefit by incorporating an employee recognition and reward program. When an organization chooses to transform its existing recognition program, it requires a fresh perspective. The easiest way to improve morale, productivity, and work quality is to effectively recognize and reward employees. Praise or a personal note acknowledging achievements are small gestures that are extremely important to employees.

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SURVIVING AND THRIVING IN THE ERA OF 4TH INDUSTRIAL REVOLUTION: A VIEW FROM THE TRENCHES OF THE INDIAN *MARKET*

* Dr. Shrawankumar Roongta

ABSTRACT

Purpose: This research paper aims at reviewing and analysing the approach and strategies adopted by Indian firms to survive and thrive in the modern era of the fourth industrial revolution.

Methodology: The paper is essentially exploratory in nature and undertakes a review of literature and analysis of secondary data, information and case studies to provide an insight into the strategies adopted by an Indian firm in the digital age.

Findings/Conclusion: Indian manufacturing companies are keen to adopt digital technologies and have partnered with the world's leading technology firms to transform their business functions. The digitisation efforts currently adopted focus on CRM and Supply Chain. There is much scope for companies in India to employ digitisation across their value chain to provide greater stakeholder value.

Implications: The theme of the conference and this paper provides insights into the forces affecting and driving the businesses in the new era. Managerial implications include learning from firms in similar industries to adopt strategies to compete, co-operate and grow in the digital era.

Originality: Few studies and research papers have aimed at analysing the strategies adopted by Indian firms to survive and thrive in the new era of digital transformation, this paper aims to contribute in that regards, and derives its originality in that context.

Keywords: *Fourth Industrial Revolution, Digital Era, Business, Innovation, Transformation.*

Introduction

Sue (2019), claimed that the reference to the fourth industrial revolution and its impact on the society and business was first made by Klaus Schwab, the founder of the World Economic Forum. According to Sue (2019), Schwab felt that the fourth industrial revolution was different from the era of computer and information technology (the third industrial revolution).

Schwab believed that the revolution brought about due to the advancement of 'digitally connected technologies' would bring about unprecedented challenges for humanity and businesses. Schwab's worry was the preparedness of the society to deal with the alignment of technology with core human values.

*Source: Encyclopaedia Britannica (2018)*

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Schwab (2018) stated that the fourth industrial revolution has brought with it a moral imperative to ensure the adherence to human values, expressed in United Nations sustainable development goals and the UN declaration of Human Rights. He was worried about the distribution of the advantages of the fourth industrial revolution to society, as it seemed to be designed to favour businesses. Schwab felt that each industrial revolution has reshaped our world, and the effects of the fourth industrial revolution could be more rapid and more disruptive.

It is in this context that this paper explores the theme of this conference. The conference aims to explore the various ways in which stakeholders in the business world and society at large would need to sustain, nurture and maintain harmony, growth and development.

The paper intends to focus on the objective of the conference to bring forward thoughts and ideas relating to the practices and trends that are shaping businesses in the fourth industrial revolution. India and Indian businesses too have felt the impact of interconnected technologies in terms of disruption of the supply chain, consumer expectations and competition from unrelated sectors.

NASDAQ OMX (2019) claimed that the Indian market for digital transformation was likely to reach $700 billion by 2024. This was on account of growth in the manufacturing industry and increased adoption of 'internet of things' (digital technology-enabled fourth industrial revolution).
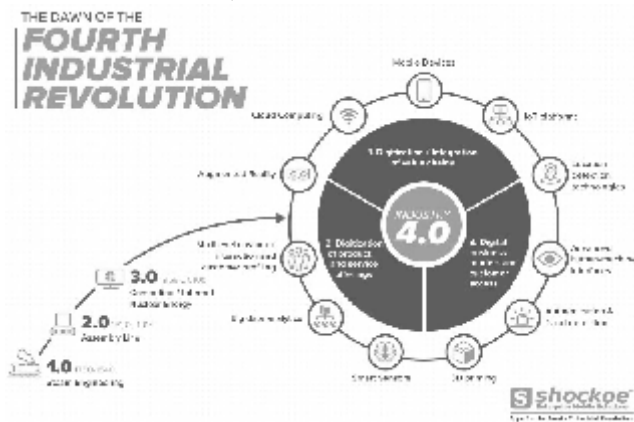
Source: Sockoe.com (2019)

The report also mentioned that the service sector namely communication, healthcare, technology, energy and banking would benefit immensely from digital transformation initiatives. It highlighted that this digital transformation market would involve cloud computing, Internet of things, artificial intelligence, mobility, social media, blockchain, machine eLearning and virtual reality.

This paper would review and analyse initiatives taken by Indian firms to deal with disruption in their business in the context of employees, marketing, business models and communication.

The need for the Study

It is morally imperative for academicians and thought leaders to observe, understand and articulate disruptive phenomenon and their implications on the society, business and humanity. Such endeavours enable the leaders in the realm of politics, business and civil society to frame policies, actions and plans which minimise the adverse impact of the disruption and allows the individual and firms to take advantage of the positive change that the phenomenon brings about.

It was felt that very few research studies had reviewed or analysed the way in which Indian firms have adopted digital technologies to transform their business models. This research study would aim to provide an insight into the challenges, methods and impact of successful adoption of digital technologies in India Inc.

Since the nature of this research paper is exploratory, usage of primary data or hypothesis formation was not considered to be essential. Although, further research in the area could be undertaken using causal or descriptive methods, and hence would form part of recommendations.

Objectives

The primary aim of this research paper is to present thoughts and ideas in the context of challenges brought on by the fourth industrial revolution and its effect of businesses through a review of relevant literature.

The paper aims at presenting a case analysis of two leading firms in their sector, that have adopted digital technologies pro-actively to transforms their customer relationship management and supply chain. It is hoped that the insights the paper presents would have managerial implications as its outcome.

Methodology

This paper has predominantly undertaken a systematic literature review and analysis of information, data, case studies and research reports in the realm of business and academics pertaining to digital technologies, their

impact on business operations and adoption of digital transformation by a Mahindra group of company and an Aditya Birla group of company.

The diverse and global nature of the businesses the two groups manage makes the study relevant and fit for the purpose of the conference theme "Impact of Fourth Industrial Revolution on Global Economy".

The author also reviewed scholarly articles, research papers and books dealing with digital technologies, business transformation and world economy to present a contextually appropriate case for digital transformation.

Analysis

Case I: Aditya Birla Fashion and Retail Limited

Aditya Birla Fashion and Retail Limited is the branded apparel business of the $48 billion Aditya Birla Group of Companies. It claims to have over Rs 8000 Crore turnover as on March 31, 2019. It has over 2700 brand stores, across 750 cities. With a presence in over 18000 multi-brand outlets and 5000+ point of sales in departmental stores, ABFRL is India's 2nd Largest retail company by market capitalisation.

Kumar Mangalam Birla, head of one of India's oldest and largest business conglomerate (Business Standard, 2020) opined that in the digital world, incrementalism wasn't enough, and firms could not pursue half measure. He believed while undertaking transformation in the fourth industrial revolution era, firms need to be prepared to go all the way.

In a recent statement published by the head of Aditya Birla group of companies, Mr Kumar Mangalam Birla (Bloomberg Quint, 2020) shared ABFRL's adoption of digital technology to transform its 'merchandise ordering system'. According to Mr Birla, ABFRL pioneered the industry-first merchandise booking process, by shifting its annual merchandise trade show to a digitally enabled 3D display of fashion apparel and online ordering.

3D technology was believed to be transformational and disruptive in terms of the designing and development of products (Court, 2015). Mullon (2015) believed digital technologies such as 3D printing and virtual reality would result in bringing in significant efficiencies in the entire value chain in the fashion industry. This view is substantiated by the experience of Aditya Birla Fashion and Retail Ltd in India in terms of its merchandise ordering process.

Court (2015) opined that the traditional process of design and development of fashion garments was based on an iterative process of repeated sampling, fittings and design alterations. ABFRL showcases its merchandise in a state-of-the-art stack to provide 3D images of garments, eliminating the need to manufacture 20,000 physical product samples every year, thereby transforming the traditional process pointed out by Court (2015).

This has resulted in reduced lead time from 8 months to 45 days in terms of concept design to the garment reaching the customer's wardrobe. Mr Birla (Bloomberg Quint, 2020) believed; this has enabled the firm to follow a 12 fashion cycles a year instead of the traditional two-fashion-cycles a year followed across the world.

Papahristou and Bilalis (2016) had stated that firms correctly using technology was able to reduce the development lead time by 20-50 per cent. They also claimed that 3D virtual prototypes allowed designers to freely experiment with a variety of fabrics and patterns before production. ABFRL's experience and published literature in the context of the digital transformation of fashion business corroborate the idea of adoption of digital technologies to survive, thrive and grow.

Business Wire (2017) published that ABFRL adopted Dassault System's 'My Collection' digital solution to manage its collections from design to delivery stage. It said that the digital transformation of its design to

delivery process enabled ABFRL to connect its internal and external stakeholders, integrated its supply chain and helped reduce production errors and material cost. Chris Colyer (2017) claimed that India's largest fashion retailer ABFRL has been able to transform its business by adopting a digitally enabled 3DExperience platform.

The impact of this digital transformation on designing, manufacturing, ordering and selling garments can be seen in the company's sell-through rate, lower markdowns, reduced pressure of liquidation and better inventory control. This transformation allows the firm to deliver a new range of garments on a monthly basis, increase the turnover of stock and working capital.

Although, McKinsey (2016) stated that the usage of digital technology was in its infancy stage in the fashion industry and a considerable amount of advancement was needed. It identified digitisation as a key objective for the coming years for the fashion and apparel industry. Reilly (2014) shared that the degree of usage of digital technology in various segments of the value chain of the fashion industry would vary based on their function and product categories.

This case highlights the real and positive impact of digital technologies in business transformation leading to survival, growth and prosperity of every stakeholder (designer, dealers, customer and the investors) in the ecosystem.

Case II: Mahindra & Mahindra (Automotive Division) and Salesforce

Mahindra Automotive Division is part of the US $20 billion Mahindra Group of Companies. The Automotive division is half a century old and manufactures passenger vehicles, commercial vehicles, Electric vehicles and has partnerships with some of the world's leading automotive companies in the world. It has assembly units in China, USA and UK; and sells vehicles across the world in countries such as South Africa, Malaysia, Australia, Brazil etc.

The Automotive division has acquired many small firms across the world to enhance its design capabilities. It reported a revenue of $7.5 billion+ in FY 2019-20.

According to Mr Mahindra (Autocar NewsDesk, 2019), India is the perfect location for global corporations considering technology services and product development for the digital world.

According to Immelt and Govindarajan (1991), becoming digital was a requisite was survival,

especially for manufacturing firms involved in the complex supply chain. They believed that digital transformation meant re-imagination of products and services as digitally enabled assets. Immelt and Govindarajan (1991) claimed that unless industrial organisation undertook digital transformation, they would not be able to compete in the future.

Holmstrom and Partanen (2014) stated that major industrial firms have formed dedicated research centres to support the innovation and widespread adoption of solutions based on digital technologies. They were also convinced that the usage of digital technologies in the manufacturing supply chain could reduce complexity.

ICT Monitor Worldwide (2019) reported that Mahindra and Mahindra Limited, a part of $20 billion Mahindra group forged a partnership with global CRM leader the Salesforce. The aim of this tie-up was to digitize M&M's complete customer experience value chain using digitally enabled technology. M&M wanted to bring its customer experience, employee interaction and dealer engagement on one single platform. Digital technology-enabled solutions such as real-time vehicle diagnostics, guided selling, AI-driven insights and personalised recommendation were employed to achieve transformation in its CRM.

Parvatiyar and Seth (2004) defined CRM as a strategy aimed at acquiring, retaining and partnering with relevant customers to create superior value for the firm and the customer. Anton (1996) believed that CRM should aim to integrate technology, process and all business activities around the end consumer.

Mahindra and Mahindra's Automotive Division's Chief of Sales and Marketing, Mr Nakra was of the view that firms needed to employ digital platforms to address the rapidly evolving needs of customers (Amman, 2019). According to Mr Jajoo (VP and Chief Solutions Officer, Sales, Force Automotive) emergence of new technologies have altered the expectation of customer in the way they interact with brands and companies. Companies can cater better to customers need by capturing and using data coming from multiple sources such as digital channels, dealers' systems, internal systems and third parties (Amman, 2019).

According to Shah (Financial Express, 2018), Mahindra Passenger Automobile division attempted to bring the dealership at the doors of the customer through digital interface named 'SyouV'. This digital platform allowed the customer to search, enquire and purchase a new

vehicle online. The company aimed to bring all its dealerships on the platform to provide a dynamic and integrated experience for the stakeholders. Mahindra's digitisation of the pre-sale channel also attempted to address sales and service using the platform (Financial Express, 2018).

Source: Financial times (2019)

According to Shah (2018) this digitisation of customer experience, dealer location, stock and time for delivery alters the traditional challenges faced by customers and dealers in terms of matching their requirement with the stock. Mahindra Automobiles claimed that 10% of its sales came from online search and experience. Mahindra Automobiles also shared that they spent 15% of their marketing budget on digital communication channels.

The 'SyouV' platform allowed the customers to build and customise the vehicle as per their own specifications (Shah, 2018). Mahindra Automobile has also digitalised its after-sales and service in terms of online booking, costing and payments. Mahindra Automobiles also intends to use Virtual Reality headsets to provide customers with options to customise the interiors and other features of the vehicle. Mahindra Automobiles have taken a digital transformation journey to offer a complete solution to customer from pre-purchase to after-sales (Auto NDTV, 2019). Marandi (2018) reported that 13% of Mahindra Passenger Automobiles sales enquiries came from its digital platform and it contributed 8% to the overall sales of the division.

According to Wright (2015), the future of the automotive industry lied in digitisation, integration and Internet of things. Wright (2015) wrote that at CeBIT show Vodafone showcase digital technology wherein smartphone could be used to prevent vehicle theft a Deutsche Telekom displayed its 'Digital Car' prototype capable of intelligent connectivity between car owners, dealers and repair workshops.

It is evident from Mahindra and Mahindra's (Automotive Division) experience with adoption of digital technologies to manage its CRM that a pro-active approach and clear strategy can transform the way its stakeholders interact with the firm and enable it to succeed.

Implications and Conclusions

The cases discussed in the paper present a clear roadmap towards the adoption of digital technologies to alter, improve and transform businesses. Both the firms – Aditya Birla Fashion Retail Ltd and Mahindra Automotive – initiated the digitisation of their business with the end consumer in mind. Partnering with the world's leading firm allowed them to integrate existing value chain with newer technologies; thereby providing efficiency and better CRM (Customer Relationship Management).

Liu (2017) shared that the fourth industrial revolution altered the relationship between the factors of production. Traditional firms depended on physical assets and human capital, but the Mahindra Automotive 'SyouV' substantiate the fact that virtual showrooms can dramatically alter the role of, and investment needed in dealerships and sales professionals. The impact and implications of the adoption of digital technologies seem greater than any other industrial revolution.

According to Westerman and Bonnet (2015), digital technologies have reshaped customer's expectation, the way employee collaborates and business models. They said that new technologies such as 3D printing, augmented reality, 'internet of things' and robotics would alter businesses worldwide.

Westerman and Bonnet (2015) believed large traditional companies can compete better with new-age firms if they adopt the digital environment. This would require a continuous re-evaluation of assumptions in every aspect of business (Operations, Customer Expectations, Logistics and Communication). Shrivastava (2017) opined that managing consumer's expectations would be impossible in the future without being a digitally oriented company.

Dr Santanam (Forbes India, 2018) opined that individuals, institutions and organisation would need to anticipate and prepare for the changes that the fourth industrial revolution is ushering into our lives. He said that rapid changes brought by digital technologies

could exacerbate inequality unless policymaking addresses up-skilling. It was claimed that the fourth industrial revolution would blur the line between physical, digital and biological worlds across sectors and international borders (Forbes India, 2018).

The fourth industrial revolution will reshape businesses and economy, Indian firms would need to adapt faster to these changes, digital technologies will allow them to minimise the cost of production, keeping products/services relevant and build better customer relationships with technologies such as Artificial intelligence, robotics, digital customer interface and digital communication mediums.

Liu (2017) said that the implications of the changes brought about by the fourth industrial revolution would involve challenges for every stakeholder in society. And, he suggests a systematic approach to respond to the digital technologies involving government, business, society and individuals. He emphasized that countries would need to provide an innovation-friendly environment for the adoption of newer technologies to flourish and succeed.

With Indian firms looking to venture abroad, as Mahindra Automotive has done, they would need to build international competitiveness by experimenting and developing digital technologies within the home market. Aditya Birla Fashion Retail Ltd.'s experience of adopting digital technologies in its design and production of garments shows that value chain across industries would need to be re-imagined. It also implies that firms in India would need to sensitise and prepare their channel partners for the changes that the fourth industrial revolution might bring about.

Recommendations

This research paper conducted a systematic literature review of definitions, information, theories and case studies in the realm of the fourth industrial revolution, digital technologies and the field of business. The literature review addresses the link between the technologies shaping the business world in the fourth industrial revolution. The article is limited in terms of its scope, the literature reviewed and impact assessment.

It would be worthwhile to research the impact of digital technologies on individuals, government, institutions and businesses using empirical and descriptive studies for a deeper and wider exploration of the theme of the conference and the subject matter.

Industry-specific studies could be undertaken to assess the usage, impact and benefits of digital technologies in every element of the value chain from design to delivery. Comparative studies could be conceptualised to study the digitisation process adopted amongst peer groups in a specific industry.

The scope of studies could also include the usage of digital technologies for the greater good of humanity in terms of promoting sustainable development goals of the United Nations. Such studies may borrow from the experience of business groups in terms of initiation, adaptation and outcomes.

The scope of this paper was limited to review the literature and analysis of two cases in the context of the fourth industrial revolution and the adoption of digital technologies.

It is recommended that sectoral studies can be undertaken to understand, evaluate and measure the impact and level of digitisation in multiple sectors such as manufacturing, hospitality, transportation, government services, Information technology, education and other social sectors.

Comparative studies are also recommended to analyse the method, approach and impact of the adoption of digital technologies between Indian and foreign firms. It is also felt that longitudinal studies may be undertaken to observe the impact of these technologies on markets, society and governance in general.

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PREDICTING THE BUYING BEHAVIOUR PATTERN OF GROCERY ITEMS BY WOMEN CONSUMERS: AN EMPIRICAL STUDY OF THANJAVUR.

* Dr. Kavitha Venkatachari

ABSTRACT

Apriori algorithm is one of the major algorithm used in mining to find frequent item sets in a large transactional data. Companies ranging from small scale to large scale all data is stored in various forms which keeps on growing. If the data is distributed all over the places in a vertically fragmented way then it is very difficult to combine the data and store it in a central location. From the data base entry we can understand that some items are repeatedly entered and they are having the common associations between them.

From this study we can understand that apriori algorithm is the best algorithm and it takes less execution time and it gives the strong association rules. By this association rule we can get the relationships between one item and several important attributes. From the visualization tools to show the results helping to give decision proposals of the grocery item.

Keywords: *Super market, data mining, association rule, buying behaviour, apriori and eclat algorithm, pattern*

Introduction

In retail sector many big retail players are there. They use big data analytics tools in all kinds of retail process. They track which new product is selling highly in the malls and who are the buyers, their time of purchase and their spending behaviour etc. and these are measured and recorded through bar code scanners. Retail analytics help the decision makers to determine the price of the product. Real time data helps them to determine when to do reduce or increase prices. This price optimization algorithm is to understand demand of the product, inventory related issues and competitors' activities. Before using analytics, they used to sell the product in the market in one season, after the buying period is over they reduce the price and sell it at discount rates. Start-ups or small scale retail shop owners have also started using social media platforms. Through whatsapp, twitter, face book they understand the consumers' buying behaviour. Here big data is playing an 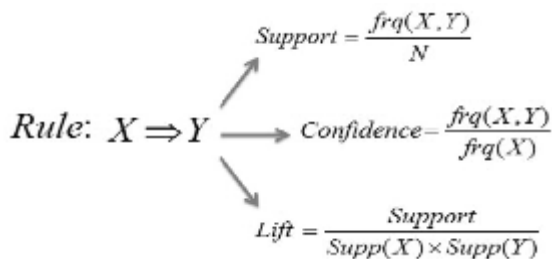important role in every sector. For demand prediction and inventory management customer's real time data is helping a lot. On that basis they can predict a lot. The shop owners and retailers now understand clearly about the buying patterns of every individual buyer's behaviour, occasions and their spending nature.

Data mining techniques build models on the basis of training data sets and testing data sets. The existing data set and also relevant data helps the analyst to predict the patterns and relationship between many items or attributes. Some patterns explain about the interrelationship among the attributes that are called as explanatory models. To predict the future values of the attributes are called as predictive modeling. To find new patterns using data mining technique has major four methods. Association rules,   prediction models like linear programming, clustering is mainly for segmentation of the customers and sequential relationships are the four major techniques used in data mining. Market basket analysis is helpful in finding interesting patterns from the large data sets. In the super markets these days all the items are scanned through

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Bar code scanners. From these bar codes we can generate per day transaction and weekly and monthly transactions. The large number of transactions are measured and recorded through point of sale systems. For example if a customer buys a mobile phone he /she will buy mobile phone cover also and other related accessories. From the analysis the shops can change the store catalogue to place the relevant products. In Medical diagnosis this technique is helping the doctors to diagnose the probability of disease occurrence. Using these techniques the physicians can add more new symptoms and find the relationship between the new signs and symptoms of the consequent disease. For Government and entrepreneurs these techniques help to take decisions. They can try to understand where they can set up the new factories or where to open new malls. In pharmaceutical sector, medicine is prepared by a combination of various chemicals each having different properties. For example if we take protein sequences there are twenty amino acids in that. Each protein has its own properties. If we affect a small change in the combination it will impact a lot. This association rule is very much helped in finding the synthesis of artificial proteins.

Association rule mining concepts:

$$Rule: X \Rightarrow Y \quad \begin{cases} Support = \dfrac{frq(X,Y)}{N} \\ Confidence = \dfrac{frq(X,Y)}{frq(X)} \\ Lift = \dfrac{Support}{Supp(X) \times Supp(Y)} \end{cases}$$

step 1

Tr Id	Purchase Items
1	Maida, Butter, Sugar
2	Egg, Butter, Cream
3	Egg, Butter, Maida, Cream
4	Egg, Cream
5	Wheat

step 2

Purchase Items	Support Value
Maida	2
Butter	3
Sugar	1
Egg	3
Wheat	1
Cream	3

step 3

Purchase Items	Support Value
Butter	3
Egg	3
Cream	3

step 4

Purchase Items
Butter, Egg
Butter, Cream
Egg, Cream

step 5

Purchase Items	Support Value
Butter, Egg	2
Egg, Cream	3
Cream, Butter	2

step 6

Purchase Items	Support Value
Egg, Cream	3

Association Algorithm process:

- Step 1: load the transactional databases.

- Step 2: find support value/frequency of all purchased items

- Step 3: remove the items that is having min_support_value less than 3

- Step 4: merge the two items

- Step 5: calculate new support value/frequency of all purchased items

- Step 6: remove the items those are having min_support _value less than 3

- Step 7: merge the items and calculate the new support value

- Step 8: remove items those are having min_support_value that is less than 3.

From the example we can understand that there is no frequent items in the whole transaction because all the items having min_support _value =3. From the above example we can understand how to calculate support value, confidence and lift values. For example in one shop per day 100 customers are visiting the grocery shop and buying items like coffee powder, sugar and milk. From the 100 customers 20 of them bought milk, 12 bought sugar and 10 of them bought coffee powder. Those who bought milk bought sugar also. Milk -----> sugar.Support value = frequency (milk & sugar)/ Total number of customers visited the shop. Support value = 32/100 = .32.Confidence = frequency (milk &sugar)/frequency (sugar) = 32/12.To find the lift value = support value / support(x) * support(y) Or Confidence/ frequency (milk)

Purpose of the study

In this research we can see in a retail shop how different collection of items are there to link up other items and how to make use of these relations by taking healthy marketing actions. Mining association rules from transactional data base provides us with valuable information about co-occurrences and co-purchases of products. Some shoppers may purchase a single product during a shopping trip, out of curiosity or boredom, while others buy more than one product for efficiency reasons. The main objective of the study in this research is to predict the association rule generations and understanding the

buying behaviour patterns from the large transactional data.
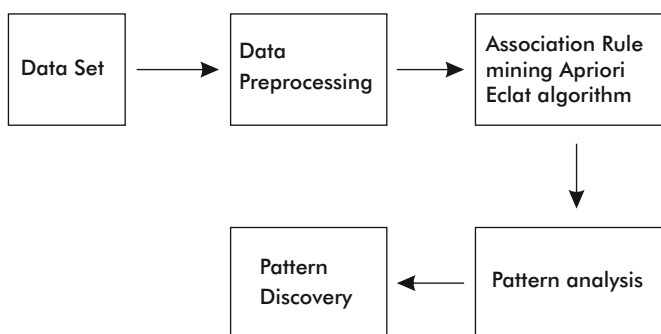
Objectives of the Study

To stay competitive, retailers must understand their current consumer behaviour and be able to predict future consumer behaviour. Understanding consumer behaviour can help retailers to retain customers, improve sales and extend their relationship with customers.

- To understand the buying pattern of the products that comprises the customer's basket.

- To study the products most likely to be purchased by the customers.

- To predict and suggest products to individual consumers and retailers

Literature studies

From the literature review we can understand that many authors have used association rule mining algorithm but they have used different software's like Tangara, Orange and Weka. But R is an open source and it is very much used in machine learning algorithms and business analytics purpose. In this research the author has used R programming language and data mining techniques because R provides very good quality plotting tools, supports for data wrangling and it is platform independent software.

Model for this research

```
[Data Set] → [Data Preprocessing] → [Association Rule mining Apriori Eclat algorithm]
                                                    ↓
[Pattern Discovery] ← [Pattern analysis]
```

Goel and Mallick (2015) have used frequent pattern mining technique and sequential pattern mining technique to improve the customer's buying behaviour pattern. In this research the data base is divided into many partitions to use clustering algorithm then they followed sequential mining. Apriori algorithm normally explains the association between two or many items purchased from

the list. Hseyinov, Canaytae have used Éclat algorithm to understand the buying behaviour of the consumers. This Éclat algorithm is a modified version of apriori algorithm. This model is useful for super markets, not for small shoppers. Éclat algorithm is useful for predicting frequent item sets in a very huge data base and this algorithm was proposed by Zaki (2001). Éclat algorithm is faster than FP growth algorithm. Othman et al have proposed another algorithm to be useful for big data structure that is MApriori algorithm. It is predicting the frequent item sets in two phases. In the mapping phase all the items are extracted but in the reducing phase which is not supporting minimum threshold value that is removed. Patron (2004) has conducted the research in his work he explained how RFM analysis is helpful in small company called silver minds music company. The company is in Europe and it is very difficult to acquire new customers in the music CD and video selling company. Chaid (Chi square automatic interaction and detection) and chi-square is very much used in the statistical method and it is helpful to segment the customers. Reader's digest and Lifestyle magazine companies have used these techniques and they have retained good number of customers in the market.

Past purchase behaviour and current customer's buying behaviour helps the marketer to predict his/her future buying behaviour. Customers who spent more money, how many times they visited the shop and how recently they did shopping is called RFM analysis. From the low score value the shopkeeper is not going to get big business so he can leave that customer. Whose value score is high they are the loyal customers and the called as the early adopters. They will promote your brand. Prokeinova, Paluchova (2014) said in their research Slovakia consumers mainly focused on traditional food consumption. In this country people mostly focus on traditional foods and safety to nature. To analyse the hidden buying behaviour pattern the author has used Tanagra software. They did the survey and collected samples from 318 respondents. From 318 respondents 64% of the respondents age group is 18-24 and 21% of them are in 25-34 age group. From the study 78% of Slovakia people are very traditional and they are using their own balcony to cultivate their vegetables. So they are not buying outside. their qualification in secondary school certificate.

Recency, frequency and monetary value is called as RFM technique and it is useful to understand customers purchase behaviour analytics. From

the customers purchase the shopkeeper or retailer can understand how frequently a customer visits the shop, how much he/she spends in the shop and whether he/she visited the shop recently or not. These three parameters help the retailer to improve their future personalization services and what kind of promotions is fit for the customers can be analysed. From the demographic variables classification rules are generated and RFM variables help the decision maker to predict the future purchase behaviour of the customer. Association rule mining based RFM technique helps the retailer to understand the relationship between the customer's product properties and loyalty towards the product can be measured. FM analysis was first introduced by Bult and Wansbeek(1995) and this theory is proven very successful by (Blattberg et al., 2008). Recency means the gap between two shopping, that is latest purchase and the present one.

Many marketers understand that most recent purchasers will in all probability purchase again than less fresh purchasers. Frequency means within a certain period of time how many business transactions the customer has made. From the transactions the marketer can understand that which customer has made more purchase and they are going to buy which products mostly than the customers who do fewer transactions. Monetary means the total amount the customer spends in the shop. From the customer's past purchase behaviour RFM value when assigned .555 is the highest value score and 111 is the lowest score. 555 means recently purchased and frequent visitor to the shop and the highest money spent in the shop. Using quintile system (5*5*5) 125 different scores are assigned and customer's purchase behaviour and money spent in the particular shop and frequency is monitored.

Clustering, association rule and RFM is helpful to understand market intelligence. RFM analysis is helpful in online marketing and direct marketing very much. We can see that customer Id 19 which has the RFM score value 155 means he/she has made a high number of purchases with high amount of transactions but not for a long time. The retailer is thinking that the customer id 9 is not happy with our service or product so he/she is not visiting for a shop frequently. He/she may find an alternate competitor for shopping so he/she has not visited the shop recently. From the RFM score value the retailer or marketer can call the customer and get the feedback about service, quality and product. From the feedback the marketer can redesign/reactivate his/her program and the marketer can send good promotional plan to him/her to get the valuable customer back.

Association mining with RFM analysis

Common purchase behaviour can be understand from the large transactional database and association rule mining and FP growth algorithms can be used. From the demographic variables we can understand which age group is buying what kind of product, at what time and what is their income range. From these inputs right product can be provided to the right people. Clustering technique provides group or segments that are similar, groups are joined together and they are called clusters. These clusters are useful for profiling the customers. For example in a cloth store if the classification rules are applied it will show the tree of which age group and gender and income are suitable for which product. For example in a female buyer aged 25 if 40% confidence and 1% support value are applied, we can get R, F and M values which are high when she buys short kurtas, then the marketer can suggest her to buy palazzos and 2 layer long kurtas also. If another customer has recently visited the shop and his frequency is very less and monetary value is also very low but he buys a cotton shirt then the marketer will suggest some other cotton kurtas also to him. According to the RFM value the marketer should suggest products otherwise will lose customers.

Area of the study

Thanjavur is formerly called as 'Tanjore' and it is situated in the south Indian state of Tamil Nadu. The city is also called as "Rice bowl of TamilNadu" because the city is mostly covered by agricultural centres and it is located in the Cauvery delta region. Thanjavur is famous for South Indian religion, culture and mainly for temples and its unique architectures. Brihadeeswar temple is also situated in Thanjavur. It is very famous for its Chola kingdom's architectures. Thanjavur is famous for its unique paintings and historical places. Population density of the city is 708 people per square kilometre. Literacy rate in this city is 82.7% and the sex ratio of this city is 1035 females for every 1000 males. Tamil language is widely spoken in Thanjavur but Sourastra and Tamil Marathi are the other languages spoken in the city also.

Data Collection and analysis

The study is conducted in Punnnia Moorthy Pillai departmental store (PPDS) and the store is a largest grocery departmental store situated in Thanjavur, Tamil Nadu, India. The store has established its name for quality, trust and service to the society for the last 100 years. PPDS started their chain of outlets into Selvam Nagar, Anna Nagar, South Rampart and New Bus stand in the year 1988. They organized their stores in 6 separate sections. a) House hold products b) Tata jewellery c) Home and kitchen appliances d) Fruits and vegetables e) Toys and f) Gift items. The house hold section includes more than 2832 items and 18 categories with different brands and prices. This is the main attraction of the store and it generates more revenue. From the shop 65% of the profit is generated from this section only. Customers include small retail shop owners and individual customers.

The super market makes 43% of its sales revenue from the whole sale retail shops and 17% of the revenue comes from the hotels and 35% from the normal retailers. Retail sells goods to about 700 end customers daily. The transaction is observed from the duplicate copy bills or invoice copies which contain the items purchased from the shop. On an average per day nearly 500 transactions are done from different sections. From the duplicate bills all the items are coded and converted in to a binary form. For better analysis process item names are written on the columns and transactions are stored in rows. The data is collected from Oct 2018 to Feb 2019. In this research, Association rule mining that is Apriori algorithm and Éclat algorithm was applied to find the association. The main concept of association rules is to examine all possible rules between items and turn them into 'if-then' statements.

Interpretation

After pre-processing, all the data is mutated and then imported to R studio. The data set contains 536 records and 24 unique fields/items are identified. From the duplicate copy bill these fields are stored in the .csv file. Invoice no, stock code, description of the item/product, quantity, invoice date, unit price, total cost, date and time is recorded in the .csv format. From the study we can find out most of the orders are happened between 10:00 am to 3:00 pm. Most of the customers have purchased more than 15 items in each invoice. Number of rules generated in the study is 5965 combinations. The accuracy of the algorithm is measured through support value, confidence and lift value. Lift value 1 means there is no association between the products. If the lift value is greater than 1 means the products are likely to be bought together. In this research the lift value is very high. High lift value products are bought together than just buying the product B alone. A lift less than 1 means the products are unlikely to be bought together. From the study we can understand 100% of the customers who bought coffee powder they also bought sugar and Rice. From the transaction records it was seen that 235 transactions were about buying single item and 115 transactions were of 2 items but the cost of the product is high. This indicates that most of the customers buy a small number of items that is low cost products in the transaction also. At 10:00am, 126 transactions happened. At 11:00am 144 transactions took place in the shop.

At 12:00 noon 1162 transactions have been sold out from that period. After the lunch hours the transactions reduced. At 4:00pm 583 transactions then it reduced to 15 items at 9:00 pm. As per monthly transactions November, December and January emerge as the peak time. During these three months people buy a lot. In the month of November 215 transactions per an hour happened and December 169 transactions per half an hour happened. On January 159 transactions per day happened. In October people did not show much interest in shopping. Very few people that is 526 people did shopping in that month. In this research we kept the support level at .0001 and the confidence level is .8. We analysed only the grocery section. From the rules we can see that more than 50% of the items are not purchased from this shop. The lift value is showing high. So we can say that rice/sugar and dhal is purchased in a combination.

Very few items were moving high in the shop. Other items moved slowly in the shop. Means the customers were buying very rarely. The product movement was very slow in the shop. To find the association between the products the author used Eclat and Apriori algorithm to find the frequency of the items. Eclat algorithm is equivalence class clustering and bottom up lattice transversal algorithm. Both the algorithms will give the same output but their method is different.

Algorithm used and tested in this paper:

Eclat algorithm:

- Works on depth first search algorithm
- Data base in the vertical format
- execute item set mining
- find frequent pattern in the data base

Step:1 Give transaction id for each item in the data base

Step:2 transaction id of {bread} is accurately the list of transaction containing {bread}

Step: 3 intersecting transaction id list of {bread} with transaction id list of all other items resulting in transaction id list of {bread, butter}, {bread, coke}, {bread, milk}…

Bread is the conditional data base if ({bread} removed}

Step:4 repeat from first step 1 on { bread} conditional data base

Step:5 repeat for all other items

Apriori algorithm

- Works on bottom up approach and breadth first search
- Data base in the horizontal format
- Execute item set mining
- Find frequent item set generation from the large data base

Step:1 Find all the item sets which are having the support value that is greater than threshold value

Step: 2 Rule generation that is otherwise called candidate rules that are having high confidence value.

Source code:

Apriori Source code:

```
paath <- read.csv ("C:/Users/kavitav1/Downloads/paath.csv")
```

View (paath)

Library (arules)

Rules <- apriori (paath)

Summary (rules)

```
Rules <- apriori (paath, parameter = list (minlen=1, maxlen=4, supp=.001))
```

Inspect (rules)

Library (arulesViz)

Plot (rules)

Visualization (rules)

Plot (rules, method = "grouped")

```
Plot (rules, method = "graph", control =list (type="green.leaf.veg", top= 10))
```

Eclat Source code:

Library (arules)

Class (paath)

```
Paath <- read.csv ("C:/Users/Kavitav/Downloads/pdps1.csv", sep = ",")
```

Inspect (head (paath, 3))

List (head (paath, 3))

```
Frequent Items <- eclat (paath, parameter = list (supp = 0.07, maxlen = 15))
```

Inspect (frequent Items)

```
itemFrequencyPlot(paath, topN=5, type="absolute", main="Item Frequency")
```

```
rules <- apriori (paath, parameter = list(supp = 0.005, conf = 0.5))
```
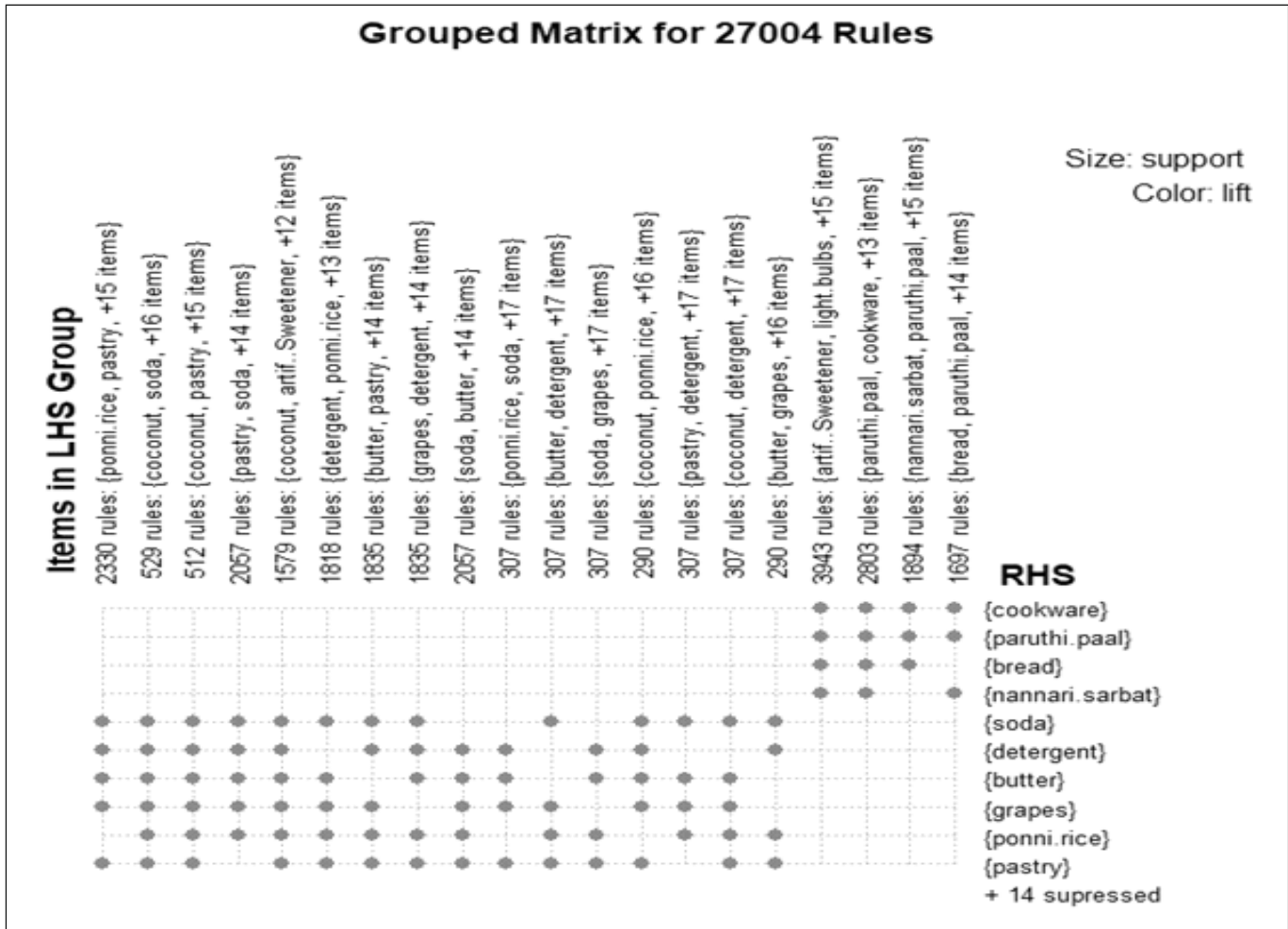
```
rulesconf <- sort (rules, by="confidence", decreasing=TRUE)
```

inspect(head(rulesconf))

ruleslift <- sort (rules, by="lift", decreasing=TRUE)

inspect(head(ruleslift))

```
rules<- apriori(paath, parameter = list (supp = 0.005, conf = 0.60, maxlen=10))
```

Grouped Matrix for 27004 Rules

Interpretation of the output:

From the visualization graph we can understand that who has bought ponni rice and pastry they have bought cookware also. The confidence value is high for this combination of the products. Next who has bought coconut ,soda and other 16 items with paruthi paal they bought together . From this output the author has suggested to the retailer what combination of products will go together and how much he wants to store in the shelves also. From the strong rules the author has given the recommend to the retailer that which items are not regularly moving from the shelves .

Advantages

Apriori:

 Easy to apply the algorithm in large set of data base

Eclat

• Needs one data base scan

• Very fast to count support value

• Execution time is less and improves efficiency and it will solve the problem in the bottom to top approach.

Disadvantages

Apriori

Execution time is more and slow and it needs more data base scans.

Eclat

It will work with intermediate transaction id list and it needs more memory

Conclusion

In this research paper the author has made an attempt to realize which algorithm produces best results and having more efficiency. Éclat algorithm and apriori algorithm have their own advantages and disadvantages already explained in this paper. Éclat gives better result, the execution time is also less and it is an efficient algorithm because éclat finds the rules with

the intersectional transaction list but it is not possible in apriori algorithm. Éclat algorithm only counts support value and it does not calculate confidence value.

From Association rule data mining technique, we can understand the buying behaviour of the customers and the items that are frequently bought together and which are not bought together. We can have complete understanding of the customer's smart purchase behaviour through Market Basket Analysis and place the products systematically. These predictive techniques helps us in removing the redundant rules and have a set of rules which can be useful for future use. This research work is helpful to the ground level managers to understand the necessity of combination of products and which product should be bundled together. The floor managers can do systematic changes to the product layout design and it will help in cross selling of the items. Just like what Flipkart and Amazon does, one can easily understand what kind of products and at what price products mostly move in the particular area, they can increase their products.

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