ISSN - 0974-7869
ISSN - 2395-6771 (Online)

OORJA

A bi-annual Refereed International Journal of Management & IT

www.oorja.org.in

Volume 16/ No. 1 Jan-July 2018

International School of Informatics & Management Technical Campus
Accredited 'A' by NAAC
Ranked First in Category 'A' by Rajasthan Technical University, Kota
www.icfia.org

ISSN - 0974-7869
ISSN - 2395-6771 (Online)

OORJA

www.oorja.org.in

"OORJA", is an incredibly potent term, Meaning 'energy' in Sanskrit, "OORJA" is also the name of a Vedic deity, who in many ancient and modern scriptures has been compared with Uzza (Shakti as Venus) in Arabic and Divine Energy in English. "OORJA", our Journal, signifies a confluence of diverse cultures and assorted intelligence to stir up the cerebral powers of its readers.

The International Journal of Management and IT a bi-annual publication is a **double blind peer reviewed refereed** publication of the International School of Informatics & Management Technical Campus, Jaipur. It is dedicated to the dissemination of the concepts and ideas of modern day Management and IT thereby stimulating academic fervor and search for knowledge amongst practicing managers and encouraging applied and theme-based field research in the area of Management and IT across the globe. The Journal seeks to embody the spirit of enquiry and innovation to augment the richness of existing Management and IT literature and theories. It is our humble effort to provide a meeting ground, a common platform and an open house for researchers, practitioners and academicians to share their vast repository of knowledge and information across the world.

Published by :
International School of Informatics & Management Technical Campus
(Formerly India International Institute of Management)
Accredited 'A' by NAAC
Ranked First in Category 'A' by Rajasthan Technical University, Kota
Sector-12, Mahaveer Marg, Mansarovar, Jaipur - 302020 Rajasthan, INDIA
Phone : +91-141-2781154, 2781155 Fax : +91-141-2781158
Email : iiim@icfia.org Website : www.icfia.org

Annual Subscription : Rs. 1600.00 only

Mr. Deepak Mishra
Graphic Designer

FROM THE DIRECTOR

The spectre of cryptocurrencies is haunting the global capitalism and this phantom has been able to breathe life through the three modern age distinct forces namely the rise of computational power which has allowed algorithms to issue currencies programmatically; a doubt towards the government that can peculiarly debase currency or even demonetise at will; a paucity of safe resources to store wealth over a long period.

In 2014,the American tax authorities treated cryptocurrencies as a 'property', subject to appropriate capital gains tax rate, while Japan deemed bitcoin as a legitimate payment method in April 2017; Australia followed the suit in the same year in July. Chinese authorities have aggressively stepped in, when needed, to ensure cryptocurrency exchanges function well.

However, over the past many years, Indian government has not paid much attention to cryptocurrencies. On April 12, 2017, the Indian government had constituted an inter-disciplinary committee to study regulatory frameworks for cryptocurrencies which had then sought public comments. Though many prominent voices called for an outright ban, citing some understandable and several absurd fears which included as to what happens to the monopoly of rupee in India as medium of exchange? And drugs, money laundering, Ponzi schemes respectively.

The significant absurdity of all these currencies is their poor fundamentals and the elimination of the need for trust between humans thereby replacing it with mathematical guarantees; but all their tradeable value depends on blind faith and ignorance of computer code. Flaws in the code of Ethereum led to the theft of $30 million in 2016 and the disappearance of $170 million, though all these sums are entirely notional. The biggest hurdle facing cryptocurrencies is their poor fundamentals.

Even software built by gigantic, legitimate companies can turn out to have catastrophic bugs in it leaving even less reasons to trust software developed by small teams of programmers who hope both to become insanely rich and to circumvent all efforts by governments to control them – and that is how all cryptocurrencies have been built. But there is not much use in sober realism here. So long as ordinary people can expect to make their fortunes overnight, they will step up to the gaming table and play- at least while the cryptokittens are away

But all said & done Cryptocurrencies, are yet proved to prove their fundamental value as currency that can be readily accepted by a huge population as a medium of exchange, in contrast to national currencies such as the U.S. dollar which are widely accepted by people as money. So, In essence, Cryptocurrencies continue to be viewed as a gamble by most governments across the world have also not been too keen on allowing cryptocurrencies to be used as alternative money as they view private currencies as a threat to their sovereignty. The Reserve Bank of India, for instance, imposed a ban preventing banks from dealing with cryptocurrencies.

But like very well said by Victor hugo, in his 1991 budget speech: "no power on earth can stop an idea whose time has come", and who knows the emergence of crytocurrencies happens to be one such idea.

Dr. Ashok Gupta
Director

EDITOR'S NOTE

The end-to-end encryption of WhatsApp is indeed a commanding tool for safeguarding the privacy of communication. And the fact that the platform, as it claims, does not store messages makes it less susceptible to concerns including the behavioural profiling of millions of users that Facebook its parent company had to face earlier this year. However, the easy sharing of videos, particularly the anonymity given to the creators of malicious content is more of a boon to mischief-mongers who aim to provoke Social religion or political Sentiments. The anonymity has led towards the weaponisation of WhatsApp converting it into an agent of what the military calls an information warfare which leads to societal chaos.

With over 200 million Indians making up its largest customer base, WhatsApp clearly cannot absolve itself of the responsibility of not having a country representative. But the question remains as to how to combat misinformation? Tech giants including Google and Facebook must ensure greater responsibility to avoid false news. After all they are not just mere platforms but also publishers who are as liable as the originator of the defamatory content when they repeat that content.

Of late the government issued a stern reprimand to WhatsApp, but aren't the states accountable in comprehending a law and order problem which is their constitutionally defined obligation?

We the smartphone users are also a part of the problem as many a times we keep forwarding unverified defamatory content without checking its authenticity or considering the impact of our actions.

People must only believe trusted brands to deliver their news and not the unverified content that keeps gushing out of their smartphones. After all not every message is news, if something appears too incredible to be true next time, probably it is! Let's be practical enough not to turn a convenience into a weapon.

The current issue of OORJA brings to its readers a wide variety of research papers on topics as broad as Big Data, E- Learning, Employee Engagement, Social Advertising and Public Welfare Schemes in The BRICS countries.

The book Review on “Corporate Chanakya : Successful Management the Chanakya Way” presents to its readers a crispy and tasty bite on the age old formula of success for corporate leaders.

The Review on the book “The CS Detective: An Algorithmic Tale of Crime, Conspiracy, and Computation” adds an entertaining twist to learning algorithms and provides an excellent taster of how to use algorithmic tools in a given situation, and when to apply common-sense heuristic methods.

As I sign off we thank our readers, contributors and well-wishers for their continued encouragement and support. We hope to receive quality manuscripts from our contributors in future as well. They deserve great appreciation for their contributions to the success of OORJA.

Happy reading!

Prof. Manju Nair
Editor-in-Chief

OORJA
ISSN - 0974-7869 (Print)
ISSN - 2395-6771 (Online)

GOVERNMENT SCHEMES AND WOMEN'S EMPOWERMENT IN RURAL INDIA: A MICRO STUDY

Ms. Trishani Mitra, Student, IM-JK Lakshmipat University, Jaipur
Dr. Sheetal Mundra, Assistant Professor, JK Lakshmipat University, Jaipur

Abstract

This paper explores the status of rural women empowerment in India. Women empowerment is prerequisite for the development of nation. The empowerment, equality and autonomy of women are globally recognized as key factors of all round development and growth of a society. The Five-Year plans in India are adopted as a model of development. 'Empowerment of Women' was the key theme of the Ninth Five Year Plan. Similarly, Tenth Five Year Plan also stressed on Economic Empowerment as one of the sector-specific 3-fold strategy for empowering women with the view of making all potential women economically independent and self-reliant.

Empowerment of women means the improvement in eco-socio and political status of women in general and the conventionally disadvantaged ones in backward and rural society. This study is based on primary data collected from a cluster of villages under Mahapura Gram panchayat, Sanganer tehsil, Jaipur district. The study reveals that rural women fall under middle empowerment level and there is a lack of awareness of the government empowerment schemes. The study concludes by an observation that the status of rural women empowerment is not satisfactory. It leads to low level of awareness about government schemes and these women fail to avail the extended benefits from these schemes. So, it is imperative to address the endogenous factors in line with exogenous factors through government schemes to empower women. Women are empowered at different dimensions, in the present study we have different levels of empowerment of women but Empowerment is something an individual or a group of individuals evolves over time. The focus should be on removing various socio- cultural barriers and developing an endogenous development strategy. Few suggestions based on the study are: Skills acquisition and capacity-building, Conducting Camps and workshops at regular intervals to demystify various myths, conducting Family development initiatives to change discriminatory traditional and cultural norms, collecting information about the complaints regarding the schemes to improve the quality of the services.

Key words: Women Empowerment, Government Schemes, Awareness, Endogenous Development

Introduction

Women empowerment has become a raging issue globally including India over the last few decades. The empowerment, autonomy and equality of women are globally recognised as key factors of all round development and growth of a society. Although women constitute half of the world's total population yet they're facing problems of gender inequality in almost every field all over the world.

Empowerment is defined by the Oxford dictionary as “the process of becoming stronger and more confident, especially in controlling one's life and claiming one's rights.” Women empowerment refers to the eco-system, which makes them politically active, economically productive and independent, and enables them to take effective decisions about themselves.

According to United Nations Guidelines on Women's Empowerment, "Women Empowerment has five components: women's sense of self-worth; their right to have and to determine choices; their right to have access to opportunities and resources; their right to have the power to control their own lives, both within and outside the home and their ability to influence the direction of social change to create a more just social and economic order, nationally and internationally" (UN Secretariat).

The concept of women empowerment has two dimensions – Static and dynamic concept. According to static concept women is empowered when they have the capability to influence the decisions that have direct and indirect impact on their lives. "Women empowerment refers to the ability of women to transform economic and social development, when empowered, to fully participate in the decisions that affect their lives through leadership, training, coaching, consulting and the provision of enabling tools for women to lead within their communities, regions and countries" (Wiser Earth, 2006). According to Naila Kabeer, empowerment is "the expansion in people's ability to make strategic life choices in a context where this ability was previously denied to them." This concept may propose that those women who lack an effective voice could be given one. Whereas, according to the dynamic concept, empowerment is a process of developing the capability of women to participate effectively in decision making in areas that directly or indirectly affect their lives. Thus, Empowerment is not only to create conditions to enhance their chances of becoming empowered, but also it is something that an individual person or a group of people acquires over time.

The difference between these two is significant as it leads to forming diverse empowerment approaches. The Static concept leads to adopt exogenous empowerment approach whereas the Dynamic concept may adopt endogenous empowerment approach. The exogenous empowerment strategies suggest a top down approach where disempowered individuals or groups can be empowered by external entities. Whereas, the endogenous strategies suggest a bottom up approach, which support the fundamental principle that external entities can only act as facilitators by creating enabling conditions so that disempowered groups can empower themselves.

Status of Women in India

Current framework of international development recognizes women empowerment as an immense effective strategy for the versatile development of the society. Though India is rapidly developing economically and technologically but women, especially in the rural areas continue to be discriminated and their status in the society is still a source of concern. Across the nation, women constitute a disproportionate share of the chronically poor population. Though the constitution provides legal equality for men and women but social and economic equality is yet to achieve. This is the fact why rural women continue to be recipients of welfare services and remain a silent observer in decision-making process with poor access to education, health care and other basic facilities of life.

Women Empowerment is affected by many different variables in India, such as geographical location, level of exposure, level of education, gender, social status, age, etc. Government of India has passed and amended several women specific legislations and implemented a gamut of programs and schemes aimed at empowering women and ensuring their well-being and economic independence. Women empowerment policies and schemes exist from top to bottom levels, i.e. national, state and local levels. These policies and schemes focus on several important sectors such as health, equal economic opportunities, education, hygiene, contribution in decision making process, political participation, etc. The scope of such schemes has been extended to gender

equality, eventually, lead to both eco-socio empowerments of women in the society.

Some Major Government Initiatives are:

- Ministry of Women & Child development was formed in 1985
- National Policy for Empowerment of women (2001)
- Empowerment of women was an important focus area, adopted in the Tenth Five Year Plan (2002-2007) for development of women.
- Protection of Women from Domestic Violence Act, 2005
- Women's Reservation Bill was passed on 9th March 2010
- SABLA
- Support to Training and Employment Program for Women (STEP)
- Indira Gandhi Matritva Sahyog Yojana (IGMSY)
- Kishori Shakti Yojna
- Beti bachao, Beti Padhao
- Ajeeveka

Despite the effective implementation of the above schemes and programmes, there are substantial gaps between achievements of the policy on paper and actual scenario. India ranks 130 among the 155 nations on Gender Inequality Index. Regardless of repeated claims of progress by the Government, according to the Global Gender Gap Index, India is not performing significantly for the women. In India, women account for 48 per cent of the total population of 1.3 billion, the sex ratio is 944 females per 1000 males, the literacy rate of women is 65.5 per cent whereas that of male is 82 per cent (even below to world' average 79.7%), Work Participation rate is 28.8 per cent females in comparison to 83 per cent males, 14 per cent of entrepreneurs in India are women entrepreneurs, 10% participation in parliament etc.

Status of Women in Rajasthan

The condition of women in Rajasthan, in comparison to the other states is deplorable. Rajasthan is disreputable for child marriages and is among one of the states having worst sex ratios in the country- 928 females per 1000 males and the sex ratio of children (0-6 years) is 883 which is way below than the country average of 914 due to reasons of infanticide, high infant mortality rate and child mortality rate. There is no such programme implemented till date which can change and challenge these deep rooted social dogmas.

The age of marriage is lower than the prescribed legal age, 49 per cent in age group 15-19 are already married, including 11 per cent who are married but the gauna has not been performed. In the same age group the rural- urban break up shows that 57 per cent rural girls are already married compared to 27 per cent in urban areas. The female literacy rate is a shocking 52 per cent. About 60 per cent women depend on their husbands or families for any medical assistance and basic needs. Women in the rural areas are also not financially stable as there is a lack of employment opportunities. To tackle such social issues and to empower women in the state the State Government is running various schemes and programs with focus on the rural areas but the results are far from being satisfactory.

Literature Review

A Sundaram (2011) in his study has tried to highlight the current status of women in Mizoram and the factors which act as obstacles in acquiring equal status with men. He concluded that effective implementation and utilization of women empowerment programme will safeguard the interests of women.

Anupam Hazra (2011) in his paper reiterates that the role of women and participation in the society must be given high priority because women have a fundamental right to enjoy equality in all aspects of life as well as their capacity in playing a crucial role in the sustainable development process.

Duflo E. (2011) her study contends that the correlation of development and empowerment are perhaps too feeble to be self-sustaining. This paper states that constant policy formation and implementation may be needed in order to bring gender equality.

Hashemi, Schuler, Riley (1996) in their paper titled "Rural credit programs and Women's Empowerment in Bangladesh" state findings from two programs providing credit to women in rural area, it was found that the programs have significant effects on 8 dimensions of women empowerment. A combination of information collected via case study and sample survey are used by the authors to reason that the grameen bank is successful in empowering women due to its key focus on credit, and its skilful use of rules to ensure smooth functioning of the loan program.

Kunja Kusum Kakati (1990) in paper studies the socio-economic status of educated working women of Kamrup district and it states that even with of legal and constitutional provisions, women remain economically dependent, educationally backward and socially discriminated. Her study reveals wide gaps between the rights and privileges that a woman is given in theory by the constitution as a worker and rights she has in reality. It is found that in matters of decision making power working women were significant than the non-working women.

Swati Mutalik (1991) attempts to explore the nature of influence of formal education on social awareness. Her study finds that education has significant correlation with its acquisition.Highly educated women belonging to high economic status had higher level of social awareness but readiness for action was absent in them. Therefore, it is necessary to motivate these women for action.

Rationale of the Study

The constitution of India states equal rights for both men and women and makes equal endowment to uplift the status of women across the nation, yet majority of them are still impotent to enjoy and access the rights and utilise the opportunities guaranteed to them. The government has come up with a plethora of schemes and allocated specific funds for empowering women with emphasis on the rural areas the results are not satisfactory. Despite running various schemes, the benefits are not derived by the women as there is a lack of awareness, and even if they are aware about certain schemes they do not know the procedure to derive the benefit or even if they are registered for a scheme they do not receive any assistance.

Hence even though there are various schemes, these schemes are not properly Communicated, they are not Converged, thus not resulting in Capacity Building. (i.e. Empowerment). This study tries to review the reasons behind this gap so the effectiveness of the schemes can be enhanced.

Objectives of The Study

The core objectives of the study are as follows:

i. To know the status of women in Rajasthan.

ii. To explore the level of women empowerment in the rural areas of Jaipur.

iii. To explore the level of awareness of government schemes among the women of rural areas of Jaipur.

iv. To study the impact of women empowerment on the awareness level.

Research Methodology

The research design is exploratory in nature based on survey conducted to find the level of Empowerment and Awareness of women in the rural areas in Jaipur district. Primary data has been collected. Judgement sampling method has been used to select a sample of 50 women of the rural area, those who are registered with the Anganwadi and frequently visit the Anganwadi, these women belong to cluster of villages under the Mahapura Grampanchayat, Sanganer tehsil in Jaipur district. Other information has been collected from the Anganwadi workers and the Sarpanch of the village.

Tool of data collection used is a questionnaire divided in two parts-

Part A is based on women empowerment scale (Hashemi, Schuler, & Riley, 1996) and responses have been collected on a 5 point Likert scale (1 = strongly disagree - 5 = strongly agree) to check the Empowerment level on 3 dimensions taken from the Women Empowerment scale, these are:

- Women's mobility,
- Freedom from Family Domination,
- Economic Security and Contribution.

It consists of 18 questions in total, broken down into 8 questions for Women's mobility subscale, 4 questions for Freedom from Family Domination subscale and 6 questions for Economic Security and Contribution subscale.

Part B of the questionnaire is used for the awareness level of 9 Rajasthan government schemes has been collected on a 5 point Likert scale (1 = Not at all aware - 5 = Extremely Aware). The 9 schemes are considered as follows:

- Beti Bachao, Beti Padhao
- Bhamashah Yojna
- Mukhyamantri Balika Sambal Yojna
- Janani Suraksha Yojna
- Mukhyamantri Shubhlakshmi Yojna
- Kaleva Yojna
- Kishori Shakti Yojna
- Sabla Yojna
- Mukhyamantri Humari Betiyan YojnaThe Women Empowerment Level and the Awareness Level was divided into 3 categories and the ranges were determined based on Mean (+/-) 1

S.D, and the categories were:

- Low Empowerment/Awareness Level
- Medium Empowerment/Awareness Level
- High Empowerment/Awareness Level.

Simple linear regression has been used to examine the impact of the empowerment level on awareness level. The data was calculated using IBM SPSS version 21 and MS Excel 2016.

Analysis

The present study focuses on finding the level of socio-economic Women Empowerment and Awareness Level of government schemes in the rural areas of Jaipur and to study the impact of Women Empowerment on the Awareness Level. The data collected on the Women Empowerment Scale has been analysed in two parts:

a) Women Empowerment level

b) Awareness level.

And an attempt has been made to find out the impact of Empowerment level on the Awareness level. The lower limits and the upper limits for both empowerment and awareness level are being calculated with the formula = mean (+/-) 1 S.D., It is assumed that the data is normally distributed and thus the range has been divided into three levels i.e., Below average, Average and Above average.

Part A: Women Empowerment Level

Table 1: Empowerment Level

Levels	Frequency	Percentage
Low Empowerment Level (<35)	7	14%
Medium Empowerment Level (35-50)	34	68%
High Empowerment Level (>50)	9	18%
Total	50	100%

**Mean = 42.68000, SD = 7.34969

Table 1 depicts that 68 per cent of the sample falls under Medium empowerment level followed by 18 per cent under High empowerment level which is comparatively higher than 14 per cent falling under Low empowerment level.

Part B: Awareness Level

Table 2: Awareness Level

Levels	Frequency	Percentage
Low Awareness Level (<12)	11	22%
Medium Awareness Level (12-19)	32	64%
High Awareness Level (>19)	5	10%
Total	50	100%

**Mean = 15.14, SD = 3.374635

Table 2 depicts that 64 per cent of the sample comes under Medium awareness level followed by 22

per cent having Low awareness level which is much greater than 10 per cent of the sample in High awareness level.

Impact of Women Empowerment on Awareness Level

Table 3: Impact of women Empowerment Level on Awareness Level

R	R Square	F	Constant	Coefficient
.443	.196	11.699	.801 (0.007)	.402 (0.001)

Table 3 depicts the impact of empowerment on Awareness Level. 44 per cent variation in awareness level is due to women empowerment level, it is a good fit model.

The impact is significant because at 95 per cent confidence level, the value is less than .05.

Findings

The major findings of the study are:

i. Out of the sample of 50 women, it is found that majority of them 68 per cent fall under medium level of empowerment

ii. Similarly, 64 per cent of the sample have medium awareness level of the various schemes run by the government.

iii. There exists a significant impact of Women Empowerment on the Awareness Level.

Discussion

The above analysis concludes that there is a significant impact of Women empowerment on Awareness Level and in both the cases, majority of the sample comes under the middle level.

Women are empowered at different levels at different dimensions; in the present study also we have different levels of women empowerment, following the endogenous strategy of empowerment we establish that empowerment cannot be given to an individual or a group, it is something that evolves over time. The concept of empowerment has two dimensions – Static supports the view that women empowerment can be developed by following an exogenous strategy whereas Dynamic supports the view that empowerment can be enhanced by following an endogenous strategy. Thus, empowerment cannot be given to people, but encouraging conditions can be generated for increasing chances of becoming empowered on their own. Thus the focus should be on removing certain socio-cultural barriers such as antagonism of men, domestic and family restrictions, dearth of access to information, cultural barriers, lack of education and vocational skills, traditional stereotypes, and low self-confidence (Garba,1997). These will help in developing an ecosystem that positively impact empowerment and increase the efficiency and reach of the schemes.

A study by Garba (1999) supports the same theory and states that in terms of effectiveness, endogenous strategies of empowerment are likely to be more effective as compared to exogenous strategies of empowerment as it focuses on fulfilling the real needs and in terms of appropriateness, a dynamic concept of empowerment is more appropriate than a static concept as it forms a basis to endogenous empowerment strategies.

The challenge and task are to develop the capacity of women so that they can perform their role properly to make a difference. Prolonged policy interventions with integrated gender equality in policy

formulation; awareness building at family, institution and community levels; effective implementation; better follow-up are required for getting the better outcomes and to encourage the participation of women in the mainstream of each socio and economic affairs.

Suggestions

The Findings of the Study Suggest

1. Women education has to be made compulsory. Educated woman is a prerequisite for women empowerment and enhances the effectiveness of the various schemes.
2. A proper assessment of the skills and capacities, actually possessed by women, are identified for effective capacity building and skill development. Proper need assessment can help in finding out the actual gaps. So by imparting relevant training can ensure the identified gaps are filled.
3. Camps and workshops can be conducted at regular intervals to demystify various myths.
4. Family development initiatives can be conducted to change discriminatory traditional and cultural norms.
5. Additional efforts from the government as well as NGOs are suggested to target women in the rural areas and increase their awareness about the various schemes so that they can derive the benefits.
6. Proper evaluation of existing schemes at each level of the government is required. It must be ensured that the benefits should reach to right person.
7. It is also necessary to gather data regarding the complaints related to various schemes as it'll improve the quality of such schemes and policies and help solve problems.
8. Proper laws should be formulated and implemented for women empowerment. Women should be made aware and informed about these laws.
9. Several NGO's E.g.: CARE India, AZAD foundation aim at developing the status of rural women to enhance their dignity and decision making.

References

- Deshpande, S. & Sethi, S. (2010). Role and Positions of women Empowerment in Indian Society. International Referred Research Journal, 1(17), 10-12.
- Duflo, E. (2011). Women's Empowerment and Economics Development. Cambridge: National Bureau of Economic Research, w17702.
- UN Secretariat. (2012). Inter-agency Task Force on the Implementation of the International Conference on Population and Development's Programme of Action. Guidelines on Women Empowerment. (online) Retrieved from www.un.org/popin/unfpa/taskforce/ guide/ iatfwemp.gdl.html, accessed on January 2, 2018.
- Kabeer, N. (2001). Reflections on the measurement of women's empowerment. In: Sisask, Anne, (ed.), SIDA studies (3). Swedish International Development Cooperation Agency, Stockholm, Sweden, pp. 17-57. ISBN 9158689575
- Home of UN Women. (2016). Retrieved from UN Women: www.unowmen.org, accessed on

January 2, 2018.

- Garba, P. (1999). An endogenous empowerment strategy: A case study Development in Practice, 130-141.
- Hashemi, S. M., Schuler, S. R., & Riley, A. P. (1996). Rural Credit Programs and Women's Empowerment in Bangladesh. World Development, 24, 635-653.
- Hazra, A. (2011). Empowering Women in Rural India. Kurukshetra - A Journal on Rural development , 3-6.
- Mokta , M. (2014). Empowerment of Women in India- A Critical Analysis. Indian Journal of Public Administration, 473-488.
- Shettar, D. R. (2015). A Study on Issues and Challenges of Women Empowerment in India. IOSR Journal of Business and Management (IOSR-JBM), 13-19.
- Department of Women and Children Development. (n.d.). Retrieved from Government of Rajasthan: www.wcd.nic.in, accessed on January 2, 2018.

OORJA
ISSN - 0974-7869 (Print)
ISSN - 2395-6771 (Online)

STUDY OF VARIOUS DATA MINING TECHNIQUES IN PREDICTION OF DEPRESSION

Ms. Suchita Sinhal, Research Scholar, CS & IT, The IIS University, Jaipur
Dr. Ruchi Nanda, Sr. Assistant Professor, CS & IT, The IIS University, Jaipur

Abstract

Data mining and Data analytics are promising research fields for their attempts to predict and analyze data from different perceptions and summarize it into significant information in order to identify hidden patterns from a huge dataset. Data mining identifies patterns which were earlier undetected by using statistical approach whereas data analytics focuses on comparing the patterns discovered with other patterns to solve business problems. These are equally significant and connected fields that cannot exist without each other. Healthcare organizations are exploiting these technologies for improvising their clinical and business processes. The healthcare data related to mental health is quite complex and uneven. The state of depression and mental disorders are neglected due to unpredictable symptoms and treatments based on assumptions. Depression is one of the most common problems that affect a large population today and is noticeable in any age group.

This paper provides the description of various data mining techniques such as Artificial Neural Networks, Decision Trees, Fuzzy classifiers and Bayesian classifiers applied to massive volume of depression data. This paper comprehensively presents a literature review on these techniques utilized by the researchers in the prediction of depression. It helps in investigating the factors responsible for depression. These factors are perceived and mathematically modeled. The paper provides an insight into some of the commonly implemented data mining techniques used to detect depression as well as classify the depression in different states and make a comparative study of such techniques based on their performance and accuracy. An estimate of the data size required to predict and detect depression is presented that can help in future research work. It explains why some techniques are more commonly used as compared to others by highlighting the rationale. This paper also helps in finding out the gap in the existing prediction techniques which helps researchers to further improvise the techniques by using some advanced methods and functions that can be applied for the prediction of depression.

Keywords- Data-Mining, Health-Care, Mental-Health, Depression, ANN, Bayesian Classifiers, Decision Trees, Fuzzy Classifiers

Introduction

Today there is an abundance of data which has created the condition of data rich and information poor leading to widening of the gap between data and information. Data Mining helps in the extraction of knowledge from large amounts of data. Data Mining tools helps in finding some interesting patterns. The patterns so discovered can be compared to other patterns in order to generate an insight, by data analytics. Data analytics and data mining provides us with bringing the data from raw state to result, with the main difference being that data mining takes a statistical approach to identify patterns while data analytics is more broadly focused on generating intelligence geared towards solving business problems. As the healthcare industry moves deeper into value-based care, organizations are utilizing

these strategies to improve transparency into their business and clinical processes. Data analytics and data mining are equally critical for business intelligence, and neither can exist without the other. Globally the healthcare issues specifically related to mental health issues and psychiatric expert system building are the least to be bothered about and very limited research work is done here The state of depression and mental disorders are neglected due to unpredictable symptoms and treatments based on assumptions. Moreover people are also unaware and have a very little interest about the mental illness. The amalgamation of more than one illness makes the situation even more complex. Depression is one of the most common problems that affect a large population today and is noticeable in any age group. Depression often precedes and may cause directly or indirectly many chronic conditions such as high blood pressure, diabetes, insomnia. Serious depression in a person can affect the family life and destroy the life of the affected person if not treated on time. Depression is associated with loss of appetite, headaches, body pain, mood disorders, irritability, frustration, unnecessary anxiety, loss of self esteem, fear of death, fatigue, inability to experience pleasure, feeling of guilt etc. The focus of this paper is on the study of data mining techniques such as ANN, Bayesian Classifiers, Fuzzy logic, to detect and diagnose Depression. The patterns that emerge from data mining will not only improve understanding of this disease, but can give us new insights into prevention and treatment. This approach balances the fact that no two cases of mental illness are the same as all patients as individuals are different.

Objectives

- The objective of the research is to enhance the existing data mining concepts to detect and predict depression in all age groups based on certain factors.
- To develop an intelligent data mining algorithm that involves less computational effort and faster learning capability of depression data.

Techniques Implemented in Data Mining

ANN in Depression

Artificial Neural Network (ANN) for depression classification was considered by Bhuvana, 2014. A neural network is constructed by highly interconnected processing units/nodes which perform simple mathematical operations. Neural networks are characterized by their topologies, weight vectors and activation functions used in the hidden layer and output layer, the topology refers to the number of hidden layers and connections between nodes in the hidden layers. The network models can be static or dynamic. Static networks include single layer perceptrons and multilayer perceptrons. A perceptron or adaptive linear element refers to a computing unit. This forms the basic building block for neural networks. The input to a perceptron is the summation of input pattern vectors by weight vectors.

OORJA
ISSN - 0974-7869 (Print)
ISSN - 2395-6771 (Online)

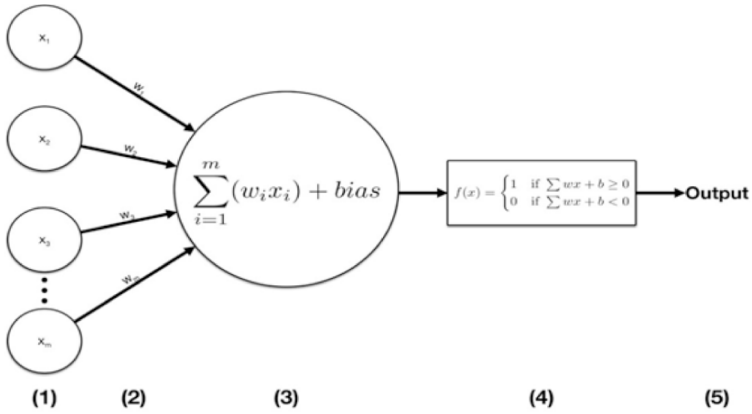


Figure 1 : Single Layer Perception Model (Bhuvana (2014)

In a multilayer perceptron model information flows in a feed forward manner from input layer to the output layer through hidden layers. The number of nodes in the input layer and the output layer is fixed. It depends on the number of input variables and output variables in a a pattern. The number of nodes in the hidden layer and the number of variables in the hidden layer are variable and this number is found by trial and error. The activation function which is used to train the ANN is the sigmoid function which is given by

$$F(x) = 1/\ 1+ \exp(-x)$$

Where F(x) is a non linear differentiable function,

A multilayer feed forward network that uses an exponential activation function, is called Radial Basis Function (RBF). The RBF uses the concept of distance between patterns and the various centers of the patterns. The number of nodes in the hidden layer of the RBF network is equivalent to number of centers, used to find the distance. A bias value of 1 is appended to the hidden layer nodes for convenience of weight processing. The final weights are obtained between hidden layer and the output layer. These weights are used for classification of depression.

Back Propagation Algorithm (BPA) is used for training ANN topology. BPA uses the concept of forward propagation to find the error of ANN for a pattern. BPA uses reverse propagation for updating weights. When the weights are optimal, so that there will be a close mapping among features of depression data with outputs in the output layer of ANN. The BPA uses the steepest-descent method to reach a global minimum. The ANN using BPA has one input layer, one output layer. The number of hidden layers can be one or more than one. The number of layers and number of nodes in the hidden layers are decided by pruning. The connections between nodes in the adjacent layers are initialized with random weights. The training process consists of phase-1 (forward) and (phase 2) reverse propagation. A pattern from the training set is presented in the input layer of the network and the error at the output layer is calculated. The error is propagated backwards towards the input layer and the weights are updated. This procedure is repeated for all the training patterns.

Strong Support for ANN in Depression Classification (Bhuvana (2014); Sau and Bhakta (2017)) The purpose of using ANN for depression classification is due to the following reasons:

1. The working concepts of ANN are based on statistics, like using linear summation between layers, to propagate information from input to output layers.

2. ANN uses transformation function like sigmoid function for back propagation algorithm, exponential function in Radial basis function network, Hyperbolic tangent function in Echo state neural network to squash output values from neurons.
3. ANN uses objective function for finding optimal weights between layers for mapping inputs (information of depression) to outputs (category of depression).
4. ANN can classify depression even if there is slight change in collected data.
5. The ANN can be trained with minimum patterns.

Because, the working properties of ANN are based on statistical concepts, ANN assures correct classification of depression.

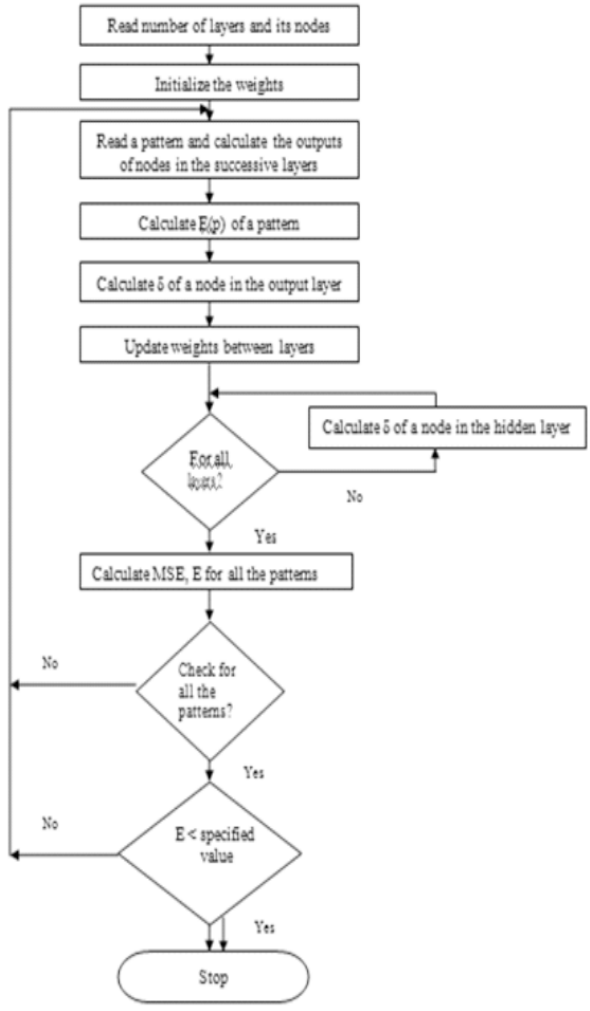


Figure 2: Flowchart for BPA (Bhuvana.R,2014)

Fuzzy Logic in Depression

Medical data related to mental health is characterized by uncertainty.(Gursel, 2016) Fuzzy Logic is a term that is associated with uncertainty, vagueness, fuzziness, having common feature as not being

clear enough to be processed by hard computing techniques. Fuzzy logic deals with approximate values instead of certain values. Any Fuzzy logic system has basically 4 components- a fuzzifier, an inference engine, knowledge base and defuzzifier. Fuzzifier is responsible for fuzzification process that involves converting a fixed object into a fuzzy set. Inference Engine- after fuzzification the resultant fuzzy sets are processed in the inference engine according to the rules of the rule base. The inference engine is the processing unit of the system. Knowledge Base- this is the most important part of FL system. The performance of the FL system depends on the knowledge base. Defuzzifier- normally the output of the inference engine is also a fuzzy set which is not useful in the real world. It needs to be transformed into the useful and understandable value which is done by defuzzifier.

A review of literature is presented that depicts different data mining techniques used for the prediction and diagnosis of depression and its different states in different age groups of people.

As per Sau and Bhakta (2017), Depression is one of the most important causes of mortality and morbidity among the Geriatric population. As the brain experiences aging it becomes more vulnerable to depression. They studied various socio-demographic factors and morbidity attributes to predict depression among geriatric population using Artificial Neural Network. Multilayer Perceptron (MLP), a feed forward ANN model was built in WEKA for classification with input variables i.e., age, gender (Male/Female), living spouse (Yes/No), type of family (Nuclear/Joint), Literacy (Literate/Illiterate), occupational status (presently working/ presently not working), personal income (Yes/No), and substance abuse (Yes/No), hearing problem (Yes/No), visual problem (Yes/No), mobility problem (Yes/No) and sleeping problem (Yes/No). The ANN model was made with seven interconnected neurons in one hidden layer. Primary data was collected by interviewing 105 elderly people and this data was used as a training data set for data mining in Weka. Then, the predictive model was build using ANN as a classifier in the Weka. Output was classified as - depressed and non-depressed. ANN model was trained and tested on the primary data set with 10-fold cross validation method.

Depression is a chronic mood disorder. Chattopadhya(2017) considered the severity of real world depression cases and implemented a fuzzy neural hybrid model for the diagnosis of the same. Principal Component Analysis, a method used to extract hidden features from multidimensional data was used here. It helped to extract the significant features by reducing the number of symptoms. 14 symptoms of depression have been considered in this study which denotes independent factors some of which are- feeling sad, weight loss, insomnia, loss of appetite, lack of thinking, loss of pleasure etc. A data of total 302 adult 'psychotic depression' cases have been collected in this study. Data has been finally normalized using max-min normalization technique. An input vector matrix was created with significant symptoms and then a fuzzy neural hybrid model was developed and tuned with back-propagation neural network algorithm.

Bhuvana et al.(2015) studied the use and implementation of two ANN algorithms : back propagation algorithm and radial basis function for categorizing and identifying the type of depression a patient has based on 21 various inputs to the algorithm. Hamilton depression rating scale is a multiple item questionnaires which was used here to collect information from the affected patients. The scale provides an indication of depression and as a guide to evaluate recovery. Depression data of 1800 patients based on Hamilton rating scale were collected through oral discussion. The information not being precise was presented into the input layer of ANN algorithm and processed with stored

weights. The outputs received from the output layer of the ANN were used to retrieve the information from the database as well as information provided by patients provides a complete information based on which the doctors could suggest remedies. Radial Basis Function Neural Network consisted here of an input layer, an output layer and a single hidden layer. A distance measure is used to associate the inputs to outputs. RBF is capable of performing approximations with an additional advantage of not being involved in repeated training.

Mukhurjee et al. (2014) stated depression as a serious disease that affects a large fraction of the global population. The diagnosis of depression faces a problem due to uncertainty of widely varying symptoms. An attempt was made to model a three layered fully connected neural network taking into account ten common symptoms namely - feeling sad, loss of pleasure, weight loss, insomnia, hypersomnia, loss of appetite, psychomotor agitation were considered for this work. The grade of each symptom and the corresponding probability of depression were assigned [0,1].

The model consists of 3 layers- the input layer, the hidden layer and the output layer. There are 10 neurons in the input layer corresponding to the 10 symptom units. The hidden layer had variable number of neurons ranging between 3 and 15 The output layer has only neuron that gives the final output as degree of depression. The weight sets [v] and [w] connect the outputs of input layer to outputs of hidden layer and the outputs of hidden layer to the inputs of output layer. In this case weight sets [v] and [w] are finely tuned to optimize the system with the help of a back-propagation algorithm. A radial basis function neural network was built in the second approach that used linear transfer functions and a radial basis function as its transfer function.

Bhakta and Sau(2016) studied depression among elderly population which is one of the emerging problem of public health. They used Weka for prediction based on machine learning classifiers. In this paper 5 machine learning classifiers are compared with respect to three test options. The machine learning classifiers that are used are- Bayes Net, Logistic, Multilayer Perceptron, SMO and Decision Table. All these classifiers are used on three different test options-using training and testing set, Cross- Validation and percentage split.

WEKA was used as machine learning platform into which the training data set was loaded, then filters are applied on this data set for optimized result. After pre-processing, result is fed into the classifiers and corresponding test options are selected. Prediction output format is chosen to view the result in human readable format. After all these setup prediction is started and result is collected in a text file. From the values of the metrics it was clear that SMO was more accurate and précised model for prediction of depression among senior citizens.

Chattopadhya et al.(2008) made an attempt to develop fuzzy logic based expert system which may be able to reason like doctors for screening adult psychosis. Among several techniques of fuzzy classifier (FC)-design , clustering to classifier technique(CCT) has been adopted. The key objective was to develop a classifier system that is able to determine the chance of occurrence of adult psychoses.

Conclusion

Depression has affected 2-3% of the global population and increasing day by day due to stress which is quite alarming. There has been very limited research work in this field due to the uncertainty related to the data. As a result it becomes very necessary for a quick and immediate automated detection

and diagnosis for a patient. This can be achieved only with the help of an intelligent data mining concept for the vast amount of data related to depression cases. Such Data mining intelligent algorithms can better classify the collected data and generate interesting patterns which can help in the better understanding of the disease, moreover the patients will be able to receive higher personalized treatments. ANN, Back-propagation and Fuzzy logic have been used so far for the detection and diagnosis of Depression. The alarming increase in the rates of depression cases however calls for the development of a full-fledged expert system tool to achieve the required amount of satisfaction and standardization. A hybrid model can be developed as an expert tool.

A number of different data mining techniques and their implementation have been studied so far in the field of medical health with special case to depression. Further application of technique will depend on the availability of data and the ease of detecting such depression cases.

The comprehensive study of application of various data Mining techniques implies that ANN and fuzzy logic are some of the commonly implemented techniques used in the prediction of depression and produce accurate results as compared to other methods.

ANN with further enhancements can be applied to deal with the unevenness present in data associated with mental health due to the adaptive nature of ANN.

References

- Bhakta, I., & Sau, A. (2016). Prediction of depression among senior citizens using machine learning classifiers. International Journal of Computer Applications, 144(7), 11-16.
- Bhuvana, R., Purushothaman, S., Rajeswari, R., & Balaji, R. G. (2015). Development of combined back propagation algorithm and radial basis function for diagnosing depression patients. International Journal of Engineering & Technology, 4(1), 244.
- Bhuvana, R. (2014). Development of artificial neural networks for data mining to diagnose depression.
- Chattopadhyay, S. (2017). A neuro-fuzzy approach for the diagnosis of depression. Applied Computing and Informatics, 13(1), 10-18.
- Chattopadhyay, S., Pratihar, D. K., & De Sarkar, S. C. (2008). Developing fuzzy classifiers to predict the chance of occurrence of adult psychoses. Knowledge-Based Systems, 21(6), 479-497.
- Concepts, D. M. (2006), Technique, Jiawei Han and Micheline Kamber. University of Illinois at Urbana-Champaign.
- Daimi, K., & Banitaan, S. (2014). Using data mining to predict possible future depression cases. International Journal of Public Health Science (IJPHS), 3(4), 231-240.
- El-Nasr, M. S., Yen, J., & Ioerger, T. R. (2000). Flame—fuzzy logic adaptive model of emotions. Autonomous Agents and Multi-agent systems, 3(3), 219-257.
- Gürsel, G. (2016). Healthcare, uncertainty, and fuzzy logic. Digital Medicine, 2(3), 101.
- Ilgen, M. A., Downing, K., Zivin, K., Hoggatt, K. J., Kim, H. M., Ganoczy, D., ... & Valenstein, M. (2009). Identifying subgroups of patients with depression who are at high risk for suicide. The Journal of clinical psychiatry, 70(11), 1495.

- Koh, H. C., & Tan, G. (2011). Data mining applications in healthcare. Journal of healthcare information management, 19(2), 65.
- Mukherjee, S., Ashish, K., BaranHui, N., & Chattopadhyay, S. (2014). Modeling depression data: feed forward neural network vs. radial basis function neural network. American Journal of Biomedical Sciences, American J. Biomed. Sci, 6(3), 166-174.
- Sau, A., & Bhakta, I. (2017). Artificial Neural Network (ANN) Model to Predict Depression among Geriatric Population at a Slum in Kolkata, India. Journal of clinical and diagnostic research: JCDR, 11(5), VC01.
- Shin, H., Park, H., Lee, J., & Jhee, W. C. (2012). A scoring model to detect abusive billing patterns in health insurance claims. Expert Systems with Applications, 39(8), 7441-7450.
- Tsai, H. H. (2012). Global data mining: An empirical study of current trends, future forecasts and technology diffusions. Expert systems with applications, 39(9), 8172-8181.
- Yu, S. C., & Lin, Y. H. (2008). Applications of fuzzy theory on health care: an example of depression disorder classification based on FCM. WSEAS Transactions on Information Science and Applications, 5(1), 31-36.

OORJA
ISSN - 0974-7869 (Print)
ISSN - 2395-6771 (Online)

CLOUD-A FACILITATOR FOR BIG DATA

Ms. Vandana Nigam, Assistant Professor, S.S. Jain Subodh P. G. (Autonomous) College, Jaipur
Ms. Shalu J. Rajawat, Assistant Professor, S.S. Jain Subodh P. G. (Autonomous) College, Jaipur

Abstract

As the popularity of the internet increasing day by day, fiery growth of voluminous data also takes place very rapidly. Big data is a technique to process, handle and store voluminous structured, semi structured and unstructured data in an efficient and systematic manner. Cloud computing is an open space capable to hold such distributed big data that provides software, platform, service and infrastructure as per demand. It provides consistent, error liberal and scalable environment to port big data distributed management system. Traditional data management techniques are not sufficient to grip the large data as they suffer from poor scalability and compatibility, less fault acceptance and low performance under high pressure. Big data technique is capable to handle these data management problems but suffers from some trouble like security, safety and data recovery management. Big data and cloud computing together can handle such problems more intelligently and have significant advantages over such traditional system. Dealing with Big Data is a very tedious and time consuming mission that necessitates huge resources to handle it and cloud provide the necessary support for the same. Big Data processing is an intricate task that includes data collection, storage and analysis and cloud provides trustworthy, fault understanding, obtainable and ascendable environment for this Big data distributed management system. Although big data and cloud crack lots of our recent troubles but still they have some holes and problems. Big Data needs enhancement in Storage Issues, Data Transportation Issues, Data Management Issues, Processing Issues, and Data Security Issues which can be easily done by Cloud computing and cloud needs enhancement in huge computing, storage resources, encourage and accelerate the development of computing efficiently by Big Data. They are closely connected and can balance each other. In other words, Big data symbolizes the goods and the cloud symbolizes the container. This paper discusses how cloud computing facilitates Big data with its relationships and issues.

Keywords-Cloud Computing, Big Data, Big Data Issues

Introduction

Today's era is the era of data & information and Internet is the biggest source of data used by variety of users for diversified reason like search, research, study, knowledge gaining and other purposes. Organizations, institutions, firms and companies are producing voluminous data on regular basis for their clients, students, faculties and their members regularly and this data is added on the websites, so it can reach to majority of people beyond physical boundaries instantaneously. Internet is growing day by day very rapidly New web pages are added, older ones are modified and millions of web pages are accessed regularly from it. New and existing data not only contains customary text but it also contains video, voice, images and more complex contents. This data is very huge, diversified and different in many aspects and needs more sophisticated technology for handling.

Literature Review

Bernice M. Purcell (2014) in their paper described that big data is a very huge version of database and can't be handled by the traditional method of data keeping system hence some more advanced and any time available technique is required which can be availed by using cloud computing technology. Cloud Services Providers not only provide the necessary storage but also furnish the task of management and maintenance of the same at lower costs. They suggested that small to medium industries can keep their huge data on cloud without investing more on the services and infrastructure and without putting much cost on their financial resources.

Nabeel Zanoon, Abdullah Al-Haj, Sufian M Khwaldeh (2017) in their paper described that big data and cloud computing are complementary to each other and quoted that big data is a product and the cloud is the container. Big data deals with gigantic data and cloud is the online facility to keep data online and can be accessed with ease at low cost and along with that cloud provides flexible and distributed data management techniques.

Marcos D Assuncao, Rodrigo N. Calheiros, Silvia Bianchi, Marco A. S. Netto, Rajkumar Buyya (2014) in their research paper suggested that big data deals with complex massive data. Big Data analytics is a complex process that demands an expert brain that can deal with understanding the data, selecting the data and analyzing it with more advanced techniques to deal with the same. They explained that Cloud can play a key role for big data as it provides infrastructure to medium-small industries and suggested two improved models AaaS (analytics as a Service) for facilitating analysis for complex data and BDaaS (Big Data as a Service)

Marcos D. Assunc Rodrigo N. Calheirosb, Silvia Bianchic, Marco A. S. Nettoc, Rajkumar Buyya (2014), in their research paper explained that big data is dealing with structured, semi structured and unstructured data. Most of the data comes to the unstructured data category so it is expected to manage, analyze and maintain the data more intelligently without increasing the cost to a great extent especially for medium and small users, so cloud is a better choice for the same. Cloud technology offers better solution for data management, data integrity and data analysis as cloud provides more flexible services for handling big data shrewdly.

Babita Ahuja, Anuradha, Ashish Ahuja (2013) in their paper explained that hidden data is a high quality data that should be available to researchers for their research work. This data is a very huge in measure and generally remains unavailable to users.

Cloud Computing

According to Peter M. Mell, Timothy Grance (2011), described that Cloud Computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction. Cloud is probably the most promising technology in modern era which completely transforms the way with which the IT world works. Cloud service providers provide pool of computing resources in the form of servers, networks, storage, applications and services which are used by the geographically dispersed cloud users on demand against some charges. Cloud technology provides application, platform and software to users.

Big Data- Big data is extremely large size data sets which are very difficult to confine and manage with conventional data processing application software as they are not ample to deal with such

complex data. Big data is not a data but a huge quantity of data and handling of such huge data (approx. 1 TB or more data daily) requires faster methods to deal with. The giant size of big data requires much more speedy techniques to tackle it in minimum processing time and output of the processing will be return by the system within acceptable time. Big data is often characterized by three 3 Vs the tremendous quantity (volume) of data, the extensive range (variety) of data types and the swiftness (velocity) at which the data must be processed. This data can be divided in following categories-(Figure 1)

1. Structure Data- Structure data is organized data which is processed and arranged in some specific manner. It is helpful in making some decisions and conclusions or reaching on some actions. On internet only 2-4% is included in this category.
2. Semi Structured Data-An intermediate form of the data which is neither raw nor typed in traditional database method. Only some part of the data is organized in database system. About 16% data comes in this category.
3. Unstructured Data- Unstructured data is unorganized data which needs processing and operations to use it in an efficient way. More than 80% data on internet comes in this category.

Along with above mentioned categories, on the basis of accessibility (crawled by web crawler), data may be broadly divided into two types Visible data and hidden (unaccessed) data. (Figure 2)

Visible data-It is the data which is searched by crawlers and included in the list and index of the crawled pages, but the listing is refreshed periodically to get newly added data with modified contents.

Hidden Data-Hidden Data is the data which is not being crawled by the web crawlers. It is also known as deep data or deep web.

Benefits of Cloud Technology for Handling Big Data

Cloud Computing and Big Data both are ultimate mixture of benefits in today's world. This combination is successful because it can handle various troubles like handling voluminous data, accessing fast, availability of data anywhere any time and at any place which are essential feature that any organization would be looking for. Big data is a artifact and cloud is a container so combination of both serves at its best to the businesses. Few benefits are discussed here-

1. Agility: Traditional database system is old-fashioned, slower to access, store and retrieve data. If we want to store large amount of data that is rapidly increasing day by day on server then it takes plenty of time approx few weeks for installation and processing. A better solution for this problem is Cloud Computing that can store data in more managed way than conventional methods. It has faster speed for installing, retrieving and processing the big data. The voluminous data are stored on number of virtual servers within few minutes.
2. Affordability: To store Big Data, ample space or database is required and that must not be very expensive. This purpose is solved by cloud technology on which saving the data is cost effective and under expected budget. Before Cloud, companies paid a lot of money for setting Information Technology and hardware updating methods. Presence of Cloud Technology not only reduces the cost of handling huge data but also relinquish the organization from keeping, managing, updating, accessing, replicating and securing the data as all such factors are handled by cloud service providers and businesses have to pay

according to the use only.

3. Data Processing: Big data is a huge data be which is in structured, semi structured or unstructured form. This kind of data can't processed easily due to its giant size. An environment is necessitated which can complete the whole process in an easier manner and reachable to small, medium and big venture and that is cloud computing. Cloud provides infrastructure, services, platform, virtual servers and many more to handle big data efficiently and conveniently as per user's expectations.
4. Feasibility: For large data sets processing, Big data analytics required an environment which should be unlimited to handle continuously raising or falling data. So for satisfying this scale of measuring an ultimate solution is Cloud, which is perfect podium to fulfill giant task easily and more quickly than other available technologies. Cloud Technology offers more feasible environment to handle Big Data.
5. Elasticity: Cloud elasticity offered by Cloud Computing is ideal for big data. Cloud continuously can hold the huge amount of big data and diagnose its patterns and also look up related business strategies detecting by several cloud providers. Cloud distributed nature makes it suitable for big data handling as well as analysis as per current and future aspects.

Growth of Big Data in Cloud Technology

We are living in a new era of data age and surrounded everywhere from data. It is the essential part of our daily life and is increasing day by day, as the volume of data is increasing very rapidly it is necessary to handle it with caution and care. As data is biggest asset for any organization it is necessary to keep it secure and readily available at any time for current and future exploit. A useful technique or platform is strongly needed to cater the same and cloud technology is best available choice. In this section we discussed about how speedily data is increasing at fiery rate, so businesses and organizations are moving towards cloud to keep their giant data readily available at any moment. The statistics shows that organizations are uploading, downloading and using the data up to 2TB or more every day on servers which is big enough than expected. To handle such big data Cloud is undoubtly a suitable obtainable technology.

Figure 3 shows that, from 2010 to 2014 the growth of big data was increased at steady rate but from 2015 onwards the growth of big data is shooting very rapidly and expected to cross 60-61 zettabytes in year 2021. To handle such vast data Cloud would be the preferred choice and due to this reason the organizations believe to outsource the data rather than handling it in-house.

Figure 4 depicts that users preferably store their data on their portable devices and PCs. Use of secondary devices is lowering in comparison to them. Corporate, organization and businesses are moving towards cloud technology because the volume of their data is very gigantic than small users. PCs and small devices have their hardware limitation and volume of corporate data is many times bigger, hence more space is needed which can handle the big data with convenience and care. The graph indicates that contribution of cloud for data storage is increased sharply and crosses 42% or more in year 2021. Boosted rate of using cloud shows that cloud is again a suitable method to keep giant data on several servers than a single one.

Figure 5 shows the growth rate of mobile data on cloud was almost steady from 2010 to 2015 but it is

very clear from the graph that mobile data will occupy approx 40% of the total data stored (10 zettabytes) on the cloud in 2021 and there will be very strong growth of mobile data in coming time. The graph also depicts that cloud technology will probably be the most preferred and popular choice for keeping the mobile giant data for the same.

As is seen in Figure 6 In real time data, information is distributed immediately after assortment, so this data is to be stored and kept without delay as timeliness is the prime need of real time data. It is expected that real time data will grow approx 1.5 times the rate of overall data formation. From graph it is depicted that real time data will occupy almost half of the total data stored on the cloud servers.

Issues and Challenges Related with Big Data in Cloud Technology

In present scenario cloud technology and big data are complementary to each other and is a profitable combination to big, medium and small enterprises. Big data is capable to handle voluminous data more smartly than traditional methods on one side and on other side cloud endowed with platform, services and infrastructure which save capital investments of the organizations to a big extent.

Besides providing a lot of benefits, there are several issues and challenges related with big data and cloud technology. For Big data major hindrance factors are capturing the voluminous data, managing its cargo space, analysis of data, searching, transferring and sharing the data, making queries on vast data and maintain the privacy and security of the data are some big hurdles for big data. For cloud computing technology multi tenancy, hardware virtualization, security threats, load balancing, resource scheduling, concurrency control, compromised security and many more factors lowers its acceptance rate in the current scenario.

Big data puts meticulous demands on networks and storage servers for current and future needs. This huge data requires storage, accessing, handling and maintaining in a graceful and secure manner. Companies and businesses find it more convenient to outsource the data without investing more funds to manage and maintain the large volume. Cloud is the best available choice for the same as it's a vibrant technology to do complex computing on such substantial volume. Cloud supports big data analysis and accommodate large data, but is not free from issues and challenges. Various challenges are there that put very serious questions on the combination of both. Some of the combined issues and challenges are discussed here:-

1. Handling Vast Data with Cloud Technology-Organizations producing hefty data every day in Terra Bytes, which are very bulky and complex to handle with the existing cloud technology. Most of the cloud service providers and still managing the data with traditional methods, but analyzing, accessing, summarizing such big data with traditional methods is more cumbersome, and from this big volume of data analyzing only few important useful bytes is a more challenging task.

2. Heavy Load on Storage-Big data requires huge server space to put data on cloud. Storage and processing of voluminous data needs fault tolerance, scalability and availability. Cloud delivers all these factors through virtualization, but cloud storage is geographically dispersed so processing, querying and managing such large data puts heavy load on the storage and working capabilities. Successful data processing requires very fast and gigantic infrastructure at cloud service providers end. Adding new infrastructure and fast processing at cloud's end not only puts financial pressure but also desires innovation and technological advancement at regular basis to cope up the difference in

existing and potential requirements.

3. Issues Related with Capacity and Performance-Data is the most valuable asset for the organization. In today's era companies are facing data bang and need to analyze and summarize it in least time with proper output format expected by users, but physical hardware limitation and can handle it upto some extent only. Need of Big data analysis is increasing day by day at very rapid rate which highly affects the cargo space performance in virtualized distributed cloud and is probably one of the strong reasons that enterprises not taking interest in choosing cloud for big data processing.

4. Need of a Combined Design-Big data and cloud are not same and compatible to each other but they are different from each other in many respects. A combined architecture is expected which can easily club big data and cloud at one place, but building an integrated architecture is one of the most difficult tasks and it also needs to incorporate service based approach at cloud end and data tuning at big data end to solve architectural challenges faced by both.

5. Replication of Data at Cloud Data Centers- When data is stored on cloud data centers it is expected that data should be replicated without leaving nil errors during copying. Replication is required so that if some problems occur at one place then users can easily get their required data from replica without knowing and facing problems. During duplication, if errors exist then it can not only create new issues but break the trust of the users. So capturing such voluminous data, its storage, transferring data, sharing, visualization and analyzing of data as flat as possible are the major concerns which keeps its acceptance difficult to users.

6. Movement of Large Data Sets-Cloud is an on air technology where data moves from one place to another place as and when needed by the users, this moving data not only carries general information but also have some confidential data like passwords, debit or credit card numbers, personal details of person or organizations and uploading of voluminous data on cloud many times in a day etc. This moving data must be kept secure to protect it from unauthorized access and from unwanted access. Managing moving of voluminous data is also a big challenge for cloud and big data combo which again hinders its full growth.

7. Security Issues-Cloud and big data are seen as next generation paradigm in computation but security issues are major concerns for organizations, business and cloud technology. The biggest challenge of the cloud service providers is to keep the big data secure and protected. Everyday new denial of service attacks, insecure interfaces, virus attacks, phishing attacks, worms and digital pests attacks, cloud abuse and other means find new entry points in the system and keep attacking and damaging valuable data Ransomware are another problem which affect the company's status and resources. Statistics shows that about 40-42% of businesses experienced Ransomware events during last some years. To manage resources, data and security is probably the biggest challenge for cloud service providers. In near future accepting cloud at various levels may be the biggest task for service providers and security is most important concern for both service providers and users.

8. Lack of Standards-Standardization is a mean to apply rules globally but unfortunately cloud and big data missing such worldwide accepted standards. Lack of knowledge, different cloud vendors and their own implementation policies are some factors due to which time honored standards are not taking its final shape. Some standards are still available at cloud provider's level but are not accepted globally so there is a need to maintain worldwide acceptable standards to resolve this issue and to build such global standards high level of expertise is needed.

From above discussion it is clear that big data and cloud technology are in their infant stage and suffering from some challenges which not only act as hurdles for their growth but also prevent potential users to accept it with trust and reliability. Organizations and enterprises want steady Return on Investments but it is their responsibility also to protect data at own level. Combination of big data and cloud technology is a good example of need (handle vast data) and tool (cloud technology) but is still facing major issues discussed above.

Future Scope and Conclusion

It is clear that cloud technology for handling big data is more acceptable method than any other available technology. Cloud not only handles and takes care of such huge complex data more efficiently but also provides data as per demand of users. Besides providing data handling competently, cloud provides Services, Infrastructure and Application without investing more on them. This paper discussed various issues related to cloud and big data and found that security is the biggest issue among all of them. Handling such big multifaceted data, more superior techniques and sophisticated algorithms are to be developed in future so that trust of existing and potential users is increased. It is also clear from above discussion that cloud is more appropriate choice for storing, handling and accessing big data. Cloud technology is very useful especially for medium and small firms and organizations as various experiments can be performed on big data without making extensive promise of firms wherewithal. It is a launch pad of big data which is capable to handle it effectively and efficiently for present as well as future uses.

References

- Bernice M. Purcell (2014). Big data using cloud computing. Journal of Technology Research (page 01-08).
- Nabeel Zanoon, Abdullah Al-Haj, Sufian M Khwaldeh, (2017). Cloud Computing and Big Data is there a Relation between the Two: A Study. International Journal of Applied Engineering Research ISSN 0973-4562 Volume 12, Number 17.
- Marcos D Assuncao, Rodrigo N. Calheiros, Silvia Bianchi, Marco A. S. Netto, Rajkumar Buyya (2014), in their research paper. Big data computing and clouds: Trends and future direction. J. Parallel Distrib. Computing (79-80) (9-15) Journal of Parallel and Distributed Computing.
- Marcos D. Assunc¸ Rodrigo N. Calheirosb, Silvia Bianchic, Marco A. S. Nettoc, Rajkumar Buyya, (2014). Big Data Computing and Clouds: Trends and Future Directions" Journal of Parallel and Distributed Computing.
- Babita Ahuja, Anuradha, Ashish Ahuja, (2013). Hidden Web Data Extraction Tools. International Journal of Computer Applications (0975 – 8887) Volume 82 – No 15, November.
- Peter M. Mell, Timothy Grance (2011). The NIST Definition of Cloud Computing. https://www.nist.gov/news-events/news/ 2011/10/final-version-nist-cloud-computing-definition-published. Accessed on 2 June, 2017.
- Big Data and Cloud computing- challenges and opportunities. Available at http://bigdata madesimple.com/big-data-and-cloud-computing-challenges-and-opportunities/ on dated

2nd June 2017, accessed on 2 January, 2018.

- Jessica Scarpati, (2012). Big data analysis in the cloud: Storage, network and server challenges available at https://searchtelecom.techtarget.com/feature/Big-data-analysis-in-the-cloud-Storage-network-and-server-challenges.accessed on 10 January, 2018.
- David Reinsel, John Gantz and John Rydning, (2017). Total WW Data to Reach 163ZB by 2025 available at https://www.storagenewsletter.com/2017/04/05/total-ww-data-to-reach-163-zettabytes-by-2025-idc. accessed on 2 January, 2018.
- https://polestarlip.com/challenges with big data on cloud, accessed on 6 January, 2018.
- Yunchuan Sun,Junsheng Zhang, Yongping Xiong, and Guangyu Zhu, (2014). Data Security and Privacy in Cloud Computing; International Journal of Distributed Sensor Networks Volume 2014 (2014), Article ID 190903.
- http://bigdata-madesimple.com/big-data-and-cloud-computing-challenges-and-opportunities, accessed on 6 January, 2018.
- Jaydip Sen, Security and Privacy Issues in Cloud Computing. Innovation Labs, Tata Consultancy Services Ltd., Kolkata, India.
- Cloud computing challenges in 2017. available at http://www.opencirrus.org/cloud-computing-challenges-2017/ accessed on 25 April 2018.
- R. Velumadhava Rao, K. Selvamanib (2015). Data Security Challenges and Its Solutions in Cloud Computing Procedia Computer Science, Volume 48 www.sciencedirect.com, accessed on 20 April, 2018.

OORJA
ISSN - 0974-7869 (Print)
ISSN - 2395-6771 (Online)

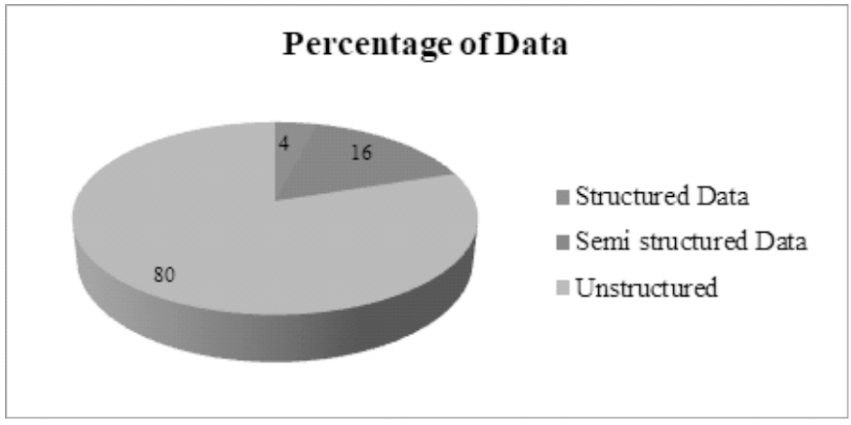


Figure 1 : Ratio of Structured, Semi Structured and Unstructured Data on Web
Source : Christine Taylor, (March, 2018). Structured vs. Unstructured Data. Retrieved from www.datamation.com

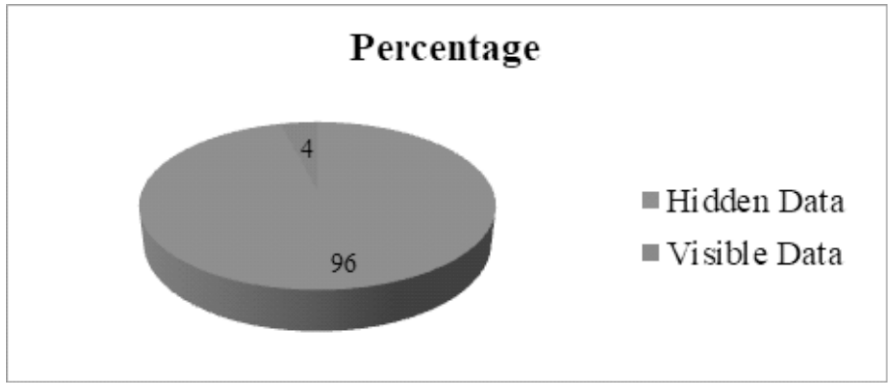


Figure 2 : Ratio of Hidden and Visible Data on Web
Source : Bergman, Michael K (2001).The Deep Web: Surfacing Hidden Value. The Journal of Electronic Publishing. Vol. 7 (1)

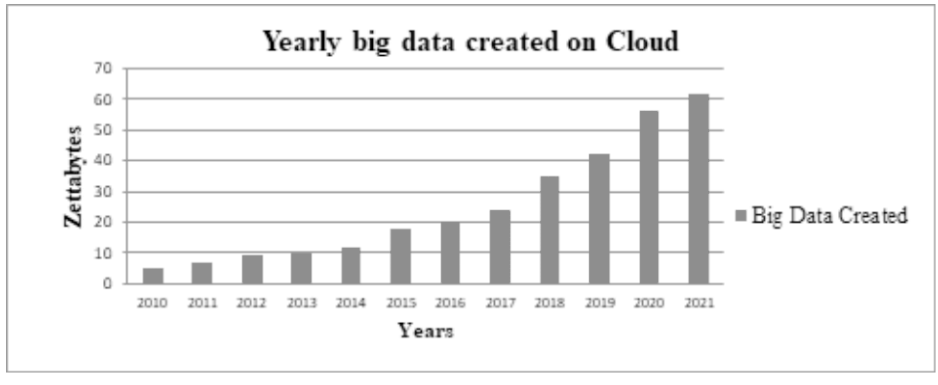


Figure 3 : Yearly Big Data created on Cloud
Source : Market Reports/Research (2018). Top 25 Cloud Backup Enablers Backup Review retrieved from https://www.storagenewsletter.com ›

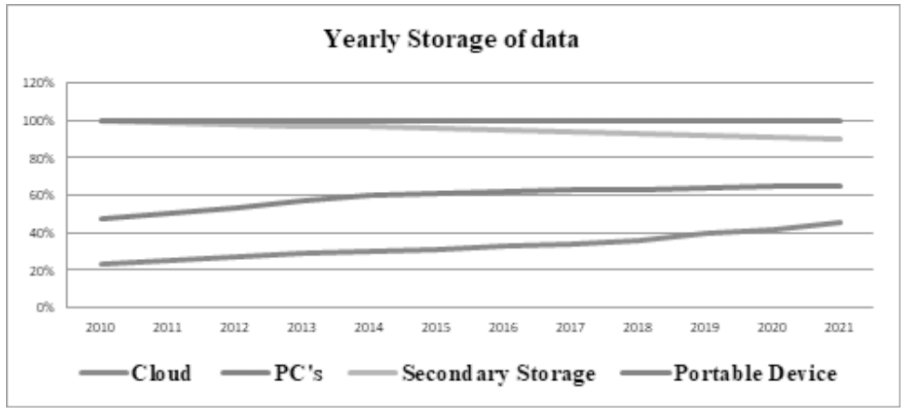


Figure 4 : Yearly Storage of Data on Different Devices and Media

Source : Market Reports/Research (2018). Top 25 Cloud Backup Enablers Backup Review retrieved from https://www.storagenewsletter.com ›

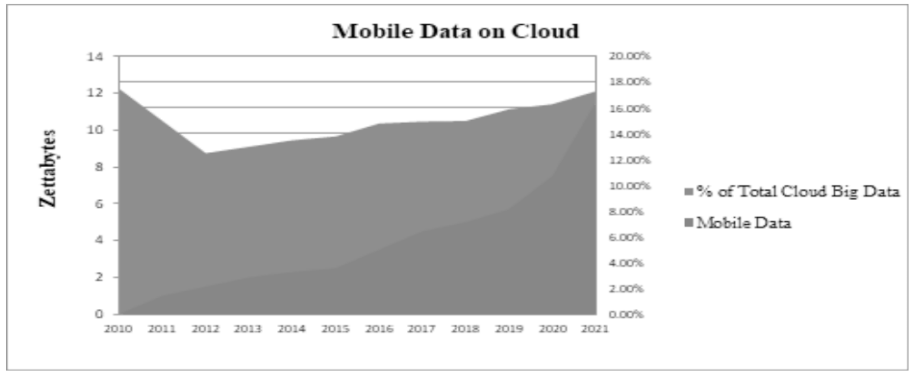


Figure 5 : Ratio of Mobile Data and Total Big Data on Cloud

Source : Market Reports/Research (2018). Top 25 Cloud Backup Enablers Backup Review retrieved from https://www.storagenewsletter.com ›

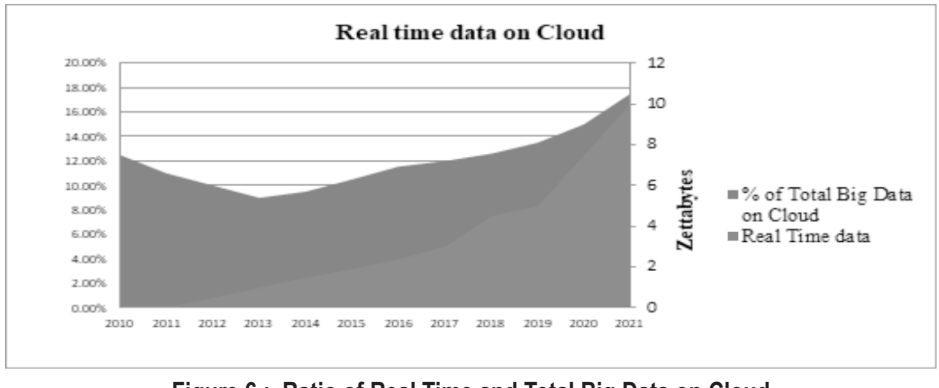


Figure 6 : Ratio of Real Time and Total Big Data on Cloud

Source : Market Reports/Research (2018). Top 25 Cloud Backup Enablers Backup Review retrieved from https://www.storagenewsletter.com ›

OORJA
ISSN - 0974-7869 (Print)
ISSN - 2395-6771 (Online)

USE OF DATA ANALYSIS IN AIRLINES TO IMPROVE DECISION MAKING

Prof. Harsh Dwivedi, Dean, R.A. Podar Institute of Management, Rajasthan University, Jaipur
Prof. Raghuvir Singh, Professor, TAPMI School of Business, Manipal University, Jaipur
Mr. Shivram Choudhary, Research Scholar, Rajasthan University, Jaipur

Abstract

Like many other industries, Airlines have also started to use data analytics for improved decision making. Data Analysis is important in the Airline Industry as the demand is unpredictable and inventory is perishable, as once the flight takes off, the airline loses the opportunity of generating any additional revenue. Also, the advantage with Airline sector is that almost all the data related to airlines is in public domain however the difficulty lies in the fact that if the companies do not understand the requirements and get forecasts right, it is impossible to sell the inventory even if sold for free. With the increasing focus on analytics, Artificial Intelligence and Internet of Things, airlines are operating efficiently and are using technology to the fullest to achieve better operational efficiency.

The paper illustrates with examples and scenarios as to how data is being analysed to increase revenue and decrease costs. Airlines used data analysis for discounted seat allocation, Internet marketing, routing, screen human resources, dynamic pricing etc. Over a period of time airlines are able to predict the behaviour of the consumer and habits like possibility of cancellation, rescheduling etc. This allows airlines to maximise revenue by overbooking. The paper shall also explain how usage of data analytics have transformed the so called difficult airline business.

The paper shall also touch on how yield management has helped American Airlines and Customer Service analysis has helped Jet Blue transform their businesses.

Keywords: Data Analytics in Airlines, Business Analysis in Airlines, Dynamic Pricing, Internet marketing, Artificial Intelligence in Airlines, Internet of Things in Airlines

Introduction

In this paper the author is analysing various data analytics techniques used by global airlines. The aviation sector by far is the most technically advanced sector however data analytics are in primitive state in our country. The paper shall illustrate why data analytics is important and why it has now become an urgent issue for Indian airlines to utilise to stay relevant in this competitive industry. The method adopted is a literature review of papers on data analytics in airlines. This shall give us an idea of how data analytics can make airlines operationally efficient and there by contribute to the bottom-line.

Literature Review

Chongwatpol, Jongsawas (2016) illustrates the conceptual framework to make proper decisions in the turbulent and competitive business environment, by explaining a new method of re-accommodating passengers in the case of canceled/delayed flights. It illustrates a situation in which a Thailand (BKK) to Hong Kong (HKG) flight is expected to get delayed and seven passengers would definitely miss the original connecting flight from Hong Kong to Chicago, USA. The next available flight to Chicago was almost fully booked and could accommodate only two more passengers. The

problem for the management was to decide who two passengers should be on the next available flight and which others would have to stay overnight in Bangkok for morning flight to Chicago on the next day.

The team used data analytics to resolve this rebooking dilemma. The first thing the team did was to get some sense of each passenger. On analysis it was found that the final destination of all the passengers except J was Chicago. Then they analyzed the frequent flyer status and found the T was 2015 diamond member, the highest status granted to any frequent flyer having 100,000 miles in the previous year. J was a million miller and had Gold member status, D has 50,000 miles & M also had a gold status. B, Jo, Ja were all basic travelers.

The next factor to be considered was based on booking status based on booking class and fare, with business/first class ticketed passengers to be given top priority. The logic behind this argument is that since the customers have paid for the better service especially in business or first class, hence they deserved better care from airlines.

After this the team pulled out historical data on number of qualified miles earned so that they could understand the travelling pattern of each passenger. Historical data on qualified miles give degree of loyalty and trend for each passenger. J had flown 1,500,000 miles however had not travelled frequently and had started travelling again in recently in the current year with an earning of 20,000 miles.

T had 1,00,000 miles annually for three consecutive years. He has also accrued 30,000 miles in current year. M & B were new travelers with no record of them in house files. D has been associated with the airline for some time and has increased his travel gradually in last three years.

Jo has occasional traveled however has increased travel in the recent year to and has reached 50,000 qualified miles in the current year. Ja has also earned approximately 40,000-mile since the current year.

The next factor looked at was solely the ticket fares for all the flights that each passenger had purchased, both lifetime and year-to-date(YTD) revenues for each passenger. J & M were airlines excellent customers with highest profit score followed by Je, Jo, J also travelled more frequently compared to D. T was steady traveler and there was no data for M.

Next matrix was of cost of operation incurred by the airline on all the passengers. The findings revealed that J used only call center to find, book and retrieve the flight information and tickets. T mostly used corporate booking channels whereas D, Ja, Jo were new generation travelers with advanced skills in computers and technology hence they managed their travel through mobile and web applications and subscribed all the electronic web applications for boarding passes, receipts and monthly statements. D sometimes called the call centers for booking multiple cities for an itinerary with a stop-over in each city with a couple of days. The airline did not have much data for M & B as they were new customers. Hence on analysis of Cost of Service for each passenger which included cost of call centers, redeemed miles etc. had revealed that it was quite costly to serve J, T and D as opposed to Jo & Ja.

Finally, more insight was looked into passenger profile by vising their online accounts, social sites and customer services, who if unsatisfied may tarnish airlines image, who has more number of followers on the web etc.

All the information was compiled and put on a dashboard and finally allowed M and D to board the next flight and others were asked to stay in the hotel for one night and were accommodated on next day.

Sahay, Arvind (2007), in his paper explains how companies are using dynamic pricing to maximize profit and the customer is accepting even when they are comfortable buying on fixed price. Dynamic pricing is highly used in service industry like airlines where there are perishable products, whose usefulness and functionality has a finite length of time and in the event of being unused their value diminishes to zero. American Airlines yield management systems (based on demand with supply constraint) and demand-based variable pricing (price change according to the demand for a product) has been very successful. In this system the pricing is done by different category of customers and on available inventory, based on a systems and procedures to maximize results from the sale of a service that has fixed supply and the revenue producing ability that decreases with time and diminishes to zero. Demand management uses historical data and mathematical models to predict demand at future points in time. In this case different prices are set for different time points according to predicted demand, as well as adjusting prices for actual demand.

Johnson, Fraser, Klassend, Robert & Farmer John (2002), explain about American Airlines yield management system, sometimes termed as revenue management, attempted simultaneously to combine demand management, by changing fares, and supply management, by controlling availability. It took into account aircraft capacity, historical customer bookings, pricing, cancellations and no-show rates, costs of over sales and costs of spoilage. Its purpose was to fill seats on each flight with highest paying passengers by determining the optimal mix of fares to sell on each flight to obtain the highest possible revenue. By the late 1990s, the company, through its Sabre division, used its expertise in a variety of service industries, such as hotels and can rental agencies.

Jeffery, Mark (2009), in his paper on usage of internet marketing by Air France explains how its net revenue gained through online advertising as well as ROA (Return on Advertising).

The travel industry is one of the earliest to adopt e-commerce into their sales strategies and still it is the most internet penetrated sector. The internet allows customers to get information on the airlines schedule, ticketing etc. on a real time basis.

Customers may choose to purchase tickets from airlines website, aggregator websites (expedia.com, orbitz.com – they also offer services beyond ticket purchase such as hotels and vacation packages). Airlines still earn the revenue by paying a fee to the aggregator for facilitating purchase. Metasearchers (Kayak.com, sidestep.com, skyscanner.com etc.) also provide information about the travel options available however they do not offer transaction services and redirect the customer to airlines website or aggregator website to make a purchase. They earn revenue by advertising.

Air France hired Media Contracts in 2007 for internet marketing campaigns and search engine optimization to maximize net revenue and ROA of its internet marketing campaigns. The media contacts provided data driven media solutions across all interactive channels from direct response to relationship media.

Media contracts also, help get all the impressions, clicks and activity data from Doubleclick to its data warehouse on a nightly basis for analysis. Doubleclicks was a web-based system which was

integrated with leading search engines such as Google, Yahoo and MSN. Its advertising services were designed to help customers maximize ROA through dynamic pricing and intelligent bidding. The tool allowed setting up of bid rules and defined budget and time frame as well as select cost per thousand, cost per click and cost per action pricing models.

By using this strategy, Air France revenue show a growth of 5.1 percent in unit revenue per available seat and the passenger activity increased by 5 percent.

Bernstein, Ethan, Mckinnon, Paul & Yarabe, Paul (2017), explain in their paper about how Artificial Intelligence is helping Japan's largest airline, All Nippon Airways (ANA) is using AI app GROW to screen the tremendous number of job application they receive every year with its limited HR Staff.

ANA prioritized ten competencies it highly valued in its new recruits and then used the had the GROW app to have their competencies and personality traits accessed to create a total score. The AI also produces a confidence score to show the degree of confidence it has in the score. Hence this GROW tool has helped ANA to accurately cluster students with high potential to advance through recruitment process.

Pfeifer, Philip (2012), explain about the model of discounted seat allocation in Piedmont Airlines. Discounted fares are given to passengers who are willing to purchase tickets far in advance of the flight departure. The airline allocates discounted seats for each class of service so as to meet demand while preventing loss of revenue hence the discounted seats are systematically limited at a specific period of time prior to departure. The late-booking passengers are the most valued customers of the airlines as the plan on short notice and book tickets on full fare.

The discounted seat allocation involved a tradeoff that if too many seats were sold at a discount, the airline could lose the difference between the full fare and discount fare for every potential full fare passenger lost hence the airline analysts repeatedly called upon to evaluate the tradeoffs between lost sales due to discount fare customers turned away the increased revenues from full fare customers and a proper balance was maintained.

Young, William (2017), gives the details of how JetBlue have improved its customer service using Artificial Intelligence and using various methods of communicating with customers including social media. People just do not have to call the customer service center anymore and they can use other modes of communication using AI tool to lodge a complaint and JetBlue shall try to resolve the complaint as quickly as possible. The whole idea was to make communication simpler for customers and crew members.

This focus on customer service came into being after JetBlue experienced losses in first quarter of 2005 and founder David Neeleman said that “we are going to offer something that no other airline has offered to the customer, we are going to be held accountable.”

JetBlue trained its employees to be fun, empathetic and caring. The company eliminated strict protocols for dealing with customer service incidents and instead empowered employees to be creative and responsive in dealing with customers.

JetBlue also turned to social media to reach out to customers, they created Facebook, twitter handles with a response time of 10 minutes for twitter and two hours for Facebook. They also used Gladly software which could compile all the data from a customer so that if a customer's emails one day and

calls the next, the agent is able to see customers email from the day before and every other contact made by the customer to the company. With the customer at the center multiple agents can work parallel on different tasks to solve an issue and provide an answer in a fraction of second.

Research Methodology

Objectives of the study

- Use of data analytics in aviation sector in India.
- To identify parameters in airline performance in which data analytics can be used for improvement.

Data Sources

For the current study, the researcher has used secondary data from authentic sources. The data has been collected from reliable case papers and websites as the travel agents and airlines are unwilling to share the date because of the competition intensity in the sector and some unknown reasons beyond researchers understanding.

Data Analytics in Indian Aviation

As of now, we are at a very basic stage of usage of data analytics in the Indian aviation sector however Government of India has launched an initiative named 'DigiYatra' to provide airline travellers a "digitally unified flying experience" across all stages of their journey.

This analytics tool shall create a reservoir of data collected from airlines, airports and travel portals. This historical shall help in identifying fare trends and help passengers to arrive at an informed decision while planning for travel and shall help improve transparency.

This system shall help passengers to get an idea of a possible peaks and troughs over a longer time period.

Table1: Summary of No. of Passengers Effected by Cancelled Flights by Major Indian Airlines in 2014-15

Airline	Cancelled Flight	Delayed Flight	Denied Board ing
Air India	63,068	453,354	5,960
Jet Airways & Jet Light	34,247	48,108	9,276
SpiceJet	25,573	21,263	-
GoAir	408	12,220	-
Indigo	-	197,682	

Source: Business Line July 19,2015

As per a Business Line report published in 2015, more than 1lac and 25 thousand passengers were effected by cancelled flights and Air India topped the list in both cancelled and delayed flight.

Table2: Status of Cancellation and Delays in Q-1, 2017 & Compensation Paid

PARTICULARS		DENIED BOARDING	CANCELLATION	DELAYS
JANUARY 2017	Passengers affected	2598	20010	239454
	Compensation Paid (Rs. In Lacs)	170.26	76.68	146.36
FEBRUARY 2017	Passengers affected	2988	8761	104591
	Compensation Paid (Rs. In Lacs)	1391.86	60.98	77.88
MARCH 2017	Passengers affected	1313	12167	56087
	Compensation Paid (Rs. In Lacs)	53.1	47.15	61.22

Source: Traffic report, DGCA

As per Economic Times of India June 12, 2017, "Directorate General of Civil Aviation (DGCA), between January and April 2017, close to 5.12 lakh domestic passengers in India faced issues due to airline companies denying boarding, as well as flight cancellations and delays. Airline companies have paid their passengers compensations of over Rs. 22 Crore for various inconveniences during the first four months of 2017".

In case of delay or cancellation of flight there is no re-accommodation mechanism devised by any airline in Indian aviation space and mere a monitory compensation is termed sufficient. The regulatory authority DGCA also gave only a compensation policy in these cases. **(Refer Table 3)**

Mere monetary compensation shows Indian Airlines lack of sensitiveness and poor customer service attitude towards the customers. Only compensation does not take away the other non-monetary issues faced by the customer like missing an important conference which cannot be rescheduled for one participant. **(Refer Table 4)**

Neither DGCA nor airlines bothered to device a mechanism of re- accommodating passengers in their own or code shared flights.

Since aviation industry is very competitive and re-accommodation of passenger is being done across the globe, Indian airlines should seriously look into it.

Majority of cancellation have been contributed to bad visibility during winters, now as this is a regular feature, we should either have better scheduling of airlines, so the customer is pre-informed, or we should buy new technology planes with better visibility capability in fog.

As per USA today, there are mechanisms which can be installed on Airstrips which allow airlines to take off or land in virtually zero visibility.

As per scroll.in report in April 2018, Delhi airport has installed advance technology to support airline take-off and landing in low visibility condition. The performance remains to be seen in 2018 winter however a more customer friendly data analytics mechanism in case of cancellation is highly recommended.

According to Gupta, Rahul & L Ganesh (2017), in India, Airlines use dynamic pricing, a discrimination in order to sell air services at varying prices simultaneously to different segments. The major parameter used for this dynamic pricing are Airline Routes which have been categorised in metro-metro and metro-non-metro routes, Time of the day, like peak timing from 5:00 AM to 10:00 AM and 5:00 PM to 9:00 PM, assuming higher passenger traffic, Day of the Week as weekends have higher traffic, Monthly calendar, festive seasons etc. This method is being adopted by all major airlines in India.

Indian Airlines are also increasing touch points to hear customers; hence the airlines have developed social media accounts. As per table 5, almost all major airline has social media presence with different degree of activeness. This is an important tool for hearing the voice of the customer.

Indian Airlines including Air India use traditional methods of recruitment including poaching for recruitment for their company. Since airlines require highly specialised workforce, they should also use best practices for recruitment.

Conclusion & Further Study

The researchers propose the following for Indian aviation companies as researcher's is of the opinion

that Indian Aviation shall be third largest by 2022

- Indian Airlines should devise mechanism to re-accommodate passengers in case of delay or cancellation of flights. They should analyse it on the basis of customers loyalty, future business, cost to the company, social media impact and should also consider the loss the customer may encounter on not reaching the destination on time. A more rational and sensitive approach is advised.
- The Indian Airlines should go a step further taking a cue from Indian culture of Atithi Devo Bhava by booking an alternative flight from competitor to accommodate customers and hence least effecting their travel plans in case of airlines fault.
- Indian Airlines have mastered the dynamic pricing even better than their global counter parts, almost all the companies use it. Air Asia has also devised a mechanism of flash sales to fill in the perishable inventory and generate additional revenue.
- Indian Airlines are though present in social media have to be more active in responding to customers and should increase their web presence for better visibility.
- The researcher is of the opinion that Indian Airlines should also use Artificial Intelligence for recruitment of resources for long term sustainability as used by global airlines.
- Further study can be done on how Internet of Things is redefining the airline business and the concerns of invasion of privacy due to the increasing use of technology. It can further be studied that whether the increasing use of technology is good or bad for the sector. Better compliance of technology to promote good use over bad use can also be a matter of further research.

References

- Bernstein, Ethan, Mckinnon, Paul & Yarabe, Paul (2017). GROW: Using Artificial Intelligence to Screen Human Intelligence, Harvard Business School (Case no. 9-418-020) P.5.
- Chongwatpol, Jongsawas (2016). Data analysis and decision making: a case study of re-accommodating passengers for an airline company, Journal of Information Technology Cases(2016) – JIT 085.
- http://www.dgca.nic.in/cars/D3M-M4.pdf, accessed on 28-March-2018.
- https://eonomictimes.indiatimes.com/industry/transportation/airlines-/-aviation/government-plans-analytics-tool-for-airfare-trends/articleshow/59058686.cms, Flight cancelled, delayed or denied boarding? Here's the compensation you can claim, accessed on 28-March-2018.
- Gupta, Rahul and Ganesh L (2017). Dynamic pricing in Airline Industry. Asian Journal of Research in Business Economics and Management, Asian Research Consortium.
- Johnson, Fraser, Klassend, Robert & Farmer John (2002). Yield Management at American Airlines: Richard Ivey School of Business (9B00D003).
- Jeffery, Mark (2009). Air France Internet Marketing: Optimizing Google, Yahoo!, MSN and Kayak Sponsored Search, Kellog School of Management (KEL319).
- http://libguides.library.cqu.edu.au/content.php?pid=9872&sid=64790 accessed on 28

March, 2018.

- Pfeifer, Philip (2012). Piedmont Airlines: Discount Seat Allocation (A). Barden Business Publishing , University of Virginia (Case No. UV6127).
- Sahay, Arvind (2007). How to reap higher profits with dynamic pricing. MITSloan Management Review Vol.48, No.4, SMR254.
- https://www.slideshare.net/prateekgahlot/recruitment-and-performance-appraisal-at-air-india-ltd, P.33, A project report on recruitment and performance appraisal at airindia ltd. accessed on 28-March-2018.

Table 3: Compensation for Being Denied Boarding

Particulars	Compensation
Alternate flight scheduled to depart within 24 hours of the booked scheduled departure	200% of basic fare+fuel surcharge (up to ₹10,000)
Alternate flight scheduled to depart after 24 hours of the booked scheduled departure	400% of basic fare+fuel surcharge (up to ₹20,000)
Passenger does not opt for alternate flight	Refund of full value of ticket and 400% of basic fare+fuel surcharge (up to ₹20,000)

Source : Economics Times June 12, 2017

Table 4: Compensation for Delay/Cancellation

Particulars	Compensation
Flight up to 1 hour (block time)	Refund of ticket fare + ₹5,000
Flight more than 1 hour up to 2 hours (block time)	Refund of ticket fare + ₹7,500
Flight more than 2 hours (block time)	Refund of ticket fare + ₹10,000

Source : Economics Times June 12, 2017

Table 5: Social Media Presence of Indian Airlines

Social Media	Air India	Jet Airways	Spice Jet	Indigo	Go Air
Facebook	70,388 Fans	11,00,000 Fans	541000 Fans	242000 Fans	15119 Fans
Twitter	2,468 Followers	45,424 Followers	10,000 Followers	3288 Followers	1188 Followers
You Tube		517 Subscribers	191 Subscribers		
Pinterest		357 Followers			

Source: blog.digitalinsights.in

OORJA
ISSN - 0974-7869 (Print)
ISSN - 2395-6771 (Online)

CARGO MIX, THE SURVIVAL STRATEGY OF PORTS: A CASE OF MAJOR PORTS OF INDIA

Mr. Ashutosh Kar, Assistant Professor, NSHM College of Management Technology, B.L Saha Road, Kolkata
Dr. Deepankar Sinha, Associate Professor, Indian Institute of Foreign Trade, Kolkata
Dr. Ram Singh, Associate Professor, Indian Institute of Foreign Trade, Kolkata

Abstract

Ports are economic entities that carry out cargo operation. Different types of cargo require different type of infrastructure. In long run ports face change in their cargo mix due to several reasons. For instance, export iron ore from India was banned in 2011, leading to change in cargo composition of ports such as Haldia. However, infrastructure meant for iron ore need not be applicable for thermal coal. This paper identifies the constraints in deciding on the cargo mix that the port would support and plausible course of action in this regard. Two ports, namely New Mangalore port and Haldia Dock Complex have been considered as case studies to identify their cargo mix, the shift in such mix and future course of action to offset the loss arising out of stoppage of flow of cargo for which the port was originally designed to handle. This paper aims at studying strategic and operational issues related to cargo mix of these two ports of India. This study makes two propositions in relation to cargo mix of a port.

Key Words: Cargo Mix, Infrastructure, Cargo Handling

Introduction

The sea ports across the world are cargo specific, that is, the ports are designed to handle specific type of cargo. For example port of Singapore is a container-handling port and does not handle any other type of cargo such as dry or liquid bulk. The growth of a port is dependent on the type of the cargo and the potential of the cargo to flow through the port. Major ports of India handled more than 50% of the cargo. The cargo mix of these ports suggests that one to two types of cargo constitute the major share. Some of these ports have been primarily based on handling single type of natural resource such as iron ore through New Mangalore port. In this port, iron ore constituted the major cargo. Natural resources are depleting in nature and hence may not be viable for the port in long run. Such ports are at present struggling to keep their operations viable. Hence if iron ore stops flowing through New Mangalore port, it has to look for other types of cargo to remain viable. This would mean that the existing facilities for handling iron ore should be used for other cargoes. Two ports, namely New Mangalore port and Haldia Dock Complex have been considered as case studies to identify their cargo mix, the shift in such mix and future course of action to offset the loss arising out of stoppage of flow of cargo for which the port was originally designed to handle. This paper identifies the constraints in deciding on the cargo mix that the port would support and plausible course of action in this regard. This paper aims at studying strategic and operational issues related to cargo mix of these two ports of India. The study has been carried out from three perspectives, namely, the port perspective, the carrier perspective and the shipper's perspective.

Sea Ports: Ports are the interface between land and sea. The primary function of a port is to provide efficient low cost inter and intra- modal transfer, storage, form change and control of cargo. A port is essentially an economic concept, and economic infrastructure that serves

coastal and overseas traffic. It is a subsystem of total transport network and a meeting place of other modes of transport. It provides necessary infrastructure for effective handling of vessels. The role of a port varies with its geographical position, the hinterland and the market it serves and factors related to economy, global trends and other factors Oram, and Smith (1965). Notteboom & Rodrigue (2007) showed that traditional approach towards port governance based on regional requirements and the associated hinterland no more hold well and demand new approaches in synchronization with new patterns of freight distribution. On the other hand the findings from study by Slack (2006) suggest that the decision of shippers is more focused to price and service considerations of land and ocean carriers compared to perceived differences in the ports of entry and exit. He suggests that some important stakeholders in the North Atlantic container trade do not consider port infrastructures as an important factor. A study showed that the freight forwarders operating in Southeast Asian select ports based on the efficiency followed by the shipping frequency, adequate infrastructure and location of the port (Tongzon, 2009). Murphy et al., (1992), showed that the port selection criteria varies amongst the different stakeholders (Shippers - small and large, carriers, freight forwarders) of a port. Yeo, etal., (2008) concluded that in Korea and japan, the criteria for selection of ports include port service, hinterland condition, availability, convenience, logistics cost, regional centre and connectivity are the determining factors in these regions. Tongzon, J. L. (1995) provides an empirical basis for the significant role of terminal efficiency (container moves per hour) relative to other factors (such as capacity, container mix, location, convenience directness, flexibility and transit time, cost factors - freight rate, basic port infrastructure and other factors) in the overall port performance. Clark, et al., (2004) showed that improving port efficiency from the 25th to the 75th percentile reduces shipping costs by 12%. The factors that govern port efficiency include excessive regulation, the prevalence of organized crime, and the general condition of the country's infrastructure. They also showed that reductions in logistics inefficiencies in a country, from the 25th to 75th percentiles imply an increase in bilateral trade of around 25%. Murphy & Daley (1994) found out the different port selection criteria that include, shipment information, loss and damage, freight charges, equipment availability, convenient pickup and delivery, claims handling ability, large volume shipments, large and odd sized freight. Several literatures exists that discusses association of port service related and cost factors that influences decisions of shippers and shipping lines. Notteboom (2008) points that hinterland connections are key for competition and coordination among stakeholders.

The type of infrastructure varies with respect to the cargo and the vessels carrying cargo. Infrastructure requirement for different types of cargo include equipment as shown in Table 1:

Table 1: Equipment Requirement for Different Types of Cargo

S. No.	Cargo	Infrastructure
1.	Dry Bulk	Tipplers, Conveyors Stacker -cum-reclaimers, grab and similar equipment.
2.	Liquid Bulk	Unloading and loading arms comprising pumps and pipelines; and storage tanks and similar equipment.
3.	Containers	Mobile harbor cranes, quay cranes, Rubber Tyred Gantry cranes, Rail Mounted Gantry cranes, Reach stackers, Straddle carriers, fork lifts and similar equipment.
4.	General cargo	Quay and yard cranes, fork lifts and similar equipment.

The storage requirement varies with type of cargo. Table 2 below provides a general view of such storage requirement at ports for different types of cargo.

Table 2: Storage Requirement for Different Types of Cargo

S. No.	Cargo	Storage infrastructure	Space Requirement
1.	Dry Bulk	Open yards or top Closed warehouses	High to Moderate depending on stackability. For example coking coal can be stacked to greater heights compared to thermal coal
2.	Liquid Bulk	Tanks	Moderate
3.	Containers	Concrete yards	Low to Moderate depending stacking heights
4.	General cargo	Warehouses of different types, Closed, semi-closed, temperature controlled, and similar types. Open yards for cargo such as logs, steel and project	Low to Moderate

Carrier perspective

The size of ships varies with the type of cargo. The general cargo carriers are the smallest ones and are never as big as container carrier. Container carriers are smaller than dry bulk carriers and dry bulk carriers are not bigger than crude carriers. Bruun (1989) established the relationship between the size of the vessel with fixed and variable cost associated with carriage of cargo and time at sea and port.

$$Dopt = \sqrt{[(A/V)*\{(U+S)/T2\}+U]*(1/R)} \quad \text{..... (1)}$$

where

D=The ship's deadweight

U+WD=Ship's fixed cost per day (U AND W are two constants)

S+GD=Ship's variable costs, excluding port expenses (S and G are constants)

RD2 = Ship's running cost per day in port (R=constant)

T1=Number of days at sea

T2=Number of days in port

T1=A/V, where

A = Distance covered in miles

V=Speed in knots

Equation 1 reveals:

1. Less time the ship lies in port (t2 is small), larger will the optimum shipment's size.
2. If port turn rounds in a certain trade are slow, then the smaller the optimum shipment will be.
3. If the cargo, a ship will carry in a certain trade is difficult and time consuming to handle in port (e.g. timber), the optimum size of the ship will be less than for the carrying of other easily handled cargos.

4. But in as much as the cargo is easy to load on board and to land and in as much as there are no narrow limits on the handling capacity of the shippers and the receivers (e.g. oil, ore), the most economic size of ship for the relevant steaming distance will be considerably greater.
5. Wherever port expenses are steeply progressive with the ship's size, the smaller the optimum ship's size will be.
6. The longer the steaming distance is, the larger the optimum ship will be – other things remaining unchanged
7. But in as much as the cargo is time consuming to handle in port, port turn rounds are slow, it may be that on long steaming distance one uses a smaller ship than on a shorter distance, where the time in port is short.
8. Wherever the steaming distance is 'a', and the time spent in port t2 are given, a raised (high) speed for the ship (v knots) make a smaller dimension of ship (in dead weight) more economic.

Shippers' Perspective

The objective of a shipper is to minimize the logistics cost. The logistics cost comprises cost of transfer of goods from hinterland to a given port. A shipper would prefer a port with lowest cost. However, a port has a constraint in terms of total cargo it can handle per annum, i.e., the capacity. Thus, in event of cargo flow exceeding a particular port's capacity would then move through other ports. The objective function is expressed in terms of equation 2.

$$\text{Min } Z = \sum i€K \sum j€L \, C_{i,j}(Q_i, j€L \, X_{i,j}(Q)/Q_i) \times X_{i,j}(Q)x \qquad (2)$$

Equation 2 refers to the objective of minimizing the logistics cost between all hinterlands and ports.

$$\text{Subject to: } 0 \leq Q_i \leq W_i \text{ for all } i€K \qquad (3)$$

Where

Qi -The capacity of Port i set by the port planner, $i \in K$; Q is the vector composed of all Qi's;

Z – The total generalized logistics cost between all hinterlands and ports;

K – The set of all ports in this problem;

L – The set of all hinterlands in this problem; (For simplicity, from here on, “hinterland” means to all shippers within a hinterland region.)

$X_{i,j}$ – The quantity of freight that is transported between Port i and Hinterland j, where i€K and j€L;

$C_{i,j}$ – The logistics cost per unit freight between Port i (i€K) and Hinterland j (j€L), which

is a function of Qi and Σ, j€L $X_{i,j}(Q)/Q_i$

Wi – The maximum capacity constraint of Port i ($i \in K$), which is usually determined by the physical and geographical restrictions; (Feng, Wang,Zhang,Jiang, 2011).

The above studies show that infrastructure play a significant role in selection of ports. Different types of cargo require different types of equipment. Equipment for similar cargo may vary in terms of handling. That is, a conveyor system for loading cargo such as coal will be different from conveyor system for unloading of coal from ship. Besides, the size of ships varies with type of cargo. The size of

ship manufactured depends also on the ease of its handling cargo in a port. That is, the size of ships is larger for liquid cargo than for dry bulk cargo, as liquid is easier to handle compared to dry bulk cargo. A shipper would always prefer a port with lowest cost. In this paper an attempt has been made to show the importance of cargo mix and its relevant infrastructure on performance and prosperity of a port. So far no significant study has been made in this context to relate cargo mix with port performance.

Cargo Mix in Indian Ports: Case studies

Introduction

Given the type of cargo, the growth varies with effectiveness of ports with respect to its competitors, effectiveness of supply chain in which port are a part of the network; and the total cost of handling cargo at the port. Ghosh, Ravichandran,and Joshi (2011), suggested that in terms of cargo composition, India's basket over the years has diversified from the traditional crude oil and iron ore to other cargo categories including coal, petroleum, oil and lubricants (POL) and containers. In 2009-2010, of the total traffic handled at major ports, POL accounted for the maximum at (31%) followed by containers (18%), iron ore (18%) and coal (13%), shown in Table 3.

Table 3: Key Cargo Categories and Percentage Share

Cargo volumes all ports (MMT)	2009-10 Actual	Percentage of total Traffic
Coal	113	13
POL	320	38
Iron –ore	149	18
Containers	116	14
Others	151	18
Total Cargo	849	100

Source: IPA, Major Ports in India – A Profile (2012)

The cargo composition at the end of 12th Five year plan is shown in Table 4. It demonstrates the changing composition of cargo mix in the country. In some cases there is decreasing trend, for example, iron ore. Even if cargo is expected to grow, this does not assure flow of cargo through a particular port. The cargo may be handled at any port, of the country, that appears to be viable in terms of volume and interest of the trader to route the cargo through the port. For example crude oil that moved through Haldia now is moved through Paradip port. Its oil jetties are left redundant.

Table 4: The Cargo Composition at the End of 12th Five Year Plan

Commodity	Major Ports	Non-Major Ports	Total	Percentage of total Traffic
POL (incl. LNG)	249.49	230.7	480.19	27
Iron Ore	112	78	190	11
Fertilizer & Fertilizer Raw Material	22.57	8.6	31.17	2
Coal	158.1	280.9	439	25
Containers	268.5	100	368.5	21
Others	135.4	117	249.4	14
Total	943.06	815.2	1758.26	100

Source: Commodity-wise Traffic at Indian Ports by the end of Twelfth Five Year Plan (2016-17) retrieved from https://data.gov.in/node/95512/download, 21.01.2018

This paper aims at studying such strategic issues related to cargo mix of two ports of India namely the New Mangalore port and Haldia Dock Complex.

New Mangalore Port

The minor port of Mangalore, till 1980, was one among the 19 ports in the state of Karnataka. It had long maritime history. A number of committees were appointed to suggest ways and means for the development of the minor port into a major one. The important ones among them are the Ports technical committee in 1946, the West coast major ports development committee in 1948 and the Intermediate Ports Development Committee in 1958.The last Committee, after a detailed study of the economic, engineering, navigation and traffic aspects relating to the Karnataka ports recommended Mangalore for development as a deep sea all-weather port. The reasons for its recommendations for Mangalore were the availability of infrastructural facilities, existence of rich mineral deposits and other resources in the hinterland and long maritime tradition (Ray, 1993). In 1979-1980, that is, before constitution of the port trust board in 1980, it handled 9.02 lakh tonnes of cargo. Comparative traffic for the years 1981-82 and 1991-92 shows five time increase from 16.43 lakh tones to 82.74 lakh tones. In 2001-02, it rose to 175.01 lakh tones and touched the figure of 329.41 lakh tones in 2011-12.

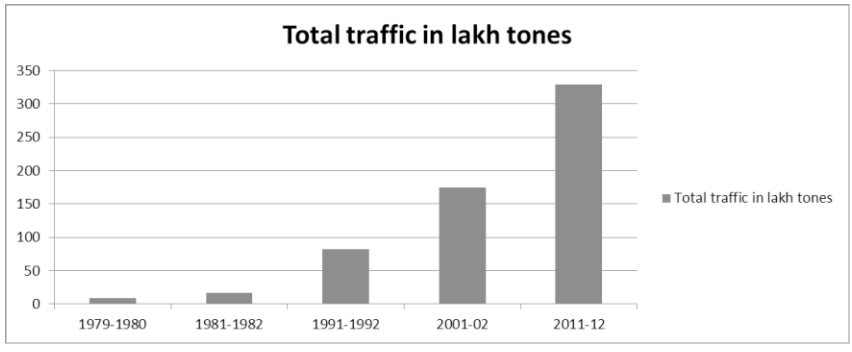


Figure 1: Total traffic handled in Mangalore Port over the years

New Mangalore is basically a bulk commodity port. Bulk cargoes like iron ore, crude, POL products, and coal constitute 90% of the total traffic projected in the Master Plan, which was prepared by the Indian Port Association and was ready by 1985. The share of the other cargo is only 10%.

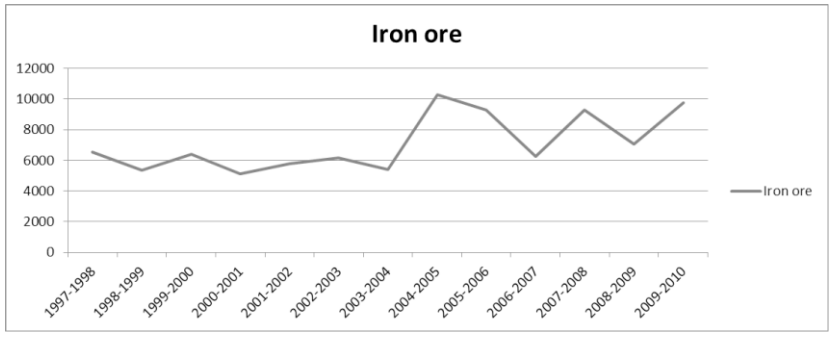


Figure 2: Share of Iron Ore Handled by the Mangalore Port

The above data shows that as in 2010-2011, iron ore is one of the major export items from the port. Any restriction or ban on iron ore fines or lumps could impact ports and terminals. The ban on iron ore mining during the period July 2011 to April 2013, led to considerable drop in iron ore exports from the port. The volume of iron ore fines came down from 5.4 million tonnes in 2009-10 to 0.9 million tonnes in 2010-11

The cargo share of POL over the years is given below. In 1990-1991 oil traffic was just 0.6 MT (POL products) against the projection of 4.5 MT. This was because the refinery did not come up and there was no import of crude or export of POL products. Import of POL products continued

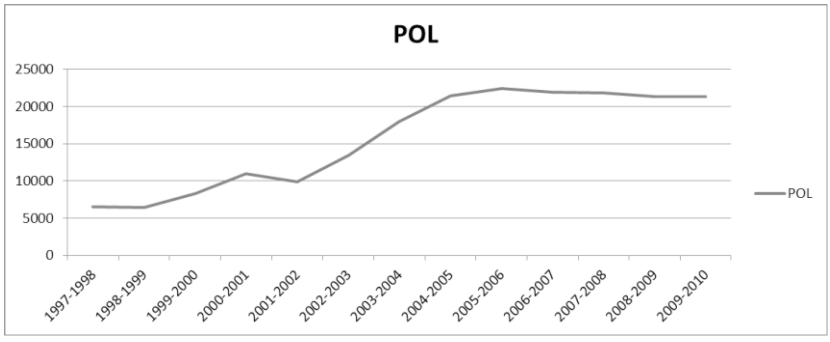


Figure 3: Share of POL Handled by the Mangalore Port

Coal also consttitutes the major part of the cargo mix. For the import of coal a separate jetty was constructed at the west of the ore berth. As the import of thermal coal, was very good, a coal berth with mechanical handling facilities should be developed, after viable linkage with coal fields and thermal plants

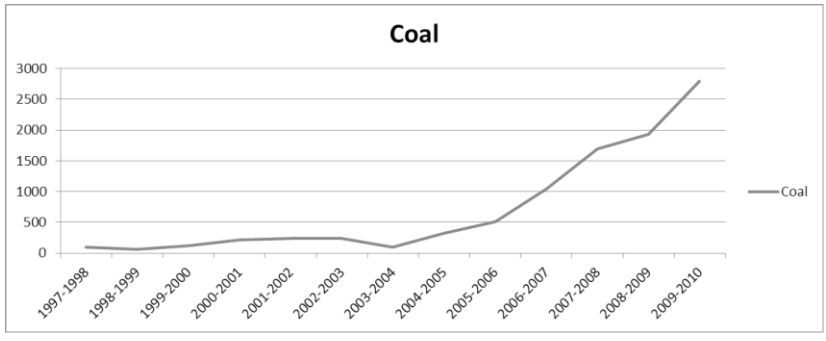


Figure 4: Share of Coal Handled by the Mangalore Port

In 1990 four additional berths were built for handling dry bulk and break-bulk excluding iron ore. Two additional berths were introduced in 1995 and 2000 respectively. Berth number 4 was used as container berth. (Ray, 1993)

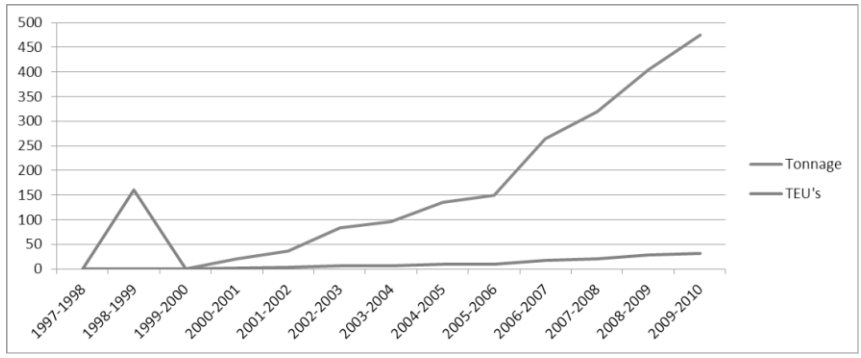


Figure 5: Share of Container Handled by the Mangalore Port

As on 2014 the iron ore terminal ready since 2010 never handled the cargo. The company then decided to convert the iron ore terminal to coal terminal with an estimated expenditure of 160 Million USD (Business Today, 03.01.2014). Iron ore handling in New Mangalore port reduced from 1.5 MMT (million metric tonnes) in the year 2014-15 to 0.5 MMT in 2015-16.

2.1.2 Haldia Dock

During the 1950s, the search was on for a suitable location of a port down the river Hooghly near the estuary which would not have the problem of navigability and would provide adequate draft for big vessels. Haldia is situated 104 km, from Calcutta and is near to the sea. Due to the increase in oil import through large oil carriers, a modern and deep drafted oil jetty was necessitated. Haldia was recognized as outlet providing facilities for large oil and ore carriers. It became operational in the year 1968, under the Kolkata Port Trust. Kolkata Port Trust, thus, had two dock systems, namely, the Kolkata Dock System (KDS) at Kolkata and Haldia Dock System (HDC) at Haldia. Table 5 shows the cargo handled vis-à-vis the capacity at Haldia.

Table 5: Cargo handling in Haldia Dock System

(Figures in the brackets denote number of berths. BJ=Barge Jetty)

Sl.No.	Cargo	Capacity in MMT (Million Metric Ton)	Cargo handled in 2009 - 10 MMT
1.	POL	17.00(3+2 BJ)	9.38
2.	Iron ore	6.00 (2)	7.684
3.	Coal	7.00 (2)	7.525
4.	Container	4.00(2)	2.010
5.	General cargo	12.7 (8)	6.399

The bulk of cargo composition was crude and POL (petroleum, oil, liquid) till few years back. This accounted for 45% of the total cargo. Haldia Dock Complex has four river side oil jetties which handle crude, POL products and liquid ammonia. Jetty No. 1 has connecting pipelines to Haldia refinery, Barauni refinery, and fertilizer plants of Hindustan Fertilizer Corporation and Hindustan Lever Limited. However the share of POL declined over the period of time. (Ray 1993). The share of POL handled by the Haldia Port over the years is given below.

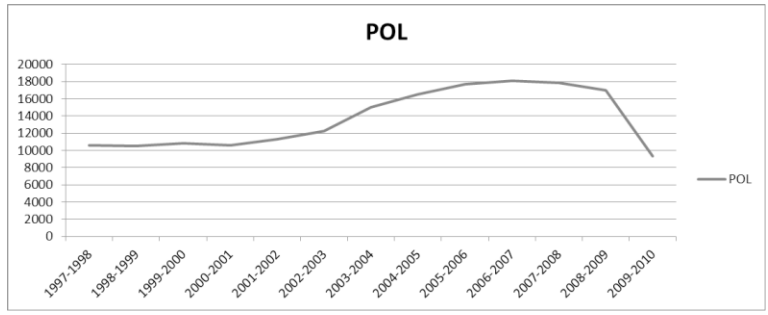


Figure 6: Share of POL Handled by Haldia Port

The Indian Oil Corporation Ltd. is a major client of Haldia Port. Although there was strong opposition, from the Kolkata Port Trust and the West Bengal government, but IOC decided to go ahead with the Paradeep-Haldia pipeline project to carry crude. This had affected both Haldia and Kolkata, docks. That resulted in the decline of the share of POL from 2005-2006 onwards.

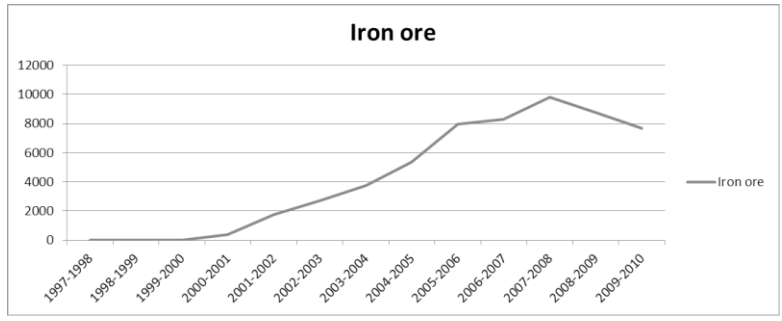


Figure 7: Share of Iron Ore Handled by Haldia Port

Iron ore handled by Haldia dock over the years are shown in the above figure. This cargo started flowing only after 2000 and started declining since 2008-2009. This decline is owing to reduction in imports of iron ore by steel makers of China. The demand for steel from Chinese manufacturers decreased due to economic slowdown. The decrease in demand of iron ore clubbed with ban of iron ore mining in India led to the reversal of flow of iron ore. Haldia Dock, primarily an iron ore exporting port started handling import cargo. The dock handled 0.86 MMT of iron ore as import cargo in the year 2015-16. The facility in Haldia dock was meant for handling export, and hence was rendered redundant for unloading operations.

Coal forms an integral part of the cargo mix. Thermal coal is shipped to Tamil Nadu. TISCO and SAIL mainly import coking coal in increasing quantity through their captive berths. Fig 10 shows the handling of coal over the years.

ISSN - 0974-7869 (Print)
ISSN - 2395-6771 (Online)

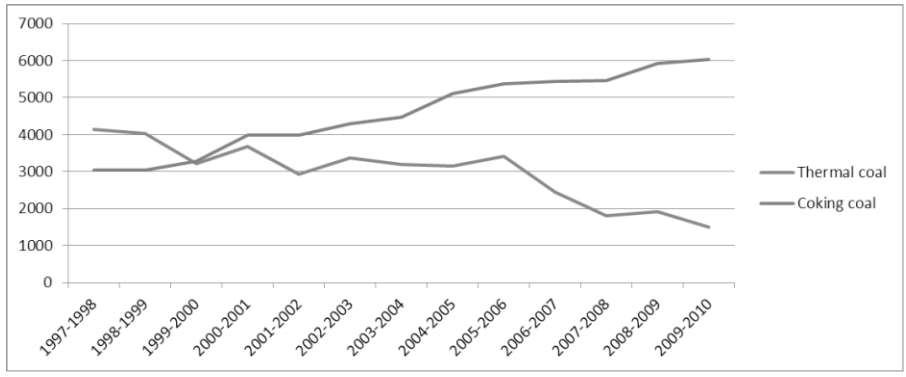


Figure 8: Share of Coal Handled by Haldia Port

The share of container handled by Haldia port is shown in the following table:

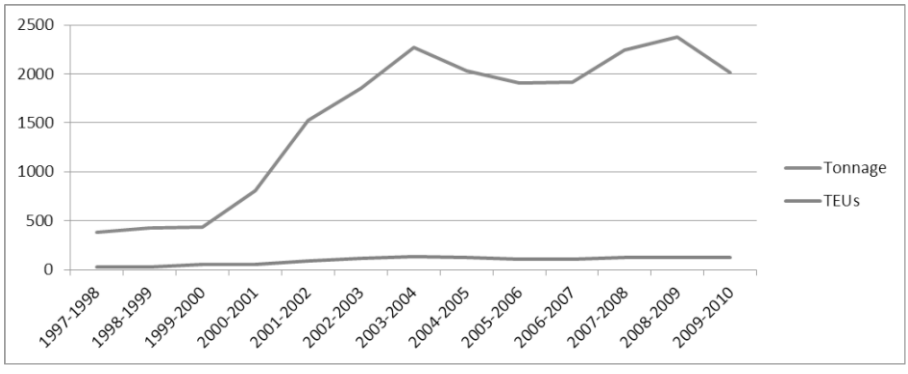


Figure 9: Share of Container Handled by Haldia Port

Analysis and Discussions

The case of New Mangalore port and Haldia dock discussed above can be analyzed from operational, economic, administrative and global perspectives.

Operational Perspective: Bulk cargo berths cannot be used for handling containers as their infrastructure requirements are different. Hence iron ore berths at New Mangalore would stand redundant once its exports from the port stop. It can be used for handling other bulk cargoes such as coal, however linkages with coal fields or appropriate infrastructure needs to developed. There are already coal handling facilities in the port and hence utilization of the iron ore berths for coal can only be partial. A long term strategy should be drawn up to ensure adequate return on assets (ROA). New Mangalore port has draft of thirteen (13) meters i.e. allowing bulk vessels to be handled at the port. New Mangalore port can accommodate ship of DWT up to 1 lakh tons. This would enable the port to accommodate coal carriers along with container vessel of Suezmax category. The existing equipment such as re-claimer and ship loader meant for iron ore handling can be used for coal handling, while addition equipment to suit the changed cargo mix need to deployed.

Economic Perspective: The demand for a particular cargo can be seen from economic perspective

as well. Say, for example, the Haldia dock may like to plan its future investments based on future cargo-mix of the port. It handles thermal coal meant for power plants in Tamil Nadu. Hence whether the cargo mix continues to remain unchanged can be studied from its future demand. The demand of electricity is increasing over the years in India. Figure 10 shows the demand for power over the years.

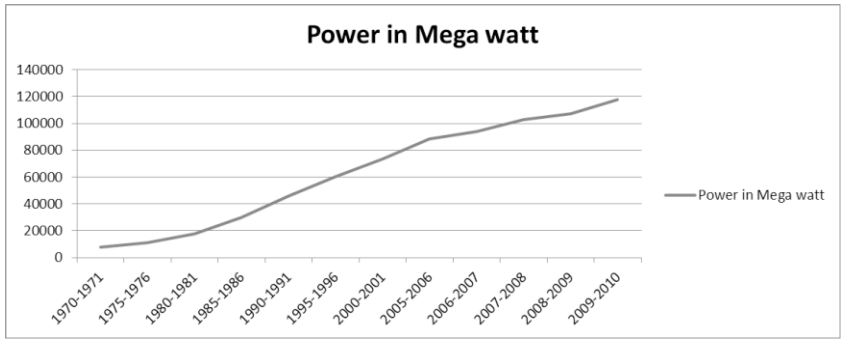


Figure 10: Demand of Thermal Power over the Years

As coal is one of the ingredients for the thermal power plant, so the flow of coal has to be increased to meet the demand. Figure 11 shows the demand for coal over the years.

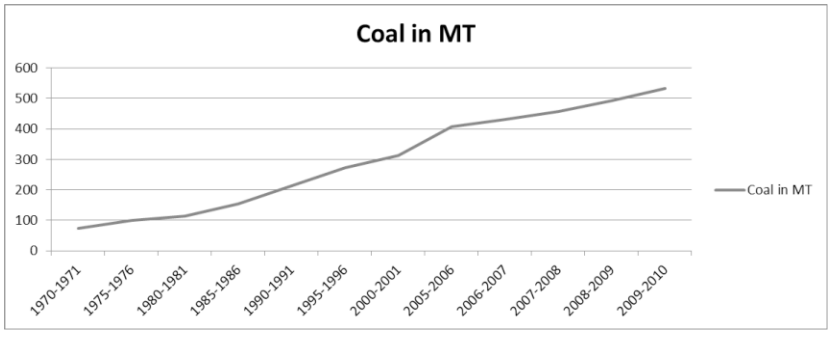


Figure 11: Demand of Coal over the Years

The demand for coal and demand for power has a strong correlation of 0.99.

Container is one of the important item of the cargo mix of the above two ports. The GDP (gross domestic product) reflecting country's economy bears an association with container handling in the ports. They have a strong corelation of 0.97. GDP of India has been increasing over the years justifying the expected growth in container handling. Hence, the ports may consider enhancement of their container handling facility.

Administrative perspective: New Mangalore operates under the aegis of Ministry of shipping, Government of India. Government of India can initiate action for creating coal and container handling facilities at New Mangalore port. However, Private Public Partnership can be explored for creating facility for cargo handling. In both the cases the entities will have to operate under the Major Port Trust Act 1963 and subsequent laws enacted regarding private participation in major ports of India. The cargo handling facility by either Government, private or jointly would have the basic objective of maximizing the stake holders wealth. The power plants and steel plants of Government of India are

major stake holders of these operations. The ports should aim at fulfilling their requirements. However, the tariff cannot be freely set as the same on the cargo and vessel are regulated by the TAMP (Tariff Authority of Major Ports). It is a regulatory body under The Ministry of Shipping, Government of India, whose major objective is to ensure that monopoly of port services leading to excessive tariff at one end and inadequate return on operation of port facilities causing losses to authority are avoided i.e. it looks for rationalization of port charges. Hence, the private or government agencies or joint operations by them will have to operate under the constraints of Major Port Trust Act (1963) and subsequent amendments and major regulations of TAMP.

Global Perspective: Ports being interface for international trade, its activities are significantly determined by the global economy. In case of economic slowdown at national and global level, import and export of goods are affected. The ports may experience low utilization of its assets during economic slowdown. While, may fall short in terms of infrastructure and cargo handling at times of economic boom. In addition, change in technology, resolutions taken in global forums and un-toward incidents may lead to temporary or complete diversion of flow of cargo from a port.

Conclusion

The above analysis leads to the following conclusions:

i. Ports need to earmark their cargo mix as different types of cargo require different infrastructure. Shift in cargo may lead to either complete or partial redundancy of assets. For example, oil jetties are not suitable for handling of dry bulk cargo, while conversion of dry bulk berth to container berth or vice versa, would require higher investments and significant restructuring; else efficiency would suffer.

ii. Demand of a cargo in a region is not the demand for the mode of transport. This can be observed from the case of POL transport from Paradeep to Haldia, which once moved by ships now being transported through pipelines. The port should draw up long term strategy to effectively utilize the oil jetties. Conversion of oil jetties to other category of cargo is a distant possibility. The future of iron ore also does not seem to be bright and as such the focus should shift to coal as the country is poised to increase its power generation from coal fired plants. The port should enhance its productivity and reduce turn round time to remain attractive to coal carriers. Or else inspite of demand for coal in that region or in the hinterland the cargo may not move by the port, instead make take alternate routes as in case of POL. Though the growth of containers are promising in the region, Kolkata port is already specializing in containers and being sister organization of Haldia may not allow Haldia Dock Complex to venture fully into container handling. In addition conversion of bulk handling berths to container berths would be a difficult proposition. Port also needs to construct concrete yards to sustain the container stacking and operation of container handling equipment. Haldia port should enhance marketing and sales promotion effort for utilizing the berth for handling chemical, liquidified gas such as LNG. It can act as a hub for eastern and northern region and also for land-locked countries such as Nepal and Bhutan.

iii. New Mangalore has the option of converting iron ore berths into other bulk handling cargo berths such as coal berths. The port can also explore the possibility of setting up container terminal to enhance container handling effectively. The viability of such recommendations can

be assessed from the following perspectives.

iv. Change in national and global policies may lead to change in cargo mix of a port. Ports need to adopt flexible technologies to meet the change in cargo mix.

The above conclusions lead to the following propositions:

a. Cargo mix determines port infrastructure, capacity and performance.

b. Shift in cargo mix lead to change in infrastructure and viability of a port.

c. Scope for further work: A further study on these ports using optimization models may be carried out that will reveal the right cargo mix.

References

- Bruun P, (1989). Port Engineering, Vol I, Gulf Publishing Company.
- Business Today, (2014), (http://www.businesstoday.in/sectors/energy/ban-on-iron-ore-mining-and-exports-in-karnataka-goa/story/202008.html, accessed on June 8, 2018.
- Clark, X., Dollar, D., & Micco, A. (2004). Port efficiency, maritime transport costs, and bilateral trade. Journal of Development Economics, 75(2), 417-450.
- Feng. X, Wang. W, Zhang.Y and Jiang. L (2011). Optimization of Capacity of Ports within a Regional Port System", pp.1-14, presented in TRB Annual Meeting.
- Ghosh. A, Ravichndran. K, Joshi. N (2011). Indian port sector: Growth plans ambitious but uncertainty hangs over implementation, published in ICRA Rating Services.
- IPA (Indian Port Association), (2010). Major Ports of India - A profile: 2009 – 2010, New Delhi.
- IPA (Indian Port Association), (2011). www.ipa.nic.in, 01.08.2011, accessed on June 8, 2018.
- IPA (Indian Port Association), (2010). Major Ports of India - A profile: 2015 – 2016, New Delhi.
- IPA (Indian Port Association), (2010) Major Ports of India - A profile: 2016 – 2017, New Delhi.
- Murphy, P. R., & Daley, J. M. (1994). A comparative analysis of port selection factors. Transportation Journal, 15-21.
- Murphy, Paul R; Daley, James M; Dalenberg, Douglas R, (1992). Port Selection Criteria: An Application of a Transportation, Logistics and Transportation Review; Vancouver, Vol.28,Iss.3.
- Notteboom, Theo. E., & Rodrigue, Jean-Paul., (2007). Port regionalization: Towards a new phase in port development, Maritime Policy & Management, 32:3, 297-313, DOI: 10.1080/03088830500139885.
- Notteboom, T. (2008). The Relationship between Seaports and the Inter-Modal Hinterland in Light of Global Supply Chains, OECD/ITF Joint Transport Research Centre Discussion Papers, No. 2008/10, OECD Publishing, Paris, http://dx.doi.org/10.1787/235371341338.
- Oram, R. B., and Smith, N. Skene., (1965). Cargo Handling and the Modern Port , A volume in The Commonwealth and International Library of Science, Technology, Engineering and Liberal Studies, 161495th Edition, ISBN: 978-0-08-011305-0.
- Ray. A (1993). Maritime India: Ports and Shipping, pp.364-384, published by Pearl Publishers, Kolkata.

- Slack, Brian., (2006). Containerization, inter-port competition, and port selection, Maritime Policy & Management, 12:4, 293-303, DOI: 10.1080/03088838500000043.
- Tongzon, J. L. (1995). Determinants of port performance and efficiency. Transportation Research Part A: Policy and Practice, 29(3).
- Tongzon, Jose L, (2009). Port choice and freight forwarders, Transportation Research Part E: Logistics and Transportation Review, Volume 45, Issue 1.
- Yeo, G. T., Roe, M., & Dinwoodie, J. (2008). Evaluating the competitiveness of container ports in Korea and China. Transportation Research Part A: Policy and Practice, 42(6).

OORJA
ISSN - 0974-7869 (Print)
ISSN - 2395-6771 (Online)

E-LEARNING: PREPARING INDIA FOR 21ST CENTURY EDUCATION

Ms. Kirti Choudhary, Research Scholar, Banasthali Vidyapith, Jaipur
Prof. P. K. Sharma, Director, School of Commerce & Management, Vardhman Mahaveer Open University, Jaipur

Abstract

Internet has marked the beginning of a new digital age. Education has crossed the four walls of the classroom and is now delivered through cloud based virtual classrooms. In developing countries like India education is getting transformed with e-learning. E-learning is at a nascent stage in India but it has a vibrant future. The present study first discusses about the online education system prevailing in India. Then the study focuses on the various initiatives taken by MHRD in partnership with public and private organizations towards the developments of online education in India. Further the study discusses about the key drivers of e-learning in India. The study also focuses on various challenges like lack of motivation and awareness, accessibility, delivery mode, quality teachers and infrastructure faced by e-learning in India. In the end few suggestions have been made regarding the successful implementation of e-learning in India.

Keywords: E-learning, Online Education, Technological Infrastructure, e-content, Information and Communication Technology.

Introduction

The accelerated advancement in information and communication technology has given space for new academic paradigm, which will have a deep impact on the social and economic development of a nation. E-learning has emerged as the most imperative competency of the 21st century. E-learning or Electronic learning refers to a learning methodology supported by information and communication technology tools like computers, multimedia and web.

E-learning has a huge potential in developing countries like India, but its adaption is very slow Pande, D., Wadhai,V.M. & Thakre, V.M. (2016). In the last few years government of India has launched several central and state specific schemes to include various internet based tools in education like cloud based virtual classrooms and universities Saxena, N. (2017). Smart boards, digital platforms, smart classrooms have almost made the chalk and duster an extinct phenomenon. The smart classroom market in India is expected to grow at a CAGR of more than 20% from 2016 to 2020 as reported by a recent research report from Technavio. Another study reports that 85% of educational institutions in India consider it important to promote an educational environment which has a proper mix of technology and education. Smart education in India is expected to escalate with a CAGR of 16.76% and the gross enrollment ration is expected to rise to 30% by 2020. These developments will boost the growth of online education in India Mohanta, N. (2017, May 11).

Objectives

To study about the status of present online educational system in India.

To study about the various initiatives taken towards the development of e-learning in India.

To focus on the key factors that helps in development of e-learning in India.

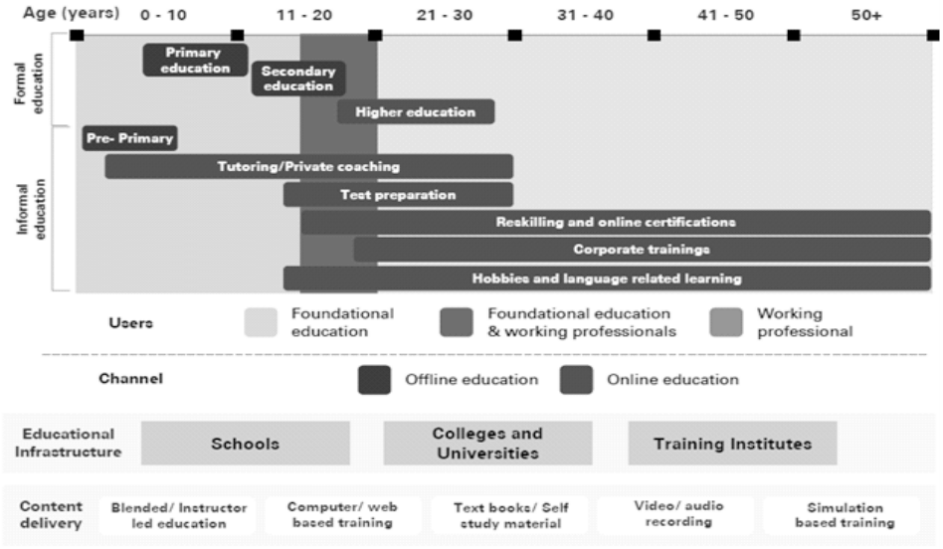
To focus on various challenges involved towards enhancing e-learning education in India.

Research Methodology

The focus of the present study is to gain an insight about e-learning trends in India. For this purpose secondary data has been collected. Secondary data comprises of collecting relevant information and data form research papers, journals, websites and published reports.

The Educational System in India

A multi-layered formal educational system prevails in India with approximately 260 million students enrolled in nearly 1.5 million schools and 39,000 colleges catering 27.5 million UG and 4 million PG students.



Source: KPMG in India's research and analysis 2017

Figure 1: Educational System

According to AISHE 2016-17 there are 864 universities in India, out of which 488 are General, 114 Technical, 67 Agriculture and Allied, 52 Medical, 19 law, 13 Sanskrit and 9 Language Universities and the remaining are other categories. In addition to one Central Open University, 13 State Open University and, one State Private Open University, there are 117 dual-mode Universities in India out of which maximum (17) are in Tamil Nadu alone.

The Indian online market is the second largest in the world, after China with about 460 million internet users. The anticipated internet users by 2021 are 635.8 million. Even with such a large base of internet users, only 26% population in India access Internet. In 2016 the internet penetration was around 31%. The online education market in India is 247 million USD in 2016. It is expected to grow to USD 1.96 billion in the next five years. Online higher education in India serves as a direct alternative to the present offline educational system. In 2016 the online higher education market in India was USD 33 million, which is expected to grow at a CAGR of 41% and become USD 184 million by 2021.

E-learning in India

E-learning in India expanded with the launch of public internet access by VSNL in the year 1995. A major revolution in e-learning was marked by the formation of the National Taskforce on Information

Technology and Software Development in the year 1998, Sharma, R. C. (2005). IGNOU took several initiatives towards internet based education by launching Virtual Campus Initiative in the year 1999. Educational channels named Gyandharshan and Gyanvani were launched for students to help them explore numerous e-learning programs. eGyanKosh, a depository of course content in the form of audio, video and text was made available for students. Flexilearn, a free of cost, self-learning platform was introduced for learners. MEdRC established in 1993 and MedVarsity established in April 2000 were initiatives towards blended learning approach in the field of medicine. Computer graphics, multimedia technologies and e-lectures enabled doctors to pursue education in medicine. National Program on Technology Enhanced Learning subsidized by MHRD, Government of India and executed by seven IITs and one IIS was initiated in the year 2003. It focused on higher technical education, professional education, distance learning, open and consistent learning, Mishra, S. (2009).

The biggest accomplishment was the launch of "EduSAT", the first Indian communication satellite propelled on 20th September 2004. This was the first educational satellite which provides nationwide satellite based two way communications to classrooms for transmitting educational material. The satellite consists of one-way video and two-way audio facility. Amrita University, Yashwantrao Chavan Maharashtra Open University (YCMOU) and Visvesvaraya Technological University are the three major universities imparting satellite based distance education facility in India.

In the 11th five year plan the Department of Information Technology, Ministry of communication and IT declared various e-learning R&D activities in India. The focus was on building a progressively configurable nation-wide multi-gigabit system linking every single educational organization, Research and Development centres, hospitals, libraries and agricultural organizations. The National Knowledge Network founded in 2009, connects more than 1500 institutions including 14 IIT's, 12 NIT's, 10 IIM's, 37 DRDO establishments and various other colleges, institutions, universities and research centres through its Virtual Classroom programs. All the branches of engineering and technology at various IIT's, NIT's, IIIT's, Amrita University, Dayal Bagh University have been included in this mission of establishing virtual labs, NME-ICT (2016), VLABS, IIT Bombay (2016).

The breakthrough in the field of online education was the “Digital India Mission” launched by Prime Minister Narendra Modi in 2015. The vision of this mission is to transform India into a digitally empowered society and knowledge economy. Digital India Mission has added new dimension to the education sector in India. MHRD and AICTE in collaboration with Microsoft developed a Massive Open Online Courses (MOOCs) Platform called SWAYAM (Study Webs of Active Learning for Young Aspiring Minds). This platform enables students residing in any part of the country to take online courses taught by best teachers in the country, thus making quality education available to all. SWAYAM is developed to achieve three fundamental principles of Education policy viz. access, equity and quality. SWAYAM PRABHA is a collection of 32 DTH channels and is responsible for transmitting good quality academic programs, throughout the day using GSAT-15 satellite. Fresh content of 4 hours is available daily and is repeated six time a day. The content is provided by NPTEL, IITs, UGC, CEC, IGNOU, NCERT and NIOS and the channels are uplinked from Bhaskaracharya Satellite Application Centre and Geoinformatics (BISAG). Another innovative initiative under “Digital India” theme is National Academic Depository (NDA). NDA is a unique 24X7 online store house for academic awards viz. degrees, mark sheets, certificates etc. The platform not only authenticates the academic awards but also provides easy access and retrieval.

Apart from the above mentioned initiatives MHRD and NMEICT have undertaken several state and national level projects to support e-learning in India. According to a report on National convention on Digital Initiatives for Higher Education, 2017 major e-learning projects as follows:-

a) National Programme on Technology Enhanced Learning (NPTEL):- MHRD in collaboration with 7 IITs has undertaken this project to support continuous and open learning for underprivileged students who are deprived of higher technical and professional education.

b) National Digital Library (NDL):- NDL is a pilot project sponsored by MHRD and coordinated by IIT, Kharagpur. This virtual repository enables lifelong learning in all disciplines. It has been developed to assemble, preserve and distribute content to students of the country from school level to PG level including technical education.

c) e-Shodh Sindhu:- This portal provides access to around 15,000 international electronic journals and e-books to all the higher education institutes in India.

d) Virtual Labs:- These labs provide a platform to students to learn basic and advanced concepts of the practical subjects at UG and PG level through remote experimentation. Around 6 lakh students have access to 1515 experiments in engineering and science disciplines across 205 virtual labs established across the country.

e) e-Yantra :- The objective of this project is to create utility based robotics applications in the field of agriculture, defense, manufacturing and services industries.

f) Campus Connectivity:- Under this project 600 universities have been connected through 1 Gbps optical fiber and 22026 colleges have been connected through 10 Mbps bandwidth. Under Digital India initiative MHRD has decided to make campuses of Universities WiFi enabled. IITs, IIMs and NITs have already established WiFi Campuses.

g) Talk to a Teacher:- This project was initiated by National Mission on Education through ICT, developed by IIT Bombay and funded by MHRD for improving teaching skills of the teachers in engineering and science subjects. Almost eighty thousand teachers have been trained through virtual classroom using A-View (Amrita Virtual Interactive e-learning World).

h) e-Acharya:- Also called Integrated e-Content Portal, is the repository of NMEICT. More than 70 projects on e-content are being developed in Science, Arts, Engineering etc. through various Universities and colleges.

I e-Kalpa:- Another MHRD/NMEICT project for creating a digital learning environment for design students in India.

j) The free and Open Source Software for Education (FOSSEE) :- It is an initiative by IIT Bombay for encouraging the use of open source software in educational institutes.

k) e-Vidwan:- It is an expert database of profiles of scientists/researchers and other faculty members employed at various educational institutions and Research & Development organizations in India. It is maintained by INFLIBNET and NMEICT.

Various learning approaches have been made available to boost e-learning in India. These approaches can only yield fruitful results when their aims and objectives are precisely defined, Rawal, S. Pandey, U. S. (2013). The wave of e-learning is spreading at a fast pace in India.

Key Drivers of e-Learning in India

India is the second largest e-learning market after US. Many factors like rapid internet penetration,

availability of low-cost mobile phones, young and tech savvy workforce have opened huge opportunities for e-learning platform in India, Nag, Arindam. (2015). The e-learning sector in India is expected to reach $ 1.29 billion by the end of 2018, growing at a CAGR of 17%, which is twice as fast as the global growth. According to a recent McKinsey research, the Digital India initiative if executed properly will increase the Indian GDP by 20-30% in the next 10 years, Krishnakumar, P. (2017). This is just the beginning of a new digital age.

The main drivers of e-learning in India are as follows:-

- E-learning provides a low cost alternative to education in developing countries like India.
- E-learning provides quality education to budding learners or students.
- The increase in smart phone base drives technology adoption among masses on India.
- Government is taking various digital initiatives for the adoption of e-learning in India.
- In the last few years there is a significant increase in the disposable income of the Indian households.
- Growing demand for industry relevant training by the young job seeking population of India.

Challenges (Findings of the study)

E-learning is a buzzword around the world, but in India it has gained momentum a decade ago. In-spite of several initiatives taken by government and several private players the growth of e-learning is slow and steady because of various challenges faced by online education in India. Some of the challenges are:-

1. Lack of awareness: - Making students aware about the benefits of online education is a big challenge. E-learning can be more engaging and effective than traditional or distance learning.
2. Unavailability of qualified teachers: - Lack of trained and experienced teachers who can engage students in multimedia teaching tools like smartboards, audio-visual aids is another challenge for online education in India. Further, the availability of skilled teachers in rural India is much more challenging.
3. Accessibility to digital infrastructure: - More than half of the Indian population (67%) resides in rural areas. Lack of technological infrastructure, poor internet connectivity, accessibility to appropriate mobile devices is still major issues in rural India. Internet penetration in India is just 15%. Absence of digital tools hampers the reliability of online courses.
4. Lack of good quality e-content: - Converting books into e-books is just not sufficient for enhancing the quality of e-content. Lack of expertise and shortage of finance towards developing e-content is one of the most challenging tasks for education providers.

Lack of motivation among students, absence of a country wide policy for online education, insufficient private players and digital illiteracy are various other challenges for the adoption of e-learning in India.

Suggestions

The future of Indian education will depend on e-learning, but it has a long way to go. Integration of technology and education is just not the solution for the successful implementation of e-learning. The government of India along with private organizations needs to work towards creating awareness

among students and teachers about the benefits offered by new learning methodologies like personalized learning, gamification etc. E-learning is a powerful tool to bridge the educational gap between rural and urban India.

1. Workshops, seminars and training programs on using digital tools and technology in education needs to be conducted by public and private organizations to create awareness and motivation among rural and urban masses.
2. The teachers and trainers of the 21st century have to become learners i.e. they must empower themselves with modern ways of teaching. Teachers need to become flexible, forward-looking and curious like their students.
3. Computer and internet is still a luxury for majority of the Indian population living in rural areas. The brick and mortar infrastructure needs to be equipped with modern technological infrastructure.
4. The e-books or the e-course material needs to focus on interactivity along with quality. The government needs to collaborate with IITs, NITs, other leading universities and the corporate sector to develop high quality e-learning content.

Conclusion

The students of the 21st century can be divided into two groups: Generation Z (born between 1995 and 2009) and Generation Alpha (born since 2010). India has the world's largest Gen Z and Gen Alpha population in the world i.e. the youngest population of about 356 million between the age group of 10 to 24 years, Nair, D. (2016). So transforming educational system through e-learning is the need of the hour as it is estimated that India will face a shortage of 250 million skilled workers by 2022. Various public and private organizations are heading towards this transformation. Government is investing huge sums of money towards distance learning providers and e-teachers in order to educate India smartly.

References

- Pande, D., Wadhai,V.M. & Thakre, V.M. (2016). Current trends of E-learning in India. International Research Journal of Engineering and Technology, Volume 3.
- Saxena, N. (2017). A study of proliferation of digital literacy in Indian higher education sector. International Education and Research Journal, Volume 3, Available at: <http://ierj.in/journal/index.php/ierj/article/view/832>, accessed on July 14, 2018.
- Mohanta, N. (2017). Is e-Learning the future of Indian education system. Retrieved from <https://www.franchiseindia.com/education/Is-eLearning-the-future-of-Indian-education-system.9345 >, accessed on July 14, 2018.
- KPMG (2017). Online education in India: 2021. A study by KPMG in India and Google.
- MHRD (2017). All India survey on higher education 2016-17. Ministry of Human Resource and Development.
- Internet usage in India- Statics and facts. (n.d.). Retrieved from <https://www.statista.com/topics/2157/internet-usage-in-india/>, accessed on July 14, 2018.
- Sharma, R. C. (2005). E-Learning in India. Encyclopedia of Distance Learning. IGI Global, chapter 111, 772-778.

- IGNOU. Indira Gandhi National Open University. Retrieved from <http://ignou.ac.in>, accessed on July 14, 2018.
- MEdRC. Medical Education Research Centre for Educational Technologies. Retrieved from <http://www.smarteach.com/medrc/default.html>, accessed on July 16, 2018.
- MedVarsity. Retrieved from <http://www.medvarsity.com>, accessed on July 10, 2018.
- Mishra, S. (2009). E-Learning in India. International Journal on E-Learning, Vol 8(4), 549- 560.
- NPTEL. Retrieved from <http://nptel.iitm.ac.in/>, accessed July 10, 2018.
- EDUSAT. Retrieved from <http://elearning.vtu.ac.in/edusat.html>, accessed on July 8, 2018.
- MIT. Retrieved from <http://www.mit.gov.in/content/e-learning>, accessed on July 12, 2018.
- NKN. National Knowledge Network - Virtual Class Rooms. Retrieved from <http://www.nkn.in/index.php>, accessed on July 10, 2018
- NME-ICT (2016). National Mission on Education through Information and Communication Technology. Retrieved from <http://www.nme.bsnl.co.in/>, accessed on July 15, 2018.
- VLABS. Virtual Labs. Retrieved from <http://www.vlab.co.in/>, accessed on July 15, 2018
- IIT Bombay (2016). IIT Bombay Virtual Labs. Retrieved from <http://vlabs.iitb.ac.in/>, accessed on July 10, 2018.
- Swayam. Retrieved from <https://swayam.gov.in/about>, accessed on July 1, 2018.
- Swayam Pranha. Retrieved from <https://www.swayamprabha.gov.in/index.php/about>, accessed on July 5, 2018.
- NAD. Retrieved from <http://nad.gov.in/about.html>, accessed on July 21, 2018.
- National Convention on Digital Initiatives for Higher Education. Available at <9208605_Brochure-(National-Convention-on-Digital-Initiatives-for-Higher-Education).pdf>
- Rawal, S. Pandey, U. S. (2013). E-Learning: Learning for Smart Generation Z. International Journal of Scientific and Research Publications, 3(5).
- Nag, Arindam. (2015). Digital India: What it Means to E-Learning. Available at <https://blog.commlabindia.com/elearning-design/digital-india-elearning >, accessed on July 21, 2018.
- Krishnakumar, P. (2017). Transforming India's learning process: How Digital India can serve as an effective tool for education <https://www.firstpost.com/business/ transforming-indias-learning-process-how-digital-india-can-serve-as-an-effective-tool-for-education-4078667.html >, accessed on July 21, 2018
- Nair, D. (2016). With the world's largest Gen Z population of 356 million, will the 'next big disruptor' be from India? Retrieved from <https://yourstory.com/2016/06/india-gen-z-next-disruptor/>], accessed on July 15, 2018.
- e-Learning Market Trends & Forecast (2017). A report by Docebo 2017-2021.

OORJA
ISSN - 0974-7869 (Print)
ISSN - 2395-6771 (Online)

A POSTERIORI ANALYSIS OF PUBLIC WELFARE SCHEMES (PWS) IN THE BRICS COUNTRIES

Mr. Sundeep Kumar, State Project Coordinator and Nodal Office, Center for Electronic Governance, Jaipur
Ms. Monica Sharma, Associate Professor, MBA Department, Malaviya National Institute of Technology, Jaipur
Mr. A K Bhardwaj, Professor, MBA Department, Malaviya National Institute of Technology, Jaipur
Dr. Govind Sharan Dangayach, Professor, MBA Department, Malaviya National Institute of Technology, Jaipur

Abstract

The concept of welfare state has always drawn attention of policy makers, academia and researchers. The state is looked upon as a care taker of the poor and the downtrodden. As a welfare state, the government has to act as a policy maker that defines the principles of welfare state keeping focus on the poor and the deprived. It has to find problems to the solution of poverty, inequality and unemployment. With the growing population, the problem of unemployment is escalated. To curb these socio economic problems, every government formulates Public Welfare Schemes (PWS) according to its unique socio economic milieu. This paper identifies the PWS implemented in Brazil, Russia, India, China and South Africa (BRICS) and their effectiveness, outcomes and pitfalls. The research concludes that the basic objective of PWS i.e. employment was fulfilled, target groups were employed to a large extent, but launching of these schemes has given rise to corruption and increase in the fiscal deficit of governments.

Keyword- Public Welfare Schemes, BRICS, Employability, Bolsa Familia Programme, MGNREGA, Social welfare.

Introduction

Equitable distribution of wealth, minimum subsistence level to the poor and meaningful employment is generated through a strong social safety system frame with the idea of PWS. According to Devereux and Solomon (2006) Employment creation programmes are an important policy instrument, especially in low- and middle income countries where rates of unemployment and underemployment are high, the employment intensity of growth is low or even declining, and macroeconomic shocks or natural disasters can undermine livelihoods and require income-stabilising interventions. Public welfare Schemes are known to support all citizens with reference to public aid. Generally, welfare is undertaken by the government in developing countries. According to McCord (2008), PWS includes all the activities which execute the wages payment in return of labor whether through the state or by any state agent. To meet the subsistence need, PWS is supposed to offer basic income to all workers.

Review of Literature

Two major elements which surround PWS are social security and assistance that include social medical treatment of, literacy home facility and security of the poor. There is an intensive debate on social welfare as now a days state has a significant role in provision of social welfare. Through normal market mechanism there is shortage lack of self-motivated contributions (Olson 1971) and involvement of private sector is the basic reason argued why the government should become the part of provision of welfare.

McCord (2008) states that employability promotion technique is basically a mix of supply-side

constraints to employment. This type of PWS promotes work place experience and skills formation among the unemployed and advances the employability of workers. These schemes are principally adopted by organization of OECD (Economic Cooperation and Development) countries from time to time when unemployment is high.

Arts and Gelissen,(2002)conclude that real welfare states are hardly ever pure types and are usually hybrid cases; and that the issue of ideal-typical welfare states cannot be satisfactorily answered given the lack of formal theorizing and the still inconclusive outcomes of comparative research.

Antonopoulos (2007) observes that in most countries private sector has not been able to absorb surplus labour especially the poor unskilled labour. Public works programs and employment guarantee schemes in South Africa, India, and other countries provide jobs while creating public assets. In addition to physical infrastructure, an area that has immense potential to create much-needed jobs is that of social service delivery and social infrastructure.

Castles (1994)observes that undue reliance on state expenditure necessarily leads to a distorted understanding of outcomes because spending is generally only one of several routes to a given policy objective and different countries use different mixes of policy instruments to achieve similar policy objectives.

Clayton and Pontusson (1998) argue that a sharp deceleration of social spending has occurred in most OECD countries since 1980, that welfare states have failed to offset the rise of market-generated inequality and insecurity, and that welfare programs have become less universalistic. They stress the distributive and political consequences of market-oriented reforms of the public sector.

Baker (1991) defines public welfare as schemes that assist the people to meet their health, social, educational, economic needs.

Jodha (1986) views that Common property resources (CPRs), though neglected by policy makers and planners, play a significant role in the life of the rural poor. There is significant contribution of CPRs towards the employment and income generation for the rural poor, i. e. labour and small farm households.

Parvez (1977) observes that he Rural Social Services (RSS) community-based project is considered to be a major breakthrough in extending Department of Social Welfare (DSW) services to the under privileged in Bangladesh.

Need for the Study

The need for the present study arose from the question as to how effective these PWS programs have been in implementation and have helped in eradication of poverty in Brazil, Russia, India, China and South Africa (BRICS).The research has a threefold objective to:

- Identify popular public welfare schemes in the BRICS countries.
- Critical evaluation of major country specific welfare schemes.
- Observe skills development in the PWS of BRICS countries.

Methodology

The researchers feel that a descriptive analysis will be suitable for studying the different PWS of the

BRICS countries. The BRICS countries have different government and social set up along with different cultures and environment setup. Voluminous literature has been written on Public Welfare Schemes. The researchers view that their work will more suitable with a descriptive approach. As the different schemes in BRICs nations have been the under study, the work will add knowledge base of the researchers who wish to go ahead with PWS in BRICS or other emerging economies. This study will be ready reference for the researchers as implementation, failures and outcomes of PWS in the BRICS have been discussed in this paper.

Public Welfare Schemes (PWS) of BRICS Countries

Public Welfare Schemes of Brazil

In terms of population as well geographical area Brazil is the largest country in the South American continent. Government of Brazil has initiated different types of PWS from year to year to help and promote human nature. Different types of PWS from different divisions with their main outline are described inTable1.

Table 1 : Brazil Public Welfare Schemes

S.No.	Public Welfare Schemes	Division	Foundation year	Main Outline
1.	Scheme of Bolsa Escola Programme	Division of education	1995	CCT (Conditional Cash Transfer) for poor children belonging to poor families
2.	Scheme of (GMFIP) Guaranteed Minimum Family Income Programme	Division of education	1995	To give family allowance to poor children
3	Scheme of Progresa	Division of education	1997	CCT(Conditional Cash Transfer) for poor families children
4.	Scheme of (PGRM) Programme for a Guaranteed Minimum Income	Division of Employment	1998	To give family allowance as per the attendance of children in the school
5.	Scheme of Bolsa Alimentacao (BA)	Health division	2001	Initialization of pregnant women health program
6.	Oportunidades scheme	Child labour and education division	2002	As per attendance of children in school to get family allowance
7.	Scheme of Auxilio Gas (AG)	Social protection division	2002	Cooking gas subsidies transfer by unconditional cash
8.	Fome Zero (FZ) scheme	Social protection division	2003	Target of no hunger
9.	Program do CartaoAlimentacao (PCA) scheme	Social protection division	Starting from 2003	Preserve food for poor people
10.	Familiaprogramme	Protection of security division	2003	Mixing of PCA and BE programme

Public Welfare Schemes of Russia

Russia is also a developing country. Since the beginning of the twentieth century the Russian Government had been implementing public welfare programs. Russia was the only country that was immune from the Great Economic Depression of the world that lasted for four years from 1929-1932. Different types of PWS from different divisions with their main outline are described in Table 2.

Table 2 : Russian Public Welfare Schemes

S.No.	Public Welfare Schemes	Division	Foundation year	Main Outline
1	Pensions for aged people	Social division	1994	Pension to senior citizens
2	Homeless for poor people	Social division	1995	Shelter to homeless people
3	Worker Protection and Benefits for people	Development division	2002	Gives maternity leave to mothers
4	Social support of people	Social protection division	2013-2020	To reduce poverty of people living below poverty line
5	Promotion of job (ALMPs) scheme	Job division	2013-2020	To give employment to low income group

Public Welfare Schemes of India

India is also a developing country like South Africa, China, Brazil and Malaysia. It is also one of the largest populated countries among all BRICS countries. Government of India is running different types of PWS to remove poverty from the country. Different types of PWS from different divisions with their main outline are described in Table 3.

Table 3: Indian Public Welfare Schemes

S.No.	Public Welfare Schemes	Division	Foundation year	Main Outline
1.	Swarna jayanti Gram Swarojgar Yojana (SGSY) scheme	Employment division	1999	Generation of self-employment
2.	National Rural Livelihood Mission(NRLM) scheme	Job division	2011	To reduce poverty in poor families
3.	Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) scheme	Job division	2005	Manual work for rural people
4.	Rashtriya SwasthyaBima Yojana (RSBY) scheme	Health division	2008	Gives health insurance for families living below poverty line
5.	Sarva Shiksha Abhiyan (SSA) scheme	Education division	2000	Providing school education for village children

Public Welfare Schemes of China

In a recent survey china is the second largest economy of the world and largest population around 1.5 billion out of all BRICS Countries. Different types of PWS from different divisions with their main outline are described in the Table 4.

Table 4 : Chinese Public Welfare Schemes

S.No.	Public Welfare Schemes	Division	Foundation year	Main Outline
1.	State Provision Scheme	Social security division	1978	Gives retirement benefits, free medical treatment and free education and housing facility for people
2.	New Cooperative medical Scheme (NCMS, rural) scheme	Social protection division	2003	Provides farming facility, information to reduce population and provision for medical treatment reimbursements
3.	Enterprise provision scheme	Social protection division	2006	It provides labour insurance and welfare schemes for villagers
4.	Social pension insurance scheme	Social protection division	2002 urban 2009 rural	Gives subsidiary to old people
5.	Rural collective provision scheme	Social protection division	2008	Gives medical treatment, pain relief and pension schemes for farmers
6.	Yigong-daizhen programme scheme	Employment division	1985	Gives employment for poor people
7	Di Boa Urban scheme	Employment division	1999	Gives minimum wages guarantee to urban poor
8.	Di Boa Rural scheme	Employment division	2006	Gives minimum wages guarantee to rural poor

Public Welfare Schemes of South Africa

South Africa has fantastic growth in infrastructure industry and is the most advanced country of the African continent. Different types of PWS of South Africa from different divisions with their main outline are described in the Table 5 below.

Table 5 : South African Public Welfare Schemes

S.No.	Public Welfare Schemes	Division	Foundation year	Main Outline
1.	Reconstruction and Development Programme (RDP) s	Construction division	1994	Addresses socio-economic issues by providing social services to alleviate poverty through infrastructure projects
2.	Child Support Grant (CSG)	Social Division	1998	To distribute social security cash
3.	(ASGISA) scheme	security division	2006	To transfer community security money
4.	Phase II(EPWP) scheme	Employment division	2009	Giving job in six years
5.	(GERS) scheme	Job division	1996	Guaranteed employment to villagers
6..	Expanded Public Works Programme(EPWP) Phase I scheme	Employment division	2001	Guaranteed employment to villagers

Findings

On the basis of several research reports published by government, semi government and private agencies, the implementation effectiveness and efficiency of the PWS were analyzed and examined. The researchers observe that the famous Brazilian Bolsa Familia Programme (BFP) has attracted criticism from within the country on account of direct cash transfer to the poor families. The critics opine that the poor will not use the money wisely as they are less educated. So there could be misuse of the funds so transferred for e.g. in drug abuse, alcoholism and buying non necessary things. Moreover, the BFP program is not widely accepted by the Brazilian society. It is apprehended that it could impede the search for employment and encourage lethargy.

However many Brazilians feel that the program has potentials to wipe out abject poverty and to reduce inter-generational transmission of poverty. On the basis of surveys conducted by the Government of Brazil it has been observed that the money is spent on item of necessity in the order of food, school supplies, clothing and shoes. An advanced study conducted by The Federal University of Pernambuco concluded that families living in rural areas spend 87% of money in buying food.

It is apparent that the program has been effective in curbing absolute poverty from Brazil. An econometric evaluation report of Bolsa Escola reveals that there has been a positive impact on school attendance and significant reduction in child labour. Yoon et al. (2001) observe that the World Bank also opines that there is a significant reduction in child labour exploitation among children benefitted under the BFP.

About the PWS of Russia, the researchers are of the view that the New Russian Pension Scheme is one of the most widespread and effective schemes as it has increased social security and has increased level of comfort living of the old citizens. The pension scheme also includes people working in the private organizations. The main drawback however is that, it does not include women and people living below poverty line. Moreover it has increased the fiscal burden of the government.

Another PWS of Russia which is Employment Promotion Scheme focuses on increasing

employment opportunities and skills development. It also imparts education and vocational training to the people for skills development. The main impediment in effective implementation of this program is the geopolitical barriers as many states of the Russian federation have contrasting ethnic and religious traits and beliefs.

The Swarna Jayanti Gram Swarojgar Yojana of India is rural based employment generation scheme started in 1999 with the aim of providing self-employment opportunities to the rural poor and bringing the people living below poverty line above the line. Under the scheme, the villagers form Self Help Groups (SHGs) and form activity clusters on the basis of common skills and aptitude and locally available resources. These SHGs are supported and trained by the NGOs and other government agencies. The researchers have observed that the scheme has a positive impact on the target people. Since its inception in 1999, nearly twenty-two lakh SHGs have been formed comprising around thirty-five lakh people. The scheme has benefitted thirty-one lakh self-employed individuals.

The other popular PWS of India is Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA). The scheme started with the objective of enhancing livelihood security in rural areas by providing at least 100 days of guaranteed wage employment in a financial year, to every household whose adult members volunteer to do unskilled manual work and creation of assets such as roads, canals, ponds and wells. We have observed that the scheme has been severely criticized on a number of grounds. First, a lot of money is engulfed by the middlemen and the workers are not paid in full. The workers are paid for the work which they do not do and is shown on papers only as the workers also get a share for this deceit. Second, the program has drawn severe criticism that it has not led to any asset creation and has increased the fiscal deficit of the government. Economists like Jagdish Bhagwati and Arvind Pangariya view that MGNREGA is an inefficient instrument of shifting income to the poor.

China launched Yigong-*daizhen* Scheme in the 1980s as a part of nation's rural poverty eradication program. The funding in this program is allocated to the local governments with a view to construct local infrastructure with the involvement of the local labour. The program is aimed at development in four key rural infrastructure areas namely rural land construction and irrigation system construction, road construction, drinking water facilities improvements and small-scale water conservation. The local labour is paid on hourly basis.

The program however had a negative impact on the village population of China. Chau et al.(2014) observe that that the introduction of *Yigong-daizhen* projects in the villages stimulates the outflow of migrant workers from affected villages.

The PWS of South Africa Expanded Public Works Programme (EPWP) was launched in 2004with a view to providing poverty and income relief through temporary work for the unemployed. It is a key government initiative which includes priorities of the Cape government into account such as decent work & sustainable livelihoods, education, health; rural development; food security & land reform and the fight against crime & corruption. The EPWP creates work opportunities in four sectors, namely, Infrastructure, Non-State, Culture and Social Environment. The Programme is an effective tool for labour absorption and transfer of income to the poor families. It is aimed at creating work opportunities for the unemployed by expenditure on goods and services. It employs workers on a temporary or ongoing basis by government, contractors or by the non-governmental organizations (NGOs).

On the basis of reporting by the government and non governmental agencies we observe that the programme fails to cover all the skills of the local labour. The scheme also had failed to cover all the poor households. Moreover lack of job card system has led to implementation failures in the scheme in many pockets of the South Africa.

Conclusion

Public Welfare Schemes are implemented in all BRICS countries. Table 1 to 5 depict that objectives of PWS were similar in all the BRICS countries. The basic objective of PWS i.e. employment was fulfilled. It is also observed that most of the people join particular PWS due to working of their relatives already in that scheme.

The objective of research was to identify popular public welfare schemes implemented in the BRICS countries. It is evident from literature that many authors view that PWSs are effective in welfare of the poor. Accordingly, it is compulsory to evaluate the ongoing PWS benefits.

The study also reveals that after working in a particular scheme the beneficiaries became self-employed. To make poor people self-employed, it is necessary to provide them skills so that they can become self-dependent. Providing opportunities of skills development and its use is the most powerful and effective way to help the poor.

Further Research

The present study aims at studying Public Welfare Schemes and their effectiveness in the BRICS. The other countries are also have PWS running under different names there is a scope of further research in other non BRICs countries of the world as public welfare schemes are also implemented in these countries. Further, the spatial development of the region where these schemes are implemented can also be brought under the purview of research as the effectiveness of a PWS also indicates whether the target region is brought at the same level of development vis a vis the other developed regions of the country. The human development index value during pre implementation and post implementation period can also be compared to gauge the level of effectiveness of these schemes.

References

- Arts, W., & Gelissen, J. (2002). Three worlds of welfare capitalism or more? A state-of-the-art report. Journal of European social policy, 12(2).
- AyubArslan, RazzaqAdeel, Aslam Muhammad Salman and IftekharHanan (2013): A Conceptual Framework on Evaluating Swot Analysis as the Mediator in Strategic Marketing Planning Through Marketing Intelligence. European Journal of Business and Social Sciences, Vol. 2, No. 1.
- Agarwal, R., Grass, W., and Pal, J. (2012). Meta-SWOT: Introducing a new strategic planning tool. Journal of Business Strategy, 33(2).
- Baker, R. L. (1991). The Social Work Dictionary. Silver Spring, National Association of Social Workers.
- Badodiya S.K., M.M. Sadhana, Patel and Daipuria O.P. (2012). Impact of Swarnajayanti Gram SwarojgarYojana on Poverty Alleviation. Indian Res. J. Ext. Edu. 12 (3).
- Castles, F. G. (1994). Is expenditure enough? On the nature of the dependent variable in

- comparative public policy analysis. Journal of Commonwealth & Comparative Politics, 32(3).
- Cawson, A. (1982). Corporatism and Welfare. London, Heinemann. Devereux, S. and Solomon, C. (2006), \Employment Creation Programmes: The International Experience, ILO Issues in Employment and Poverty Discussion Paper No. 24.
- Chakrabarti, Saumya (2013). A Comparative Study of some of the Employment Guarantee Schemes across the Developing Countries. Working Paper Series: No. 2, 2012-2013.UGC SAP (DRS-I), Department of Economics and Politics, Visva-Bharati.
- Clayton, R., & Pontusson, J. (1998). Welfare-state retrenchment revisited: entitlement cuts, public sector restructuring, and inegalitarian trends in advanced capitalist societies. World Politics, 51(1).
- Centre for Science and Environment (CSE) (2008). NREGA, Opportunities and Challenges, Centre for Science and Environment, New Delhi.
- Chau, N.H., Kanbur, R. & Qin, Y. IZA J Labor Develop (2014). 3: 4. https://doi.org/ 10.1186/2193-9020-3-4. accessed on May 5, 2018.
- Deka Ajay Kumar, Hazarika Padmalochan (2013). Generation of Income of Rural Poor through Swarnajayanti Gram SwarozgarYojana (Sgsy) –A Study Relating to Kamrup District (Rural) of Assam. IJcaes special issue on Basic, Applied & Social Sciences, Vol. III.
- Dreze Jean and Khera, Reetika (2009). The battle for employment guarantee, Frontline, 26 (01), Jan. 03-16.
- Dev, S. (1995). India's (Maharashtra) employment guarantee scheme: Lessons from long experience. In von Braun J. (Ed.). Employment for Poverty Reduction and Food Security. Washington, D.C. International Food Policy Research Institute.
- Jane Andrews and Hinson Helen (2008). Graduate Employability, 'Soft Skills' Versus 'Hard' Business Knowledge: A European Study. Higher Education in Europe, Vol. 33, No. 4, December 2008.
- EPWP (2005). Expanded Public Works Programme (EPWP): Fourth Quarterly Report (1 April 2004 – 31 March 2005), Pretoria: Department of Public Works.
- Betcherman, Gordon, Karina Olivas, and Amit Dar. (2004). Impact of Active Labor Market Programmes: New Evidence from Evaluations with Particular Attention to Developing and transition Countries. Washington, D.C.: World Bank, Social Protection Discussion Paper Series 0402.
- Dreze, Jean (2008). NREGA: Ship without Rudder? The Hindu, July, 2008.
- Dar, Amit and P. ZafirisTzannatos. (1999). Active Labor Market Programmes: A Review of the Evidence from Evaluations, Social Protection Discussion Paper no. 9901, January. The World Bank. Washington, D.C.
- Dutt Polly (2009). Attaining Sustainable Rural Infrastructure through the National Rural Employment Guarantee Scheme in India. Commonwealth Journal of Local Governance Issue 4: November 2009.
- Dreze, Jean (2011). Employment Guarantee and the Right to Work, in Khera, New Delhi: Oxford.

- Ritika (ed.) (2011). The Battle for Employment Guarantee, New Delhi: Oxford.
- Dugarova, E. (2016). The Family in a New Social Contract: The Case of Russia, KazakhstanandMongolia. UNRISD Research Paper.Geneva: UNRISD.
- Fretwell, D.H., J. Benus, and C.J. O'Leary (1999). Evaluating the Impact of Active Labor Market Programmes: Results of Cross Country Studies in Europe and Asia. Social Protection Discussion Paper No. 9915, Washington: The World Bank.
- Godfrey, Martin (2003). Youth Employment Policy in Developing and Transition Countries–Prevention as well as Cure, World Bank Social Protection Discussion Paper Series No. 0320, Washington D.C., World Bank.
- Heckman, J.J., R.J. LaLonde and J.A. Smith (1999). The economics and econometrics of active labour market Programmes, in O. Ashenfelter and D. Card (eds.), Handbook of Labor Economics 3, Elsevier, Amsterdam.
- Gordon Betcherman, Martin Godfrey, Susana Puerto, Friederike Rother, and Antoneta (2007). A Review of Interventions to Support Young Workers: Findings of the Youth Employment Inventory. S P Discussion Paper, No. 0715, the World Bank.
- Greenberg, David H.; Charles Michalopoulos; Philip K. Robins (2003). A Meta-Analysis of Government-Sponsored Training Programmes. Industrial & Labor Relations Review. Volume 57, Issue 1 2003 Article 2.
- H. O. Falola, A. O. Osibanjo, and S. I. Ojo (2014). Effectiveness of Training and Development on Employees' Performance and Organization Competitiveness in the Nigerian Banking Industry. Bulletin of the Transilvania University of Braşov Series V: Economic Sciences Vol. 7 (56) No. 1 .
- International Labor Office (2005). Youth: Pathways to Decent Work, Background Report of the International Labor Conference, 93rd session, Geneva, ILO.
- International Finance Corporation and the World Bank (2006). Doing Business Database.
- International Labor Office (2004). Global Employment Trends for Youth, Geneva, ILO.
- International Labor Office (2006). Global Employment Trends for Youth, Geneva, ILO.
- Jodha, N. S. (1986). Common property resources and rural poor in dry regions of India. Economic and political weekly, 1169-1181.
- Johanson, Richard K., and Arvil Van Adams (2004). Skills Development in Sub-Saharan. Africa. Washington, DC: World Bank.
- Lal R., Miller S., Lieuw-Kie-Song M., Kostzer D. (2010). Public Works and Employment Programmes: Towards a Long-term Development Approach, UNDP Poverty Group Working Paper number 66 June, 2010.
- McCord, Anna (2005). Win-win or lose-lose? An Examination of the Use of Public Works as a Social Protection Instrument in Situations of Chronic Poverty' presented at the Conference on Social Protection for Chronic Poverty, Institute for Development Policy and Management University of Manchester.
- McCord, Anna (2004). Policy Expectations and Programme Reality: The Poverty Reduction and Labour Market Impact of Two Public Works Programmes in South Africa' ODI/ESAU Working

paper 8.

- McCord, Anna (2007). EPWP Mid Term Review: Component 1 International PWP Comparative Study, SALDRU, University of Cape Town.
- McCord, Anna (2008). A typology for Public Works Programming, Natural Resource Perspectives #121.
- Mehrotra, Santosh (2008a). National Rural Employment Guarantee Act 2005, presentation at the Citizen City International Symposium on ELR, Rio de Janeiro.
- Miller, Steven (1992). Remuneration systems for Labour Intensive Investments: Lessons for Equity and Growth, International Labour Review, Vol. 131, 1992, No. 1.
- Mehrotra, Santosh (2008b).NREG Two Years On: Where do we go from here? http://www.indiaenvironmentportal.org.in/files/2_38.pdf, accessed on May 8, 2018
- Menon, SudhaVenu (2008). Right to Information Act and NREGA: Reflections on Rajasthan, http://mpra.ub.uni-muenchen.de/7351/1/MPRA_paper_7351.pdf
- Mitchell W (2008). Assessing the wage transfer function and developing a minimum wage framework for the Expanded Public Works Programme in South Africa, Centre for Full Employment and Equity, University of Newcastle, Newcastle Australia.
- Mukherjee ArghyaKusum and Kundu Amit (2011). Impact of Swarnajayanti Gram SwarojgarYojana (SGSY) on Health, Education and Women Empowerment.MPRA Paper No. 33258, posted 9, 14:15 UTC.
- National Urban Livelihoods Mission; Ministry of Housing and Urban Poverty Alleviation (MoHUPA) (2015). Training Module on Employment through Skill Training & Placement for Capacity building of field functionaries of NULM.
- Negi R S., Singh Santosh and Dhanai Rekha (2015). Impact Assessment of MGNREGA: Study of Pauri Garhwal District of Uttarakhand, India. International Journal of Multi disciplinary and Current Research, Vol.3 (Jan/Feb 2015 issue), ISSN: 2321-3124.
- Kayak, Nadine and Khera Reetika (2009). Women workers and perceptions of the National Rural Employment Guarantee Act in India, http://www.faoilo.org/fileadmin/user_upload/fao_ilo/pdf/Papers/24_March/Nayak_-_formatted.pdf accessed on 8 May, 2018.
- Oakley, P. (1999). Organisation, Contracting and Negotiation in Development Programmes and Projects: A study of current practice at the community level. ILO, Geneva.
- Prasad Dr. H. A. C., Sinha Dr. N. K. and Khan Riyaz A. (2013). Performance of Major Social Sector Schemes: A Sample Survey Report. Working Paper No. 3/2013-DEA.
- Romero, Simon and William Neumann (2013). Sweeping Protests in Brazil Pull In An Array of Grievances. New York Times.
- Rani M. Pamela (2015). Impact of Mgnrega on Life of People and Reforms. International Journal of Multi disciplinary Advanced Research Trends ISSN : 2349-7408 Volume 2, Issue 3, March 2015.
- Salazar-Xirinachs, Jose M.(2008). Social Security and Employment: Perspectives on the Linkages, Presentation at the Asia-Pacific Regional High Level Meeting on Socially Inclusive

Strategies to Extend Social Security Coverage, New Delhi, India

- Shekhar Shreyes (2014). MGNREGA-Programme Details, Critical Analysis and Alternatives. Researching Reality Summer Internship 2014.Working paper: 325.
- Stahlberg, Stéphanie Gimenez (2013). India's latest and largest Workfare Program: Evaluation and recommendations.
- UpenKonch (2015). Self-Employment Opportunities of Women through Self Help Groups (Shags) Under Swarnajayanti Gram Swarojgar Yojana (SGSY) in Assam. International Journal of Applied Research2015; 1(10): 665-671.
- Venial, Amish and Siddhartha (2010). Bank Payments: End of Corruption in NREGA? Economic & Political Weekly EPW April 26, 2008.
- Wag (2010). Youth Entrepreneurship Strategy: An action plan for Wales 2010-15, Welsh Assembly Government/ HMSO.
- Wolff J and Nivorozhkin A (2008). Start me up: 'The Effectiveness of a Self-Employment Programme for Needy Unemployed People in Germany', IAB Discussion Paper 2008/20, InstitutfürArbeitsmarkt- und Berufsforschung, Nuremberg.
- Yens, K. and Li, S. (2005). Matching Job Skills with Needs, Business Times.
- YAP, Yoon-Tien, Guilherme Sedlacek and Peter Orazem. (2001). Limiting Child Labor Through Behavior-Based Income Transfers: An Experimental Evaluation of the PETI Program in Rural Brazil. World Bank, Washington, DC.
- Zhu Ling and Jiang Zhongyi (1995). Yigong-Daizhen in China: A New Experience with Labor-Intensive Public Works in Poor Areas', Chapter 4 in J. Von Braun (ed.), Employment for Poverty Reduction and Food Security, Washington D.C.: IFPRI.

OORJA
ISSN - 0974-7869 (Print)
ISSN - 2395-6771 (Online)

THE IMPACT OF SOCIAL ADVERTISING CAMPAIGNS IN SHAPING THE BEHAVIOUR OF THE PEOPLE IN RAJASTHAN

Dr. Atul Gupta, Assistant Professor, Department of Management Studies, Swami Keshvanand Institute of Technology, Jaipur

Abstract

Advertising is the language of marketing. It has an influential, pervasive and powerful influence on society. According to ASCI (Advertising Standards Council of India) advertising is 'any paid form of communication focused to the society or a section of it, the imperative of which is to persuade the opinions or behaviour of those to whom it is focused.' The connection between society and advertising has always come in for a lot of flak. All over the place in the world, system of advertising has been arraigned of adding iniquities in the world critic that change the marketing system on the foundation that it supports too much interest in the material belongings. Critics do not view this interest in substance things as a natural state of mind but rather a false want formed by advertisements. It fosters approving perceptions of people about banned products and contributes in enhancing the evils in the society. The present research is such type to study the effectiveness of social advertising in shaping the behavior and attitude of the people. By adhering to the appropriate research mechanisms, the study collected and analyzed data from 500 respondents belong to all the strata of the population covering five major cities of Rajasthan i.e. Jaipur, Bharatpur, Udaipur, Kota. Ajmer. Primary data were used in the study and a descriptive research design was carried out with a structured questionnaire. Data analysis was carried out by using 'F-test' and independent sample 't-test'. The prime findings of the study showed that though some people remain ignorant towards these advertising but in the study it is found that there is significant impact of social advertising campaigns in shaping the behaviour of the People in Rajasthan. The study is of prominent importance as the investment done on these social advertising involved huge financial costs. Not only government but also the private sector companies are following the path of these advertising for promotion their products and organization. So the study got its relevance to analyses the effectiveness of social advertising.

Keywords: Social Advertising, Awareness, Behaviour of People

Introduction

The role of advertising is not restricted to chalk out the promotional plan of the products or services but they also promote social issues and bringing about positive change in the mass population. Now days, we find a lot of advertisements which convey social message of creating awareness among societies. The social service advertising is not a new concept of marketing, but it gained its importance in present times.

Almost every business organization follows some methods as a customs of marketing communication. Commercial advertising is one of the favorite options of marketer for promoting product or services. Social advertising makes use of commercial advertising techniques to promote the acceptance of a behaviour that will inflate the well being of the target audience or society as a whole (Weinreich, 1999). In commercial advertising the stress is on selling the product or service on

the other hand in social advertising major stress in on the change in the behaviour of the people for the betterment. The endeavor of social advertising is entirely based on the welfare of the society by and large. It seeks to influence social behaviours not to benefit the manufacturer or marketer, but to benefit the target people and the general society.

Social service issues, ideas or advertising was promoted and launched by the government and other such not for profit organizations or society. But now in modern days, organizations choose the path of social advertising as a promotional method of marketing. It not only helps in establishing their brand, but also projecting their image of socially responsible company.

Social advertising is one of the most influential tools of mass promotional strategy. They are the indicators of the values that prevail in the society and functioning by way of direction to change. These advertisements raise the social issues which have a major significance from the point of view of the general people and act as a democratic right to the common man. Social Advertising is a means to change public attitude and behaviour in order to bring about positive social change. It is also referred as development advertising, public service advertising, social service advertising, non-product advertising, non-commercial advertising, public interest advertising, and public education campaigns.

Review of Literature

Social advertising plays a very significant and vital role in educating and shaping the behaviour of the people. These advertisements can aid public involvement through supporting issue and transferring awareness, skills, knowledge and technologies to the mass population. Geetanjali Lal (1988) opined that advertising scene in India leads to conclusion that help of advertising is paramounting. Indian social problems are yet to take a start. It's not that advertising of social problems is not taking place, it has its very existence in society but effective use of the medium has not taken place. Kazmi and Batra (2010) suggested that advertising influences ours lives in many unsuspecting ways because of its ability to affect our perception, impressions, feelings, attitudes, and behaviours. . El-Omari (1998) stated that many organizations relate their success with creative advertising campaign following the route of social advertising. Manisha Sharma (2006) captured the effects of advertising to our lives, and mentioned its influence on our purchase decisions. She argued that advertising affects our attitude and leaves an indelible mark on our minds. Sangeeta Sharma and Raghuvir Singh (2009) state that in recent years, the use of attitude upholding as a determining factor of advertising effectiveness has grown its importance. This has resulted from recent effort dealing with product positioning in which product benefits provide the basis for market segmentation. Dr. Sandeep Vij and Dr. Raghbir Singh (2011) in their study mentioned that attitude of consumers towards social advertising is one of the most important determinants of consumers' attitude towards a brand, which in turn affects the purchase decision of the consumers. Marketers should emphasize the informative power of advertisements to boost the positive image of advertising in general. Shalini, Yogita and Atul (2012) studied that social messages are often a central component of public education campaigns designed to raise money, generate awareness, change attitude, and modify behaviours on a variety of pressing social issues.

Objectives of Social Advertising

Every advertisement should have objectives to provide a framework for action. Advertising is a part of

the promotion mix and thus, advertising objectives should be in line with the overall promotional or marketing objectives of a firm. On one hand, the objective of commercial advertising is to increase the sales, on the other hand, the primary objective of social advertising always being to influence the very specific behaviours of audience to accept, modify, abandon, or reject. The three main objectives of social advertising are depicted in figure 1.

Figure 1 : Objectives of Social Advertising

i. **Behaviour Objectives (What marketer wants audience to do):** All social advertising campaigns are designed and planned with a specific behaviour objective in mind. Even if the promoter ascertains that the campaign needs to include supplementary knowledge and belief objectives, a behavioural objective will require to be indentified that these supplementary elements will support. A behaviour objective should be notable different from numerous other planning components. It is not the same as a campaign slogan or message, although it is used to develop both.

ii. **Knowledge Objective (What marketer wants audience to know):** Knowledge objectives are those relating to facts & figure, skills and other inputs which the target audience would find encouraging or essential. The facts and figures are related with the current behaviour to seek the benefits of projected behaviour.

iii. **Belief Objective (What marketer wants audience to believe of feel):** Belief objectives are those relating to attitudes, opinions, feelings or values held by the target audience. The target audience may have present values and believe that the promoter may need to change consecutively for them to act, or target audience may locate that an essential belief is missing or the projected belief can make a big difference.

Research Objectives

The present research has following objectives:

i. To ascertain the impact of age on the effectiveness of social advertising in Rajasthan.

ii. To ascertain the impact of locality on the effectiveness of social advertising in Rajasthan.

iii. To ascertain the association and impact of religion on the effectiveness of social advertising in Rajasthan.

iv. To ascertain the important factors involved in the liking of the social advertising.

Research Methodology

This study aims to measure the impact of social advertising in shaping the behaviour of the people. The research study is exploratory and conclusive in nature, as it tries to measures the awareness, preference and response of the people of Rajasthan region towards social advertising. Based on the studies and review of literature, the present study has been designed to abridge gaps in the existing literature. The study is based on the primary survey and data has been collected from 500 respondents with the help of a well designed, pre-tested structured questionnaire. The convenience method of non-probability sampling technique was used for collection of data from the stated population. People from all the strata of society were included in the survey to make the sample more representative. For data analysis the SPSS tool, version 15 has been used. Table 1 gives the demographic characteristics of the respondents.

Table 1: Demographic Characteristics of the Respondents

	Number of Respondents	Percentage
Age		
18-30	141	28.2
31-50	152	30.4
Above 51	207	41.4
Total	500	100.0
Locality		
Urban	367	73.4
Rural	133	26.6
	500	100.0
Religion		
Hindu	353	70.6
Muslim	90	18.0
Sikh	46	9.2
Christian	11	2.2
Total	500	100.0

Factors Considered for Research Study

To analyse the impact of social advertising campaign in shaping the behaviour of people in Rajasthan few questions were asked to people related to their attitude and behaviour. These questions were based on the aspect related to people's behaviour-framed in different five statements. These statements were examined against the three variables i.e. age, locality and religion. These statements are:

Statement 1: There is no difference between the social advertising and commercial advertising.

Statement 2: Social advertising are even more important in a developing country like India.

Statement 3: I am generally interested in watching social advertising.

Statement 4: Social advertising are very important in creating social awareness in the society.

Statement 5: I have overall good image about social advertising

Hypothesis Formulation

The formulation of hypothesis or propositions is the practical answers to research questions. In other way it is an important step or a tentative assumption in the process of which a researcher wants to test for its logical or pragmatic consequences. In due course, a confirmed hypothesis may become part of the theory or sometimes grow to become a theory itself.

The Major hypothesis of the research is:

H_0: There is no significant impact of social advertising campaigns in shaping the behaviour of the People in Rajasthan.

H_1: There is significant impact of social advertising campaigns in shaping the behaviour of the People in Rajasthan.

As the research proceeds we developed following sets of null hypotheses:

$H_0$1: There is no significant difference in behaviour of people for social advertising in Rajasthan among the different age group towards five statements.

$H_0$2: There is no significant difference in behaviour of people for social advertising in Rajasthan between urban and rural locality towards five statements.

$H_0$3: There is no significant difference in behaviour of people for social advertising in Rajasthan between different religions towards five statements.

For the easy understanding of the research results, we developed five different hypotheses for each statement mentioned above. Each statement has been considered as a hypothesis against the three variables i.e. age, locality and religion. Therefore, total 15 (Five Statements x Three Variables) sub hypotheses have been formulated. Accordingly, the hypothesis numbers have been generated such as $H_0$1(1) to $H_0$1(5); $H_0$2(1) to $H_0$2(5), $H_0$3(1) to $H_0$3(5).

Analysis and Interpretation

Interest of Respondent in Watching the Advertisements: A question was asked from the respondents whether they were interested in watching the advertisements or not.

Table 2: Descriptive Statistics of Respondent's Interest in watching Advertisements

Response	Number of Respondent	Percentage
Yes	444	88.8
No	56	11.2
Total	500	100.0

It can be inferred from the Table 2 that most of the respondent (88.8%) were interested in watching the advertisements while only 11.2% of the respondent were not take any interest in the advertisements. So, the huge investment done by the government, corporate house or any other NGO's would not be a waste. It would intensify their goodwill and also facilitate in shaping the behaviour of the people in Rajasthan.

Reason for Liking Social Advertising Campaign: A question was asked from the respondents about the reasons they like social advertising. The respondents have marked their response on 5 scale matrix. The results were as follows:

ISSN - 0974-7869 (Print)
ISSN - 2395-6771 (Online)

Table 3: Reason for Liking Social Advertising Campaign on 5-Point Scale

S. No.	Statement	Strongly Disagree		Somewhat Disagree		Neither Agree nor Disagree		Somewhat Agree		Strongly Agree	
		No.	%	No.	%	No.	%	No.	%	No.	%
1	Message/Theme is important	36	7.2	72	14.4	116	23.2	154	30.8	157	31.4
2	Celebrity is appealing	58	11.6	84	16.8	121	24.2	178	35.6	157	31.4
3	Music is good	58	11.6	71	14.2	100	20.0	170	34	157	31.4
4	The story is good	36	7.2	60	12.0	73	14.6	163	32.6	168	33.6
5	Timing is right	14	2.8	47	9.4	104	20.8	161	32.2	174	34.8
6	Cathy Slogan	38	7.6	82	16.4	98	19.6	132	26.4	150	30.0

Table 3 depicts that most of the people (157) 31.4% in Rajasthan like social advertising because of the important message/ theme promoted by it. About (174) 34.8% of respondents believe that the timing for promoting the social advertising was right so it clicks in the mind of the audience. Also, out of 500 respondents (157) 31.4% of the respondent believe that it is due the celebrities in the social advertising whose influence works to motivate the people and prefer social advertising. About (38) 7.6% of respondents were belongs to the category of strongly Disagree about the catchy slogan. About (73) 14.6% of the respondents belongs to the group of neither agree nor disagree about the story of the social advertising.

Study of Age Dimension against the Five Statements of People's Attitude

Table 4: Analysis of Variance of Different Age Group Respondents in Rajasthan

Statements	Source of Variation	Sum of Squares	D.F	Mean Sum of Squares	F-ratio	Hypothesis Accepted/ Rejected
Statement 1	Between Samples	17.342	2	8.671	4.753*	$H_0$1(1) Rejected
	Within the Samples	906.586	497	1.824		
Statement 2	Between Samples	10.710	2	4355	2.735*	$H_0$1(2) Accepted
	Within the Samples	973.122	497	1.958		
Statement 3	Between Samples	7.980	2	3.990	2.174*	$H_0$1(13) Accepted
	Within the Samples	912.220	497	1.835		
Statement 4	Between Samples	4235	2	2.118	1.178*	$H_0$1(4) Accepted
	Within the Samples	893.787	497	1.798		
Statement 5	Between Samples	.772	2	.386	.215*	$H_0$1(5) Accepted
	Within the Samples	890.428	497	1.792		

*Significant at .05 level, **'F'** value at .05, (2,497)= 3.01

Study of Locality Dimension against the Five Statements of People's Attitude

Table 5: Statistical Comparison of Five Statements among Urban and Rural Respondents in Rajasthan

Statements	Group	N	Mean	Standard Deviation	Standard Error	t-test	Hypothesis Accepted/ Rejected
Statement 1	Urban	367	2.91	1.362	.071	2.059*	$H_0$2(1) Rejected
	Rural	133	3.20	1.340	.116		
Statement 2	Urban	367	3.19	1.378	.072	.991	$H_0$2(2) Accepted
	Rural	133	3.05	1.474	.128		
Statement 3	Urban	367	3.32	1.368	.071	1.536	$H_0$2(3) Accepted
	Rural	133	3.11	1.322	.115		
Statement 4	Urban	367	3.71	1.326	.069	2.068	$H_0$2(4) Rejected
	Rural	133	3.43	1.367	.119		
Statement 5	Urban	367	2.92	1.312	.068	3.420	$H_0$2(5) Rejected
	Rural	133	3.38	1.352	.117		

*Significant at .05 level of significant 't' at .05(498)=1.97

Study of Religion Dimension against the Five Statements of People's Attitude

Table 6: Analysis of Variance of Different Age Group Respondents in Rajasthan

Statements	Source of Variation	Sum of Squares	D.F	Mean Sum of Squares	F-ratio	Hypothesis Accepted/ Rejected
Statement 1	Between Samples	47.538	6	7.923	4.457*	$H_0$3(1) Rejected
	Within the Samples	876.390	493	1.778		
Statement 2	Between Samples	63.352	6	10.559	5.655*	$H_0$3(2) Rejected
	Within the Samples	920.480	493	1.867		
Statement 3	Between Samples	21.928	6	3.655	2.006*	$H_0$3(3) Accepted
	Within the Samples	898.272	493	1.822		
Statement 4	Between Samples	35.108	6	5.851	3.34*	$H_0$3(4) Rejected
	Within the Samples	862.914	493	1.750		
Statement 5	Between Samples	19.878	6	3.313	1.875*	$H_0$3(5) Accepted
	Within the Samples	871.322	493	1.767		

*Significant at .05 level, **'F'** value at .05, (2,497)= 3.01

Table 7: Consolidated Table of Acceptance/ Rejection of Hypothesis based on Behaviour of people for social advertising in Rajasthan towards Five factors

Statement	Hypothesis No.	Age	Hypothesis No.	Locality	Hypothesis No.	Religion
Statement 1	$H_0$1(1)	Rejected	$H_0$2(1)	Rejected	$H_0$3(1)	Rejected
Statement 2	$H_0$1(2)	Accepted	$H_0$2(2)	Accepted	$H_0$3(2)	Rejected
Statement 3	$H_0$1(3)	Accepted	$H_0$2(3)	Accepted	$H_0$3(3)	Accepted
Statement 4	$H_0$1(4)	Accepted	$H_0$2(4)	Rejected	$H_0$3(4)	Rejected
Statement 5	$H_0$1(5)	Accepted	$H_0$2(5)	Rejected	$H_0$3(5)	Accepted

Study of Action taken by People after Coming across the Social Advertising: To deeply analyse the impact of social advertising in Rajasthan a question were asked to people about the various actions taken by them after coming across the social advertising. The responses of the people were collected in the form of statements on a 5-point scale. These factors are then examined against the three variables i.e. age, locality and religion. These statements and result is provided in the consolidated tables given below:

Table 8: Consolidated Analyses of Action taken by People after Coming across the Social Advertising

Factors	Age	Locality	Religion
Followed instructions Given in the ads	.985	2.927*	2.759
Became more conscious and careful	1.024	2.211*	3.529*
Went out and educated other people	1.609	1.543	3.903*
Looked for more information	.213	.512	1.301
Did Nothing	1.842	2.616*	3.584*

*Significance

Interpretation: From the above table it is clear that the significance of the factor is found for 'Does not follow the instructions' in the Family Type, Occupation and Locality Variable. Also there is significance in 'Did Nothing' and 'Became more conscious and careful' factor among most of the variables.

Thus the overall finding of the study is that there is no significant difference in the attitude of people for social advertising. Most of the respondents even did not react as per the message given in the social advertising. Respondents remain ignorant towards the social advertising. For some factors there exists the difference in the attitude of people but the magnitude of difference is less. Hence, we accept our alternative hypothesis and consequently we reject the null hypothesis of the research i.e. “There is significant impact of social advertising campaigns in shaping the behaviour of the People in Rajasthan.”

Conclusion

Advertising is only one of the constituent of the promotion mix, but it often takes exceptional prominence in the overall marketing mix program. Because of its high visibility and pervasiveness, it is an important medium to spread the awareness about the social issues in the society. Therefore, to change the attitude and behaviour of the people in a positive direction, social advertising holds an important position in the developing country like India.

In short, the value of social advertising can be viewed as a sack of tools or techniques tailored mainly from commercial advertising and applied to issues for the social cause and good. People's attitude is the core of social advertising, because all the efforts of advertisers are directed towards them. To make the advertisement popular or to influence the attitude of the people, understanding the behaviour of mass population and their perspective of people's behaviour in particular become critically important. Behaviour of mass population is the study of individuals, groups, or organizations and the processes they use to select, secure, use, and dispose of products, services, experiences, or ideas to satisfy their needs and wants.

The study indicates that in Rajasthan most of the respondents (88.8%) were interested in watching

the advertisements. It was also analyzed that people believe that 'important message/ theme' (31.4%) promoted by social advertising and 'timing' (34.8%) are the major factor which tends the people for the positive liking of the social advertising. F ration for the statement 2 and 5 is (2.735) and (.215) respectively, which are significant for the age dimension on the people attitude. Similarly, t test for statement 2 and 3 is (0991) and (1.536) respectively, which are significant for the locality dimension on the people attitude. For the religion statement 3 and 5 the F ratio is (2.006) and (1.875) respectively, which are proved significant the people attitude.

Thus the study indicates that there is no significant difference in the attitude of people for social advertising. The social advertising is doing well but there is a long way to go for creating the real impact in the society. Just like any other marketing or promotional campaign, a social advertising campaign works when it is based on good research, good planning, pertinent attitudinal and behavioural models of change, and structural environments facilitate target audience from responding to the campaign.

References

- Agrawal, P. K. (2008). Advertising Management – An Indian Perspective Pragati Prakashan, Meerut.
- Das, Manish and Saha Victor (2018). Impact Assessment of consumer Demographics on Rural Consumers' Ethnocentric Tendencies and Social Comparison Information habits, Indian Journal of Marketing, Volume: 48, Number: 8.
- Dutta, Kirti (2009). Consumer Beliefs and Attitudes towards Advertising Media: a Study of Indian Women, Indian Journal of Marketing, Volume: 39, Number: 12.
- El-Omari, H. A. (1998). Reasons and Forms of Evaluating the Effectiveness of Advertising in Case of Chemical Industry in Jordan'J. King, Soudi University, Volume 10.
- Gaur, Sugandha (2013). Revival of Public Service Advertising through Unconventional Mediums, Indian Journal of Marketing, Volume: 43, Number: 10, October.
- Gupta, Ruchi (2012). Advertising Principles and Practices, First edition, S. Chand & Company Ltd. New Delhi.
- Jha, S.M. (2005). Social Marketing, Himalaya Publishing House, New Delhi, 4th edition,.
- Kazmi, S. H. H. and Batra, Satish (2009). Advertising & Sales Promotion, Excel Books, New Delhi.
- Kotler, Philip, and Roberto, Ned and Lee, Nancy R. (2002). Social Marketing: Improving the Quality of Life, SAGE Publications, New Delhi.
- Lal, Geetanjali (1988). Economic and Social Effects of Advertising: An Indian Context, Research Thesis, University of Rajasthan, Jaipur.
- Mannar, Suresh, K. and Srinivasan, Indira (2008). Public Service Advertising-Some Issues and Campaigns, ICFAI University Press, New Delhi.
- Menon, Arpita (2015). Media Planning and Buying: Principles and Practices in the Indian Context, 6th edition, Tata McGraw Hill Education Pvt. Ltd., New Delhi.
- Mohan, Manendra, Advertising Management: Concepts and Cases(2008). Tata Mc Graw-Hill.

- Nigam, Shalini, Narang, Yogita and Narang Atul (2012). Effect of Public Service Advertising and the Effectiveness of Media-An Exploratory Study of Four Campaign, IJRFM, Vol 2.
- Russell, J. Thomas, and Lane, W. Roland. Kleppner's (1996), Advertising Procedure, Prentice Hall of India Private Limited, New Delhi.
- Sharma, Manisha (2006). Advertising in India (with special reference to social control and public participation in Rajasthan), Research Thesis, University of Rajasthan, Jaipur.
- Sharma, Sangeeta and Singh, Raghuvir (2009). Advertising: Planning and Implementation, PHI Learning Pvt. Ltd., New Delhi.
- Terence, Shimp A. (2013). Advertising and Promotion – An IMC Approach, 9th edition, Cengage Learning India Private Limited, New Delhi.
- Tripathi, S. N. and Mittal, M. (2010). Investigating the Impact of Mobile Marketing in the Current Scenario and Proposing Customerization as a Solution, retrived at http:/ www.iitk.ac.in/...Marketing,percent20Finncepercent20and20Internationalpercent20strategy-03.pdf.accessed on February 27, 2010.
- Vij, Sandeep and Singh, Raghbir (2011). Dimensions of Consumers' Advertising Beliefs in India, Indian Journal of Marketing, Vol 41.

OORJA
ISSN - 0974-7869 (Print)
ISSN - 2395-6771 (Online)

DRIVERS OF EMPLOYEE ENGAGEMENT IN INDIAN INDUSTRY -A COMPARATIVE STUDY

Dr. Ruby Dwivedi, ICSSR Post Doctoral Fellow at R.A. Podar Institute of Management, University of Rajasthan, Jaipur
Prof. Gitika Kapoor, Professor, R.A. Podar Institute of Management, University of Rajasthan, Jaipur

The one important HR practice which can optimise utilization of human resource is "Employee Engagement" and the organizations have started taking initiatives to increase the level of employee engagement because now they know that it is only through committed workforce that has high level of engagement can give organization the much required competitive edge over their competitors in the market place.

Thus, the managers now know very well that in order to stay ahead of competition HR has to be given due importance and in turn HR will take all possible initiatives to increase employee commitment and employee engagement.

Actually, before studying employee engagement scholars developed Q construct known as Organizational Commitment. It measures the desire of the employees first to stay in the organization and second their belief in and acceptance of the organizational goals and values and third, their readiness to put in required efforts on behalf of the organization.

"Affective commitment, refers to the employee's emotional attachment to, identification with, and involvement in the organization" (Meyer and Allen, 1991) which is now referred as the important aspect of employee engagement. The implications of affective commitment of employees have been studied by researchers and has been found that it has a positive impact on employee productivity, customer satisfaction, employee retention and thus overall profitability.

To deal with the present day competition employees of the organization should be full of enthusiasm, dedicated to their work and actively involved in their work activities. This will happen when employees feel appreciated, recognised, see their job as meaningful and thus have positive emotions towards their work. The work environment should be positive and appreciative of collaboration and team work.

Research Methodology

Objective of the study

To identify the main drivers of employee engagement in the three Industries.

Scope of the Study

The responses of the employees working in three sectors- IT, Education and Retail was taken on a pan India basis during the period 2015-2016. Through which the Primary data was collected. The names of companies are not being disclosed as they were promised of confidentiality.

Research Instrument Applied

The Gallup Incorporation an American research based global performance management consulting company has developed a questionnaire to gauge the level of employee engagement. This research instrument (Gallup Q12 Employee Engagement Questionnaire) is being widely used by the industry.

The questionnaire has 12 dimensions to measure the health of the work place. These dimensions consistently correlate the 4 outcomes- employee relation, customer matrix, productivity and profitability.

The same instrument has been used by the researcher to measure the level of engagement of the employees of the three sectors.

Sample Characteristics

The sector-wise distribution of respondents to Gallup's employee engagement questionnaires is as follows:(Table 1)

Table 1 : Sector wise Distribution of Responders

Subordinate (Junior Employee) response sector wise	Number
IT	212
Education	210
Retail	78
Total	**500**

Significance of the Study

It may help the organization to decide as to which type of culture and the leadership style should be promoted and practiced by the managers so that there is an improvement in the level of Employee Engagement.

Rationale of the Study

Every single employee has a role to play and a job to perform in the achievement of organizational goals. The presence of service sector in Indian economy and it's contribution in GDP is increasing every year with the passage of time. That is why the researcher has decided to choose the three predominant industries of the service sector. These are the sectors which have a significant role to play in the present and in the future also. Their presence and contribution is not going to be marginalized rather it is likely to increase. Today the life of every individual is full of stress both at personal and professional front, which is resulting into increase in number of cases of psychological disorders and work life imbalances. All this further asks for an organization to be a place where work is not a stress but an experience of self achievement and proving oneself.

Limitations of the Study

1. Data was collected on a self report basis from the employees of the three sectors in a single time frame and the responses could be biased.
2. Every sector is characterized by certain job characteristics which is prevalent only in a particular industry. Therefore the results could be influenced by the set of conditions prevailing in that particular sector.

The terms leader and manager have been used interchangeably. In case of educational institutions also in place of Directors, Principal, head of the Department the terms managers/ leader have been used to maintain uniformity in the three sectors.

The responses of employees and its analysis are presented below.

Overall Satisfaction with the Company

The first question measures the overall satisfaction of the employees with one's company as it results into positive contribution, higher productivity, more profitability, low employee turnover and higher sense of belongingness towards the Organization.

Table 2 : Overall Satisfaction with the Company

Level of satisfaction/ Employee response sector wise	Extremely satisfied	Satisfied	Not sure	Dissatisfied	Extremely dissatisfied	Total
IT	26	170	3	13	1	212
Education	14	110	0	46	40	210
Retail	4	12	13	49	1	78
Total						500

92% employees from IT sector are moreover satisfied with their companies as are the 59% employees from Education sector. There is a huge difference in the satisfaction level of employees from the Retail sector, only 21% of employees from Retail are satisfied with their organization.

The above suggests that the employees of IT sector are engaged with organizations, which is likely to result into higher productivity more profitability and lower attrition as compared to the employees of the Retail Sector.

Understanding and Clarity of Expectations at Work Place

Every employee should have clear cut understanding of what is expected of him at the work place. The table below shows the responses of employees in terms of their understanding and clarity of expectations at work place.

Table 3 : Understanding and Clarity of Expectations at Work Place

Level of satisfaction /Employee response sector wise	Extremely satisfied	Satisfied	Not clear	Dissatisfied	Extremely dissatisfied	Total
IT	37	129	11	22	13	212
Education	19	117	10	39	25	210
Retail	12	15	11	13	27	78
Total						500

78% employees from IT sector have understanding of the expectations at work place while almost 65% of employees from Education sector have the same. From the Retail sector 51% seem to be quite dissatisfied with what is expected out of them. Also, as many as 14% employees are quite unclear with what are the organizations expectations' from them.

In the absence of role clarity and organization's expectations from them the employees are indecisive, hesitant and unsure of themselves. Clarity and understanding of expectations can guide employees towards better achievement of results.

Availability of Material and Equipment

For the optimal use of resources be it - human, material, financial etc. we need a right kind of balance between different inputs. In the absence of the availability of the right kind of material and equipments at the workplace the utilization of capabilities of people remains impaired and

underutilized.

Table 4: Availability of Material and Equipment

Level of satisfaction /Employee response sector wise	Extremely satisfied	Satisfied	%	Not sure	Dissatisfied	Extremely dissatisfied	Total
IT	72	80	71.6	2	58	0	212
Education	84	40	59	11	39	36	210
Retail	10	23	42.3	0	41	4	78
Total	166	153	319				500

72% employees from IT sector are moreover satisfied with the availability of material and equipment in comparison to 59% of employees from Education and 42.3% of employees from Retail sector. Employees from IT & Education are more satisfied with their organization in comparison to Retail sector where almost 58% employees are dissatisfied in terms of not being provided with the material and equipment for facilitating work.

IT companies which operate under intense national and international competition should make available the best of necessary tools to maximise potential of their employees otherwise survival will be a threat and Education sector should also do the same. The efficiency of the employees in the Retail sector is largely impaired by non availability of right kind of equipments. The organizations that recognize and use the impact of various innovations and adapt to the changing environment remain in the business and survive.

Opportunity to do what I do best

Desirable overlapping of the employee with his job gets the best result.

Table 5 : Opportunity to do What I do Best

Level of satisfaction/ Employee response sector wise	Extremely satisfied	Satisfied	Not sure	Dissatisfied	Extremely dissatisfied	Total
IT	78	110	2	10	12	212
Education	43	89	4	48	26	210
Retail	13	9	8	31	17	78
Total						500

63% employees from IT sector are more satisfied in terms of getting opportunity to perform, what they do best in comparison to Education (89%) which is next in satisfaction level followed by Retail employees (28%).

The analysis shows that IT companies while recruiting employees take into consideration the requirements of the job and try to match them with the person's talent. It is only then better and effective utilization of human potential can be achieved. The organizations can also think of job crafting to more effectively utilize specific talents of their employees. It is not possible for a manager to develop in his subordinates those set of skills of which they do not have the potential. Excellence can only be achieved if employees get an opportunity to grow their inherent talents and use them to their fullest potential.

In this context it is expected of HR department to recruit people on the basis of their capabilities and potential and not merely on their educational qualification and experience. It is advised that the

company should go in for psychometric analysis and potential mapping of the applicants to create a right match between man and the job.

Recognition for the good work done

Appreciation at work place is something that all employees look forward too as it is a great motivator. Their satisfaction and productivity level rises if employees and job done by them is valued.

Table 5: Recognition for the Good Work Done

Level of satisfaction/ Employee response sector wise	Extremely satisfied	Satisfied	Not sure	Dissatisfied	Extremely dissatisfied	Total
IT	43	133	0	26	10	212
Education	39	91	10	60	10	210
Retail	10	15	1	35	17	78
Total						500

83% employees from IT, 62% from Education and only 32% employees from Retail are of the opinion that their performance is recognized at their workplace.

While comparing the three sectors, it is evident that IT and Education sector employees get more recognition for their performance, as compared to Retail sector. Workplaces that continue to follow the old culture of being indifferent towards employees will destroy the very human spirit that makes the real difference in quality output and service delivery .Retail sector seems to be suffering from that very culture.

As against the assumption that appreciation comes only from supervisors and managers, Gallup found that employees value the recognition and praise from their peer group too as they are the people who exactly know the various aspects of a given job.

Compensation is not the only need of employees from an organization. Along with that regular appreciation of good work done is also expected and appreciated very few organizations have well established regular initiatives of formally recognising the contributions of their subordinates in terms of- Employee of the month, Best performing employee etc.

Someone at work cares about me

Table 7: Someone at Work Cares About Me

Level of satisfaction/ Employee response sector wise	Extremely satisfied	Satisfied	Not sure	Dissatisfied	Extremely satisfied	Total
IT	53	110	27	22	0	212
Education	47	60	34	49	20	211
Retail	10	23	4	28	13	78
Total						500

77 % of employees from IT sector are of the opinion that they feel someone at workplace cares for them in comparison to 51% of employees from Education and 42% from Retail sector. 5% employees from the Retail sector have no idea about the presence of such people at their workplace. Also 53% of them believe that no one at their workplace cares about them. It can therefore be inferred that leaders from IT & Education are successful in communicating their concern regarding their

employees in comparison to Retail.

It is often said and heard that organizations are not bad and people do not leave companies due to that but the leaders are bad and that's why they leave the organizations. Negative behaviour of a senior with his subordinates can be very costly to any organization and to the employees.

Encourage my Development

Now a days individuals who have multiple job opportunities with them do not choose the organization solely on the basis of compensation. One factor which is given highest consideration is the opportunity to learn and grow there. Whether and to what extent the organization is likely to offer this has become a significant criteria.

Gone are the days when the progression of an employee in an organization was simple, linear and progressive. The environment has become very competitive and the growth has become complex and trajectile- similar to the movement of a projectile.

People remain and grow in an organization only if they are able to add value to their work which in turn is possible only if the organization/manager gives encouragement and regular opportunity to grow by offering employees new projects/ committees/ tasks/ task force/ autonomous work groups or send them to attend training programs within and outside. These can be some of the measures to help employees develop. Employees in good organizations are not developed only in the areas which are weak but are given an opportunity to develop where they have potential and their strength lies.

Table 8 : Encourage my Development

Level of satisfaction/ Employee response sector wise	Extremely satisfied	Satisfied	Not sure	Dissatisfied	Extremely satisfied	Total
IT	123	47	0	15	27	212
Education	39	103	9	36	23	210
Retail	1	5	4	50	18	78
Total						500

80% of employees from IT sector and 68% of employees from Education sector are convinced that they are being encouraged to develop and hone their skills in their organization. On the other hand 87% of them from the Retail sector are totally dissatisfied, as they do not feel that they are being encouraged for their further development.

Opinion Counts at Work

Most of the organizations which used to follow autocratic style of managing are non existent. They used to dictate terms unilaterally without giving opportunity to the employees even to voice their opinion. Human beings are social animals with a need to participate in the process of decision making and give their suggestions (and at times their suggestions are the most honest ones as they are hands on to any given job). They feel good when their voice is heard and even better when it is valued. When the opinion of the employees is heard in any organization, connect between the individual employee and the organization becomes strong.

Sustained competitive advantage can only be achieved when organizations encourage their people

to express their ideas and more so if those ideas are valued and implemented by the managers. The growth of Quality Circles is a good example in this context. All those employees who work from shop floor or those who are in direct contact with the customers are in a position to suggest new ideas resulting in to product/ process innovation, new product development/ increased efficiency. The category of employees termed as knowledge worker only stays with the organization when they are given an opportunity to experiment with their ideas and this entire process of experimentation is valued. For sectors like IT, it is very much required and for Educational institutions also it matters significantly.

Table 9: Opinion Counts at Work

Level of satisfaction/ Employee response sector wise	Extremely satisfied	Satisfied	Not sure	Dissatisfied	Extremely satisfied	Total
IT	39	123	20	17	13	212
Education	21	79	10	59	41	210
Retail	0	5	1	42	30	78
Total						500

76% employees from IT sector and 48% employees from Education sector believe that their opinion counts at work while 92% employees from Retail sector seem dissatisfied, as they do not feel that their opinion counts or makes any difference.

Therefore it can be inferred that employees from IT and Education play some part in decision making while employees from Retail do not seem to be given any part in decision making in organization.

Relevance and Importance of Job Profile

As stated earlier, it is not solely compensation for which employees join any organization A set of factors which make employees feel attached to the organization and remain motivated to perform their jobs are : relevance and the significance of their jobs. They increase their intrinsic motivation. When the employees feel that their contribution is meaningful it enhances their involvement, degree of satisfaction and motivation to perform. Thus, the organizations that prepare job profile which is of significance makes employees feel that they are an integral part of the organization and in turn they stay committed to it. Good organizations take initiative to discuss its vision and mission with the employees, too.

All those job profiles which have significance in the eyes of individual employee, co-worker and society at large make the job meaningful in the psychological state of individual job holder and in turn makes an individual feel from within highly motivated and this increase the sense of belongingness towards the organization.

Table 10 : Relevance and Importance of Job Profile

Level of satisfaction/ Employee response sector wise	Extremely satisfied	Satisfied	Not sure	Dissatisfied	Extremely dissatisfied	Total
IT	26	129	12	17	28	212
Education	37	94	8	27	44	210
Retail	3	4	5	36	30	78
Total						500

73% employees from IT sector realize the relevance and importance of their job profile and are satisfied as are the 62% employees from Education sector. Only 9% employees from Retail are satisfied with the relevance of their job while more than 85% are dissatisfied. The majority of the employees do not find their jobs important or relevant in line with the objectives of the organization.

This suggests that managers in IT industry put in efforts to prepare job profile that has relevance and significance which is not largely done in Retail. This in turn make them feel that they are involved in jobs which are irrelevant and do not see any direct linkage between what they do and how it relates to the overall company objectives.

Associates also Committed to Quality

Quality output is not the contribution of a single employee- it is a result of each individual having a concern for quality and collaboration. In team functioning people often come together and represent different departments/ expertise. For everyone to prioritise on the same lines is not easy. Conflict between team members arises due to this and calls for a great deal of understanding between each other, knowing each other's strengths and weaknesses and streamlining the efforts of all the members by focusing on their strength at large.

Table 11: Associates also Committed to Quality

Level of satisfaction/ Employee response sector wise	Extremely satisfied	Satisfied	Not sure	Dissatisfied	Extremely satisfied	Total
IT	13	139	33	10	17	212
Education	56	31	23	46	54	210
Retail	1	12	5	40	20	78
Total						500

72% employees from IT sector against 41% employees from Education sector believe that their associates are also committed to quality. There is a difference in the opinion of employees from the Retail sector; who seem to be less satisfied with their associate's commitment level to quality and almost 77% employees are dissatisfied in this aspect.

This calls for very strong need to change the culture prevailing in Education and Retail sectors. Initiatives should be taken by the managers of these two sectors to change the work culture and help employees to recognise and understand that customer satisfaction and loyalty can only result if every employee has a positive approach towards problem solving and concern for quality issues.

Best friend at Work Place

Large part of the active work day is spent by the employees in their organizations and this call for a need to develop quality relationships at the workplace. Many organizations have started recognizing and appreciating this fact and create work spaces, work groups in such way that promotes healthy interactions. Good number of organizations organizes formal and informal gatherings to strengthen introduction as this addresses to the human need for affiliation and recognition. An environment promoting trust between people, strengthen such relationships. Large numbers of researches have showed that if an employee has a best friend at work then he tends to be more focussed, loyal to the organization and passionate towards the work. The employees' retention rate is higher. They

infrequently go on sick leave and fewer accidents occur. The career decisions often depend upon the quality of relationships in the work place.

Table 12 : Best Friend at Work Place

Level of satisfaction/ Employee response sector wise	Extremely satisfied	Satisfied	Not sure	Dissatisfied	Extremely Dissatisfied	Total
IT	77	93	8	23	11	212
Education	47	63	19	57	24	210
Retail	12	10	3	23	30	78
Total						500

80% employees from Education sector and 52% from IT are satisfied with their affiliation at work place and have best friend there too. On the other hand 68% employees from Retail sector are of the expression that they don't have a best friend at work place. It shows that IT and Education sector employees are able to make more affiliation and bonding at work in comparison to employees from Retail sector.

It shows that the managers form IT company have initiated the efforts to build the quality relationships and healthy workplace environment. This is largely missing in Retail Sector which suggests that these employees work under stress and are emotionally distressed. Their loyalty towards co-workers is likely to be poor as the element of trust is weak. All this calls for initiatives to be taken to strengthen friendly relationships among employees as the absence of this can cause stress and burnout. Healthy interactions at the workplace also act as de-stressor and promote cohesiveness.

Discussed my Progress

Employees have a psychological need to know whether the contribution which they are making by undertaking various activities on the job are in the right direction or not. This asks to give regular feedback on the part of managers to their employees with regard to their work progress. It helps in building their motivation. The managers who are of the view that annual performance review is sufficient enough to help employees understand themselves and give them a perspective of their contribution are proving to be incompetent. On the contrary, effective managers have developed formal and informal procedures of reviewing the contributions of their subordinates. In this competitive world the customers do not want to wait and want the delivery of their product/ service in real time. For this every employee should first know what is expected of him, should discuss the process and know the feedback on how it is being delivered. Both his good and not so good work activities should be discussed with him in an environment which is positive healthy and trustworthy. Effective managers make it a practice to do it on the regular basis.

The main purpose behind such regular feedback is to help employees consolidate on their strengths and not to be discouraged by highlighting their areas of weaknesses during discussion. The understanding of oneself by an employee and its relevance in the present and future work activities of the organization makes individuals more confident, focused towards their purpose and aligned with the organization. This also addresses to the anxiety of lay off and future career uncertainties.

Table 13: Discussed my Progress

Level of satisfaction/ Employee response sector wise	Extremely satisfied	Satisfied	Not sure	Dissatisfied	Extremely dissatisfied	Total
IT	21	134	8	46	3	212
Education	39	83	7	52	29	210
Retail	2	13	8	35	20	78
Total						500

73% employees from IT sector and 58% from Education sector are satisfied that they have people who discuss their progress at work place. In comparison to them Retail sector employees do not agree with it. Almost 71% of employees opine that nobody is there at their work place to discuss one's progress with them on time to time basis. It goes on to prove that IT and Education sector employees get the opportunity to discuss this as compared to employees from Retail sector.

The above suggests that the employees of the Retail sector largely and to some extent of Education sector have concern regarding their contributions towards the organization. This uncertainty results into stress regarding their career today and tomorrow and can also lead to negative productivity and dissatisfaction. This calls for a change in the formal system of performance feedback and also asks to work on informal ways to communicate on the regular basis with individual employee regarding his work progress, contributions, strengths and the ways and means to consolidate on those strengths so that the future career related anxieties are addressed to.

Opportunity to Learn and Grow

With changing scenario, growth is only possible when the individual on a regular basis adds to his present level of competence towards acquiring futuristic relevant knowledge. This is the reason why individuals are more attracted towards organizations which give them an opportunity on the regular basis to learn and hence the Evolution of Learning Organizations.

Organizations need to create a culture that promotes to think out of box, generate new ideas, new ways and means of doing the job. Experimentation with new and different ways of doing things needs to be promoted. Although all this asks for huge resources and may result into some failures also but eventually may turn out to be more beneficial in the long run. Companies can become more productive and efficient by offering variable compensation to their employees. But if an organization wants its employees to be smart rather than making them just the work horses needs to build a culture which promotes free exchange of ideas, experimentation and risk taking.

Table 14 : Opportunity to Learn and Grow

Level of satisfaction/ Employee response sector wise	Extremely satisfied	Satisfied	Not sure	Dissatisfied	Extremely satisfied	Total
IT	119	47	7	29	10	212
Education	31	98	10	37	34	210
Retail	5	15	2	51	5	78
Total						500

78% employees from IT sector are moreover satisfied with opportunity to learn and grow in their organization and so are the 61% employees from Education sector. There is a difference in the satisfaction level of employees from the Retail sector, where 70% of them appear to be dissatisfied

The analysis of input from the employees of the three sectors suggests that the employees of the Retail sector are largely told one best way of doing things and follow it. Generally most of the things are pre-decided by their managers and the employees are to follow the directions. They are in a very limited way given an opportunity to innovate and do things differently. Their work environment does not promote learning new things and experimenting with new ideas. All this results into their mechanical involvement with the job and the organization and the desirable emotional bonding does not take place.

Conclusion

The main drivers of employee engagement for the three sectors respectively are

A. Main drivers for engagement in IT sector are:
   - Opportunity to do what employee can do best.
   - Recognition for the good work done.
   - Best friend at work place.
   - Encourage employee development.

B Main drivers for engagement in Education sector are:
   - Encourage employee development.
   - Understanding of Expectations at work place.
   - Opportunity to do what employee can do best.
   - Relevance and Importance of job profile.

C Main drivers for Disengagement in Retail sector are:
   - Encourage my development.
   - Relevance and Importance of job profile.
   - Associates also committed to quality.
   - Recognition for the good work done.

Thus, in order to improve the level of employee engagement in the three sectors under study the manager of IT, Education and Retail sectors can work on the main drivers cited above to improve their competitive advantage. Though, it is difficult to start working simultaneously on all the drivers mentioned above hence, it is advised that a company should decide the sequence of implementation and work on them one by one by taking into consideration the availability of resources at their disposal and the priority of the top management.

Suggestions

For IT Sector

1. Managers should make an assessment of individual potential and assign work on its basis.

2. As and when the employee is able to meet the expectations it should be appreciated by going in for both monetary and non monetary form of appreciation.
3. Create an environment which encourages every employee to open up and share his concerns with trust and confidence.
4. Prepare a specific career progression chart for employees with potential and provide them opportunities for development.
5. Assign them with new projects and overseas assignments whenever possible.

For Education Sector

1. Offer opportunities and sponsorships to attend seminars, conferences and FDPs on Institutions' time.
2. Provide financial incentives for publishing papers in reputed national and international journals.
3. The faculty should be sent to the premier institutions to attend refresher and short term courses.
4. There should be clear communication of expectations regarding academic delivery, student counselling and evaluation.
5. Academic assignments should not be forced but should be assigned on the basis of the interest of the faculty.

For Retail Sector

1. The superior should differentiate between “X” and “Y” type of employees. “X” type of employees should be closely supervised and rewarded financially. For “Y” type, growth opportunities should be discussed and bottlenecks should be addressed.
2. Every employee should be told the significance of his job and his contribution to the organization.
3. As the employees in this sector to a large extent are less mature and educated they need to be trained to deal with customers. Soft skill training in this area is desirable.
4. Every store should recognise the efforts of its employees by introducing a system of appreciation like “Employee of the month / quarters”, they can be sent for picnic on company sponsored tours to break the monotony and to encourage the performance.

References

- Gibbons, John (2006). Employee Engagement: A Review of the Current Research and its Implications, The Conference Board Report, November 2006.
- Harter, J.K., Schmidt, F.L. & Hayes, T.L. (2002). Business unit level relationship between employee satisfaction, employee engagement, and business outcomes: A meta analysis. Journal of Applied Psychology, 87.
- Macey, W.H. and Schneider, B. (2008). The Meaning of Employee Engagement. Industrial and Organizational Psychology. Vol. 1. No. 1.

- Meyer, J.P. Allen, N.J. (1991). A three- component conceptualization of organizational commitment. Human Recourse Management Review, 1.
- Shuck, B. and Wollard, K.K. (2010). Employee Engagement and HRD: a seminal review of the foundations, Human Resource Development Review, Vol. 9 No. 1.
- Shuck, B., & Wollard, K. (2008). Employee Engagement: Motivating and connecting with tomorrow's workforce. New horizons in Adult Education and Human Resource Development, 22 (1).
- Shuck, B., Reio, T., & Rocco, T. (2011). Employee Engagement: An antecedent and outcome approach to model development. Human Resource Development International, 14.
- William H. Macey & Benjamin Schneider, (2008). The Meaning of Employee Engagement, Industrial and Organizational Psychology, 1.

OORJA
ISSN - 0974-7869 (Print)
ISSN - 2395-6771 (Online)

CORPORATE CHANAKYA
SUCCESSFUL MANAGEMENT THE CHANAKYA WAY

Radhakrishnan Pillai (2010). Corporate Chanakya: Successful Management the Chanakya Way. Jaico Publishing House, Pages 316, ISBN: 9788184951332.

Corporate Chanakya: Successful Management the Chanakya Way is a book worth appreciation. We should thank the author for writing an insightful and valuable book for practitioners which portrays the application of Chanakya's strategies, to the modern day corporate environment. In today's competitive and dynamic business environment, almost every organization faces challenges which need to be tackled very tactfully and strategically. Therefore, in relevance to today's tribulations in business world, the author has very well attempted to cite sutras and verses from Chanakya's Arthashastra wherever applicable. It is a thoughtful, well argued and well written book. The quintessence of this book is the application of Chanakya's Arthashastra, his works, strategies and insights to the modern business environment.

Chanakya was born in fourth century B.C. in India and was also known as Kautilya and Vishnugupta. Intellectuals have always depicted Chanakya as a rare mastermind who became an authority in diverse and specialized fields like economics, management, law, politics, governance, leadership, military tactics, warfare, accounting systems and numerous others. He documented his lifelong work in his book Arthashastra and Chanakya Niti. He classified 6000 sutras into 15 books, 150 chapters and 180 topics, in his book 'Arthashastra'. Chanakya was one of the most luminous, diplomatic and astute economists and strategists of the Mauryan Era. Out of the box strategies and droll principles of Chanakya can be credited with building the entire Mauryan Empire. The present day world is witnessing countless business empires which call for effective management to stay at parity with increasing competition. Consequently, Mr. Radhakrishnan Pillai, the author of the book 'Corporate Chanakya: Successful Management the Chanakya Way', has tried to make use of maxims or sutras proposed in Chanakya's book called 'Arthashastra' in the management and running of modern day businesses. He has tried to reiterate the unsurpassed tips from the chapters of Chanakya's 'Arthashastra'. Corporate professionals, entrepreneurs, leaders, and even students aspiring to work in the corporate environment can apply the tips of Corporate Chanakya for enduring success.

The book consists of three parts:

The author strove exceedingly well to surface the strategies and lessons of Chanakya on Leadership, Management and Training. According to Mr. Pillai, the author of the book, the teachings mentioned in 175 short chapters of the book could be applied in one's life and their practical benefits could be enjoyed.

The first part of the book comprise of teachings on Leadership. It focuses on rudiments associated with Power and power management, Qualities of a Leader, Competition, People and what a leader should avoid. The author has conversed about the role of different factors in contributing to the success of an organization. He enunciates that knowledge is power and hence, the best asset in today's world is 'Knowledge'. In this part of the book, the author has very elaborately articulated about power in the corporate world and the way power brings responsibility, the author has also talked

about the art of punishment and how a leader can stay at the top and create his own law and control his office. Mr. Pillai has also mentioned about seven pillars of business and three important aspects of success including Success by Counsel, Success by Might and Success by Energy. The author has very aptly explained that bosses are also answerable and how 'Arthashastra' can be applied in business. He has very well brought out the worth and importance of an inherited company and also, why a leader should keep his people happy. While talking about the qualities of a leader, the author has emphasized on total alertness, multiple tasking, open-door policy, ethics in business, respecting and protecting women and decision making as some of the important attributes of a successful leader. Moreover, the author asserts that decision makers should comprehend the requirements of the people in the organization and realize them to ensure allegiance among the employees. The author has greatly emphasized on the attributes of a leader. How to handle competition and protect oneself from enemies and create a win-win situation is another important topic discussed by the author under leadership. Freedom coupled with guidance is the need of every employee is the essence of chapter titled 'Growing under a Mentor'. The author has very well attempted to bring out the theory of motivation-Saam, Daam, Danda, Bheda of Chanakya and its application in the modern business world, he has also very well explained, when a senior should offer his good wishes to the junior and say good bye. The author has talked about developing leaders into managers, proper delegation of work and protecting employees under the topic people. The last topic of the first part of the book is titled as 'To Avoid'. Leaders should not be carried away by the desire for Power. Instead, they should discover new leaders and prepare them and develop into mentor, directing this new cohort leader to take over. This topic comprises of ten chapters which outline 21 things that a leader should avoid doing.

The second part of the book focuses on Management and the pre-requisites of holistic management. The key to success of any organization is effective management. In this part of the book the author has talked about Employees- their Safety and Security, Selecting the Right Managers, Deciding Rank, Stopping Attrition, Taking Care of Employees, Security above Salary, Rewarding Productive People, Taking Initiative and Becoming a Good Boss; Financial Management- Taking Care of the Treasury in Difficult Times, Internal Accounting Systems, Paying Taxes on Time, Making Timely Payments, Money for Wealth Creation and Road to Wealth; Different Ways to Encourage Teamwork- Public Relations, Working Together, Get Everyone Involved, Power of Communication, Stopping Fights, Brainstorming. Teaming up to Succeed, Common Purpose; and Clarity & Precision about Strategy of the Organization- Keep an Open Mind, Managing Multiple Projects, Constantly Educate Yourself, Working in New Regions, Intelligence Management, Time Management, and Ensuring Growth. It also discusses Principles of Management, Project Management, Disaster Management and different aspects related to Corporate Social Responsibility. The author firmly believes that financial success guarantees the growth of every organization. Further, he emphasizes on reinvesting the earnings of the organization in R&D, innovations and contributing to social welfare. In this part the author also lays emphasis on conducting meetings with clear agenda and outshining in time management by noting important points, preparing to do lists and maintaining a diary. The author accentuates on listening to everyone without preconceived notions, as even the most unexpected person could give, the key information and direction that one might have been waiting for, a number of years.

ISSN - 0974-7869 (Print)
ISSN - 2395-6771 (Online)

In the third and last part of the book, Mr. Pillai has very elaborately discussed about training with special focus on trainees, Boss, Organization and Advice. Bringing out the teachings of Chanakya, the author has laid emphasis on talent acquisition and training of young minds. It is believed that young people have an open mind and are like water which takes the shape of the vessel it is poured into and the learning capacity of the young people is also fast. Talking about trainees, Mr. Pillai says that the objective of every trainee should be to complete the assignment within the timeframe and that too with the right attitude and also, they should be taught moral standards right from start. The author further mentions that teaching and mentoring the young ones personally has to be the top agenda of every CEO. Moreover, the author recommends that the employees should make themselves indispensible and try to be an asset to one's boss and organization.

This book fortifies the idea of amalgamating primordial Indian acumen with modern management theory which could upshot in a distinctively Indian management style that others would like to follow. It also epitomizes the principles of management which could direct a person to build and manage an organization.

OORJA
ISSN - 0974-7869 (Print)
ISSN - 2395-6771 (Online)

THE CS DETECTIVE
AN ALGORITHMIC TALE OF CRIME, CONSPIRACY, AND COMPUTATION

By Jeremy Kubica, No Starch Press, Pages 242

Educators are redesigning the curriculum in recent years to embrace Computational Thinking (CT) as an essential ingredient for students and teachers of the digital era. The term computational thinking was noticed by the Computer Science community after an article in the ACM Communications on the subject by Jeannette Wing. It is a method that enables problem solvers to think as if they are computers while finding solutions to their problems. It helps in formulating problems so that their solutions can be represented as computational steps and algorithms. CT is a simple concept to understand and a pleasurable one to teach and learn, and has therefore become popular in classrooms around the world. In this book, the author uses computational thinking to crack search problems while solving a case.

Jeremy Kubica, a Ph.D. in Robotics, works on machine learning and algorithms as a principal engineer at Google. He has authored three books, the other two being, Computational Fairy Tales, and Best Practices of Spell Design and is also the author of a blog of the same name as his first book, Computational Fairy Tales.

The CS Detective as the title suggests, is an interesting account of investigation of a crime interwoven with solutions found using Computer Science Algorithms. The story is presented with each chapter being an investigative step and then the technical aspects are discussed distinctively at the end of each chapter.

The story is that of a detective Frank Runtime, who has been assigned the task of finding out who stole at least some 512 documents from a police station's record room. Frank had been checked out of the force five years ago for 'doing things his way'! As Captain Donovan hands him over the case, with a list of missing documents and the duty roster for the night in question, Runtime sets out to 'search' for the thieves and in the process, has many more 'searches' to handle! His training as a police officer, particularly lectures by Professor Drecker have made him quite an expert at 'searching'. Having clearly identified the Target (the thieves), the Search Space (every person in the vicinity of the capital), and the Search Algorithm (any, except linear!), Frank is ready to begin.

The author thus has gathered all the material to make the case a computational thinking exercise.

Recalling his professor's mantra, 'The key to efficient algorithms is information', he starts his exhaustive search for a little information that could put him on track to a more structured search and his informant Billy, does just that. The conversation with Billy leads him to Mr. and Mrs. Crannock whose cart the thieves are suspected to have used for the crime. Mrs. Crannock is a proud array enthusiast and has ingeniously applied the concept of arrays and indexes to design carts for livestock transportation. The Crannocks however have a dubious record, Frank is therefore suspicious of the information provided by them and searches for and finds some more clues in their backyard. His knowledge of strings comes in handy to decode some hidden messages. Here he meets Officer Elizabeth Notation, who is independently working on the same case. The names of the

main characters in the story are noteworthy, Jeremy clearly has data structures in mind while deciding the names.

Frank and Notation use binary search to search for the smuggler's ship which they suspect Crannocks' carriages had dumped the documents in, and gather further clues to move ahead in their search for the thieves. The stepwise diagrammatic representation of the search by the author helps the reader understand the fundamentals of binary search while following the detectives on their mission. With suspicion about the motive behind Ms. Notation's interest in the case, Frank sets out to decipher the hidden messages behind the coded strings on the array design boards of the criminal's farm. He puzzles out two messages from Crannock's boards, 'Defensive wizard wanted' and, 'Array Carts for Rent. No questions' giving him an unsubtle clue that takes him to a port. At the port, joined in by Notation a binary search for the smuggler's ship begins, followed by another binary search, this time with heuristics and an incomplete modified binary search. Frank and Notation have a miraculous daring escape from the ship as there enters Socks, the Wizard as their rescuer! Kubica has ensured that both, the investigators as well as the criminals are crazy about data structures! He has built a kingdom of data structure savvy population.

Dead ends are part of investigation work, says Frank, that's why we use backtracking!, as they revisit their list of unexplored leads. Notation makes an attempt to explain backtracking to Socks using a jargon a wizard would understand! And as they chose a lead to follow, they come across a locked gate, with six buttons, challenging them to crack the right combination, one string that opens the lock, to enter an abandoned prison. After some deliberation they agree to follow the Breadth-First search and succeed in getting in. Once inside the prison, Frank knew, they had walked into a maze, and there begins another search, this time for the papers. Depth-First search takes them to the papers But, as they reach the papers, an accident (is it really an accident?!) awaits them which sets the papers on fire! Thanks to Socks, they are saved due to the spell of accelerated rotting that he casts on the iron rods blocking their way.

Socks and Runtime discuss the use of stacks and queues in Breadth-First and Depth-First searches while tracking their way back from the room that had the papers on fire. One needs to be careful when choosing the data structures as they help enable the algorithm. Having lost a very important clue, the papers, the three decide to backtrack, and Frank suggests Parallelization, i.e. to split up and explore different parts of the search space. Parallel algorithms divide up work and do that work in parallel, at the same time, that is.

With the trio suddenly on a tight time line, Mavis, a freelance, never technically convicted smuggler, who Frank got along with quite well, came as an aid. While they were pondering on the next lead to follow from the pending list, she suggested Frank Runtime to use Iterative Deepening. A cross between a pure depth-first search and a breadth-first search, Iterative deepening is explained with interesting graphics by the author. His search leads Frank to Cloaks and More's Gilbert Cloaksworth an expert in cloaks. Cloaksworth a co-developer of Inverted Index of cloaks helps in identifying a clue to the shreds of cloak Frank had found at Crannock's farm. Kubica explains inverted indexes very simply in this chapter.

It is the binary trees and the binary search ladders that take Runtime into and through the difficult times he faces due to the Vinettees. He has a narrow escape. The description of binary search ladders has not been woven aptly with the story by the author and the reader may at times feel lost on

the ladders. Search trees stay on for a little longer with Frank and his team. As they add suspects to the search tree, a mistake is committed. Frank discusses Amortized costs with Socks as they mull over the mistake and are disappointed at not having found anything suspicious so far. Frank has to remember this day and this mistake in future!

Frank visits the police record room from where the documents were stolen, scans the shelves of books. The record room itself was like a giant trie or prefix tree. Frank made a mental list of the prefixes for which he noticed empty shelves and moved out. He then pays a visit to the captain and discovers that there have been some more thefts in the meantime. The details of these new cases take him by surprise - The spell of Accelerated Rotting! After discussing Ms. Notation's role in the case and the Captain's impression of her as a 'dedicated to the force' officer, Frank informs him about his observations about her. Frank then briefs the Captain about his encounter with the Vinettees on the ship and how Socks saved him. The Captain tells him about Princess Ann's likely return to the castle and the almost certain role of the evil wizard, Exponentious, who now locked in the royal prison, had tried to destroy the kingdom through his League of Unnecessary Complexity.

Jeremy Kubica has turned every little problem in to a Computer Science problem very interestingly and makes the reader feel that the world is a Computational Thinking exercise. From listing, to searching to, to breaking locks, to finding ways, everything has a solution in computational thinking.

As Mr. Runtime approached his office, he could sense something inappropriate and could notice three thugs and a spy keeping an eye on his office and awaiting his arrival. He ran towards an old police safe house trying to remember the combination of the lock. Priority queues helped him with the combination and he entered the safe house to safety. Spending the night in the safe house, helped Frank ponder over the happenings of the case so far, he was convinced of the When and Where of the case, but had to find answers for Who, Why, and How. He knew, if he could find out who, the other two questions would become easier. He replayed the events from the beginning and, the realization dawned! Socks must be involved! And then came in his heuristics, for the how. The castle he knew would be the target of the villians (Where), time was not on his side (When), Exponentious's supporters, the wizards were the perpetrators (Who), his release was the reason (Why) and the How was still a question he had to find answer to, and needed some more information for.

He sets out to meet the old hand at data structures Dr. Loop. She informs him that magic could be used in the castle and of the spells cast in the hallways of the prison. He finds things falling into place and is able to link the League of Unnecessary Complexity mentioned by Captain Donovan with the information he received from Dr. Loop.

With the climax at the royal prison, there is an exchange of words between Socks and Frank clearing the doubts and joining the dots. Socks is confronted and imprisoned. As the case is solved, Ms. Notation in promoted, and Frank is assigned the investigation of the League of Unnecessary Complexity as an independent contractor.

Like all detective stories it is an entertaining book, but it is above all fascinating, for its style. The book is an interesting resource to learn about key algorithms and basic data structures such as strings, arrays, and stacks. Kubica has blended a stirring twist with a fresh algorithmic concept in each chapter to keep the readers unruffled with the complexities. The correlations used by the author to introduce the algorithms are very well thought out. The maze used for back tracking when Mr.

Runtime and Socks are returning after papers catch fire and the array cart for transporting animals are interesting examples of data structures. For the more technically oriented readers a technical recap is also given at the end of each chapter. The illustrations add to the learnability of the concepts while retaining the grip over the story. Some concepts such as the Binary search ladders could have been handled better and also the heuristics could be dealt with in a shorter way, but then, interlacing of a mystery with core Computer Science concepts is not an easy task.

For anyone starting with Computer Science concepts, to teachers, this book is fun. Also for those who are just interested in the detective part of it, it's a good read.

INTERNATIONAL SCHOOL OF INFORMATICS & MANAGEMENT

Technical Campus

(Formerly India International Institute of Management)

Vision:

To be globally responsive and socially conscious, committed to innovation and creativity by developing and disseminating knowledge and practice for learning and resource use optimization. And to emerge as an organization with an optimal blend of value based growth and future preparedness, leading to prosperity of the society and nation at large.

Mission:

"We stand committed with a spirit of enterprise, will to succeed, zeal to grow and objective-achievement orientation through value based education for community at large by creating an environment of intellectual stimulus, scientific orientation and social responsibility".

Goals:

- To develop a comprehensive worldview in the students with respect for all forms of life and foster an environment where people work together and are motivated to succeed.
- To inculcate the zeal for individual excellence and yet reinforce the importance of team work.
- To support a proper harnessing of latent talents and to encourage the students to take initiatives.
- To provide an environment, in which the students and the faculty are driven by the spirit of enquiry in their quest for knowledge.
- To Enhance logical, creative and analytical skills.

OORJA

A bi-annual Refereed International Journal of Management & IT

International School of Informatics & Management Technical Campus
(Formerly India International Institute of Management)
Accredited 'A' by NAAC

Sector - 12, Mahaveer Marg, Mansarovar, Jaipur - 302020
Rajasthan, INDIA
Phone: +91-141-2781154, 2781155
Fax: +91-141-2781158
Email: iiim@icfia.org
Website: www.icfia.org