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AN EXPLORATORY STUDY ON FACTORS INFLUENCING BRAND PREFERENCE OF CONSUMERS TOWARDS REFRIGERATOR IN BALASORE TOWN, ODISHA

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ABSTRACT

The present study examines the key determining factors that influence the buying behavior of consumers towards the refrigerator product. This study has been conducted in Balasore town, Odisha. A structured questionnaire was administered to collect information related to buying behavior of consumers of refrigerator of the said locality. Finally, 450 respondents were included from cross section of population using the said product. The data thus collected were analyzed by appropriate statistical tools. The result shows that the factors influencing buying behavior of consumers have considerable impact on the brand preference with regard to refrigerator. Keeping in view the outcome of the study, few important suggestions were offered for the mutual benefit of the marketers and consumers.

KEYWORDS

brand, consumer buying behavior, demographic variables, refrigerator.

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INTRODUCTION

Consumer behavior is a decision making process of a person when he/she is engaged in evaluating, acquiring, using or disposing goods/services. The decision making is primarily dependent on two important aspects i.e. the consumers expected amounts of satisfaction and the resources available to him/her for spending at any point of time. In other words, consumer behavior can be defined as the sum total of how individuals and groups recognize and determine their needs and "how can or how often" they purchase and use goods and services to meet those needs". Consumer behavior is the study of when, why, how, and where people do or do not buy product. It mingles elements from psychology, sociology, social anthropology and economics. It also tries to understand the buyer decision making process, both individually and in groups. Apart from this, it studies characteristics of individual consumers such as demographic and psychographic behavioral variables in an attempt to understand people's needs. The study of consumer behavior also assumes more relevance because it assesses influential factors affecting the consumers from groups such as family, friends, reference groups, and society in general.

STATEMENT OF THE PROBLEM

Basically, the consumer behavior is the study on how individuals make decisions to spend their available resources in consumption related items. Now-a-days, consumer behavior research focuses on not only goods and services that consumers buy but also evaluate those goods after its use. Sometimes, the buyer may decide not to buy the same model again and may try to buy other brands. Thus, changing consumer behavior becomes a major challenge to the manufacturers and it affects their production and marketing decision. Hence, manufacturers and marketers should study the consumer behavior on a regular basis, so that they can make necessary changes to the products as per the requirements of the consumers. Keeping in view the above issues, Balasore town is selected by the researchers as the study area. Balasore town is one of the important towns of northern part of Odisha in which there is a greater scope for marketing of household consumer durables. Thus, an attempt has been made by the researchers to study the factors influencing buying behavior of consumers with reference to brand preference of refrigerators in the said locality.

REVIEW OF LITERATURE

The literature review is an integral part of the research work. Review of past studies reveal the works done by individual researchers and institutions and facilitates to create the base for further research. Various studies related to consumer behavior, particularly in urban markets have been carried out by different scholars on different aspects at national and international level. It is observed from the review of literature that the adoption of latest marketing strategies in marketing of consumer durables is of recent phenomenon. In this connection, research work conducted by the distinguished scholars in this area include George and Terry (1982), Ford, et al. (1998), Mahavi and Felix (2000), Losarwar (2002), Verma and Kappor (2003), Harish (2007), Nabi, et al. (2010), Lalitha and Kumar (2011), Nandamuri and Gowthami (2012) and others. These studies mainly focused on the buying behavioral aspects of consumers towards consumer durable products. Similarly, the well-known scholars namely Ranganathan and Shanthi (1995), Barry (1992), Selvaraj and Mahendra (2003), Sridhar (2007), Kapoor and Kulshreshta (2009), Bashar, et al. (2011), Thakur and Hunda (2012) and others carried out the study on buying behavior of consumers towards selected consumer durable products and offer important suggestions for effective marketing of such consumer durables. These studies exposed the fact that factors influencing the consumer behavior have positive impact on the choice and use of durable products. Keeping in view the above presented issues, the present research paper made an attempt to study the factors affecting the buying behavior of consumers towards brand preference on refrigerator in Balasore town, Odisha.

OBJECTIVES OF THE STUDY

The following objectives are framed for the present research work:

1. To study the demographic profile of the consumer respondents in Balasore town.
2. To identify the factors affecting the buying behavior of consumer respondents with regard to brand preference on refrigerator in the said locality.
3. To offer suggestions based on the findings of the study for the benefit of consumers and marketers.

SCOPE OF THE STUDY

The present study takes into account the factors influencing consumer behavior on durable product i.e. refrigerator. The study is mainly concerned with urban consumers residing at Balasore town. Hence, the scope of the study is limited to Balasore town and one consumer durable product.

HYPOTHESIS FOR THE STUDY

Keeping in mind the objectives set for the study, the following hypothesis is framed to test in due course of analysis.

1. H_0 There is no significant association between the respondents' age group and the preference of refrigerator brand.
2. H_0 There is no significant association between the respondents' educational qualification and the preference of refrigerator brand.
3. H_0 There is no significant association between the respondents' income and the preference of refrigerator brand.

RESEARCH DESIGN

The research design adopted for the present research work is narrated below:

The research study has used a structured questionnaire for the purpose of collecting primary data from the consumer respondents. The secondary data were collected from books, journals, periodicals etc. For collection of primary data, purposive random sampling method was followed. The reliability of the data set was tested by using Cronbach's Alpha whose test value was found to be 0.736 and considered highly reliable. The researchers have collected responses from 450 consumer respondents. Finally, the collected data were analyzed and interpreted by using the statistical tools such as Percentage, Scaling Technique (Measurement of attributes), Chi-square test etc.

ANALYSIS AND INTERPRETATION OF DATA

The demographic variables namely, gender, age, education, occupation, and annual income are taken into account to study the status of the respondent consumers participated in the survey.

1. DESCRIPTIVE ANALYSIS

The demographic variables namely, gender, age, education, occupation, and annual income are taken into account to study the status of the consumer respondents participated in the survey.

TABLE 1: DEMOGRAPHIC VARIABLES OF CONSUMER RESPONDENTS (N=450)

Variables	No. of consumers	Percentage
Gender		
Male	270	60.00
Female	180	40.00
Age (in years)		
20 to 30	181	40.22
31 to 45	140	31.11
46 to 60	104	23.11
Above 60	25	5.56
Qualification		
Literate	10	2.22
10 th pass	24	5.33
12 th pass	23	5.12
Graduate	136	30.22
Post-graduate	224	49.78
Others	33	7.33
Occupation		
Agriculture	20	4.44
Government service	158	35.11
Private service	95	21.11
Business	112	24.89
Others	65	14.45
Annual income (Rs. in lac)		
2 or less	128	28.45
2 to 4	148	32.89
4 to 6	110	24.44
6 to 8	49	10.89
Above 8	15	3.33

Source: Data collected and compiled from survey

Table 1 shows the distribution of sample respondents by their demographic variables. From the above table, it is evident that the total number of respondents is 450 and maximum respondents are male constituting 60%. The share of female respondents is 40%. It implies that the sample is unequally distributed gender wise with dominance of male respondents. It is further revealed that the maximum respondents i.e. 181 are in the age group of 20-30 years constituting 40.22%. It is followed by age group of 31-45 years with 31.11%. It is observed that among 450 respondents, 224 i.e. 49.78% belong to the category of post-graduates. At the same time 30.22% respondents are Graduates. It can be said that majority of the sample respondents are from post-graduate or graduate category. From the above table, it is further observed that 35.11% consumer respondents are from government service followed by 24.89% in business category. From this, it can be noted that government service holders are the maximum participants in the total sample. The table also reveals that there are 148 i.e. 32.89% consumer respondents in the annual income group between Rs. 200001 and Rs. 400000. Respondents earning below Rs. 200000 income are 128 in number i.e. 28.45%. It can be stated that majority of the consumer respondents are in the annual income group of Rs. 200001- Rs. 400000.

2. INFERENCE ANALYSIS

The consumer behavior towards purchase of refrigerator has been discussed below taking into account selected key variables influencing the buying behavior of consumer respondents.

i. Choice of Brands

TABLE 2: DISTRIBUTION OF CONSUMERS BASED ON REFRIGERATOR BRAND

Brand name	No. of consumers	Percentage
Panasonic	41	9.11
Samsung	106	23.56
LG	65	14.44
Kelvinator	7	1.56
Godrej	125	27.78
Videocon	15	3.33
Whirlpool	60	13.33
Electrolux	7	1.56
Voltas	14	3.11
Lloyds	3	0.67
Heir	3	0.67
Others	4	0.88
Total	450	100

Source: Data collected and compiled from survey

The table-2 presents the distribution of respondents by their refrigerator brands. The table reveals that refrigerator with brand name Godrej has maximum number of consumers constituting 27.78% followed by Samsung and LG brands with 106 (23.56 %) and 65 (14.44 %) consumer respondents respectively. Lloyds and Heir brands have equal number of consumers i.e. 3 (0.67%). Panasonic has 41 numbers of consumers constituting 9.11%. The percentage of refrigerator with brand name Kelvinator and Electrolux is 1.56 each. Videocon and Whirlpool brands have 15 consumers or 3.33% and 60 consumers or 13.33% respectively. From the above analysis it is observed that, Godrej and Samsung are found to be the most preferred brands by the consumer respondents

ii. Use of model

TABLE 3: DISTRIBUTION OF CONSUMERS BASED ON TYPE OF USAGE OF REFRIGERATOR BRAND

Type/model	No. of consumers	Percentage
Double Door	170	37.78
Single Door	250	55.56
Triple Door	15	3.33
Special Type	7	1.56
Others	8	1.77
Total	450	100

Source: Data collected and compiled from survey

The above table-3 presents the distribution of refrigerator models the customers are using. Maximum number of customers use single door refrigerator (55.56%). 170 consumers are using double door which accounts for 37.78%. Whereas 15 numbers of consumers are using triple door refrigerator. It is evident from the table that single door refrigerator is the most preferred one among the consumer respondents.

iii. Period of use

TABLE 4: DISTRIBUTION OF CONSUMERS BASED ON PERIOD OF USING REFRIGERATOR BRAND

Period of use	No. of consumers	Percentage
More than 5 Years	260	57.78
3-5 Years	100	22.22
1-3 years	4263	14.00
Up to One Year	27	6.00
Total	450	100

Source: Data collected and compiled from survey

The table-4 depicts the period of use of refrigerators by consumer respondents. A close look into the table reveals that 260 customers i.e. 57.78% which is highest among all categories say that they use refrigerators for more than 5 years. The second highest percentage is 22.22 i.e. 100 customers use refrigerators for a period ranging 3-5 years. Similarly, 14% consumer respondents use the refrigerator for a period of 1-3 years. However, 6.00% consumers are using the refrigerator for a period of less than one year. Thus, it can be inferred from the above table that majority of the consumer respondents use the refrigerator for long period i.e. more than 5 years.

iv. Change of Brand

TABLE 5: DISTRIBUTION OF CONSUMERS BASED ON CHANGE OF BRAND OF REFRIGERATOR

Change of brand	No. of consumers	Percentage
Yes	350	77.78
No	100	22.22
Total	450	100

Source: Data collected and compiled from survey

The above table-5 shows the distribution of respondents on change of brands of refrigerator. It is marked from the table that 77.78% of consumer respondents change their brands and 22.22% consumer respondents do not change their brands of refrigerator. It can be inferred here that majority of the consumer respondents go on changing the refrigerator may be due to getting new brands with more features.

v. Medium of Purchase

TABLE 6: DISTRIBUTION OF CONSUMERS BASED ON MEDIUM OF PURCHASE OF REFRIGERATOR BRAND

Medium of purchase	No of consumers	Percentage
Cash	350	77.78
Installment	45	10.00
Credit	55	12.22
Total	450	100

Source: Data collected and compiled from survey

The table-6 presents the purchase pattern of refrigerator. Maximum consumers purchase refrigerators on cash basis i.e. 77.78%. There is low percent i.e. 10% consumer respondents purchase it on installment basis. While 12.22% consumer respondents prefer to purchase on credit basis. It can be concluded that majority of the consumer respondents prefer to purchase the refrigerator by paying cash.

vi. Sources of Information

TABLE 7: DISTRIBUTION OF CONSUMERS BASED ON SOURCE OF INFORMATION ON REFRIGERATOR BRAND

Source	No. of consumers	Percentage
Television advertisement	230	51.11
Ad in the newspaper	40	8.89
Radio Advertisement	35	7.28
Magazine	32	7.11
Neighbors	53	11.78
Friends	45	10.00
Colleagues	7	1.55
Others	8	1.78
Total	450	100

Source: Data collected and compiled from survey

The table-7 presents the distribution of source of information for selection of brands of refrigerator. Maximum consumer respondents get information through television advertisement on refrigerator brands (51.11%). It is distantly followed by neighbors whose contribution is 11.78%. The least sought after source of information collection on refrigerator by the respondents is from their colleagues (1.55%). Thus, it can be concluded that majority of the consumer respondents get the information on refrigerator brands through television advertisement.

vii. Final Decision Maker for Selecting Brand

TABLE 8: DISTRIBUTION OF CONSUMERS BASED ON FINAL DECISION MAKER FOR SELECTION OF BRAND

Decision maker	No. of consumers	Percentage
Friends	60	13.33
Relative	35	7.78
Senior family members	165	36.67
Self	175	38.89
Others	15	3.33
Total	450	100

Source: Data collected and compiled from survey

It is seen from the table-8 that most of the consumer respondents take self-decision for selecting and purchasing refrigerator brand i.e.38.89%. The second highest is 36.67% where customer respondents prefer senior family members to take final decision on the purchase of refrigerator. From the above analysis, it is very much clear that majority of the consumer respondents take the final decision to purchase the refrigerator product either themselves or take the advice of senior family members.

viii. Preferred Place of Purchase

TABLE 9: DISTRIBUTION OF CONSUMERS BASED ON PREFERRED PLACE TO PURCHASE REFRIGERATOR BRAND

Purchase place	No. of consumers	Percentage
Known retailer	155	34.45
Multi Brand retailer	70	15.56
Company show room	150	33.33
Nearby retailer	60	13.33
other place	15	3.33
Total	450	100

Source: Data collected and compiled from survey

From the table-9, it is clear that a sizeable number of consumer respondents numbering to 155 i.e. 34.45% prefer to purchase refrigerator from known retailers. It is closely followed by company show room with 33.33% consumer respondents. The least preferred place of purchase for refrigerator by the consumer respondents is from other places. Thus, it can be inferred that majority of the consumer respondents prefer to purchase the refrigerator product either from known retailer or from company's own show room.

ix. Level of Satisfaction of Consumer Respondents

TABLE 10: SATISFACTION LEVEL OF CONSUMER RESPONDENTS TOWARDS REFRIGERATOR BRAND

Response	Frequency	Percentage
Highly satisfied	40	8.89
Satisfied	230	51.11
Neutral	150	33.33
Dissatisfied	20	4.44
Highly dissatisfied	10	2.23
Total	450	100

Source: Data collected and compiled from survey

The table-10 shows maximum i.e. 51.11% consumer respondents are satisfied with their refrigerator performance. Further, 33.33% respondents remain neutral on the issue of product performance. However, 6.67% consumer respondents feel either dissatisfied or highly dissatisfied on the performance of the refrigerator.

TESTING OF HYPOTHESES

1. H_0 There is no significant association between the respondents age group and the preference of refrigerator brand.

TABLE 11: CHI-SQUARE TEST: AGE Vs. REFRIGERATOR BRAND

Sl. No	Particular	Chi-square (calculated value)	D. F	Chi-square tabulated value(5% level of significance)	Inference
1	Age and Refrigerator	0.216	33	47.39	Accepted

The table-11 brings out the association between the age of respondents and preference for refrigerator brands. From the table, it is observed that the Pearson chi-square value is 0.216 which is less than 47.39. Now, it is felt necessary to test "is there any significant association between the respondents' age and preference for refrigerator brands"? Since the calculated value is less than the critical value at 5% level of significance, the null hypothesis may be accepted. It means that there is no significant association between the respondents' age and preference of refrigerator brand.

2. H_0 There is no significant association between the respondent's educational qualification and the preference of refrigerator brand.

TABLE 12: CHI-SQUARE TEST: EDUCATION Vs. REFRIGERATOR BRAND

Sl. No	Particular	Chi-square (calculated value)	D. F	Chi-square tabulated value (5% level of significance)	Inference
1	Education and Refrigerator	0.19	55	73.31	Accepted

The table-12 visualizes association between the educational qualification of respondents and preference for refrigerator brands. From the table, it is observed that the Pearson chi-square value is 0.19 which is less than the tabulated value of 73.31. Through this, we want to test "is there any significant association between the respondents' educational qualification and preference for refrigerator brands"? Since the calculated value is less than the critical value at 5% level of significance, the null hypothesis may be accepted. It means that there is no significant association between the respondents' educational qualification and preference of refrigerator brand.

3. H_0 There is no significant association between the respondent's income and the preference of refrigerator brand

TABLE 13: CHI-SQUARE TEST: ANNUAL INCOME Vs. REFRIGERATOR BRAND

Sl. No	Particular	Chi-square calculated value	D. F	Chi-square tabulated value (5% level of significance)	Inference
1	Annual Income and Refrigerator	0.94	44	60.48	Accepted

The table-13 shows the chi-square test value with reference to the association between the income of respondents and preference for refrigerator brands. From the table, it is observed that the Pearson chi-square value is 0.94 which is less than the tabulated value of 60.48. Through this, we want to test "is there any significant association between the respondent's income and preference for refrigerator brands"? Since the calculated value is less than the critical value at 5% level of significance, the null hypothesis may be accepted. It means that there is no significant association between the respondents' income and preference of refrigerator brand.

FINDINGS OF THE STUDY

The major findings of the descriptive and inferential analysis of the study are presented below:

DESCRIPTIVE ANALYSIS

The demographic profile of the consumer respondents reveals that out of the total respondents 60% are male and the remaining 40% are female respondents participated in the survey. There are 181 respondents (40.22%) whose age group is in between 20 and 30 years. Similarly, the maximum respondents' educational qualification is post- graduate i.e. 224 (49.78%). It is observed that government service holders constituting 35.11% are the maximum respondents in the total sample. Further, more than 60% respondents belong to the income category of Rs. 200000 – Rs. 400000 or below Rs. 2, 00,000.

INFERENCE ANALYSIS

With regards to purchase behavior of consumer respondents towards refrigerator 27.78% respondents choose Godrej brand followed by Samsung brand with 23.56%. Maximum consumer respondents use single door model of refrigerator whose number is 250 (56.56%). The consumer respondents numbering 260 (57.78%) use the product for more than 5 years. On the issue of change of refrigerator set, 350 respondents (77.78%) have changed the brand. Similarly, on the issue of medium of purchase of refrigerator, 77.78% respondents stated that they purchased the product by paying cash. With regard to the sources of information about the product, 230 respondents stated that they come to know the product from television advertisement. On the question of the final decision to purchase the refrigerator product, 175 respondents i.e. 38.89% took the decision by themselves Apart from these, the consumer respondents constituting around 67.78% prefer to purchase the product from known retailers and company's show rooms. On the issue of level of satisfaction, 60% consumer respondents feel either satisfied or highly satisfied on the performance of refrigerator used by them.

CONCLUSION

The study reveals that consumer respondents are very much concerned with the brand. They also change the brand when new brands with additional features are available in the market. Majority of the consumer respondents depend on television advertisement for getting information on the product. Similarly, they are relying on the known retailers for selecting the product. The final decision to purchase the product in maximum cases lies on the consumer respondents. With regard to the level of satisfaction of consumer respondents on the refrigerator, the majority of the respondents express their satisfaction on the performance of the refrigerator used by them. It is further noticed from the analysis that the factors influencing the buying behavior differs from consumer to consumer. However, there is a significant association between factors affecting buying behavior of consumers and their preference of brand.

SUGGESTIONS

1. Marketers should design and develop consumer profile to understand the characteristics of target market. Since the demand for consumer durable products is growing day by day, the manufacturers should focus on the potential markets. They can formulate appropriate marketing strategy on the basis of demographic factors.
2. It is revealed from the study that the consumers are giving less importance to other leading brands/ products. The marketers should try to position their brands through innovative marketing strategies in order gain more market share.
3. It is noticed from the study that consumers are consulting the retailers before purchasing the product and retailers are playing an important role as advisors for brand selection. Hence, the manufacturers should associate the retailers in all promotional activities. This will prove to be more beneficial because from manufacturing to consumption, the retail outlet is the key linkage.
4. The product attributes and brand knowledge play a key role in determining the behavior of consumers. Therefore, it is suggested that the companies producing durable products should advertise the products by giving more emphasis on product attributes.
5. It is revealed from the study that brand plays an important role in the psyche of consumers; brand building is more important in marketing of consumer durables. Hence, companies should remember that "Brand is Supreme" and accordingly, build the brand equity for their products.

LIMITATIONS OF THE STUDY

The present research work has been carried out on the basis of data collected from the consumer respondents. The views expressed by the respondents may be biased one. Hence, the conclusion drawn on such information is one of the limitations of the study. The selection of Balasore town is another limitation of the study from the limited area (coverage) point of view. The statistical tools and techniques used in the study do have their own limitations. Besides this, the resource and time factors are the other constraints for carrying out the present study. In view of the aforesaid limitations, the end users are advised to make use of the findings and suggestions of the study thoughtfully.

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SOCIAL ENTREPRENEURSHIP: AN EMERGING NEED FOR YOUTHS

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ABSTRACT

The study finds out that the Social entrepreneurship implies innovative and financial sustainable activities targeted at social problems. However, its commercial activities do not necessarily need to concede with the social mission rather, their purpose is to create financial resources to implement social objectives, Social entrepreneurs act as the change agents for society, seizing opportunities and others to improve systems, invent new approaches, and create solutions to change society for the better. Again as social entrepreneurs drive social innovation and transformation in various fields including education, health environment and enterprise development it is necessary to build strong and sustainable organisation through youths because of having strong passion, motivation and will power and the most valuable human resource for fostering economic, cultural and political development of a nation. In India the interest of social entrepreneurship has increased only in the last several years. Support to a social enterprise, which is reflected in the willingness to enable, support and promote entrepreneurial activities by providing all necessary resources to youth is a crucial factor in the development of youth social entrepreneurship.

KEYWORDS

social entrepreneurship, social problems, social mission.

JEL CODE

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1. INTRODUCTION

The term Social entrepreneurship describes the mechanism by which new products, services and organisational process are identified and realised as a sustainable part of the society. Societies depend on entrepreneurs to drive job growth, innovate solutions to pressing problems. Entrepreneurship extends to profit and nonprofit business World. Although profit is necessary for surviving an organisation it is not always the end goal. That is the reason that Social entrepreneurship was developed and implemented in the last centuries. Social entrepreneurship rather aims to benefit the community by redirecting all profit back towards a social mission.

Due to the implementation of the social innovation and financially sustainability activities targeted at social problems social entrepreneurship concept have moved from the traditional charitable mooring to find more effective and sustainable solution to social problem.

2. CONCEPT & HISTORY OF SOCIAL ENTREPRENEURSHIP IN INDIA

"Social Entrepreneurship" have only come into widespread use over the last few decades though it is not a new phenomenon. The roots of what we now call Social entrepreneurship date back to the end of the nineteenth century with size of a more systematic and strategic form of charity. This was "a shiftaway from the idea of charity as simply giving alms to the poor to charity as something that can create lasting and systematic change".¹ When it comes to Social Entrepreneurship in India, one can referred India as epicenter of the impact investing and the World's laboratory for testing new ideas. India's journey into the World of Social entrepreneurship has been led by vision and energy of outstanding individuals.

¹*Fulton Katherine & Gregory Dees, "The past, present and future of Social entrepreneurship, A conversation with Grey Dees"

One can cited the salute given to 10 (ten) Social entrepreneurs on the Independence Day, who have shaped India's tryst with Social entrepreneur, - Mahatma Gandhi, a man obsessed with sustainability, being environment friendly making the best use of local resources, growth of village etc.) Dr. Varghese Kurten, father of India's milk revolution (founded the Kaira District Co-operative Milk Producers Union - now better known as Amul) 1946.

Sanjit Bunker Roy founder of Barefoot College founded Social Works and Research Centre (SWRC) in 1972 to find ways to address rural poverty by using new models and strategic, Harish Hande, Co-founder of sales (1995) Solar bringing the renewable energy solution to India's poor; Dr. G. Venkataswamy, founder of Aravind Eye Hospital (1976) providing affordable eye-care to the millions who had no access to quality health care; Sunil Bharti Mittal, founder of Airtel, Vineet Rai, founder of Aavishkaar (2001), Vikram Akula (2006) under of microfinance etc.

From the above cited, social entrepreneurs in India one may notice that social entrepreneurship concept was coined long ago but has been in the corporate parlance in just the recent past. Traditionally entrepreneurship has been associated with profit making individuals who aim high and achieve a lot for themselves in the world of tough competition. And the success of enterprise was and is being judge on parameter like return on investment and net income margins. But with empowerment and awareness of the citizens of the developing world, a new revolution has started, particularly among the youth of the world. This revolution is the growth of social entrepreneurship - the form of entrepreneurship where profits are not the results, but just the means to achieve the end result of social upliftment and further empowerment which is initiated through social entrepreneurship and social innovation.

3. SOCIAL ENTREPRENEURSHIP AND SOCIAL INNOVATION

As there is growing interest in social entrepreneurship because of the activities related to society, social, economic and environmental outcome basis on value of equality and justice, focusing on investing the surplus on development for resources for community and not just making economic profit, on the collective and joint principle, it is necessary to study the emergence of two inevitable concepts of social entrepreneurship - Social entrepreneur and social innovation.

SOCIAL ENTREPRENEUR

A social entrepreneur as a leader or pragmatic visionary;

- achieves large scale, systematic and sustainable social change through a new invention, a different approach, a more rigorous application of known technologies or strategic, or a combination of these.
- focuses first and foremost on the social and / or ecological value creation and tries to optimize the financial value creation.
- innovates by finding a new product, a new service, or a new approach to a social problem.
- continuously refines and adapts approach in response to feedback.

➤ combines the characteristics represented by Richard Branson and Mother Teresa.

In short, social entrepreneurs drive social transformation in various fields including education, health, environment and entrepreneur’s development. They pursue poverty alleviation goals with entrepreneurial zeal, business methods and courage to innovate and overcome traditional practices through social innovation.

SOCIAL INNOVATION

Social innovation pursues social change and aims to alleviate a particular social problem.² The entrepreneur emphasis about social outcomes rather than income generation. This is the "change- maker" area where a social entrepreneur must emphasis. Again, social entrepreneurs, through social innovation generate a positive "return to society" which must be measured with different metrics. Which ultimately led to the economic, social and any other development.

² Mair Johanna and Christian Seelos "Social Entrepreneurship; The contribution of individual entrepreneur."

4. SOCIAL ENTREPRENEURSHIP TOWARDS THE SOCIETY

Social entrepreneurship as a new form of entrepreneurship exhibits the characteristics of non- profit, government and business applying the traditional entrepreneurship's focus on innovation, risk taking and large scale transformation to social problem solving.

Social entrepreneurs present user-friendly, understandable, and ethical ideas that engage widespread support in order to maximise the number of citizens that will stand up, seize their idea, and implement it. Leading social entrepreneurs are mass recruiters of local change maker's role models proving that citizens who channel their ideas into action can do almost anything.

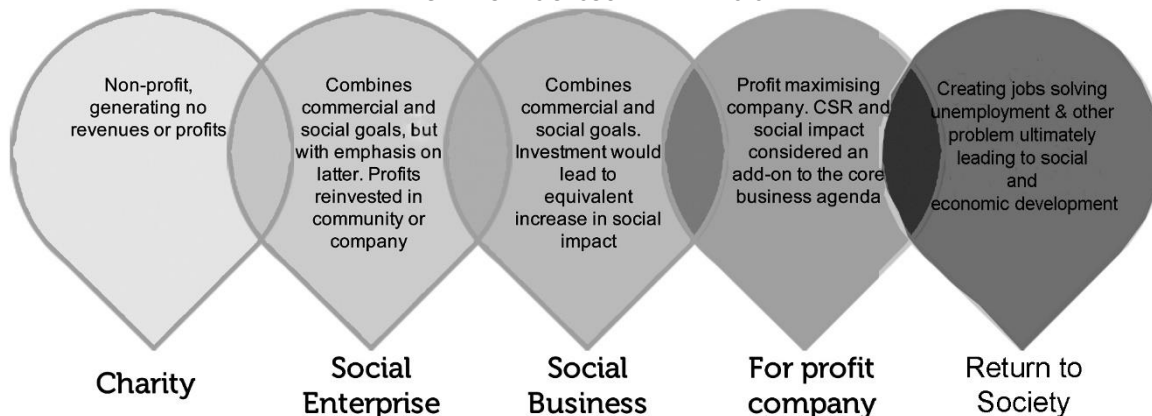
Just as entrepreneurship changes the face of business, social entrepreneurs act as the change agents for society, seizing opportunities' others miss to improve systems, invent new approaches, and create solutions to change society for the better. While a business entrepreneur might create entirely new industries, a social entrepreneurs develops innovative solutions social problems and then implements them on large scale.

Increasingly business graduates are recognised as possessing important skills that can drive social change. This new discipline is often referred to as Social Entrepreneurship. Social Entrepreneurship describes the discovery and sustainable exploitation of opportunities to create public goods. This is usually done through the generation of disequilibria in market and non-market environments. The Social entrepreneurship process can in some cases lead to the creation of social enterprises. These social ventures are hybrid organizations exhibiting characteristics of both the business and voluntary sector. Individuals engaging in Social Entrepreneurship are usually referred to as social entrepreneurs, a term that describes resourceful individuals working to create social innovation. They do not have to identify (or create) opportunities for social change (that so far have been unexploited), they must also muster the resources necessary to turn these opportunities into reality.³

³ Mair Marti 2006.

Here, one can consider a typical example about Prof. Muhammad Yunus, a Bangladeshi social entrepreneur, banker, economist and civil society leader who was awarded the Nobel Peace Prize for founding the Grameen Bank and pioneering the concepts of microcredit and microfinance. These loans are given to entrepreneurs who are too poor to qualify for traditional bank loans. In 2006, Yunus and the Grameen Bank were jointly awarded the Nobel Peace Prize "for their efforts through microcredit to create economic and social development from below".

FIG. 1: MODELS OF SOCIAL ENTERPRISES



From the above model, it is seen that social entrepreneurship shifts away from the idea of charity to the evasion of long lasting systematic change resulting the transformation of societies at large relating to poverty alleviation through microfinance, health care facilities, education training, community regeneration (such as housing association), welfare projects (providing employment for unemployed or homeless) etc.

Again from the above diagram/model one can also notice the ethical consideration of business extended through CSR (i.e. corporate social responsibility providing the impact towards the customer, employees, shareholder, supplier, banks and public at large) giving an impact towards the renovation of society.

Considering the need for success in addressing the today’s multiple development challenges youth and adolescents, the most valuable segment of population are necessary to pursue for social entrepreneurship for a developing country like India.

5. YOUTH IN INDIA

Youth⁴ being enthusiastic, vibrant, innovative and dynamic in nature is the most important section of the population. Youth shows strong passion, motivation and will power which also make them the most valuable human resource for fostering economic, cultural and political development of a nation. A country’s ability and potential for growth is determined by the size of its youth population. Their role in building defense capability of a nation is unquestionably prima una. The energy and passion of the youth is utilised properly, can bring huge positive change to society and progress to the nation. Youth are the creative digital innovators in their communities and participate as active citizens, eager to positively contribute to sustainable development.

⁴ Conventionally, period from adolescence to middle age is termed as youth. Age constitute the determining characteristics in the definition of youth by various agencies. UN adopted the age group 15 to 24 for defining youth. The National Youth policy initially (in 2003) defined the youth as in the age group 13-35, However National Youth Policy, 2014 modified Youth as 15-29 years. In the present report, we have adopted 15-39 years as youth.

The life experiences and perspectives of young people in the 21st Century differ greatly. About 87 per cent of young women and men living in developing countries face challenge brought about by limited and unequal access to resources healthcare, education, training and employment as well as economic, social and political opportunities. UNDP Youth strategy 2014-17. In many parts of the world.

Youth faces poverty, hunger, barriers to education, multiple and interesting form of discrimination, violence and limited opportunities for growth and employment prospects⁵. Youth are often excluded from decision – making processes and generally looks at untraditional avenues for civic engagement.

⁵ Youth in India 2017 Ministry of Statistics and Programme implementation, Government of India, Social Statistic Division.

More than 600 million youth live in fragile and conflict – affected countries and territories⁵ young people are both the victims and the perpetrators of the violence in societies they live in. This diversity of situations explain by youths are considered both as source of concern and a beacon of hope and positive thinking.

⁶ UNDP youth strategy 2014-17.

Environmental, social and economic opportunities and risks are becoming leader to predict. The dynamic landscape overall is becoming for role examples. Development thinking, knowledge and experience are available from a wider array of sources and providers. While the complexity of today's social, political and economic environmental issues constitutes a significant challenge, it also offers tremendous opportunities for youths to show their strengths as a strong self-organising force with the potential for innovation and embracing change.

India accounted for substantial share of world population. By 2010, India accounted for 17% of the World population, recording an increase of 2.7% in its share since 1970. The growth is projected to continue and by 2030. Indians would account for 17.97 of global population. India's share in the decennial addition to global population increased from 18.13 during 1970-1980 to 22.87 during 1990-2000 and is projected to decline to 18.69 by 2020-2030.

The growth pattern in the youth segment differs substantially from that of general population. The total youth population increased from 168 million in 1971 to 423 million in 2011. This increase was in the form of annual addition of roughly 5,3,6 and 6.6 million during seventies, eighties and nineties respectively. During the period 2011 to 2011, addition is substantially high at 7.4 million. The share of youth population in total population has been increasingly continuously from the level of 30.6% in the year 1971 to 34.8% in the year 2011.

According to "World Population Prospects": the 2015 revision" population Database of United Nation Population Division, India has the World's highest number of 10 24 years old, with 242 million despite having a smaller population than China, which has 185 million young people. As per India's census 2011, Youth (15-24 years) in India constitute 1/5th (19.1%) of India's total population.

6. THE ROAD AHEAD

Considering the importance and potentiality of youths and the need for social entrepreneurship in a developing country like India (which is going through an interesting time of transition), it is necessary to study the challenges of youth social entrepreneurs that faces by them in general, relating to funding, skill man force, structure plan, Central agenda/issues etc.

Keeping in view about the constraints the following suggestion are proposed.

1. Information relating to the opening of several universities that have established centres for social entrepreneurship both in US and abroad (see in the web-sites), must be given to the youths.
2. As young social entrepreneurs need support in many ways relating entrepreneurship, the growing organisation relating to the same such as youth venture, peace child (be the change), and Youth Social Enterprise Initiative (YSEI) that support Youth Social Entrepreneurs through skills training, funding, networks and campaigning information must be provided.
3. Awareness about Policy Initiatives for youths in India under the Welfare of Youth in India's, Government programme for youth in India such as National Young Leaders Programme (NYLP), Nehru Yuva Kendra Sangathan (NYKS), National Service Scheme (NSS), Rajiv Gandhi National Institute of Youth Development (RGNIIDY) Assistance to Scouting and guiding organisation, youth Hostels etc. must be given to youth.
4. Relating to the skill development of youth, different such as Mahatma Gandhi National Rural Employed Guarantee Act (MGNREGA), Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY), Prime Minister Employment Generation Programme (PMEGP), Enterprise and Skill Development, Assistance to Training Institute (ATI) Scheme and others must be awareness towards the youth.
5. Information's relating to international incentives for youth such UN's Department of Economics & Social Affairs (DESA), UN Centre for Human Settlements (HABITAT), United Nation Development Programme (UNDP) United nations Population Fund (UNFPA), United Nation Children Fund (UNICEF) International Labour Organisation (ILO), United nations Volunteers (UNV), the World programme of Action for youth WPAY etc. must also give awareness to the youth.
6. Providing and emphasizing the success stories of Indian social entrepreneurs such as Vikram Akula (SKS Microfinance), Harish Hande (Seles soles) and others of the post will be fitting to draw attention to their modern counterparts of the youths.
7. As Indian social entrepreneurs have to deal with government departments at national state, local level to obtain various clearances, it is necessary to simplify and consolidate the legislation relating to regulation, Taxation and other related rules and regulated areas.
8. Youth led initiatives through financing mini grants programme for promising youth initiate projects are encouraged too. Besides these, enhancing visibility of youth social entrepreneurs initiatives through campaigns, case studies communications and invitations to international forums are also necessary.
9. The voices of youth website, for example, would be an excellent platform where youth social entrepreneurs could network share success, be encouraged and promoted voice of youth could also link to other organisations that are actively promoting youth social entrepreneurs network Worldwide.
10. Create, support systems for youth social entrepreneurs by forming partnership with youth related organisation such as youth venture and Junior Achievement should be initiated. Again the system should provide – youth networking and capacity building, support for funding physical space and equipment, tools knowledge and advisor; information and research, partnership and policy bridges among youth selected organisations etc.

7. CONCLUSION

Social entrepreneurship implies innovative and financial sustainable activities targeted at social problems. However, its commercial activities do not necessarily need to concede with the social mission rather, their purpose is to create financial resources to implement social objectives, Social entrepreneurs act as the change agents for society, seizing opportunities and others to improve systems, invent new approaches, and create solutions to change society for the better.

Again as social entrepreneurs drive social innovation and transformation in various fields including education, health environment and enterprise development it is necessary to build strong and sustainable organisation through youths because of having strong passion, motivation and will power and the most valuable human resource for fostering economic, cultural and political development of a nation.

In India the interest of social entrepreneurship has increased only in the last several years. Support to a social enterprise, which is reflected in the willingness to enable, support and promote entrepreneurial activities by providing all necessary resources to youth is a crucial factor in the development of youth social entrepreneurship.

Further, research in Youth Social Entrepreneurship can be to explain and precise define the value of social effects that social entrepreneurship added to entire society and it can also be one of the research to demonstrate how commercial enterprise and established business models can be integrated with social value creation resulting towards the economic development of country.

8. WEBSITE RELATING TO YOUTH

Some websites relating to Youth are given below:

1. Document of UNDP Youth Strategy 2014-17.
http://www.undp.org/content/dam/undp/library/Democratic%20Governance/Youth/UNDP_Youth-Strategy-2014-17_Web.pdf
2. Website of United Nations.
<http://www.un.org>
3. ILO Publication "Global Employment Trends for Youth 2015: Scaling up investments in decent jobs for youth".
http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_412015.pdf
4. United Nations World Youth Reports 2013, 2016.
5. Website of Ministry of Youth Affairs & Sports.
<http://yas.nic.in/>
6. Website of Ministry of Rural Development.
<http://rural.nic.in/>
7. Website of Ministry of Micro, Small and Medium Enterprises.
msme.gov.in

8. Website of Ministry of Skill Development & Entrepreneurship.
<http://www.skilldevelopment.gov.in/>

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4. Drayton, Bill. Everyone A Changemaker: Social Entrepreneurship's Ultimate Goal. *Innovations*, winter 2006. Retrieved on Jan. 15, 2007 from www.ashoka.org.
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8. Seelos, Christian & Mair, Johanna. (2004) Social Entrepreneurship: The Contribution of Individual Entrepreneurs to Sustainable Development. WP No.553 IESE Business School University of Navarra.
9. Seelos, Christian, & Mair, Johanna. (2005) Sustainable Development: How Social Entrepreneurs Make it Happen. WP No.611, University of Navarra.

WEBSITES

10. www.ashoka.org
11. www.fuqua.duke.edu/centers/case
12. www.futureshifters.net
13. www.genv.net
14. www.pbs.org/opb/thenewheroes
15. www.peacechild.org
16. www.schwabfoundation.org
17. www.skollfound.org
18. www.ssireview.org
19. www.takingitglobal.org
20. www.youthactionnet.org
21. www.youthforcauses.com
22. www.youthgrantmakers.org
23. www.youthnnovation.org
24. www.youthventure.org
25. www.ysei.org

GREEN MARKETING – A BOON OR A BANE?

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ABSTRACT

Green marketing products that are presumed to be environmentally safe. It incorporates a broad range of activities, including product modification, changes to the production process, sustainable packaging, as well as modifying advertising. The objectives of the study are to orient the objectives of Green Marketing, to identify the need/importance of Green marketing, to understand the various Green Brands, to examine an Ideal Green Mix, to analyse the role of Green Marketing in sustainable growth of the economy, to bring out the Challenges encountered in Green Marketing and to provide strategies to overcome the Challenges of Green Marketing. The sample of 100 respondents based on convenience sampling technique using questionnaire and analysed using SPSS package. And it was found that There is a very high correlation between Objectives and Strategies implemented in Green Marketing. There is a very high correlation of 0.943 between Need and Importance of Green Marketing. There is significant relationship between Marketing Mix and Green Brands. There is a very high correlation of 0.976 between Sustainability and Green Brands. There is a very high correlation between recommendation and sustainable growth of the economy and there is a very high correlation between Challenges and Recommendations of Green Marketing. The present study concluded that businesses should take the high road by employing effective and truthful green marketing strategies. In the long term, green companies enjoy more profits and continued patronage when they are able to establish a reputation for being trustworthy and truly dedicated to sustainability.


KEYWORDS

green marketing, green mix, challenges, strategies, sustainability, green brands.

JEL CODES

M31, Q52.

INTRODUCTION

 *Green marketing products that are presumed to be environmentally safe. It incorporates a broad range of activities, including product modification, changes to the production process, sustainable packaging, as well as modifying advertising. Yet defining green marketing is not a simple task where several meanings intersect and contradict each other; an example of this will be the existence of varying social, environmental and retail definitions attached to this term. Other similar terms used are *environmental marketing* and *ecological marketing*.*

OBJECTIVES OF THE STUDY

The objectives of the study are as follows:

1. To orient the objectives of Green Marketing.
2. To identify the need/importance of Green marketing.
3. To understand the various Green Brands.
4. To examine an Ideal Green Mix.
5. To analyse the role of Green Marketing in sustainable growth of the economy.
6. To bring out the Challenges encountered in Green Marketing.
7. To provide strategies to overcome the Challenges of Green Marketing.

SCOPE OF THE STUDY

The study was concerned with in Chennai city.

OBJECTIVES OF GREEN MARKETING

The term 'green' is indicative of purity. Green means pure in quality and fair or just in dealing. For example, green advertising means advertising without adverse impact on society. Green message means matured and neutral facts, free from exaggeration or ambiguity. Green marketing is highly debated topic for lay people to highly professional groups. Concept of green marketing concerns with protection of ecological environment. Let us see the major objectives of Green Marketing, which are as per following:

1. Eliminate the concept of waste;
2. Reinvent the concept of product;
3. Make environmentalism profitable;
4. Bringing out product modification;
5. Changing in production processes;
6. Packaging changes; &
7. Modifying advertising.

Green, environmental and eco-marketing are part of the new marketing approaches which do not just refocus, adjust or enhance existing marketing thinking and practice, but seek to challenge those approaches and provide a substantially different perspective. Here are the five Marketing Mix of Green Marketing

A. GREEN PRODUCT

The products have to be developed depending on the needs of the customers who prefer environment friendly products. Products can be made from recycled materials or from used goods. Efficient products not only save water, energy and money, but also reduce harmful effects on the environment. Green chemistry forms the growing focus of product development.

B. GREEN PRICE

Green pricing takes into consideration the people, planet and profit in a way that takes care of the health of employees and communities and ensures efficient productivity. Value can be added to it by changing its appearance, functionality and through customization, etc.

C. GREEN PLACE

Green place is about managing logistics to cut down on transportation emissions, thereby in effect aiming at reducing the carbon footprint. For example, instead of marketing an imported mango juice in India it can be licensed for local production. This avoids shipping of the product from far away, thus reducing shipping cost.

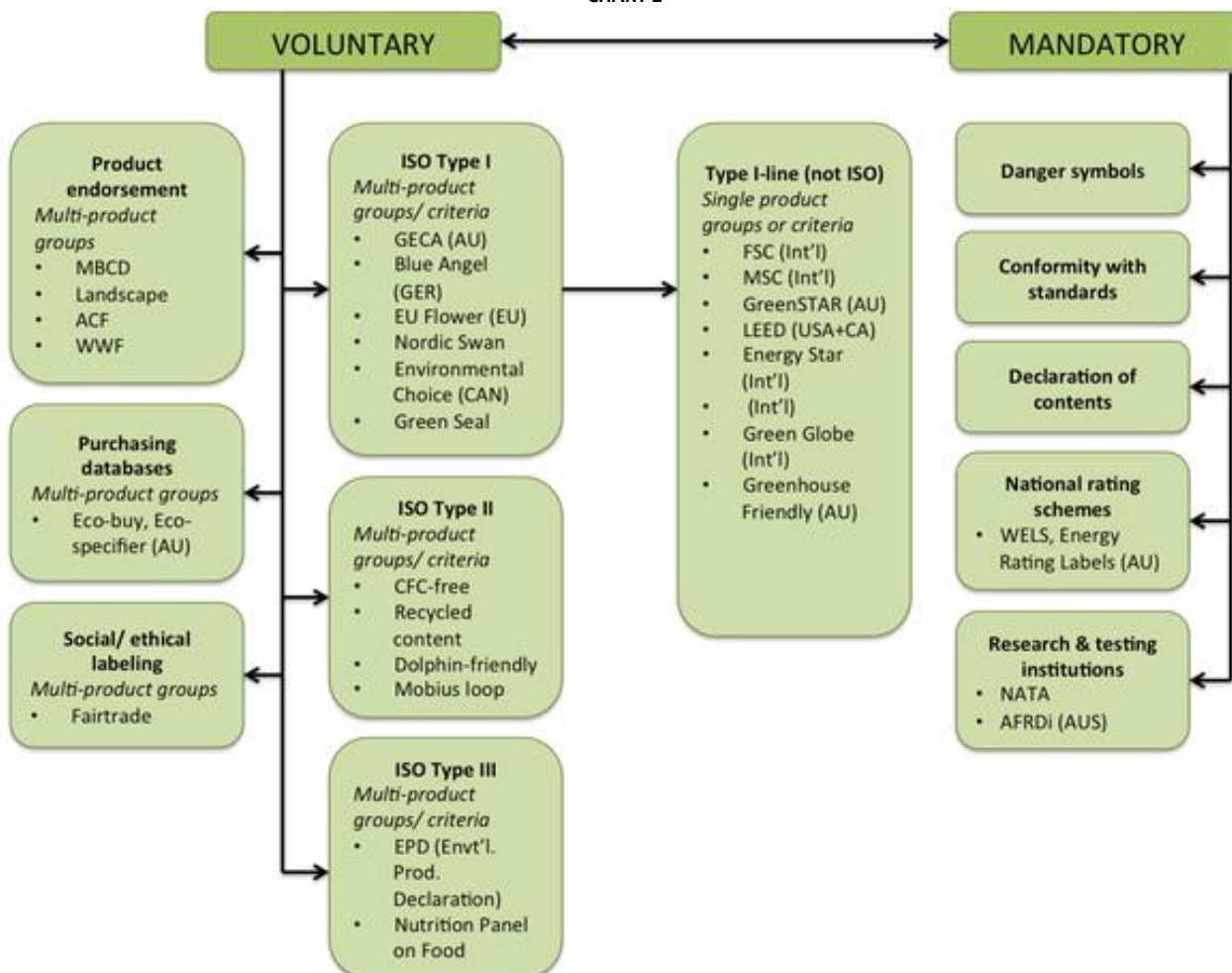
D. GREEN PROMOTION

Green promotion involves configuring the tools of promotion, such as advertising, marketing materials, signage, white papers, web sites, videos and presentations by keeping people, planet and profits in mind. The following are Green Marketing Activities.

CHART 1

	Tactical greening	Quasi-strategic greening	Strategic greening
Targeting	Ads mentioning green features are run in green-focused media.	A firm develops a green brand in addition to its other brands.	A firm launches a new Strategic Business Unit (SBU) aimed at the green market.
Green design	A firm switches from one raw material supplier to another with more eco-friendly processes.	Life-cycle analysis is incorporated into the eco-design process to minimize eco-harm.	E.g. FUJI XEROX develops its Green Wrap paper to be more eco-friendly from the ground up.
Green positioning	E.g. a mining company runs a Public Relations (PR) campaign to highlight its green aspects and practices.	E.g. British Petroleum (BP) AMOCO redesigns its logo to a sun-based emblem to reflect its view to a hydrogen/solar-based future of the energy industry.	E.g. the BODY SHOP pursues environmental and social change improvements and encourages its consumers to do so as well.
Green pricing	Cost-savings due to existing energy-efficiency features are highlighted for a product.	E.g. a water company switches its pricing policy from a flat monthly rate to a per-unit-of-water-used basis.	A company rents its products rather than selling; consumers now pay only for use of the product.
Green logistics	A firm changes to a more concentrated detergent, which.	Packaging minimization is incorporated as a part of a firm's manufacturing review process.	A reverse logistics system is put into place by FUJI XEROX to reprocess and remanufacture copiers.
Marketing waste	A firm improves the efficiency of its manufacturing process, which lowers its waste output.	E.g. TELSTRA (a phone company) has internal processes so that old telephone directories (waste) are collected and turned into cat litter products by other companies.	E.g. a Queensland sugar-cane facility is rebuilt to be cogeneration based, using sugar-cane waste to power the operation.
Green promotion	An oil company runs a PR campaign to highlight its green practices in order to counter an oil spill getting bad press coverage.	A company sets a policy that realistic product eco-benefits should always be mentioned in promotional materials.	As a part of its philosophy the BODY SHOP co-promotes one or more social/eco campaigns each year with in-shop and promotional materials.
Green alliance	A company funds a competition (one-off basis) run by an environmental group to heighten community awareness on storm water quality issues.	E.g. SOUTHCORP (a wine producer forms a long-term alliance with the Australian Conservation Foundation to help combat land-salinity issues.	A company invites a representative of an environmental group to join its board of directors.

CHART 2



It's not enough to just run ad campaigns anymore. Your customer has WAY more control over your brand story than ever before. And your brand story must mean more to your customer than "Low price leader." It's critical that your brand resonate emotionally and deliver physically to actually make their lives better.

If you're really good, your brand will even promote change for the better in your customer.

- ❖ At the core of these consumer brands are the drive to educate customers about healthier choices, while filling their needs with their products and offerings.
- ❖ BeTrulyYou.com – They offer glass water bottles, and recently did a big campaign to encourage consumers to *Fall in Love with Their Tap*. All the packing products are made from recycled materials and are, themselves, recyclable and biodegradable.
- ❖ Method – Their sustainability philosophy starts with the brand mission to *"Inspire a Happy, Healthy Home Revolution,"* and is centered around using innovation to create positive change.
- ❖ Terracycle – TerraCycle makes affordable, eco-friendly products from a wide range of different non-recyclable waste materials. Our hope is to eliminate the idea of waste by finding innovative, unique uses for materials others deem garbage.
- ❖ SunChips –how Frito-Lay has completely structured its business model around a healthier snack chip that strives to make the planet healthier through the use of renewable energy
- ❖ Volkswagen, on the other hand, is doing a better job of inciting change within its customers as an extension of its brand. Check out The Fun Theory, a site dedicated to the thought that something as simple as fun is the easiest way to change people's behavior for the better.
- ❖ Adelante Healthcare – We practice what we preach, as is seen in the sustainable healthcare movement we helped create when we rebranded Adelante Healthcare. The organization's three pillars of sustainability include sustaining individual patient health, sustaining the availability of healthcare, and sustaining healthy households, communities and planet.
- ❖ Patagonia – The Tin Shed. Enough said.
- ❖ Red – Our creative director, Luis, chimed in with Red. *"Like a lot of people, when that campaign first emerged I dismissed it as a clever marketing ploy. But 4 or 5 years later, it's still growing and making a difference. Talk about sustainability..."*
- ❖ So who or what would you name as #10? Tell us about your favorite sustainable brand that has made a movement out of a mole hill.

5 EFFECTIVE GREEN MARKETING STRATEGIES

In recent decades, sustainability has become a priority for consumers, who are increasingly on the lookout for products that are high-quality, affordable AND environmentally-friendly. This has led companies to devise green product and marketing strategies.

1. GREEN DESIGN

Oftentimes, companies resort to greenwashing because their products and services are not green to begin with. A take-out bag with a big recycle symbol on the front may actually be made from virgin, and not recycled, paper. A fuel-efficient car that experts are raving about on social media may contain conflict materials. The most important green marketing strategy is to design products and services that are green to begin with. If a product or service is environmentally-friendly from the ground up, there is no need for greenwashing.

2. GREEN POSITIONING

A company should explicitly promote its sustainability performance and those of its products and services—as a key component of its business activities. Everything a company does should reflect its sustainability values. They cannot claim to be sustainable while engaging in unsustainable business practices such as making employees work under sweatshop conditions. Doing so will ruin the company's credibility with consumers.

3. GREEN PRICING

A company should highlight how a green product or service can help consumers save key resources. A car company, for instance, can promote its latest vehicle by emphasizing how it is more fuel-efficient compared with other leading car brands. This allows consumers to actively participate in sustainability. They become aware that their choice is about investing in something that will allow them to save money and resources in the future, rather than making a short-term purchase.

4. GREEN LOGISTICS

In addition to a product or service being green, its packaging must also be green. Packaging is the first thing that consumers see. Unsustainable packaging has the potential to dissuade consumers from purchasing sustainable products.

5. GREEN DISPOSAL

An effective green marketing strategy takes into consideration every aspect of a product's life cycle. From production to disposal, everything must be sustainable. Unsustainable disposal practices can be hazardous to both the environment and human health.

IMPACTS OR IMPORTANCE OF GREEN MARKETING

Green marketing affects positively the health of people and the ecological environment. People are aware of pure products and pure methods of producing, using, and disposing the products. It encourages integrated efforts for purity in production and consumption as well.

- Now, people are insisting pure products – edible items, fruits, and vegetables based on organic farming. The number of people seeking vegetarian food is on rise.
- Reducing use of plastics and plastic-based products.
- Increased consumption of herbal products instead of processed products.
- Recommending use of leaves instead of plastic pieces; jute and cloth bags instead of plastic carrying bags.
- Increasing use of bio-fertilizers (made of agro-wastes and wormy-composed) instead of chemical fertilizers (i.e. organic farming), and minimum use of pesticides.
- Worldwide efforts to recycle wastes of consumer and industrial products.
- Increased use of herbal medicines, natural therapy, and Yoga.
- Strict provisions to protect forests, flora and fauna, protection of the rivers, lakes and seas from pollutions.
- Global restrictions on production and use of harmful weapons, atomic tests, etc. Various organisations of several countries have formulated provisions for protecting ecological balance.
- More emphasis on social and environmental accountability of producers.
- Imposing strict norms for pollution control. Consideration of pollution control efforts and eco-technology in awarding IS, ISO 9000, or ISO 14000 certificates and other awards.
- Declaration of 5th June as the World Environment Day.
- Strict legal provisions for restricting duplication or adulteration.
- Establishing several national and international agencies to monitor efforts and activities of business firms in relation pollution control and production of eco-friendly products.

CHALLENGES IN GREEN MARKETING

There is sizable numerical strength of organizations which would like to turn green, as an increasing number of consumers' want to associate themselves with environment-friendly products. There is wide spread confusion among the consumers regarding products. In particular, where one often finds erosion of credibility of green product. Therefore, to ensure consumer confidence, marketers of green products need to be much more transparent and refrain from breaching any law or standards relating to products or business practices. There is large number of challenges in the field of green marketing which may be sum up as follows:

Need for Standardization of the Products: It has been observed that very loss proportionate of the marketing message from "Green" campaigns is true to requisite standard and reflect the authenticity which they claim. There is no 'yard stick' currently, from where we could certify that the product as organic. Until or unless some of regularly bodies are involved in providing the certifications, which can be proved helpful to verify the authenticity of the product's characteristics. A standard quality control board needs to be in place for such labeling and licensing.

New Notion: The consumers of different rural and urban hierarchy are gradually becoming aware of the merits of green products. But it is still new notion or concept for the masses. It is therefore, become imperative to educate the people about growing menace of deteriorating environment. The new green movements and advocacy programs need to reach the masses and that will be a time consuming process. Indian Ayurvedic heritage can help to boost up the green marketing for beauty products. Indian consumers have an extensive exposure to healthy living life style such as yoga and natural food taking habits; can be helpful to make out the concept of green marketing thoroughly.

Long Gestation Period Require Patience Perseverance It has been observed that the inventers and corporate need to view the environment as a long-term investment opportunity. It is because of the projects related to 'Green Marketing' have a long-gestation period. It requires a lot of patience to get the desired results.

Avoiding Green Myopia: The first principle of green –marketing is focusing the customer benefits. i.e. that is why consumers buy particular goods and services in their first priority. Is it a right approach and motivate the customers to buy particular brands or even pay a premium for a 'greener' surrogate products. It will be futile practice, if a product is produced which is absolutely green in various aspects but does not hold good upon the satisfactory criteria of the customers, and it will lead to 'Green Myopia'. If green product not economical viable, as a result, it will reduce the market acceptability.

Other challenges, associated with 'Green Marketing' are green products which require at the **cost effective**. It requires a modern technology which again **huge cost in Research and Development**. In order to inculcate the 'Concept of Green Marketing' in to the masses, it requires a systematic advocacy and campaigning programs, so that the people may be ready to pay a premium for green products.

STRATEGIES TO BE EXECUTED FOR GREEN MARKETING

1. **Product Differentiation:** it is a paramount need to make continuous efforts which can be helpful to differentiate then products and services using green marketing practices. There is a wide range of markets which includes retailing etc. the manufactures have used eco-performance to differentiate and to compete. It has been observed that the product with poor eco-performance can become target for new substitution, as a result of this many organizations are products from the competitors.
2. **Value positioning of consumer:** the organization can design environmental products to perform as promoting and delivering the customer's desired value of environmental products and target relevant customer market segment can be proved conducive to organization to differentiate.
3. **Designing of bio-degrading prone packaging:** it has been observed that promotion of green products has been strongly influenced by the design making of the customers. Thus it indicates that bio-degradable packing will affect in a strong and moderate on their decision making. It is therefore, an imperative to the personnel's associated with green marketing should modify the product packaging by making use of recycle as well as handmade paper in packaging rather than using more mechanized material. The manufacturers, who are using plastic for packaging should meet some of requisite standard.
4. **Product strategy for green marketing:** in order to promote marketing for green marketing it is an urgent need to identify customer's environmental necessities and develop the products accordingly. It includes more environmentally responsible packages which ensure that products meet or exceed the quality expectation of the consumers; so that the marketers may charge higher price with highlighting the eco-logical viability of the products.

- Distribution strategy of green marketing:** in this strategy of green marketing, it is very essential to take customer support. In this case, the location must be differentiated from the competitors. It can be achieved by promoting the in-store activities like recycling of materials to focusing the environmental and other related benefits.
- Life cycle analysis of green marketing:** Product brand is a vital aspect, which can help to formulate plans for green marketing. It is a best tool for performing life cycle analysis complex assessment which can make available the vital statistics on social, environmental and economic impact of products through the supply chain production process and after the purchase. Life cycle analysis can inform a brand requirement to go before it claims to be sustainable. The consumers do not expect perfection when it shapes to sustainability but they would like to see that brands make out the levels of probe, formulate a plan and in the executing process.

RESEARCH METHODOLOGY

The problems are as follows:

- What are the importance of Green Marketing?
- What are the various Green Brands available in the market?
- What is an Ideal Green Mix?
- What is the role played by green Marketing in sustainable growth of the economy?
- What are the various Challenges encountered by Green Marketing?
- How are Challenges overcome by Green Marketing Strategies?

SAMPLE DESIGN

Non-random sampling method is adopted (i.e) the respondents to my study are not selected at random. The sample size selected is 100.

DATA COLLECTION

Data can be divided into to (1) Primary data (2) Secondary data.

METHOD OF COLLECTING SECONDARY DATA.

Secondary data for this study was taken from research articles published in magazines, books, periodicals, newspaper etc.

METHOD OF COLLECTING PRIMARY DATA

There is various method of collecting data such as interview method, questionnaire method, preparing schedules, observation method etc. The researcher used questionnaire method to collect the data.

ANALYSIS AND INTERPRETATION

The investigator used various statistical tools such as pie diagram, graphs etc. to analyse the data.

LIMITATIONS OF THE STUDY

There are few limitations of the study

- Time available for the study is limited.
- Data available is not sufficient to cover all aspect.
- The area covered for the study is narrow.
- The very difficult thing is to meet the people concern and get the information.
- In many companies they are not willing to co-operate and provide the investigator with sufficient information.

ANALYSIS AND INTERPRETATION

Objective No.1 To orient the objectives of Green Marketing.

H0 There is no significant relationship between Objectives and Strategies of Green Marketing.

H1 There is significant relationship between Objectives and Strategies of Green Marketing.

TABLE NO. 1: RELATIONSHIP BETWEEN OBJECTIVES AND STRATEGIES OF GREEN MARKETING

Correlations			
		Objectives	Strategies
Objectives	Pearson Correlation	1	.968**
	Sig. (2-tailed)		.000
	N	100	100
Strategies	Pearson Correlation	.968**	1
	Sig. (2-tailed)	.000	
	N	100	100

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

Source: Primary Data

From the above table it is clear that there is a very high correlation between Objectives and Strategies implemented in Green Marketing.

Objective No.2 To identify the need/importance of Green marketing.

H0 There is no significant relationship between need and importance of Green marketing.

H1 There is significant relationship between need and importance of Green marketing.

TABLE NO. 2: RELATIONSHIP BETWEEN NEED AND IMPORTANCE OF GREEN MARKETING

Correlations			
		Need	Importance
Need	Pearson Correlation	1	.943**
	Sig. (2-tailed)		.000
	N	100	100
Importance	Pearson Correlation	.943**	1
	Sig. (2-tailed)	.000	
	N	100	100

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

Source: Primary Data

There is a very high correlation of 0.943 between Need and Importance of Green Marketing.

Objective No.3 and 4 To understand the various Green Brands and Ideal Green Mix.

H0 There is no significant relationship between Green Brands and Ideal Green Mix of Green marketing.

H1 There is significant relationship between Green Brands and Ideal Green Mix of Green marketing.

TABLE NO. 3: RELATIONSHIP BETWEEN GREEN BRANDS AND IDEAL GREEN MIX OF GREEN MARKETING

Test Statistics		
	Marketing Mix	Green Brands
Chi-Square	30.340 ^a	13.280 ^b
Df	6	7
Asymp. Sig.	.000	.066
a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 14.3.		
b. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 12.5.		

Source: Primary Data

From the above table it is clear that the calculated value is more the table value therefore the null hypothesis is rejected. So it is confirmed that there is significant relationship between Marketing Mix and Green Brands.

Objective No.5 To analyse the role of Green Marketing in sustainable growth of the economy.

H0 There is no significant relationship between Green Brands and sustainable growth of the economy.

H1 There is significant relationship between Green Brands and sustainable growth of the economy.

TABLE NO. 4: RELATIONSHIP BETWEEN GREEN BRANDS AND SUSTAINABLE GROWTH OF THE ECONOMY

Correlations			
		Sustainability	Green Brands
Sustainability	Pearson Correlation	1	.976**
	Sig. (2-tailed)		.000
	N	100	100
Green Brands	Pearson Correlation	.976**	1
	Sig. (2-tailed)	.000	
	N	100	100
**. Correlation is significant at the 0.01 level (2-tailed).			

Source: Primary Data

From the above table it is inferred that there is a very high correlation of 0.976 between Sustainability and Green Brands.

H0 There is no significant relationship between Recommendations and sustainable growth of the economy.

H1 There is significant relationship between Recommendations and sustainable growth of the economy.

TABLE NO. 5: RELATIONSHIP BETWEEN RECOMMENDATIONS AND SUSTAINABLE GROWTH OF THE ECONOMY

Correlations			
		Recommendations	Sustainability
Recommendations	Pearson Correlation	1	.962**
	Sig. (2-tailed)		.000
	N	100	100
Sustainability	Pearson Correlation	.962**	1
	Sig. (2-tailed)	.000	
	N	100	100
**. Correlation is significant at the 0.01 level (2-tailed).			

Source: Primary Data

From the above table it is inferred that there is a very high correlation between recommendation and sustainable growth of the economy. This proves that the recommendation provided is for the sustainability of the economy.

Objective No.6 and 7 To bring out the Challenges encountered in Green Marketing and strategies to overcome the Challenges of Green Marketing.

H0 There is no significant relationship between Challenges encountered and strategies of Green Marketing.

H1 There is significant relationship between Challenges encountered and strategies of Green Marketing.

TABLE NO. 6: RELATIONSHIP BETWEEN CHALLENGES ENCOUNTERED AND STRATEGIES OF GREEN MARKETING

Correlations			
		Challenges	Recommendations
Challenges	Pearson Correlation	1	.976**
	Sig. (2-tailed)		.000
	N	100	100
Recommendations	Pearson Correlation	.976**	1
	Sig. (2-tailed)	.000	
	N	100	100
**. Correlation is significant at the 0.01 level (2-tailed).			

Source: Primary Data

From the table it is clear that there is a very high correlation between Challenges and Recommendations of Green Marketing. This shows that Challenges faced by Green Marketing is overcome by the recommendations provided.

FINDINGS

- ✓ There is a very high correlation between Objectives and Strategies implemented in Green Marketing.
- ✓ There is a very high correlation of 0.943 between Need and Importance of Green Marketing.
- ✓ There is significant relationship between Marketing Mix and Green Brands.
- ✓ There is a very high correlation of 0.976 between Sustainability and Green Brands.
- ✓ There is a very high correlation between recommendation and sustainable growth of the economy
- ✓ There is a very high correlation between Challenges and Recommendations of Green Marketing

CONCLUSION

Businesses should take the high road by employing effective and truthful green marketing strategies. In the long term, green companies enjoy more profits and continued patronage when they are able to establish a reputation for being trustworthy and truly dedicated to sustainability.

RECOMMENDATIONS

First Carbon Solutions (FCS) helps organizations recognize business drivers for sustainability practices and offers cost-effective *sustainability management solutions*. FCS provides guidance on industry best practices and can help you with your sustainability programs.

It is extremely important for companies to develop legitimate and effective green product and marketing strategies, which can **eliminate the need for green washing** and lead to greater profits and consumer patronage.

A company that is **honest and genuinely committed** to sustainability can earn the respect and loyalty of consumers.

SCOPE FOR FURTHER STUDY

- ❖ A Comparative study can be done regarding Green marketing between two different countries.
- ❖ A Consumer Behaviour study can be done for Green Marketing.
- ❖ A study can be conducted on Green Marketing to find out the Sustainable growth of economy.

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APPENDIX

QUESTIONNAIRE

GREEN MARKETING – A BOON OR A BANE?

1. Name of the Respondent
2. Age: 20 – 30 30 - 40 40 - 50 50 - 60
3. Gender: Male Female
4. Income: 20,000 – 30,000 30,000 - 40,000 40,000 - 50,000 More 50,000
5. Educational Qualification: UG/PG Professional Others
6. Nature of the organisation: Public Private Business Others
7. Experiences: Less than 10 yrs 10 – 20 yrs 20 – 30 yrs More than 30 yrs
8. Which is considered as most important objective of Green marketing?
 1. Eliminate the concept of waste
 2. Reinvent the concept of product
 3. Make environmentalism profitable
 4. Bringing out product modification
 5. Changing in production processes
 6. Packaging changes
9. What is the need for Green Marketing?
 1. Competitive advantage
 2. Corporate social responsibility (CSR)
 3. Government pressure
 4. Competitive pressure
 5. Cost or Profit issues
10. What is the importance of Green Marketing?
 1. Pure Products
 2. Less Plastics
 3. Herbal Products
 4. Usage of Leaves
 5. Bio-fertilizers
 6. Recycle of waste
11. Which is the most important component of Green Marketing Mix?
 1. Product
 2. Price
 3. Place
 4. Promotion
 5. Public
 6. Partnership
 7. Policy
12. Which Green Brand is mostly used by the consumers?
 1. Energy Saving
 2. LED Lights
 3. Solar Water Heaters
 4. Solar Panel
 5. Eco – Friendly
 6. Green GPS units
 7. Solar Speakers
13. What are the Challenges faced by Green Marketers?
 1. Need for standardization of the products
 2. New notion
 3. Long Gestation Period
 4. Avoiding Green Myopia
 5. Huge cost in Research and Development
 6. Renewable and recyclable material

14. Which concept do you think will lead to sustainability?
 1. Be Truly
 2. Method
 3. Terracycle
 4. Sunchips
 5. Patagonia
 6. Adelante Health Care
 7. Fun Theory
15. What are the strategies do you think is needed for Green marketing?
 1. Green Design
 2. Green Positioning
 3. Green Pricing
 4. Green Logistics
 5. Green Disposal
16. What do you think will be the apt recommendation for the sustainability of Green Marketing?
 1. Global Restrictions
 2. Environmental Accountability
 3. Pollution Control
 4. Adulteration
 5. Pollution Control Agencies

FINANCIAL HEALTHINESS OF OIL AND GASES INDUSTRY IN INDIA

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ABSTRACT

Financial health of a company was evaluated easily on the basis of various ratios. Altman developed Z score on the basis of various simple ratios. In this paper the financial healthiness of oil and natural gas sector has been evaluated by using Altman Z score analysis. This paper analysis and forecast the financial healthiness of 6 public sector oil and natural gas companies for 10 years. The data was collected from capital line database and annual report of the company. From the study BPCL, HPCL, Indian Oil Corporation ONGC and OIL INDIA are in too healthy zone. Uncertainty of risk is never accrued. GAIL is in healthy zone. During 2016 it is in bankruptcy zone.

KEYWORDS

oil & gas industry, financial healthiness.

JEL CODES

G17, L95.

INTRODUCTION

The oil and natural gas sector was one of the core sectors among 6 core sector in India. It was founded by industrial policy resolution 1954. It was under ministry of petroleum and natural gas. It plays a major role in decision making which influencing to all the other important sector of the economy. GDP contribution by this sector was 15%.

There is an increasing gap between demand and supply of India's gas. There are several policies were formed to fulfill increasing demand. The new exploration licensing policy (NELP) was envisaged in 1997-1998. 100% FDI was allowed to this sector in many segment included natural gas, petroleum product, refineries and others.

REVIEW OF LITERATURE

Kannadhasan (2007) made a study on measuring financial health of a public limited company using Z score model-A case study over the period 2001-2002 to 2004-2005 Wendt(India) were used for the study. Altman Z score model was used for the study over the period 2004-2005 to 2013-2014. They use random sampling method. They concluded by using Prof Edward Altman Z score that HPCL have very good and sound financial position.

Meherji duvvuri (2012) has exanimate financial health of NFCL-A Z score approach over the period 2001-2011. K.B. Mehta's model was used for the study. Z score was between 0.53 to 1.93 during the study period. It shows that company was in safe zone.

Nilanjana Kumari (2013) made a study on evaluation of financial health of MMTC of India a Z score model over the period of 2007-2008 to 2011-2012. Edward Altman Z score model was used for the study. Z score is ranging from 4.24 to 6.30 during the study period. They concluded that overall financial health of the company is good. It has sound financial health in future.

M.Lahiri (2013) has made a study on measuring the financial health of Indian oil corporation limited using Z-score model covered the period from 2005-2012. He uses Altman's Z score to analysis. The Z score of Indian Oil Corporation is 1.8528 is calculated. It shows that financial health of the company is good.

S.Saravanan and K. Jananai (2015) has made a study on a study on measuring the financial soundness of Bharath petroleum Corporation Limited (BPCL) for the period 2004-2005 to 2014 – 2015 and made an objective to assess the short term and long term solvency, liquidity and profitability position of the company. They use various tools like correlation multiple regression and ANOVA. They concluded that liquidity position was strong. The overall analysis was strong tendency. The profitability was decline in the study period.

Kalaivani and Shunmugananda Vadivel (2015) in their study they analysis financial health analysis of large scale oil and natural gas companies in India with special reference to select oil and natural gas companies. 6 companies were selected for the study over the period of 2005-2006 to 2013-2014. They use Dr. Edward Altman's model for multiple discriminate analysis and they concluded that oil India limited, BPCL and HPCL have excellent financial viability position during the study period.

STATEMENT OF THE PROBLEM

Oil and natural gases industries got an important place in Indian economy. It contributions more to the economy by industrial output, employment opportunity and foreign exchange earnings. It was 2nd largest employment provider in India at present. Oxygen is most essential to human being to live. Finance is like oxygen for business without oxygen human being cannot live without finance business cannot. This is because it was in the modern money oriented economy. Basic foundation of all the economic activity is finance. Financial healthiness of the company is to examinant the financial position of the company like doctor diagnose the patient and records the blood pressure, body temperature etc as like that the research examinant the financial statement a recorded the financial healthiness. So the study contains to analysis the financial healthiness of oil and gas sector in India.

OBJECTIVE OF THE STUDY

To predict the financial healthiness and viability of the company through Z score (test for bankruptcy)

METHODOLOGY OF THE STUDY

This study is purely based on secondary data. The date was collected from the database capitaline and annual report of the companies. 6 public sector companies were selected for the study for 10 years (2006-2007 to 2015-2016). Prof Edward I. Altman multiple discriminate analysis (Z score) has been use for the study.

LIMITATION OF THE STUDY

1. The data used in this will be secondary in nature.
2. The finding is applicable to oil and gases sector. It is not suitable to other industries.

ALTMAN Z SCORE ANALYSIS

To predict financial distress, Edward I Altman’s bankruptcy model has been used. Here several ratios that significantly influence the health are computed and a single composite index viz, ‘Z’ score which takes into 15 accounts the weight influence of different ratios has been developed. This model was given by

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 0.99X_5$$

Where, X_1 = Working capital / Total Assets

X_2 = Retained Earnings (loss) / Total Assets

X_3 = Earnings before Interest and Taxes (EBIT) / Total Assets.

X_4 = Market value of Equity / Book value of Total Debt.

X_5 = Sales / Total Assets.

ANALYSIS AND INTERPRETATIONS

TABLE 1: Z'SCORE VALUE OF BPCL

YEAR	X1	X2	X3	X4	X5	Z SCORE
2007	0.06	0.06	0.52	0.02	4.58	5.23
2008	0.16	0.06	0.40	0.02	4.13	4.77
2009	0.04	0.04	0.31	0.01	4.03	4.44
2010	0.19	0.05	0.32	0.01	3.45	4.02
2011	0.06	0.05	0.34	0.01	4.49	4.95
2012	0.20	0.04	0.32	0.01	5.52	6.08
2013	0.23	0.05	0.46	0.02	5.77	6.52
2014	0.11	0.05	0.59	0.02	6.34	7.11
2015	-0.25	0.06	0.72	0.04	6.48	7.04
2016	-0.23	0.10	0.83	0.03	4.27	4.99
MEAN value						5.52

Source: Computed

The above table shows the Z score of BPCL. The mean value is 5.22. It shows that BPCL is in too healthy zone. Uncertainty of risk is never accrued. During the study period of 10years BPCL have good financial healthy. There is decrease value in the Zscore from 2007to 2010. From 2011 to2015 Zscore value is increase. During 2016 Zscore value is decrease compare to previous year. The highest Zscore value is 7.11 during 2004. The lowest Zscore value is 4.02 during 2010. The overall conclusion of financial position of BPCL is excellent during the study period.

TABLE 2: Z'SCORE VALUE OF GAIL

YEAR	X1	X2	X3	X4	X5	Z SCORE
2007	0.30	0.31	0.77	0.40	1.26	3.04
2008	0.37	0.35	0.91	0.43	1.26	3.31
2009	0.31	0.28	0.89	0.68	1.50	3.66
2010	0.22	0.29	0.84	0.55	1.37	3.27
2011	0.05	0.26	0.80	0.35	1.49	2.95
2012	-0.02	0.22	0.65	0.15	1.47	2.46
2013	0.03	0.21	0.60	0.09	1.38	2.32
2014	0.07	0.19	0.58	0.08	1.49	2.42
2015	0.07	0.14	0.37	0.08	1.37	2.04
2016	-0.05	0.14	0.31	0.10	1.28	1.78
MEAN value						2.72

Source: Computed

The above table shows the Z score of GAIL. The mean value is 2.72 its shows that the company is in healthy zone. During 2007 to 2010 the company is in too healthy zone remaining years during 2011-2015 the company is in healthy zone. During 2016 it is in bankruptcy zone. Zscore value is decrease from 2007-2016 except 2009. The highest Zscore value is 3.66 during 2009. The lowest Zscore value is 1.78 during 2016. The overall position of the company has risk in uncertainty it leads to bankruptcy so the company should maintain proper management in finance to make safe.

TABLE 3: Z'SCORE VALUE OF HPCL

YEAR	X1	X2	X3	X4	X5	Z SCORE
2007	0.00	0.05	0.36	0.02	4.46	4.88
2008	0.23	0.04	0.19	0.01	3.85	4.32
2009	0.09	0.04	0.21	0.01	3.75	4.10
2010	0.08	0.05	0.29	0.01	3.31	3.75
2011	0.21	0.05	0.19	0.01	3.18	3.63
2012	0.29	0.04	0.18	0.01	3.67	4.19
2013	0.31	0.03	0.11	0.01	3.84	4.30
2014	0.26	0.04	0.24	0.01	4.06	4.60
2015	0.00	0.05	0.25	0.01	4.57	4.88
2016	0.04	0.07	0.42	0.01	3.62	4.17
MEAN value						4.28

Source: Computed

The above table shows the Z score of HPCL. The mean value is 4.28. Its shows that the company is in too healthy zone. There is no risk for uncertainty. During 2007-2015 HPCL got same Zscore. The HPCL is in too healthy zone but the Zscore value is decreased from the year 2007 to 2011. From 2012 the Zscore value is increasing. In 2016 score value is decrease compare to previous year. In 2012 the HPCL have highest Zscore in 2016 is 4.88.the lowest Zscore value is 3.63 in 2011. From this overall it concluded that financial position is excellent during the study period.

TABLE 4: Z'SCORE VALUE OF INDIAN OIL CORPORATION

YEAR	X1	X2	X3	X4	X5	Z SCORE
2007	0.08	0.09	0.64	0.03	3.49	4.34
2008	0.20	0.08	0.50	0.02	3.22	4.03
2009	0.05	0.05	0.31	0.02	3.45	3.88
2010	0.12	0.10	0.54	0.03	2.83	3.63
2011	0.18	0.07	0.36	0.03	3.06	3.70
2012	0.34	0.05	0.22	0.02	2.81	3.44
2013	0.34	0.05	0.26	0.02	2.94	3.61
2014	0.30	0.06	0.30	0.02	2.89	3.56
2015	0.05	0.05	0.27	0.03	3.15	3.56
2016	0.02	0.09	0.42	0.03	2.44	3.01
MEAN value						3.67

Source: Computed

The above table shows the Z score of Indian Oil Corporation. The mean value is 3.67. It shows that it is in too healthy zone. There is no chance for uncertainty. During the study period of 10 years Indian oil got same Zscore value (3.56) in 2014 and 2015. The Zscore values are decrease from 2007 to 2016 except 2009, 2011 and 2013. These year there is some minor increasing of Zscore value. The highest Zscore value is 4.34 during 2007. The lowest Zscore value is 3.01 during 2016. The overall conclusion of the company financial position is good during the study period.

TABLE 5: Z'SCORE VALUE OF ONGC

YEAR	X1	X2	X3	X4	X5	Z SCORE
2007	0.38	0.63	2.06	0.08	0.74	3.89
2008	0.36	0.62	2.06	0.10	0.72	3.87
2009	0.33	0.56	1.86	0.08	0.67	3.49
2010	0.29	0.61	2.02	0.08	0.58	3.58
2011	-0.03	0.61	2.02	0.15	0.57	3.32
2012	0.03	0.81	2.67	0.57	0.55	4.62
2013	0.00	0.66	2.17	0.00	0.56	3.39
2014	-0.04	0.72	2.37	0.00	0.51	3.56
2015	-0.05	0.64	2.11	1.84	0.48	5.03
2016	-0.09	0.63	2.08	0.00	0.44	3.06
MEAN value						3.78

Source: Computed

The above table shows the Z score of ONGC. The mean value is 3.78. It shows that the company is in too healthy zone. Risk for uncertainty is low. During the study period of 10 years there are many ups and downs in the Zscore value. The values were decreasing during 2009, 2011 and 2013. The highest Zscore value is 5.03 during 2015. The lowest Zscore value is 3.06 during 2016.

TABLE 6: Z'SCORE VALUE OF OIL INDIA

YEAR	X1	X2	X3	X4	X5	Z SCORE
2007	0.82	1.14	1.08	0.69	0.70	4.44
2008	0.70	0.98	1.13	0.72	0.75	4.28
2009	0.72	1.01	1.20	0.77	0.77	4.48
2010	1.01	1.42	0.94	0.60	0.68	4.66
2011	1.06	1.48	0.85	0.54	0.69	4.61
2012	1.17	1.63	0.94	0.60	0.54	4.88
2013	1.38	1.94	0.85	0.54	0.48	5.19
2014	1.43	2.01	0.48	0.31	0.31	4.53
2015	1.05	1.48	0.44	0.28	0.32	3.57
2016	0.33	0.47	0.39	0.25	0.30	1.75
MEAN value						4.24

Source: Computed

The above table shows the Z score of OIL INDIA. The mean value is 4.24. It shows that it is in too healthy zone. During the study period of 10 years oil India have ups and downs in the Zscore value. During 2016 it is in bankruptcy it causes certain to fall. The highest Zscore value is 5.19 during 2013. The lowest Zscore value is 1.75 during 2016. The company Zscore value is decreasing from 2013 to 2016. So precaution measures should take.

FINDINGS

- BPCL, HPCL, Indian Oil Corporation ONGC and OIL INDIA are in too healthy zone. Uncertainty of risk is never accrued.
- GAIL is in healthy zone. During 2016 it is in bankruptcy zone.

CONCLUSION

The financial healthiness is the key for every business firms in taking decisions. The Altman Z score is the best method for finding the financial soundness. The present study analyzes the financial healthiness of Oil and Natural Gas Industries; 10 years period of six companies has been taken for the study. From the study concludes that BPCL, HPCL and Oil India's financial strength is in excellent position. ONGC and Indian Oil's financial strength is in good. GAIL is in uncertainty position hence management should take necessary mitigation action to safe guard their financial health.

IMPORTANT WEBSITES

1. www.capitalline
2. www.bpcl
3. www.gail
4. www.hpcl
5. www.indianoilcorporation
6. www.oilindia
7. www.ongc

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AN APPROACH TOWARDS A COMPREHENSIVE BIG DATA ALGORITHM IN DEDUCING AND RESOLVING HEALTHCARE PATTERNS IN INDIA'S RURAL-POOR

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ABSTRACT

With India becoming one of the world's fastest growing economies, there is still an extremely large part of the country lying under the poverty index, with more than 250 million citizens still marked as poor. Adding to that, statistics from the World Bank Organization suggest that more than 60 million children in the country are malnourished; with about 45% stunted (too short for their age), 20% wasted (too thin for their height, indicating acute malnutrition), 75% anemic, and 57% Vitamin A deficient. These statistics lead to an incriminating look into how the country's rural poor are reeling with health-care and nutrition needs. With technology advancing to greater heights in the field of data analytics, this paper aims at using big data analytics concepts such as data munging, visualization, clustering, and the likes into developing a single algorithm that would establish correlation between a person's nutrition and day-to-day activities with their health care patterns, to provide better healthcare predictions.

KEYWORDS

big data, health, statistics, analysis, nutrition, patterns, malnourishment, data science, analytics, algorithm.

JEL CODES

I10, C80.

INTRODUCTION

The major aim for the healthcare industry in the world today is to work on value-based business, as compared to the volume-based business that has been present for centuries at a stretch. This requires working on techniques and solutions that add more value to the healthcare practices of today.

The major requirement for such a shift is partly because of the abundance of data available today in the healthcare industry.

Over the past few years, health care data have become much more complex, partly due to the abundance of data available and in part due to the advancement in technology to help collect (or fetch) data from sources that weren't quite feasible a few years back. Due to this, it has been widely believed that healthcare data analytics is an important field of study in order to manage such large amounts of data.

But even with the widespread availability of resources to collect data and the technology to analyze and use it, one of the major hurdles presented today is to the developing countries (*such as India*) that do not have the resources to implement such advanced mechanisms. High costs due to reduced efficiency of scale, lack of proper technology and network availability in rural areas and small clinics (*Bhattarcharjee, et al., 2007*).

In countries such as India, one of the major hurdles being faced today in the healthcare industry is the lack of quality data. If the healthcare industry in the country is able to work on ways to understand healthcare patterns in the major population of India (especially the rural-poor, that constitute an extremely large part of the country), data scientists and analysts along with healthcare researchers and professionals could then use that data to deduce results and solutions to a lot many problems presented today in the country. A few of the major problems in the country today in lieu with the healthcare (directly or indirectly) include *lack of access to proper sanitation in rural areas*—less than 50% rural population with access to improvised sanitation; *lack of total health-care spending*—less than 4.1% of the GDP being spent on healthcare in India; *low number of health-care professionals in the country*—up to 2 per 1000 persons as compared to up to 12 per 1000 persons in developed countries such as Australia; *lack of per capita health care spending*—less than 100 USD (Joumard, Kumar, 2015).

This number is even lower in the rural parts and states of the country. States such as Bihar (1 health worker per 1000), Rajasthan (1.4), Uttar Pradesh (1.3), Assam (1.4) show that the plight of number of health workers is also a huge detriment to improving the health conditions of the country. These statistics show a huge gap between developments in the healthcare industry in developing countries such as India and other developed nations.

OBJECTIVES OF THE STUDY

The major objective of the study was to understand the current health state of the rural-poor population specifically in Delhi-NCR region. This particular study further helped to understand the healthy: poor ratio of the surveyed population and give an overview of the health condition based on rating such as 1: Healthy State, 2: Average State, 3: Unhealthy State as an outcome of the classification algorithm applied to the dataset generated after the desired surveyed results were compiled, filtered and grouped as per requirement.

The detailed objectives include:

- 1) Applying self-predicting algorithm to gather a result set of health condition of rural-poor population classified as either healthy, average or unhealthy.
- 2) Studying the current health scenarios of the lower poverty line people and using the same data for further predictive and solution-based algorithms.
- 3) Ultimately, these survey findings can help in policy formation as well as betterment of health conditions of the underprivileged in alignment with other sections of the society.

RESEARCH METHODOLOGY OF THE STUDY

TARGET POPULATION

The target population here are the families belonging to lower income groups. People aged 18+ have been interviewed about the overall conditions of themselves as well as their families. The major areas covered are Subhash Nagar slums in Delhi and J.J. Colony in Dwarka, New Delhi (NCR). Other people that have been interviewed include house maids, security guards, washer-men/washer-women, auto drivers, sweepers, rickshaw pullers, factory workers and other daily wage earners. A target of 700 interviews has been achieved covering the mentioned groups of people residing in the capital city, Delhi.

METHOD OF INTERVIEW

All survey interviews have been carried out in a face-to-face interactive fashion. The questionnaire being in English, all people being interviewed were made to explain each and every question, asked to relate it with their lifestyle and health condition and this way accurate responses from the interviewees were collected.

DATA SOURCE

The data set used for the findings is Primary Data collected through the means of surveying the target population mentioned in the above section. The data is solely original and not taken as a secondary source of data from any references. The data used clearly specifies the current state of people termed as lower strata and also what are their needs that should be fulfilled to provide them a better and healthier lifestyle. The data consists of information stating their primary health issues that need major focus rather than concentrating on providing facilities and equipment(s) for rather bigger and severe health conditions.

TECHNOLOGY USED

The software (s) needed to analyze the various aspects of the survey are as follows:

Microsoft Excel (preferably 2016 version)

MS-Excel is a very powerful tool of the Microsoft office due to its various features. We can organize your numeric or text data in spreadsheets or workbooks and view it in context through excel which will help us make more informed decisions. As one looks at different configurations, Excel learns and recognizes our pattern and auto-completes the remaining data for you. No formulas or macros required. The Tell Me search feature guides you to the feature commands you need to get the results you are looking for. Excel also performs complex analyses for our data. And it summarizes our data with previews of pivot-table options, so that we can compare them and select the one that tells our story best. Excel can recommend the charts and graphs that best illustrate your data patterns. Quickly preview your options and pick those that present your insights most clearly. We can discover and compare different ways to represent our data and our intents visually. When we see the one that shows our data best, apply formatting, spark lines, charts, and tables with a single click. A set of new modern charts and graphs in Excel 2016 help you to present our data in fresh ways. Excel makes it easy to spot trends and patterns in your data by using bars, colors and icons to visually highlight important values. The new one-click forecasting feature in Excel 2016 creates forecasts on your data series with one click to future trends. In this survey analysis, Excel has been used to create the primary data set by entering all recorded responses in form of a spreadsheet which is further used for extracting patterns.

R Studio

RStudio is an open source tool for performing Data Mining operations. In technical terms, RStudio is a cross-platform integrated development environment (IDE) for the R statistical language. The technology to amass data exceeds our abilities to make use of it. Another cool feature which might be of use to some is the manipulate package for dynamically changing plot parameters. People all over the world are turning to R, an open source statistical language, to make sense of data. Inspired by the innovations of R users in science, education, and industry, RStudio develops free and open tools for R and enterprise-ready professional products for teams to scale and share work. RStudio is an integrated development environment (IDE) for the R programming language. Some of its features include: Customizable workbench with all of the tools required to work with R in one place (console, source, plots, workspace, help, history, etc.). Syntax highlighting editor with code completion. Execute code directly from the source editor (line, selection, or file). Full support for authoring Sweave and TeX documents. Runs on all major platforms (Windows, Mac, and Linux) and can also be run as a server, enabling multiple users to access the RStudio IDE using a web browser.

The major benefit of using RStudio in our survey is that it helped in carrying out the Data Mining for the survey responses we collected from various people. The entire process of mining our desired results included creating a database in the Microsoft Excel spreadsheet, importing a "csv" format of this database in the RStudio and then using the various entries of the dataset to plot histograms, bar graphs and pie charts.

Python

Python is a general-purpose language, which means it can be used to build just about anything, which will be made easy with the right tools/libraries. Professionally, Python is great for backend web development, data analysis, artificial intelligence, and scientific computing. Being a very high-level language, Python reads like English, which takes a lot of syntax-learning stress off coding beginners. Python handles a lot of complexity for you, so it is very beginner-friendly in that it allows beginners to focus on learning programming concepts and not have to worry about too much details.

Also, as a dynamically typed language, Python is really flexible. This means there are no hard rules on how to build features, and you'll have more flexibility solving problems using different methods (though the Python philosophy encourages using the obvious way to solve things). Furthermore, Python is also more forgiving of errors, so you'll still be able to compile and run your program until you hit the problematic part.

NEED FOR ANALYSING HEALTHCARE PATTERNS

There have been many surveys conducted across multiple states in the country to analyse health conditions of people living in rural and semi-rural areas. (Singh, Shokeen, et al., 2017).

Statistics suggest that out of hundreds of people surveyed about their health conditions, that a good 35% people consider them to be in the moderate health category, while a good 25% people feel that their health conditions are mild and could get worse at any time.

Out of the people surveyed, a majority of people suffer from common health concerns such as fever, flu, common cold and cough, and the likes; a good 12.3% people face issues related to breathing and skin diseases. The amount of health concerns in people surveyed suggests that one of the major reasons for the prolonged health issues in people is due to the time lapse between their regular health check-ups. About 74% people suggested that they had not visited a doctor in the past 6 months.

There were some other surprising findings too in concern with the health issues of people surveyed. One of the major outcomes was the vast amount of people without the access to filtered water. The surveys conducted suggested that 58.4% of people did not have access to filtered water and had to survive with untreated and unfiltered sources of one of the basic necessities of human life.

One of the major causes of health-care problems also involve the lack of clean surroundings for children. A whopping 20.5% people believed that their surroundings weren't up to the clean hygienic conditions of livability, while up to 61% people rated their surrounding localities as only moderately clean. Cleanliness (or its lack thereof) is one of the major causes of low health standards in the country. A staggering 59.4% of households in rural areas lacked the basic latrine facilities just a few years back. (Swachh Status Report, 2016).

More so, there have been more than 68% of households in 2012 with no arrangements for garbage disposal.

Factors such as lack of sanitation, garbage disposal, regular health check-ups, cleanliness, purity of water, etc. have been known as direct constituents in the deteriorating health of people.

This suggests the answer to the question about the need for a detailed analysis on the healthcare patterns and needs of the people living in the rural and semi-rural parts of the country.

HEALTHCARE SECTOR & BIG DATA ANALYTICS (PRESENT SCENARIO)

Data Mining (in the field of Big Data) is generally described as the process by which data can be gathered, analysed, and stored so that quality information can be fetched out of the same. (Russom, 2011).

Generally, the first step of data processing is gathering and collecting data. This is done through a variety of mediums, including but not limited to surveys (online and/or offline), questionnaires, internet-connected devices, etc.

Once the data has been collected, the next step mostly is the idea on how/where to store the data. *Big Data Storage and Management* (Alkhatib, Khloe, et al., 2015) is considered as the next step for big data analytics. Next, the data is transformed and classified before being ready for proper analysis.

(A) Predictive Analytics in Healthcare Systems

One of the areas where predictive analytics and in turn data is being highly used is the use of healthcare prediction on reducing further risks to patients and thereafter reducing costs. Predictive analytics use medical histories of patients to evaluate and determine further risks. In turn, it also helps in predicting and understanding future medical treatments.

Parkland Hospital in Dallas, Texas has introduced a health-care prediction system that helps scan patients' details and identifies potential risks and outcomes (Jacob, 2012).

(B) Role of Predictive Analytics in Healthcare

The major role of predictive analytics in the healthcare system has been in making sure that specialists are able to achieve results and outcomes, and predict preventive care solutions to patients. This also allows practitioners to work on treatments to avoid further risks to the patients (Conley, et al., 2008).

PREDICTIVE MODEL (ALGORITHM) FOR HEALTHCARE ANALYTICS

With data from hundreds of residents of localities in and around the National Capital Region of the country, the aim was to generate a model for healthcare analytics converging around the idea of using statistical information such as age, source of drinking water, foods consumed on a daily basis, cooking fuel used, frequency of visits to the doctor, air ventilation and cleanliness in the society, and linking these with the medical conditions that the people have.

The first major task whilst generating a model for Machine Learning is to understand the kind of learning methodology to be followed.

The following explains (in detail) in a step-by-step process the creation of a Machine Learning Methodology (or an algorithm) that can be used in analysing healthcare data and statistics to generate predictive outcomes.

The first step in starting with machine learning on healthcare data is to understand what the data are, whether the data provided to the model are fully functional and can be properly worked on, and making sure that the data are ready to be processed and provided to the Machine Learning Model. In technical terms, this process is known as *Data Preprocessing*.

Data Preprocessing constitutes a variety of steps. The foremost of them all constitutes Data Slicing/Dicing. *Data slicing*, as the name suggests requires breaking down the data into several smaller parts so as to examine it from different viewpoints and understand it better.

For scenarios related to healthcare data, there are fields of information (or labels/columns) which aren't directly relevant for our use case. In such cases, the data scientist's first job is to demarcate the fields most relevant to our analysis.

Once the data slicing is carried out successfully, the next task that needs to be completed falls under *Treating Missing Values*. This involves marking the empty value fields, filling them using one of the many algorithmic techniques available, and then filtering data based on any missing information.

Next comes *Removing Duplicate Values*. This might not seem as an extremely crucial step in solving the problem, but it does weigh in to the end result, as it helps in removing any skewness that might come due to farcical or duplicate values.

One of the most important factors while preprocessing data is making sure that all the values provided to us as in certain parametric limits. This falls under *Data Scaling*.

Once the preprocessing is carried out successfully, our next task constitutes generating a model that the user can train using the data already available.

The next step constitutes deciding on which model to take up for the kind of data available. Considering that our data are related to healthcare statistics, and taking forward the idea of predicting outcomes based on the available data, we are using the **Apriori Algorithm** to understand what kinds of associations are present between the data.

Our model suggests the inputs to be at least a few of the following: *age, gender, whether immunized at birth, smoking habits, filtered v/s unfiltered drinking water, any chronic diseases, blood pressure, anemia, access to private cooking area, access to private toilets, cleanliness of localities, personal doctors, cooking fuel used. And we link this with a single parameter termed as "Overall Health" in our model.*

Our aim constitutes deriving a model that would find associations between all of the aforementioned parameters (based on the surveys conducted).

AIM: To generate a model that fits perfectly for determining health-related outcomes using the Apriori algorithm in such a way that it helps formulate associations in data available to us, and link it with the overall health of the person.

HOW THIS IS CARRIED OUT: To generate a model that fits perfectly with our aim, we consider four major parameters: *Support, Confidence, Length, and Lift*.

Support: Parameter that allows us to judge the number of occurrences of a particular instance in comparison to the total number of instances. A support of 0.5 would mean that a particular item in a list has 50% occurrence in a total of 100%.

Confidence: This shows the chance of occurrence of the second event considering the first event is taking place.

If for a set: {'A', 'B'}, the confidence is 0.29, this means that if event A occurs, there is a 29% chance that event B would also occur.

Lift: This parameter is similar to the confidence, with the difference that it also takes into account the popularity (or support) of the resultant parameter.

Length: This signifies the length of each rule set being generated. A set {'A', 'B'} has a length of 2.

If for a set: {'A', 'B'}, we wish to find out the lift, it would mean: The occurrence of event B considering event A, but also considering the popularity of event B.

A lift value greater than 1 for a set {'A', 'B'} suggests that event B is likely to happen if event A happens. A lift value less than 1 for the same set would suggest that event B is less likely to happen if event A happens.

Once the parameters such as these are established, the next aim is to set minimum threshold values for each.

Minimum Support can be set to a value that can be found out based on the number of items we have in our dataset. This would represent the minimum number of occurrences of each set of instances. For our model, after multiple iterations, we figure that the perfect *Minimum Support = 20% (0.2)*.

Minimum Confidence can be set based on how we wish to know the relation between the predictor and the predictant events. After multiple iterations of rules being generated in our tests, we recommend the *Minimum Confidence = 30% (0.3)*.

Minimum Length is set based on the number of lengths of rules we wish to generate. We wish our rules to generate at least 4 associations for the final outcomes. So, *Minimum Length = 4*.

Next, we generated rules significant to our model. These rules are generated and listed for the end user to find out associations between the data.

Here is an *example test rule* that we generated during the testing of the model:

```

62 = (RelationRecord) RelationRecord(items=frozenset({'no immune', 'unhealthy', 'smokes', 'male', 'unfiltered water'}), support=0.4,
> 0 = {frozenset frozenset({'no immune', 'unhealthy', 'smokes', 'male', 'unfiltered water'})
1 = {float} 0.4

```

This rule takes in the following association:

{'no immune', 'unhealthy', 'smokes', 'male', 'unfiltered water'}

OUTCOMES FOR THIS RULE

(a) The support for this rule turned out to be a massive 0.4

(b) Out of the multiple Order Statistics derived from this rule, the one that has the maximum lift is: **{'no immune', 'smokes', 'unfiltered water', 'male'} -> {'unhealthy'}**

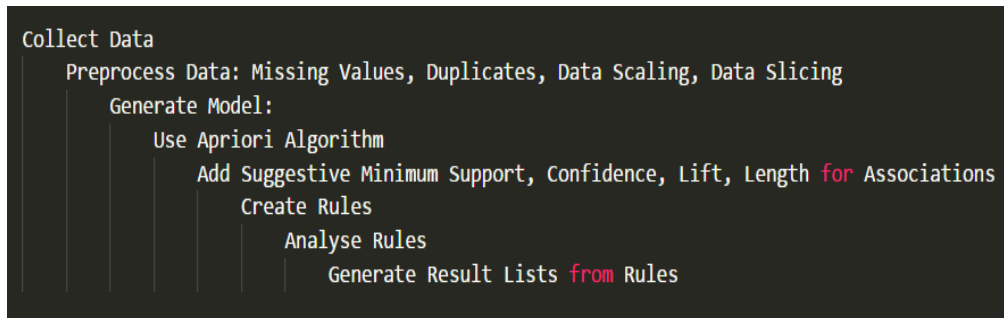
The lift for this is 2.5, the confidence a straight 1.0 in our model.

This signifies in the model that a man who has not been immunized during his childhood, who smokes, and drinks unfiltered water has a good 100% of considering himself unhealthy.

This checked perfectly with our surveys conducted of people from across the country.

This signifies a model that has been generated with the exact *minimum confidence, length, support, and lift* to generate associations between the eating, drinking and smoking habits of people, their prior health conditions, and finally their overall health.

The model generation for health-related data suggested would include the following steps:



CONCLUSION

The study concludes that with the India becoming one of the world's fastest growing economies, there is still an extremely large part of the country lying under the poverty index, with more than 250 million citizens still marked as poor. Adding to that, statistics from the World Bank Organization suggest that more than 60 million children in the country are malnourished; with about 45% stunted (too short for their age), 20% wasted (too thin for their height, indicating acute malnutrition), 75% anemic, and 57% Vitamin A deficient. These statistics lead to an incriminating look into how the country's rural poor are reeling with health-care and nutrition needs. With technology advancing to greater heights in the field of data analytics, this paper aims at using big data analytics concepts such as data munging, visualization, clustering, and the likes into developing a single algorithm that would establish correlation between a person's nutrition and day-to-day activities with their health care patterns, to provide better healthcare predictions.

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