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Customers' Perception towards Mobile Number Portability: An Empirical Study

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Abstract – Perception means the sense of perceiving and the word perceive means to become aware of by one of the senses. It is therefore an intelligent observation or understanding. The word perception refers to the intuitive faculty. The word percept is the mental product with the help of this intuitive power the human being including animals perceive or become aware of through the senses or by mind. Other meanings of the word perceive are to discern to apprehend, to understand, to comprehend or to have knowledge. Perception is the process by which we become aware of and give meaning to events around us. It is through our perception that we come to define 'Reality'. Perceived reality is what individuals experience through one or more of the human senses and the meaning they ascribe to those experiences. Perception is the process by which people organize and obtain meaning from the sensory stimuli they receive from the environment. It is the process by which we make sense of the word. It is not foolproof. No two people in the same situation will perceive it in exactly the same way. Perception has close relation with the personality of the person perceiving the things and culture. To define the personality, the collection of psychological characteristics or traits that determine a person's preference and the individual style of behavior. Culture is the way in which a society as a whole perceives the world.

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1. INTRODUCTION

1.1 Mobile Number Probability

Mobile Number Portability (MNP) is a technology that enables subscribers to switch their service providers while retaining their mobile numbers. The mobile number portability is the process to change the mobile company without changing your mobile company. This is the very simple and easy way to change any mobile company according to the customers' choice. We believe the implementation of MNP would be a negative for the Indian Telecom Sector from an operator point of view, while for subscribers it would be a key positive. Churn rates, already in the region of 4-5 per cent monthly (pre-paid subscribers) are likely to increase further. It will increase the competition of mobile companies to give better services. These companies will do their best to give their better performance. Mobile Number Portability is a feature present in most developing telecom markets around the world, is now making its way into the developing telecom markets of South Asia. Every mobile company tries to maximize their subscribers by giving better services than other mobile companies. MNP is a service that enables a mobile subscriber to switch operators while retaining his/her phone number. The customers want the good and proper communication with their friends and their relatives so they choose the best network. This MNP is useful for the new companies because everyone will tries to use that companies if there is the all qualities in the company then the company can develop themselves. The successful implementation of MNP is associated with high porting rates. The company should show all the proper details to the customers and give the full information to the customers because there will be too much options have the customers so they will want to full information about the company and all the schemes. This is because high porting rates signify that the facility is being utilized and conforms that mobile subscribers are in demand of the service every company wants to increase their customers.

Number Portability has to ensure that call routing for all mobile sessions Voice, SMS, MMS should be enabled with routing to the ported network for the same called subscriber number. IETF defines three types of number portability (NP): Service provider number portability (SPNP), location portability and service portability. SPNP allows subscribers to switch service providers while retaining the same phone number. The technology challenges towards implementation come through complexities in number administration, network signaling functions, call routing, billing and service management. The introduction of MNP is expected to increase churn rates and force

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service providers to stay competitive through product and service differentiation. Prepaid churn rates are said to be between 3- 4 percent per month but the regulator is looking to increase it to, about 8- 10 percent in order to force incumbent operators to be more competitive (Business Standard, 2007). Although competition is high in the Indian mobile sector, regulators feel the need for more intense competition for the benefit of subscribers. MNP will give the five new entrants into the mobile sector and four existing operators who have been allowed to provide services in new circles, a chance to survive in the already competitive marketplace. Given the anticipated growth in the mobile market to more than 500 million subscribers, one of the largest in the world and second only to China, regulators feel that the introduction of MNP in India is imminent and deem it a suitable time to set the stage to push subscriber number up.

2. REVIEW OF LITRATURE

Survey of related literature is an important pre-requisite to the planning and implementation of a planned research project. Its review is an exacting task, calling for a deep insight and clear perspective of the overall fields. It is a crucial step, which invariably minimizes the risk of dead ends, rejected topics and rejected studies, waste efforts, trial and error activity oriented towards approaches already discarded by previous investigators and even more important erroneous finding based on a faulty research design. The review of the literature promotes a greater understanding of the problems and its crucial aspects and ensures the avoidance of unnecessary duplication. It also provides comparative data on the basis of which to evaluate and interpret the significance of one's findings.

Mlik, *et al.* (2008)[1] describes various parameters that effect subscribers or parameters on which MNP depends and MNP decision using fuzzy logic. In this paper a sample has been taken when customer care services satisfaction is 55 per cent network coverage of strength is -75db and tariff plan is 65 paisa per call then MNP will be 0.5188 here it has considered three parameters and drawn the graph showing the required portability. By using this graphical representation, we can find out MNP for various input values and it can be decided that MNP should be carried out or not. This system can further improved by considering many more parameters which are responsible for MNP. These parameters are single strength, billing, IDD service etc.

Reiko and Small (2010)[2] reveals that the widespread presumption in favour of number portability is not necessarily in the interest of society in general, or even of consumers. In well developed telephony markets with high penetration rates, it is possible for consumers as a group to receive fewer surpluses following a reduction in the cost of switching between carriers as a result of the introduction of number portability. It has examined four possible mature industry regimes, two of which involve some sharing of the market between the incumbent and the entrant. Switching costs affect customers and firm differently in these two shared market cases.

Iqbal (2011)[3] discusses about the suitability of introducing MNP in India. The paper will also consider how phone subscribers at the Bottom of the Pyramid (BOP) and the impact of the Low-cost, low-ARPU pricing model implemented in South Asia will affect porting rates. The researcher investigates the benefits, costs and preconditions for Mobile Number Portability (MNP), while questioning its suitability for implementation in emerging South Asia. He finds out that high porting rates are not the only means to measure the impact or successfulness of MNP. According to writer in many cases customer's loyalty also tends to increase, leading to lower porting rates than otherwise expected. At the end the writer says that the existing market structure in South Asia may not be as suited to MNP because of the large numbers of prepaid or low end users. Their phone use patterns and requirements are rather distinctive, compared to high end post paid subscribers, commonly found in the developed western markets.

Khan (2010)[4] emphasized to implement number portability, the best solution is to implement centralized system, maintain a common number porting database, and use the All Call Query (ACQ) Call routing scheme to route the calls to a ported number. A trusted 3rd party, which typically reports to the telecom regulatory authority, can maintain the centralized Number portability database. According to write the number portability gives freedom to subscriber to choose best service provider. This will encourage competition among the service providers, and in turn will reduce the tariff. From subscribers point of view it reduces cost, time and money. From service providers point of view specific network maintenance activities need to be done to ensure proper operation of the number portability service overtime.

Sharma (2011)[5] found that subscribers would likely to have efficient services at cheapest rate. Subscribers can retain one number lifetime while choosing competitive plans from other operators. In this way the researcher find out that the subscribers who wishes to port his mobile number should approach the Recipient operator, withdrew his porting request within 24 hours of its submission to the Recipient Operator. Some experts are saying that MNP would not a game changer, it will just make a bit initial impact and everything will flatten out in the long run eventually.

Dhanya (2012)[6] revealed the pros and cons of Mobile Number Portability System (MNPS) from both customers as well as service providers

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perspective. It was found that, Customers are eagerly waiting for such a service, where customer can change service provider without changing mobile number. Major drawback of MNP for customer will be relatively less as compared to that of service provider. Service providers do not be happy with MNPS. They will face problems like losing customer base, cut-throat competition and financial loss and also they will have to upgrade their network. According to the researcher Mobile Number Portability System will change the scenario of the telecom industry. Earlier the only way a service provider was able to hold their customer was by the mobile number. But now if MNPS comes into action customer will have freedom to switch with same number so customer will rule the market. In this battle between customers and service providers, service provider will have to surrender against customers.

Kumar (2011)[7] advocated that the service accessibility, service affordability, promotional offers and customer services are four important factors which are influencing the customer in selecting the service provider. This study provides, a significant contribution to the theory by conducting factor analysis and Structure equation method to know the impact of these factors in selection of service provider in India. There is a huge growth in mobile subscribers in India and heavy competition among the service providers. The finding of the study contributes to a better understanding of the relationship between Service Accessibility, Service Affordability, Promotional Offers and Customer Service to select the service provider. In particular, the finding in this research can help practitioners and academicians to understand the level of impact that these factors has on service provider and the correlation between these factors. The result of this research predicts that Customer Service is most important factor than Promotional Offers which is influencing the customer to select their service provider.

Farzana, *et al.* (2011)[8] found that there is huge potential to make a conceptual contribution by developing a theoretical linkage and improving the theoretical rational for existing linkages. More specifically, this study tested switching cost as a moderator to solve the conflicting and confusing relationship that exists between service satisfaction and service switching constructs, which is new to the service literature.

3. RESEARCH METHODOLOGY

The present study will be exploratory as well as descriptive in nature.

3.1 Statement of the Problem

To know the perception of mobile number portability users.

3.2 Objective of the study

The present study attempts to:

(i) identify the factors responsible for Mobile Number Portability;

(ii) study the satisfaction level towards MNP among mobile users; and

(iii) to give the recommendations for the improvement in MNP in the society.

Table : Perception of mobile number portability users.

S.N.	Expectations	N/%	1	2	3	4	5	Total
1.	Cheap call rate	N	300	88	12	0	0	400
		%	75.0	22.0	3.0	0	0	100
2	Good network coverage	N	294	101	4	1	0	400
		%	73.5	25.3	1.0	0.3	0	100
3	Good and different type of tariff plan	N	159	136	86	17	2	400
		%	39.8	34.0	21.5	4.3	0.5	100
4	High Internet speed	N	207	144	47	2	0	400
		%	51.8	36.0	11.8	0.5	0	100
5	Cheap internet pack	N	210	145	41	3	1	400
		%	52.5	36.3	10.3	0.8	0.3	100
6	Good customer care facility	N	216	149	34	1	0	400
		%	54.0	37.3	8.5	0.3	0	100
7	Discount offers and schemes	N	191	175	32	2	0	400
		%	47.8	43.8	8.0	0.5	0	100
8	3G service facility	N	159	175	58	8	0	400
		%	39.8	43.8	14.5	2.0	0	100
9	Recharge voucher's facility	N	179	193	28	0	0	400
		%	44.8	48.3	7.0	0	0	100
10	Free roaming facility	N	193	179	26	2	0	400
		%	48.3	44.8	6.5	0.5	0	100
11	Cheap rates of Value Added Services	N	121	204	68	7	0	400
		%	30.3	51.0	17.0	1.8	0	100

Source: Survey, Data processed through PASW 18.0

Source: Survey, Data processed through PASW 18 0

Detail Explanation

Table depicts that 300 (75.0 per cent) respondents are expecting 'very much' with respondents to 'cheap call rate' mobile phone service providers to 'cheap call rate' whereas 88 (22.0 per cent) respondents are expecting 'much' with mobile phone service providers to 'cheap call rate' and 12 (3.0 per cent) respondents are 'less expecting' with mobile phone service providers to 'cheap call rate'. 294 (73.5 per cent) respondents are expecting 'very much' with mobile phone service providers to 'good network coverage' whereas 101 (25.3 per cent) respondents are expecting 'much' with mobile phone service providers to 'good network coverage'. 4 (1.0 per cent) respondents are 'less expecting' with mobile phone service providers to 'good network coverage' and only one (0.3 per cent) respondent is 'lesser expecting' with mobile phone service providers to 'good network coverage'. It depicts that 159 (39.8 per cent) respondents are expecting 'very much' with mobile phone service providers to 'good and different type of tariff plan' whereas 136 (34.0 per cent) respondents are expecting 'much' with mobile phone service providers to 'good and different type of tariff plan'. 86 (21.5 per cent) respondents are 'less' expecting with mobile phone service providers to 'good and different type of tariff plan' whereas 17 (4.3 per cent)

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respondents are 'lesser' expecting with mobile phone service providers to 'good and different type of tariff plan' and 2 (0.5 per cent) respondents are 'least' expecting with mobile phone service providers to 'good and different type of tariff plan'. 207 (51.8 per cent) respondents are expecting 'very much' with mobile phone service providers to 'high internet speed' whereas 144 (36.0 per cent) respondents are expecting 'much' with mobile phone service providers to 'high internet speed'. 47 (11.8 per cent) respondents are 'less' expecting with mobile phone service providers to 'high internet speed' whereas 2 (0.5 per cent) respondents are 'lesser' expecting with mobile phone service providers to 'high internet speed'. 210 (52.5 per cent) respondents are expecting 'very much' with mobile phone service providers to 'cheap internet pack' whereas 145 (36.3 per cent) respondents are expecting 'much' with mobile phone service providers to 'cheap internet pack'. 41 (10.3 per cent) respondents are 'less' expecting with mobile phone service providers to 'cheap internet pack' whereas 3 (0.8 per cent) respondents are 'lesser' expecting with mobile phone service providers to 'cheap internet pack' and only 1 (0.3 per cent) respondent is 'least' expecting with mobile phone service providers to 'cheap internet pack'. 216 (54.0 per cent) respondents are expecting 'very much' with mobile phone service providers to 'good customer care facility' whereas 149 (37.3 per cent) respondents are expecting 'much' with mobile phone service providers to 'good customer care facility'. 34 (8.5 per cent) respondents are 'less' expecting with mobile phone service providers to 'good customer care facility' whereas, 1 (0.3 per cent) respondents are 'lesser' expecting with mobile phone service providers to 'good customer care facility'. 191 (47.8 per cent) respondents are expecting 'very much' with mobile phone service providers to 'discount offers and schemes' whereas 175 (43.8 per cent) respondents are expecting 'much' with mobile phone service providers to 'discount offers and schemes'. 32 (8.0 per cent) respondents are 'less' expecting with mobile phone service providers to 'discount offers and schemes' whereas 2 (0.5 per cent) respondents are 'lesser' expecting with mobile phone service' providers to 'discount offers and schemes'. 175 (43.8 per cent) respondents are expecting 'much' with mobile phone service providers to '3G service facility' whereas 159 (38.8 per cent) respondents are expecting 'very much' with mobile phone service providers to '3G service facility'. 58 (14.5 per cent) respondents are 'less' expecting with mobile phone service providers to '3G service facility' whereas 8 (2.0 per cent) respondents are 'lesser' expecting with mobile phone service providers to '3G service facility'. 193 (48.3 per cent) respondents are expecting 'much' with mobile phone service providers to 'recharge voucher's facility' whereas 179 (44.8 per cent) respondents are expecting 'very much' with mobile phone service providers to 'recharge voucher's facility'. 28 (7.0 per cent) respondents are 'less expecting' with mobile phone service providers to 'recharge voucher's facility'. 193 (48.3 per cent) respondents are expecting 'very much' with mobile phone service providers to 'free roaming facility' whereas 179 (44.8 per cent) respondents are expecting 'much' with mobile phone service providers to 'free roaming facility'. 26 (6.5 per cent) respondents are 'less' expecting with mobile phone service providers to 'free roaming facility' whereas 2 (0.5 per cent) respondents are 'lesser' expecting with mobile phone service providers to 'free roaming facility'. 204 (51.0 per cent) respondents are expecting 'much' with mobile phone service providers to 'cheap rate of value added services' whereas, 121 (30.3 per cent) respondents are expecting 'very much' with mobile phone service providers to 'cheap rate of value added services'. 68 (17.0 per cent) respondents are 'less' expecting with mobile phone service providers to 'cheap rate of value added services' whereas 7 (1.8 per cent) respondents are 'lesser' expecting with mobile phone service providers to 'cheap rate of value added services'.

CONCLUSIONS

Most of the respondents (75 per cent) are expecting 'very much' with mobile phone service providers to 'cheap call rate. So service providers companies should make the strong plan regarding cheap call rate. 73.5 per cent respondents are expecting 'very much' with mobile phone service providers to 'good network coverage. So service providers companies should make the strong plan regarding good network coverage and 39.8 per cent respondents are expecting 'very much' with mobile phone service providers to 'good and different type of tariff plan. So service providers companies should make the strong plan regarding good and different type of tariff plan.

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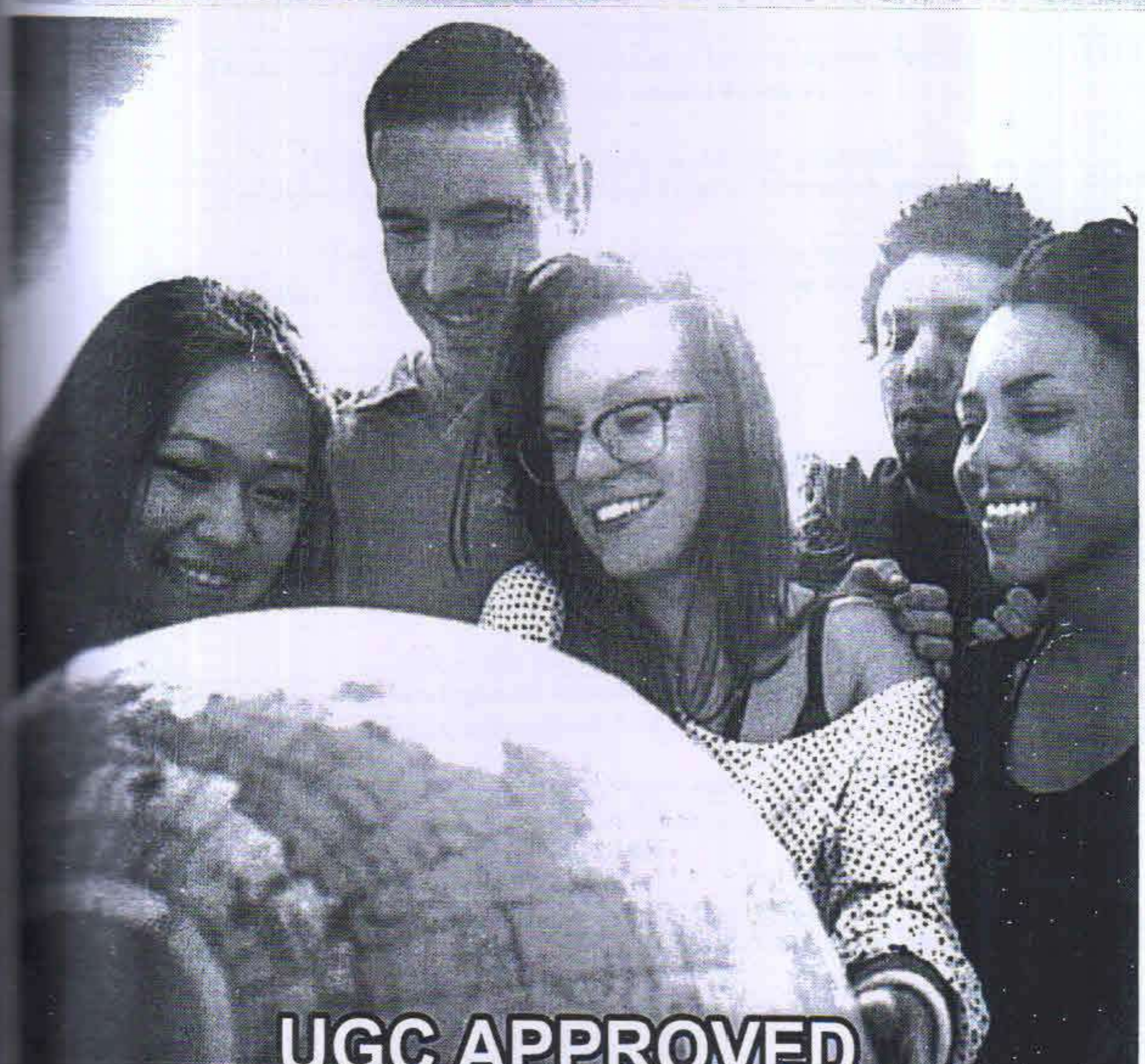

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Impact of Emotional Intelligence on Adjustment of Employees in the Organization

Dr.Satish Kumar*
Sunita Nimbria**

Abstract
EmotionalIntelligence can help in creating enthusiastic work environment, psychological well being and effective methods of adjustment and problem solving for useful vision for the future and achieving organizational goals. The purpose of present study is to examine the impact of emotional intelligence on adjustment of the employees. Sample consisted of 100 employees (50% male) from various organisations were selected.The emotional intelligence scale developed by Hyde et.al(2002)and Adjustment Scale by A.k.Sinha&R.P.Singh(1980) were used for the data collection. Coefficient of Correlation and t value were computed. Results revealed that emotional intelligence and adjustment are not correlated.This study also indicates no gender differences between emotional intelligence and adjustment. Furthermore, suggestions for further investigations were also stated.

Keywords: *emotional intelligence, adjustment, employees.*

Introduction

The success of any individual or organization is depends on the quality of its human recourses. In the organization employees feel stress free and comfortable when organization provide them healthy environment. For this emphasis should also be placed on emotional and intellectual endowments and abilities for the growth. In this regard, emotional intelligence has emerged as the crucial factor in the successful social adjustment. Emotional intelligence can help in creating enthusiastic work environment, psychological well being and efficient methods of problem solving for useful vision for the future and achieving organizational goals.

Emotional Intelligence

The concept of emotional intelligence has found increased acceptance as a factor that is potentially useful in understanding and predicting individual performance in different domains of daily life, adjustment, social functioning and academics, and workplace performance (e.g. Brackett, Rivers, & Salovey, 2011 Mayer et al. 2008, O'Boyle et al.2010). Emotional Intelligence model is emerging as key success factor to enhance the effectiveness of an organization and can influence the employee commitment in an organization. Emotional intelligence (EI) has their own place and value in the area of leadership and organization. It has been proved that our general intelligence and academic success are poor predictors of life success and adjustments. It accounts for only 20% of our life success (Goleman 1995).

Emotional intelligence is an important set of psychological abilities that relates to life success. It accounts for how people's emotion reports vary in their accuracy and how the

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mere understanding of emotions leads to better adjustment and problem solving in the individuals emotional life. It is empathy and communication skills as well as social and leadership skills that are central to ones success in life. Goleman (1995) purports that is far better to have a high emotional quotient rather than high intelligence quotient to become the productive and valued member of the society.

Emotional intelligence in the Indian context cannot be viewed as a homogenous trait, or a mental ability devoid of social concerns like respecting elders, concern for others, fulfilling one's duties. These along with moral values of Ahimsa (non-violence), kindness, benevolence, provide the very basis for emotional expression and responsively. In fact, they are built in ways an individual deals with situations, emotional, social, or otherwise. These culture specific ways of behaving, therefore, are basic to the notion of emotional intelligence. It is due to these reasons that individuals approach emotions differently-across cultures, subcultures, within societies or families. Regulation of emotion too is directed inwards. Individuals attempt to change their behaviours, actions, etc., and to adapt themselves according to the environment. Thus, the need of others takes prominence over personal, social and environmental values.

Adjustment

In our day to day life we need adjustment for living a stress-free life; this adjustment may be anywhere for example: in family, in the school, in the peer groups, in the society, in the job etc. This is necessary for the survival of an individual is to adjust. "Life presents a continuous chain of struggle for existence and survival" says Darwin. The concept of adjustment is as old as human race on earth. Psychologists have interpreted adjustment from two important points of views. One is adjustment as an achievement and another, adjustment as a process. The first point of view emphasizes the quality of efficiency of adjustment and the second lays emphasis on the process by which an individual adjusts in his external environment.

A person who adjusts himself in every situation or environment can never fall in his life as compare to those who find it difficult to adjust themselves in different situations. Those who have sound emotional intelligence can adjust in any environment. Adjustment is an unending process and is bound up with human life. It is continuous process to produce harmonious relationship between man and his environment. Adjustment is a satisfactory relation of an organism to its environment (Symonds, 1949).

Large number of researches and studies has been conducted in the field of emotional intelligence and adjustment in order to highlight various important aspects some are mentioned here. Kalapriya & Anuradha (2015) conducted a study on emotional intelligence and academic achievement among adolescents. Results revealed that there is significant difference between emotional intelligence and academic achievement among adolescents. Adeyemo et al., (2008) found a significantly high emotional intelligence in female workers; however, no significant relationship was found between age, marital status, educational qualification and emotional intelligence. Kushwaha (2015) investigated the adjustment level among female hostlers and day scholars. Results revealed that there is significant difference found between the adjustment scores of hostlers and day scholars. Kumar (2013) studied Adjustment of Secondary School Students of Working Mothers belonging to Joint and Nuclear Families and conclusion of the study reveals that there is no significant difference between adjustment of students of working mothers belonging to joint and nuclear families. But on the other hand the mean score of social adjustment of boys of working mothers belonging nuclear families is higher than those from joint families.

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Problem: To assess the impact of Emotional Intelligence on Adjustment of employees in the organization.

Objectives

1. To see the relationship between emotional intelligence and adjustment among employees.
2. To investigate gender difference of emotional intelligence among employees.
3. To investigate gender difference of adjustment among employees.

Hypothesis

1. There is no relationship between emotional intelligence and adjustment among employees.
2. There is no significant gender difference in the emotional intelligence among employees.
3. There is no significant gender difference in the adjustment among employees.

Methodology

Sample: -The present study consisted of 100 samples equally divided into two groups' male employees (50) and female employees (50).

Description of the tool used:

1. **Emotional Intelligence Scale:** It is a standardized scale developed by Ankool Hyde, Sanjyot Pethe and Upinder Dhar. It has 34 items related to the dimensions of emotional Intelligence. It is a five-point scale. The mode of response is to just tick right (✓) mark in the column such as strongly agree, agree, Uncertain, disagree and strongly disagree. The split-half reliability coefficient was found to be 0.88 and validity is 0.93. Manual scoring has been done conveniently with each item or statement scored as:

Response	Scores
Strongly agree	1
Agree	2
Neutral	3
Disagree	4
Strongly disagree	5

2. **Adjustment Scale:** It is a standardized scale developed by. Prof.A.K.Sinha and R.P.Sina. The mode of response is to just tick right (✓) mark for Yes or No. One mark will be allotted for each right answer. The test-retest reliability of the test is .93. Inventory can be scored by hand only. For any answer indicative of adjustment, zero is given, otherwise a score of one is awarded. It means high score in any given area of adjustment indicates poor adjustment and low score indicates healthy adjustment i.e. as we will move from low score to high score there will be decline in adjustment in given areas of adjustment.

Statistical Techniques Used

The researcher will use appropriate statistical techniques however she proposes to use Mean, S.D, Correlation and t-test in analysing data of the study.

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Result

Table1: Mean, SD and t- value of Emotional Intelligence according to Gender of Employees

Gender	Mean	SD	t value
Male	68.74	14.10	0.978
Female	68.66	15.42	
Total	68.7	14.70	

Table2: Mean, SD and t- value of Adjustment according to Gender of Employees

Gender	Mean	SD	t value
Male	36.78	16.03	0.230
Female	33.28	12.39	
Total	35.03	14.36	

Table3. Correlation-Coefficient between Adjustment and Emotional Intelligence of Male and Female Employees.

	Emotional Intelligence	Adjustment	Gender
Emotional Intelligence	1		
Adjustment	-.002	1	
Gender	-.003	-.122	1

Discussion

The data in Table No-1 reveals the mean and standard deviation of Emotional Intelligence according to gender of employees. The total mean score of Emotional Intelligence of employees is 68.7±14.70. In which, the male employees have higher Emotional Intelligence (68.74±14.10) as compared to female employees (68.66±15.42) of different organizations. The t-test value (0.978) it shows that there is no significant difference in the emotional intelligence of the male and the female employees. It represents how the male and female employees both are going at a same pace with regards to the emotional intelligence. There stands no gender difference in the employees of organisation for emotional intelligence.

The result in Table No.2 indicates the mean and standard deviation of Adjustment according to the gender of employees. The total mean score of Adjustment of employees is 35.03±14.36. In which, the male employees have higher Adjustment (36.78±16.03) as compared to female employees (33.28±12.39) of different organizations. The t-test value(0.230) it shows that there is no significant difference in the adjustment scale of the male and the female employees. It represents how the male and female employees both are going at a same pace with regards to the adjustment. There stands no gender difference in the employees of organisation for adjustment scale.

The above table no. 3 shows no positive relationship between adjustment and emotional intelligence among male and female employees. The value of correlation shows how they adjust themselves considering emotional intelligence in mind.

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Conclusion

This study aims to determine the phenomenon of emotional intelligence on adjustment of employees in the organization. Employees with high level of emotional intelligence adjust effectively with others and control their emotions more carefully rather than reacting to the situation. In this study the researchers obtain the data from both male and female employees, therefore specifically it aims to provide the relevant understanding of emotional intelligence with respect to the adjustment of employees in the organization.

Though, this could be concluded how the relation between emotional intelligence of the female employees than that of the male employees. We might say that the females treat the two aspects differently as compared to the males. They might work with the concept of being emotionally strong and understand what everyone wants and needs are but do not mix them with how well they adjust in the organisation.

Suggestions

1. This study is confined to only one organization. The future researcher can conduct the study amongst various other organizations.
2. Similar studies may be conducted in other professional differentiating the hierarchy of the organization.
3. Similar studies may be conducted in general employees without being specific on any grounds.
4. This study is limited to two psychological variables it may be extended to other psychological variables.

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PAPER 23

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Degradation of AY36 using TiO_2-UV Photocatalytic System

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ABSTRACT

This study investigates the efficacy of photocatalytic degradation process using TiO_2-UV configuration for treatment of waste water containing textile dye Acid Yellow 36 (AY36). Acid Yellow 36 dye was degraded using catalyst TiO_2 in an alkaline medium of pH 8.0. A dose of 0.25 g of TiO_2 was used for 88.4% degradation of initial concentration of 20 mg/l AY36 dye in 28 hrs. The effect of parameters such as pH, initial dye concentration, amount of TiO_2 used, and exposure to UV light/irradiation on degradation of AY36 was investigated. Further it was observed that suspended TiO_2 in dye solution shows more effective results towards dye degradation, than embedded TiO_2 in the form of alginate beads. The study concluded that photocatalytic degradation is a potential tool for degradation of azo dyes.

Keywords: TiO_2; Acid Yellow 36; Advanced oxidation process (AOPs); Photocatalysis

1. Introduction

Dyes are important raw material for industries like paper, pulp, leather, textile etc. Azo dyes have excellent coloring properties like yellow to orange so they are used in almost every industry. These dyes have colouring properties because of the presence of a chemical azo group. Other industries where dyes are used are tinting and inks, paints adhesive, polymers etc. [1] Effluents from different industries are the main source of contamination of water as they contain different fractions of residuals of dye. Azo dyes are highly resistant in nature; they are even resistant to heat temperature and weather condition.

Azo dye; R-N=N-R’

Where, R and R’ can be either alkyl or aryl. The N=N is an azo group, which is only responsible for the colour of the dye and the only reason for its recalcitrant nature. It is hard to degrade dye by any biological means so chemical methods need to be applied for breakdown of double bond which turns coloured solution to colourless[2]. Industrial outlets contains huge amount of an azo dye residues which are toxic in nature and cause harmful effects on ecosystem. Dyes are not only harmful to plants and water organisms, but also show harmful Impact on human beings. There is ample evidence of the harmful effects of dyes. These are highly mutagenic and carcinogenic in nature and hence causing cancer and other dreadful disease. These are continuously being released to the environment from industries which impart ecotoxicity in aquatic ecosystems[3]. Since dyes are readily dissolved in water, they interfere with the photosynthetic activity of water organisms, and disturb the food chain of aquatic ecosystem by reducing visibility of zooplanktons. Textile dyes also cause allergies, respiratory diseases and dermatitis, irritation of skin and eyes etc. Considering the harmful effects of dyes on environment, it is important to explore an effective method for its degradation.

There are various methods of dye degradation but one of the more efficient accelerated processes is advanced oxidation process. It is a chemical treatment which reduces organic impurities of water by oxidising them to simpler forms[4]. The hydroxyl radicals are produced during the process with the help of primary oxidants (H_2O_2, ozone) or energy sources (UV lights) or catalyst (TiO_2). These components must be precised, properly configured, and used for the study. AOPs are mainly used for non-degradable and toxic products which include photocatalysis[5], Fenton oxidation[6], Photofenton, ozonolysis, and ultrasonication in standalone mode or combination of two. Photocatalysis process is the acceleration of photoreaction in presence of catalyst like TiO_2 or ZnO etc. The most widely used semiconductor catalyst in photo-induced process is TiO_2 which is activated by UV light[7]. TiO_2 is also known as heterogeneous catalyst. It is chemically and biologically inert, stable, relatively easy to produce and reuse, cheap, environment friendly, have stable electrical properties, and efficiently catalyse reactions. It exists in four mineral state anatase, rutile, brookite and TiO_2(B)[8]. It is versatile in nature and has various application areas like paints, varnishes, paper, plastics, solar cells, glass, electrical conductors, food colouring agents etc. It is also used in immobilised form of beads and acts as an opacifier in powdered form. It is widely used as a white pigment due to its sticky nature and having very high refractive index. TiO_2 is being used in the photocatalysis process because of the following factors - inexpensive, easily available, wavelength selective, and accelerated by UV light. Photocatalytic reactions take place at room temperature and the formation of intermediate products is avoided. UV light is absorbed by TiO_2, making ground state electrons jump to excited state forming an electron hole pair. This creates a void or energy gap between lower vacant conduction band and upper filled valence band. Hydroxyl ions are generated by this process. When photons with greater or equal energy to 3.4 eV is adsorbed by TiO_2, an electron is excited from valence band to conduction band; charge carriers (OH radicals) are generated and leave a positive hole in the valence band, this photo generated electron hole pair is known as excitons.

There are various operating parameters which play a vital role in the photocatalytic degradation[9]. One such parameter is amount of catalyst used. Greater the amount of catalyst used more will be the rate of degradation[8].

The mechanism of photocatalytic degradation can be described by following steps:

- Absorption of photons by TiO_2 and productions of electron- hole pairs.
- Oxygen ion absorption.
- Neutralisation of OH radicals by photon holes.
- Reaction of organic pollutant with OH radical.

The first step of the reaction is carried out by photons with the energy higher than the band gap of TiO_2 i.e. 3.2 eV[10].

2. Materials and methods

The AY36 is an azo dye with complex chemical structure, recalcitrant nature, and reported eco-toxicity. The dye was obtained from Vishnu chemicals, Ankleshwar, Gujarat having 85% minimum assay. Titanium dioxide (99% AR Grade) was obtained from High Purity Laboratory Chemicals Pvt. Ltd., Mumbai. All the experiments were performed in triplicates using Grade 1 ultrapure water.

A stock solution of 1000ppm (0.5mg/500ml) of AY36 was prepared for degradation experiments. The 20mg/l solution of dye was prepared by diluting the stock solution. A standard curve of AY36 was plotted in concentration range of 5-20 mg/L with regular interval of 5mg/L The absorption spectrum for absorbance (400-700 nm) of AY36 against wavelength reported 434nm as the wavelength of maximum absorption. The pH was adjusted at 8.0 with the help of HCl (1N) and NaOH (1N) solutions. The experiment was conducted using 150ml of the dye solution in conical flask. The solution was continuously stirred using magnetic stirrer at 150 rpm in the UV chamber fitted with three (03) lamps (λ – 254 nm) of capacity of 30 W each.

The photo-catalytic degradation of AY36 was studied at an initial dye concentration of 20 mg/L with TiO_2 as catalyst under UV light. A volume of 10 ml was extracted from the flask placed in a UV light and the absorbance was monitored first at interval of 15 minutes for first one hour; 30 minutes for next one hour; and then at regular interval of two (02) hours. The extracted sample was centrifuged at 5000rpm for 20 minutes to separate TiO_2 particles from the solution. A blank without dosing of TiO_2 was also run to compensate for the photo-degradation. The concentration was obtained observing the absorbance at 434nm over Labtronics make LT-290 model spectrophotometer. The percentage degradation of AY36 was calculated using formula given below

$$\text{Percentage degradation } \% = ((C_i - C_f)/C_i) \times 100$$

Where, C_i is the initial concentration of dye, and C_f is the final concentration of dye.

3. Results and discussion

Based on the results obtained, it was observed that photoctalytic process could degrade AY36 dye. The concentration of AY36 went on decreasing with time. It decreased from initial concentration (Ci) of 22.6 mg/l to 20.4 mg/l in first one hour. Later, the rate of degradation reduced but the degradation progressed slowly; and residual concentration of AY36 stabilised at around 2.2 mg/l after a period of 32 hours (**Figure 1**). Further degradation of AY36 was not observed, and it was concluded that Photocatalytic degradation of AY36 has an overall efficiency of about 90%. The reduced rate of degradation in later phase may be ascribed to reduction in initial dye concentration with time. The Photocatalytic degradation of AY36 might be following first order rate kinetics which is dependent over initial concentration of reactants viz. AY36 in the present study. In order to confirm it, the rate of degradation (mg/h) was calculated using the following relation

$$\text{Rate of reaction (K) (mg/h)} = (C_i - C_f)/(t_i - t_f)$$

Where, Ci is initial concentration of AY36; C_f is the final concentration; t_i is initial time; and t_f is the final time during an interval of degradation. The rate of degradation was maximum during 15 to 30 minutes (@ 2.6 mg/h) followed by the rate of 2.2 mg/h during 30 minutes to one hour. Later, the rate of degradation went on decreasing with time (**Table 1**) and it stabilised at 0.1 mg/h after a period of 32 hours with an overall decolourisation efficiency of 90.3%.

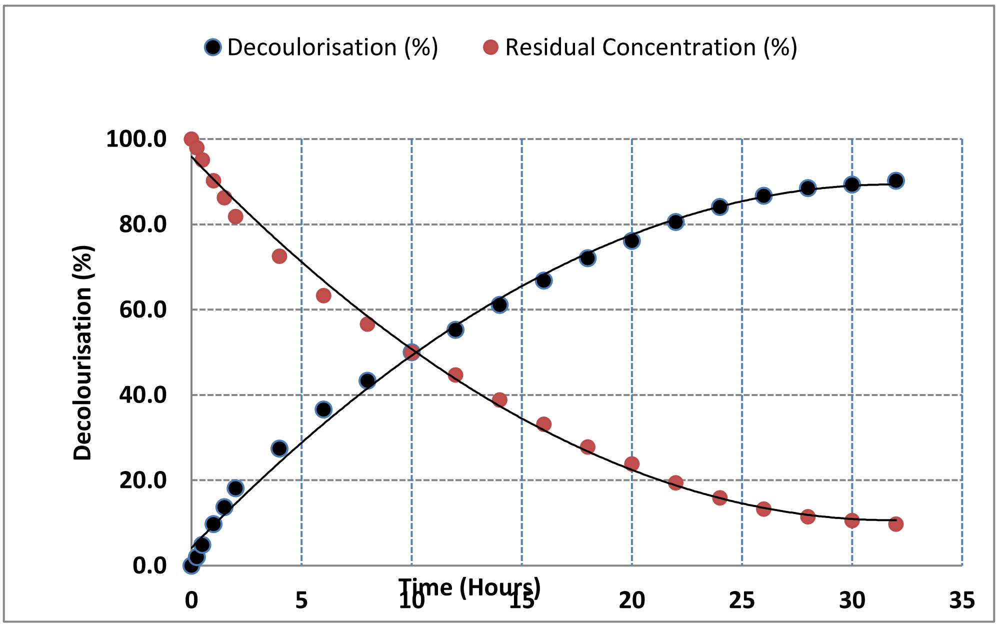

Figure 1. Degradation profile of AY36 during photocatalytic treatment

S. No.	Time (hours)	Concentration (mg/l)	Decolourisation (%)	Rate of decolourisation (mg/hour)
1	0	22.6	0.0	0.0
2	0.25	22.2	2.0	1.8
3	0.5	21.5	4.9	2.6
4	1	20.4	9.8	2.2
5	1.5	19.5	13.7	1.8
6	2	18.5	18.2	2.0
7	4	16.4	27.4	1.1
8	6	14.3	36.6	1.0
9	8	12.8	43.4	0.8
10	10	11.3	50.0	0.8
11	12	10.1	55.3	0.6
12	14	8.8	61.2	0.7
13	16	7.5	66.8	0.6
14	18	6.3	72.1	0.6
15	20	5.4	76.1	0.5
16	22	4.4	80.5	0.5
17	24	3.6	84.1	0.4
18	26	3.0	86.7	0.3
19	28	2.6	88.5	0.2
20	30	2.4	89.4	0.1
21	32	2.2	90.3	0.1

Table 1. Percent decolourisation and rate of degradation of AY36 in the present study.

4. Conclusion

Based on results obtained in the present study, Photocatalytic degradation was observed to be an effective process for decolourisation of azo dyes like AY36. The TiO_2-UV system can be used for the treatment textile industry wastewater containing toxic azo dyes. Optimisation of parameters regulating photocatalysis may be done to improve efficiency of the process to treat the industrial effluents to the level of compliance.

Conflict of interest

The authors declare no potential conflicts of interest.

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Innovative Developments in Coating for Making Flame Retardant Paper and their Kinetic Study

Dr. Krishan Kumar

ABSTRACT

Organic polymers and cellulose based papers are intrinsically flammable and therefore these materials need to be modified to prevent or delay fire propagation. This is usually carried out by means of incorporation of fire retardant material into the polymer/cellulosic based materials. However, an alternative and innovative way to provide flame-retardant properties to such material may be carried out through application of flame-retardant coatings. Furthermore, this coating provides anti-fire properties without affecting the bulk properties or processing of the polymer substrate and can be applied easily to any substrates. In this study, attempts were made todevelop a new approach based on an innovative coating. The coating composition includes compound based on phosphorus and nitrogen and char forming agents which trigger several fireproofing mode of actions in condensed and gas phases. This article investigates the preventive modification of cellulose paper to exhibit flame retardancy by application of intumescent coating through Pad-Dry- Cure conventional process. This study also explored the various parameter to achieve the goal like flammability and kinetic parameters of cellulosic paper and coated paper samples. Activation energy of thermal degradation of samples was determined using Coats-Redfern method. Result of the study revealed that paper samples coated with intumescent coating formulation were best as far as physical properties are concerned. The Limiting Oxygen Index (LOI) values of sample found increased from 18to 31% on coating. Activation energy of coated paper is found to be lower than simple uncoated paper.

KeyWords: Cellulosic fibre, intumescent, coating, flame retardant, activation energy

1.0 Introduction

Cellulosic polymeric material like fabric, papers, wood etc. undergoes degradation on ignition, forming highly burnable volatile products mainlyleavoglucosan with spread of fire causing injuriesand losses in fire accidents [1]. Cellulose thermally decomposes below 300°C under dehydration, depolymerisation and oxidation with release of CO, CO2 and carbonaceous residue [2, 3]. At higher temperature (> 300°C), tar consisting leavoglucosanasa major flammable constituent is formed [4, 5]. Function of flame retardant is to increase char at the cost of flammable volatiles. Many flame retardants available in the market such as chlorine-type flame retardant, bromine-type flame retardant, phosphorus-halogentype flameretardants and also inorganic flame retardantto make cellulosic papers as flame proof [6]. But halogen based flame retardant releases highly toxic and corrosive fumes during combustion. There has also been major interest in replacing halogenated flame retardants because of environmental and toxicity issues [7,8]. Also traditional phosphate-based flame-retarding papers meet the requirements of non-halogen, non-toxic, and low-fume characteristics. However, papers incorporating chemicals are liable to become wet when exposed to atmospheric moisture, leading to resist of their more-general acceptance.

In this study, attempts were made to develop a new approach based on an innovative coating. Intumescent flame retardant system requires acid source, a swelling agent and a char forming agent [9-13]. The coating composition includes compound based on phosphorus and nitrogen and char forming agents which trigger several fireproofing mode of actions in condensed and gas phases.

Experimental:

Materials

For intumescent flame retardant system, ammonium polyphosphate (APP) as an acid source, melamine as a swelling agent and pentaerythritol (PER) as a carbon source were obtained from Clariant Co., Germany. Normal Photocopy paper (purchased from market) was used for back coating, and acrylic resin, Zytrol-7800 as binder (Zydex Industries, India).

Preparation of intumescent formulation

Intumescent formulation was prepared containing intumescent components (APP, pentaerythritol and melamine) in ratio 3:1:1. The acrylic resin was used for coating the intumescent formulation on ordinary paper. The intumescent formulation was prepared by mixing evenly in pastel and mortar.

Intumescent formulation application and curing process

The intumescent formulations solution was prepared with desired proportions of M : L (material to liquor) ratio that incorporated into sample by using pad- dry- cure technique. The solution was placed in the trough of padding mangle for giving treatment. After dipping the samples into the solution for approximately 2 minutes, the sample was passed through the rolls at 2.5kPa pressure.

Two dip two nip were given to get desired chemical level of weight add on. The paper sample was taken for this study was basis weight of 75g/m2. Initial weight of sample taken for this proposes was 3.32 gram. The coating amount was adjusted using bars of different numbers and coat weight was maintained to 20-22 g/m2.Then the coated sample was dried in oven and cured at 110- 1200C for 2 minutes.

Thermal Analysis

Thermal degradation of samples was carried out by thermogravimetry (TG) (TA instruments SDT Q600). Samples in platinum crucibles were analyzed from ambient temperature to 600°C (heating rate, 10°C/min). Nitrogen was used as carrier gas (flow rate, 100 ml/min).

Limiting Oxygen Index (LOI)

LOI values that measure performance of flame retardancy were measured using a Stanford Redcroft FTA flammability unit BS-2782 instrument. Samples were tested according to standard method ASTM D2863, ISO-4589.

Kinetics Study

TG data were analyzed for kinetic study using Coats-Redfern method [14, 15]. It is assumed that only a single reaction occurs while a sample undergoes a certain temperature rise at a steady heating rate, β. Thus, Coats-Redfern equation when n≠1 is given below:

$$ln\left[\frac{1-(1-\alpha)^{1-n}}{(1-n)T^2}\right] = ln\frac{AR}{\beta E}+ln\left[1-\frac{2RT}{E}\right] - \frac{E}{RT} \quad \text{.........Equation (1)}$$

Where n=order of reaction, E is Activation Energy, A is Pre-exponential Factor, R is gas constant,

β is heating rate i.e, 10 0C/Min,

α is degree of conversion= (W0-WT)/(W0-Wf) where W0 is initial weight of sample, WT is residual weight of sample at temperature, T 0C, Wf is the final weight of sample.

when order of reaction, n=1 then Coats-Redfern equation become as below:

$$ln\left[\frac{-\ln(1-\alpha)}{T^2}\right] = ln\frac{AR}{\beta E}+ln\left[1-\frac{2RT}{E}\right] - \frac{E}{RT} \quad \text{.........Equation (2)}$$

Result and Discussion:

Thermal analysis

The untreated paper sample shows one stage of thermal degradation in range of 295-400 0C with weight loss of 79.2% and with DTG peak at 375 °C as given in Table 1 and shown in Fig 1-2. The sample degraded almost completely up to 400 °C leaving no char yield at 600 °C. The thermal degradation of sample was due to pyrolytic decomposition of reactions.

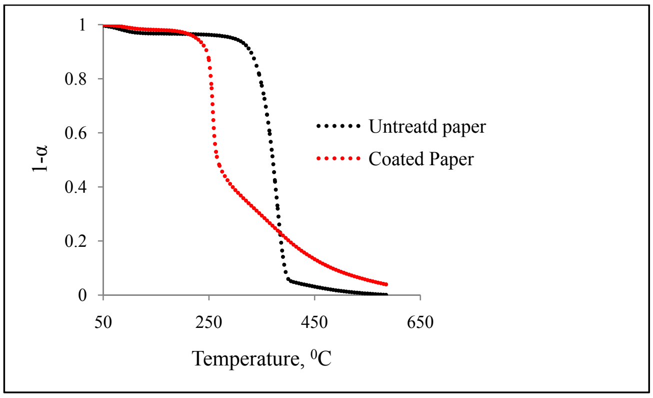

Fig 1: *curves in Nitrogen at heating rate of 10°C/min of untreated paper and Coated Paper*

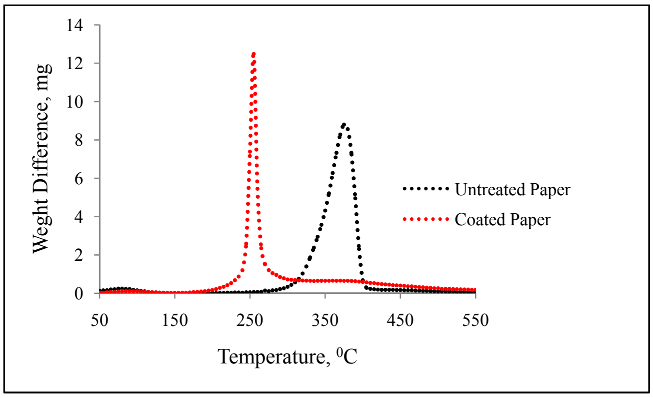

Fig 2: *DTG curves in Nitrogen at heating rate of 10°C/min of untreated paper and Coated Paper*

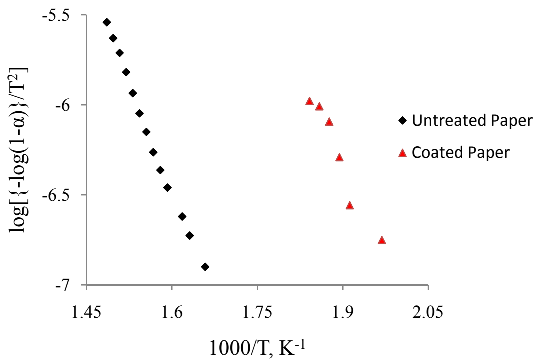

Fig 3: *Coats-Redfern plot for first stage of thermal degradation of untreated paper and Coated Paper*

Table 1: DTG peaks, LOI and Char Yield and Kinetic Parameters of untreated paper and its coated sample

Sample	TG Stages	Temperature Range (^{0}C)	Weight Loss (%)	DTG Peak (^{0}C)	1-α range	Activation Energy, (kJmol^{-1})	ln A (min^{-1})	Char Yield (%) at 600 ^{0}C	LOI (%)
Untreated Paper	Single	295-400	79.2	375	0.9-0.05	154.7	20.07	Nil	18
Coated Paper	First Stage Second Stage	240-270 270-600	31.5 31.2	255 -	09-0.49 -	129.8 -	20.12 -	28.7 -	30.2 -

First stage of thermal degradation:

Firststage of thermal degradation of intumescent coated paper in temperature range 240- 270 °C shows 31.5 % (Fig 1) weight loss. The first stage thermal degradation of sample is mainly due to pyrolyticdecomposition reactions corresponds to release of phosphoric acid from intumescent.This released phosphoric acid startsphosphorylate the cellulose as well as thepentaerythritol at about 200 °C. In themeantime the melamine (the third componentof intumescent formulation as swelling agent) sublimes at about 240 °C and start releasingNH_3 at about 260 °C and continues up to 380 °Cand weight is less in nitrogen atmosphere.This way, a cover of swelled material startsbuilding on the polymer substrate as a thermalbarrier. The dispersion of combustible volatilesfrom the burning substrate to combustion phaseis also prevented. The DTG peak at 255 °C (Fig 2) for coated paper also predicts the changes indecomposition stage of paper sample.

Second stage of thermal degradation:

Secondstageofthermaldegradationofintumescentcoatedpaperin temperature range 270-600 °C shows 31.2 % weight loss as in Fig 2.This may be due to pyrolytic decomposition,deoxygenation, dehydrogenation, andaromatization of char. At the same timecomplex formation takes place of intumescentcomponent with the substrate and solidification throughcross-linking reaction of residual char occurs inthis stage. No DTG peak is shown in this stagebecause of gradual weight loss.

Kinetics Study of Thermal Degradation

The kinetic parameters of thermal degradation of untreated and its coated samples were determined using first order Coats-Redfern method as in equation (2) on data obtained from TG and is given in Table 1 using Coats Redfern Plot (Fig 3). Activation energies of coated sample and untreated sample was calculated in range of degree of conversion ($1-\alpha=0.9-0.49$) and ($1-\alpha=0.9-0.05$) respectively, which falls in first stage of thermal degradation of maximum mass loss. Activation energy of coated paper (129.8 kJ mol^{-1}) is found lower than that of untreated paper (154.7 kJ mol^{-1}). Decrease in activation energy is due to catalyzing effect of phosphoric acid and metals, which show that dehydration path during thermal degradation of cotton is chosen resulting in more char formation at the expense of tar.

LOI and Char Yield

Char yield at 600°C and LOI values of untreated paper and its coated sample were obtained. Higher the valueof LOI and char yield, better is the flame resistance ofthe material. LOI value for pure untreated sample (18%) was found toincrease for intumescent coated sample (30.2%).No char yield was obtained for pure untreated paper sample at 600°C. Char yield for intumescent coated sample increased from zero to 28.7%.

Conclusions

TGcurvesofcoatedpapershowstwostagesofthermaldegradation which are mainly due to dehydration,pyrolytic decomposition and aromatization of char,respectively. For coated sample, pyrolytic degradationgives a less amount of tar consisting flammable volatileproducts and correspondingly higher char yield. Decrease in activation energy is due to catalyzing effectof released phosphoric acid, and support thatdehydration path during thermal degradation of polymeric substrateispreferred in which more char is formed at the expenseof tar. LOI value for pure untreated fabric (18%) increased for coated fabric(30.2%) again supports the flame retardant behaviour of coated sample.

Hence the thermogravimetric analysis, LOI and char yield results has demonstrated that coatings decompose, absorb heat, swell and form the protective char layers at the different temperature ranges, and, therefore, these cooperated reactions provide a good fire protection for the polymeric substrate in a fire.

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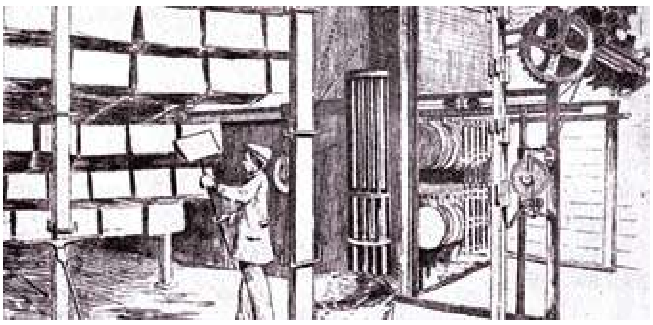

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Our Heritage

सूरजपाल चौहान की कहानियों में दलित चेतना

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शोध–सार :

सूरजपाल चौहान एक दलित वर्ग से हैं। वे अपनी कहानियों में ना केवल सहानुभूति की बात करते है, अपितु वे स्वानुभूति की बात करते है। क्योंकि उन्होंने इन सब चीजों को स्वंय झेला है। वे उस तबके से आते है जो समाज इन सब बातों को झेलता है, देखता है, उस पीड़ा को भोगता है। इसलिए इनकी कहानियों में केवल कल्पना नहीं है वो जीवन की सच्चाईयाँ है, जीवन का यथार्थ है। इनके तीन कहानी संग्रह 'हैरी कब आएगा', 'नया ब्राह्मण', 'धोखा–, अब तक प्रकाशित हो चुके है। इनकी मुख्य कहानियाँ 'बदबू', 'बहुरूपिया', 'बस्ती के लोग', 'कारज', 'तीन चित्र', ;एलिजाबेथ', 'जाति', 'झूठ के दो चेहरे' हैं जिनके माध्यम से मैं अपनी बात आपके सामने रख रही हूँ। इन्होंने अपनी कहानियों में दलित वर्ग में चेतना जागृत करने के लिए उनमें शिक्षा का अधिकार, सस्कृति का अधिकार, समानता का अधिकार, स्वतंत्रता का अधिकार के प्रति लोगों को जागृत किया है।

भारतीय समाज में दलित के लिए विभिन्न शब्दों का प्रयोग हुआ है जैसे– अछूत, हरिजन, अस्पृश्य आदि। शब्दकोशीय आधार पर इसके अग्रलिखित अर्थ लिए जा सकते हैं – दबाया गया, सताया गया, खंडित, बिखरा हुआ, कुचला हुआ, बांटा गया, रौंदा गया, अपमानित, उपेक्षित, शोषित, पीड़ित, उत्पीड़ित, पराश्रित आदि।" (1)

'महात्मा गांधी ने शूद्रो के लिए 'हरिजन' शब्द प्रयुक्त किया परन्तु भीमराव अम्बेडकर ने इसका विरोध किया क्योंकि दक्षिण भारत के मंदिरों में देववासियों से उत्पन्न अवैध संतानों को हरिजन कहा जाता था। यह 'हरिजन' शब्द घृणा की दृष्टि से देखा गया। 'दलित' शब्द का प्रयोग स्वयं डॉ0 अम्बेडकर ने किया यह 'डिप्रेस्ड क्लास' का हिंदी पर्याय है। यह वही शब्द है जो कि स्वर्ण हिंदुओ के उत्पीड़न, दलन और अन्याय का प्रतीक है तथा इसके उत्पीड़न से मुक्ति का उद्‌घोष है।' (2)

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पन्ना भगत कहता है – " मगना, बावरो मत बने, उल्टी गंगा मत बहा............बरसों से चले आ रहे रिवाजों को ताक पर, पहले अपने बाप की चिता की आग को ठण्डी करने की सोच ताकि उनकी आत्मा को कूं शान्ति मिल सके।" (10)

मगनलाल मोहल्ले के लोगों की आँखों पर जो अज्ञानता का पर्दा पड़ा था उसे हटाने की कोशिश करता हैं। कमली अपने पति से कहती है–"गाँव में अब भी छुआछूत, ऊँच–नीच और कुप्रथा का बोलबाला है, ऊँची जाति की क्या कहें, दलितों में की आपस में।"(11)

कहानीकार ने 'तीन चित्र ' शीर्षक कहानी के दूसरे चित्र से स्पष्ट किया है अगर कोई स्वतंत्र व्यवासाय करना चाहे तो सवर्ण समाज में लोग उसके उस धंधे को चौपट कर देते हैं। पंडित की दुकान के सामने चाय की दुकान लेकर बैठे चतरसिंह की जाति पता चलते ही उसका धंधा बरबाद कर देते हैं।

दलित युवक अगर सवर्ण कन्या से विवाह कर लेता है तो या तो उसे मार दिया जाता है या उसे वह स्थान छोड़ कर भाग जाना पड़ता हैं। हर किसी को अब यह कहते हुए तो सुना है कि पहले जैसे जाति–व्यवस्था नहीं रही।

अब दलित लड़के– लड़की में साथ स्वर्ण शादी करते है लेकिन ऐसा कुछ नहीं है सब ढकोसला है। दलित लड़कियों के साथ सवर्ण वर्ग के युवक रंगरेलिया तो मना सकता है लेकिन उससे शादी की बात आए तो अपनी बात से मुकर जाता है। 'एलिजाबेथ' कहानी में एलिजाबेथ के माँ–बाप ईसाई धर्म अपनाने के बाद भी जाति से पीछा नहीं छुड़ा पाए। विनोद को उसकी जाति का पता चलते ही पीछे हट गया। रवीन्द्र कहता है "एलिजाबेथ और उसके परिवार के लोग ईसाई बनने से पहले चूहड़ा जाति से सम्बन्ध रखते थे, यार अशोक , क्या धर्म बदलने से जाति बदल जाती है, यह तो अच्छा हुआ कि समय रहते सच्ची बात पता चल गयी, वरना विनोद के साथ बहुत बड़ा अनर्थ हो जाता। प्रगतिशील या वामपन्थी होने का यह मतलब तो नहीं कि किसी भी चूहड़ी–चमारी से विवाह रचाते फिरे।" (12)

पढ़े लिखे दलितों में दलित अपनी पहचान मिटाकर छलावे के पीछे भाग रहा हैं लेखक इस वर्ग को नया ब्राह्मण कहते हैं। ' नया ब्राह्मण' कहानी में मंगूल राम नौकरी मिल जाने के बाद अपने अतीत को भूल जाता है। उसे अपने माँ से रहने–सहने से भी छिन आने लगती है। " उरी अम्मा, कैसी रहवै तू भंगन सी, ठीक से रहा कर अफसर की माँ जैसी।" (13)

' जाति ' कहानी दिल्ली में एक सरकारी दफ्तर के अन्दर जाति भावना और अवमानना के चित्र प्रस्तुत होते हैं। कहानी में ब्रांच मैनेजर एक दलित है और वहाँ काम करने वाले ब्राह्मण और स्वर्ण समाज से हैं। चेतन दलित वर्ग से हैं। चेतन पी.सी. शर्मा विरोध करते हुए

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मैनेजर से कहता– " सर यह पी0सी0 शर्मा समझता क्या, बामन का चौ...........जब भी मिलता है मेरी जाति ही पूछता है। कई बार उसे बता चुका हूं कि शिडयूल कास्ट हूं, लेकिन हरामी कुरेद–कुरेदकर मेरी उप–जाति में बारे में जानना चाहता ।सर, इसने फिर कभी पूछा तो साले के होश ठिकाने लगा दूंगा।" (14)

' झूठ के दो चेहरे' कहानी में लेखक समाज में चित्रित दोगलों चेहरों की बात करता हैं। एक तो हम भंगी समाज की औरतों की ताई कहकर बुलाते है दूसरे और उनसे छूआछूत करते हैं। वह कहता है – " अगर सुक्को गाँव में किसी की ताई, चाची या किसी की भाभी है तो फिर उसके बेटे मुक्खा को गाँव की पाठशाला में दूसरे बच्चों से अलग क्यों बैठाते है। मेरे बापू और अम्मा मुझे मुक्खा के संग खेलने क्यों नहीं देते। एक ओर सुक्को मेरी ताई लगे तो फिर दूसरी और यह छुआछूत क्यों।"(15)

निष्कर्षः–

दलित साहित्यकार सूरजपाल चौहान अपनी लेखनी के बल पर देश – विदेश के लोगों का ध्यान अपनी ओर आकर्षित करने में सफल रहे।

सुरजपाल चौहान जी वैज्ञानिक आधार पर अम्बेडकर वादी है। वह दलित एकता के प्रति समर्पित है । सूरजपाल चौहान दलित संहिता के प्रतिबद्ध है। वे चाहते है कि समाज में सभी को समान हक मिलें। समाज में ऊँच–नीच का भेद खत्म हो। वह समाज में समानता चाहते है।

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A study of Soliton Transmission with Wavelength Division Multiplexing and Four Wave Mixing

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Abstract:- Soliton waves are those waves which propagate long distance without any distortion of its wave form. The propagations of optical pulses in optical fiber by non-linear Schrodinger (NLS) equation calledsoliton in optical fiber. The optical solitons have been experimentally generated by various research worker using mode-locked lasers and single mode fiber. It is necessary to generate short pulses at wavelength greater than Υ_0 which is in the 1.3 to 1.5 µm region of single mode fused silica fibers. Generally color center lasers have been used to create the pulses, although semiconductor diode laser are becoming available which can generate the optical solitons is of the order of 1W. Such peak powers are relatively straight forward to generate.

***Keywords*:** Optical solitons; optical fiber; optical nonlinear; dispersion; WDM and FWM

1. Introduction

The optical fiber development much of the effort was devoted to decreasing the loss. These efforts led to the realization of the low-loss single mode silica fiber which has a minimum attenuation at 1.55mm. In single-mode fibers the total dispersion is the sum of material dispersion caused by the dispersive properties of the waveguide material and waveguide dispersion caused by the guidance effects within the fiber structure. The total dispersion can be negative or positive depending on the wavelength. In silica based fiber the total dispersion passes through zero to 1.3mm and it is negative for the wavelength greater than 1.3mm.

In 1973 Hesegawa and Tappert modeled the propagation of coherent optical pulses in optical fiber by nonlinear Schrodinger (NLS) equation which showed theoretically that generation and propagation of shape preserving pulses called soliton in optical fibers. They solved the nonlinear Schrodinger (NLS) equation. This equation has an exact solution for an initial pulses shape of N_{sech} (t), where N is any integer known as order of solitons. The first order solitons is a self-maintaining pulses whereas higher order solitons split and narrow which recovering their initial shape at the end of a period which is P/2 in normalized coordinate axis. This period is known as the solitons period. They showed that the pulses can be convex upward (bright solitons) or Concave upward (dark solitons) depending on the sign of the dispersion. If dispersion is positive 'dark solitons' generated or positive then bright solitons generated. The following properties of solitons make them attractive for optical communication systems.

i. Pulse shape the width and speed are preserved in the absence of loss
ii. Solitons are stable against small perturbations

iii. They collide with each other without changing their shape and speed.

At present solitons propagation is the only method which can be induced broadening of pulses in fiber-optics transmission. This important discovery of Hagegawa and Tappert stimulated extended research towards optical solitons as in high bit-rate optical fiber communication systems.

During the present research work, we have tried to analysis the following cases-

i. Introduction to Soliton Propagation
ii. Types of Soliton
iii. Soliton Transmission
iv. Wavelength Division Multiplexing in Solitons
v. Four Wave Mixing in Solitons
vi. Stability of Solitons
vii. Conclusions

2. Types of Soliton:

2(a) Spatial Solitons : The nonlinear effect can balance the diffraction. The electromagnetic field can change the refractive index of the medium while propagation thus creating a structure similar to a graded-index fiber. If the field is also a propagating mode of the guide it has created, then it will remain confined and it will propagate without changing its shape.

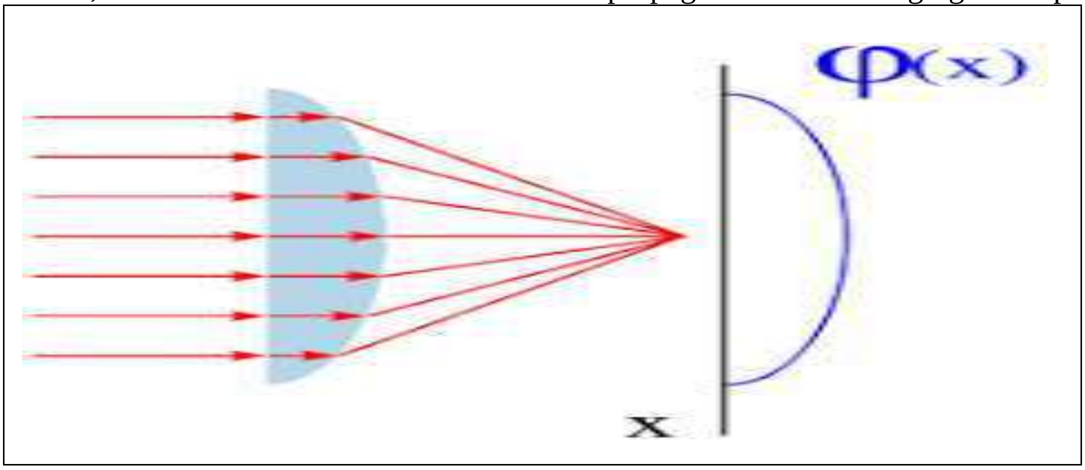

Fig- Optical field approaches the lens and focused

In order to understand how a spatial soliton can exist, we have to make some considerations about a simple convex lens. As shown in picture on the right an optical field approaches the lens and then it is focused. The effect of the lens is to introduce a non-uniform phase change that causes focusing. This phase change is a function of the space can be representing with a $\Psi(x)$, whose shape is approximately represented in picture.

The phase change can be expressed as the product of the phase constant and the width of the path in field has covered can be written as

$$\Psi(x)= k_0 nL(x) \qquad \text{...........1.1}$$

Where L(x) is the width of the lens changing in each point with a shape that is the same of $\Psi(x)$ because k_0 and 'n' are constants. In other words, in order to get a focusing effect we just have to introduce a phase change of such a shape but we change the value of the refractive index n(x) we will get exactly the same effect, but with the completely different approach.

That's the way graded-index fiber work; the change in the refractive index introduces a focusing effect that can balance the natural diffraction of the field. If the two effects balance each other perfectly, then we have a confined field propagating within the fiber. Spatial solitons are based on the same principal: Kerr effect introduce a self-phase modulation that changes the refractive index according to the intensity

$$\Psi(x)= k_0(x)L = k_0L[n+n_2I(x)] \qquad \ldots\ldots\ldots\ldots 1.2$$

If I(x) have a shape similar to the one shown in the figure, then we have created the phase behavior we wanted and the field will show a self-focusing effect. In other words the field creates a fiber like guiding structure while propagating. If the field creates a fiber and it is the mode of such a fiber at the same time. It means that the focusing non-linear and diffractive linear effects are perfectly balanced and the field will propagate forever without changing its shape (as long as the medium does not change and if we can neglect losses. In order to have a self-focusing effect, we must have a positive n_2, otherwise we will get the opposite effect and we will not notice any non-linear behavior.

2(b) Temporal Solitons: If the electromagnetic field is already spatially confined, it is possible to send pulses that will not change their shape because the non-linear effects will balance the dispersion. Those solitons were discovered first and they are often simply referred as "solitons" in optics. The main problem that limits transmission bit rate in optical fibers is group velocity dispersion. It is due to the fact that generated impulses have a non-zero wide bandwidth and the medium they are propagating through have a refractive index that depends on the frequency or wavelength. This effect is represented by the group delay dispersion parameter D; using it it's possible to calculate exactly how much the pulse will widen

$$\Delta\tau \sim DL\Delta\lambda \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 1.3$$

Where L is the length of the fiber and $\Delta\lambda$ is the bandwidth in terms of wavelength. The approach in modern communication systems is to balance such dispersion with other fiber having D with difference signs in different parts of the fiber: this way pulses keep on broadening and shrinking while propagating anyway with temporal solitons. It is possible to remove such a problem completely.

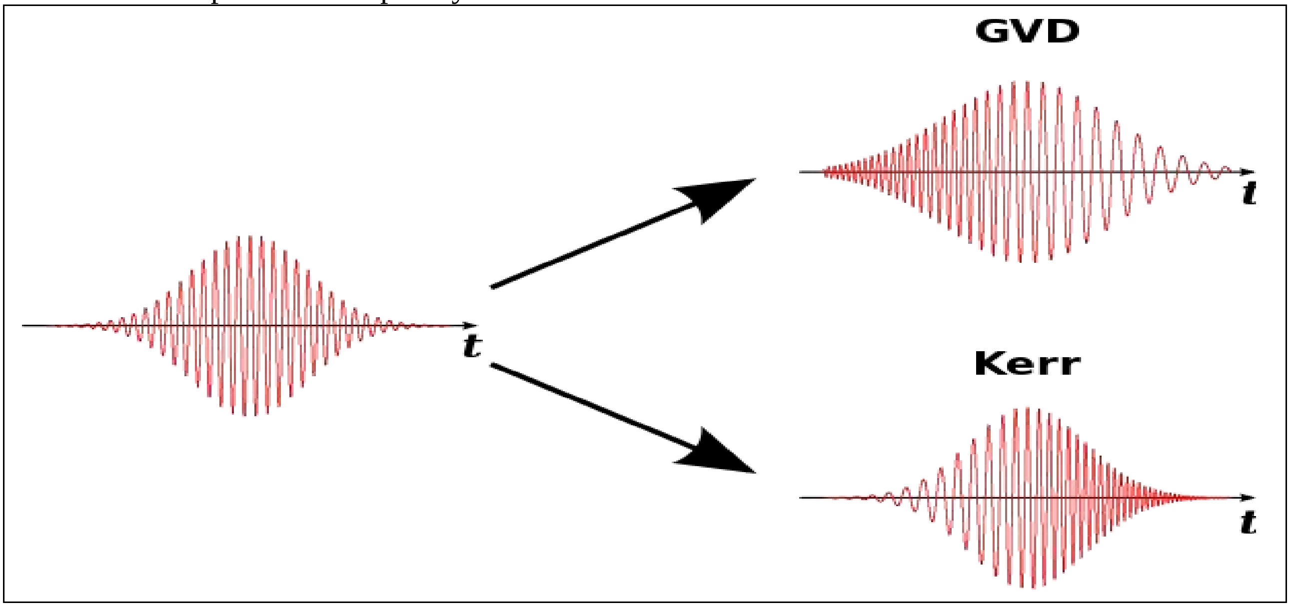

Fig:- Linear and Non-linear effects on Gaussian pulses

In above picture left side is a standard Gaussian pulse which is the envelope of the field oscillating at a defined frequency. We assume that the frequency remains perfectly constant during then pulse.

Now we let this pulse propagate through a fiber with D>0, it will be affected by group velocity dispersion. The higher frequency components will propagate a little bit faster than the lower frequencies, thus arriving before at the end of fiber. The overall signal we get is a wider chirped pulse shown in the upper right of the picture.

Now let us assume we have a medium that shows only non-linear Kerr effect but its refractive index does not depend on frequency- such a medium does not exists, but it's worth considering it to understand the different effects.
The phase of the field is given by:

$$\Psi(t) = \omega_0 t - kz = \omega_0 t - k_0 z[n+n_2 I(t)] \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots 1.4$$

The frequency (according to its definition) is given by

$$\omega(y) = \partial\Psi(t)/\partial t = \omega_0 - k_0 z n_2 \, \partial I(t)/\, \partial t \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots 1.5$$

This situation is represented in the picture on the left shows in beginning of the pulse the frequency is lower and at the end is higher. After the propagation through our ideal medium, we will get a chirped pulse with no broadening because we have neglected dispersion.
Coming back to the first picture, we see that the two effects introduce a change in frequency in two different opposite directions. It is possible to make a pulse so that the two effects will balance each other. Considering higher frequencies, linear dispersion will tends to let them propagate faster, while non-linear Kerr effect will slow them down. The overall effect will be that the pulses do not change while propagating: such pulses are called temporalsolitons. An electric field is propagating in a medium showing optical Kerr effect through a guiding structure (as an optical fiber) that limits the power on x-y plane.
2(c) Dark Solitons:- In the analysis of both types of solitons we have assumed particular conditions about the medium

- In spatial solitons, $n_{2\,>\,0,}$ that means the self-phase modulations causes self-focusing
- In temporal solitons$\beta_2 < 0$ or $D > 0$, anomalous dispersion

Is it possible to obtain solitons if those conditions are not verified or if we assumed $n_2 > 0$ or $\beta_2 < 0$ we get the following differential equation (it has the same form in both cases we will use only the notation of the temporal solitons).

$$-1/2\partial^2 a/\partial\tau + \partial a/\partial^{\zeta} {}_{+\,N}{}^2 IaI^2 a=0 \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots 1.6$$

This equationhas soliton like solution . For the first order (N=1):

$$a(T,\zeta) = \tanh(T)e^{i\zeta} \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots 1.7$$

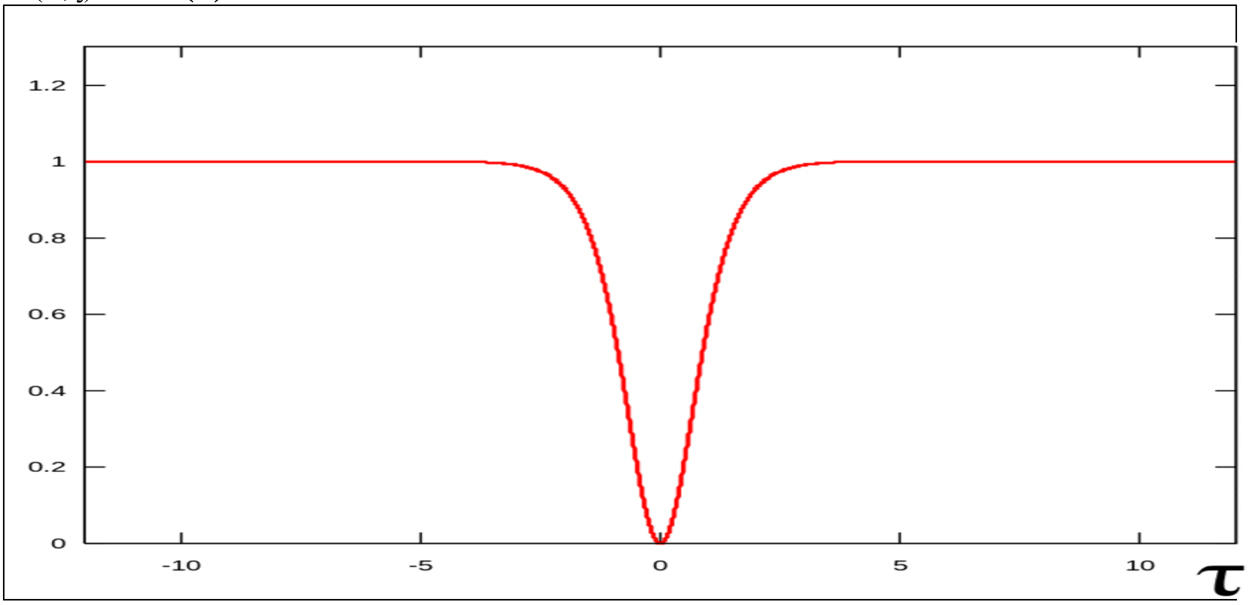

Fig:- power of a dark soliton

Power of darksoliton shown in figure. For highest order soliton (N>1) we can use the following closedform expression.It is a soliton, in the sense that it propagates without changing its shape, but it is not made by a normal pulse, but it is a lack of energy in a continuous time beam. The intensity is always constant, but for a short time it becomes zero and then back to the constant value again , thus generating a "dark pulse", from which the name dark solitonthose soliton can actually be generated introducing short dark pulses in much longer standard pulses. Dark solitonsare GeO2and P_2O_5 compositional fluctuations can occurs .These two effect give rise to refractive index variations which occurs within the glass over distances that are small compared with he wavelength. These index variations cause a Rayleigh-type scattering of light. Rayleigh scattering in glass is the same phenomenon that scatters light from the sun in the atmosphere, thereby giving rise to a blue sky.

3. Soliton Transmission:- The solutions a pulse able to keep its shape and width steady as a result of mutual compensation of dispersion broadening and self-phase modulations narrowing processes has been discussed above. The Wavelength Division Multiplexing system is based on solitons transmission. System of 128 channels with each channel carrying capable of 109 bit/sec. Its pulse is able to travel upto6,000KM without regeneration. Since solitons can be transmitted over a very long fiber link without amplifications and dispersion compensation. They look like the most promising transmission technology. The urgent need of solitons stems from the necessity to cope the most limiting effects in today's fiber. The major challenge in the development of commercial solitons transmission is already installed multimillion networks of standard fibers. Solitons are used to produce a pulse train suitable for solitons transmission.

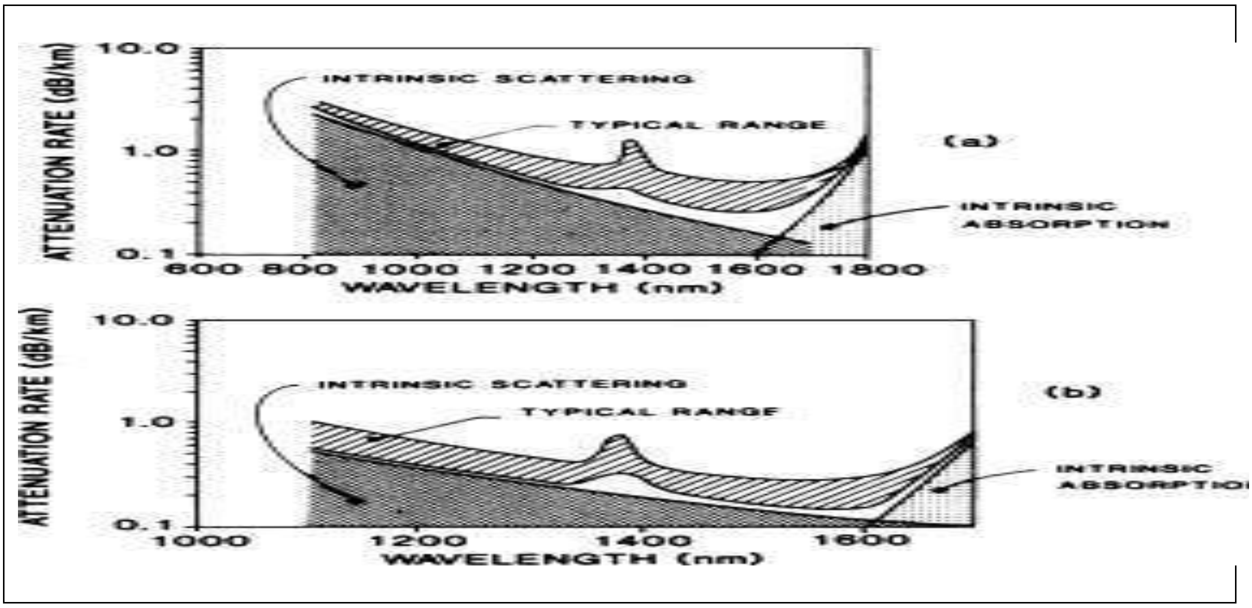

Fig- Semiconductor of the device for a hybrid pulse source

Our research goal is to realize long distance large capacity optical transmission by taking advantage of optical nonlinear effects, including optical solitons and nonlinear techniques for generating ultra-short optical pulses. Thus soliton is a wave that exists in nature which can propagate over long distances without any distortion in its waveform. Another interesting property of solitons is the durability, which means that once generated and launched into the fiber they retain their shape over long distances.

4. Wavelength Division Multiplexing (WDM) with solitons-

The wavelength division multiplexing is the potentially an effective way to increase the capacity of ultra-long distance date transmission. For most transmission modes, however nonlinear interaction tend to cause server in inter channel interference. On the other hand in losses, constant dispersion fiber, solitons of different wavelength are transparent to each other. The transparency means that each solitons emerges from a mutual collision with wavelength energy and shape. In particular FWM components that make a temporary appearance during the collisions are reabsorbed by solitons. This transparency can be maintain in the system by use of a chain of lumped amplifiers as long as the collision length (

the distance that the solitons travel down the fiber while passing through each other) is two or more times the amplifier spacing. Nevertheless the effect of cross-phase modulation between colliding solitons and their generation of the FWM components was assumed to be similar to that in the lossless case. In the recent experimented study of soliton WDM transmission at 10 G bits per channel, however we observed serious penalties, particulars the distance for error free transmission. Thus it is clear that the above analysis has an important effect.

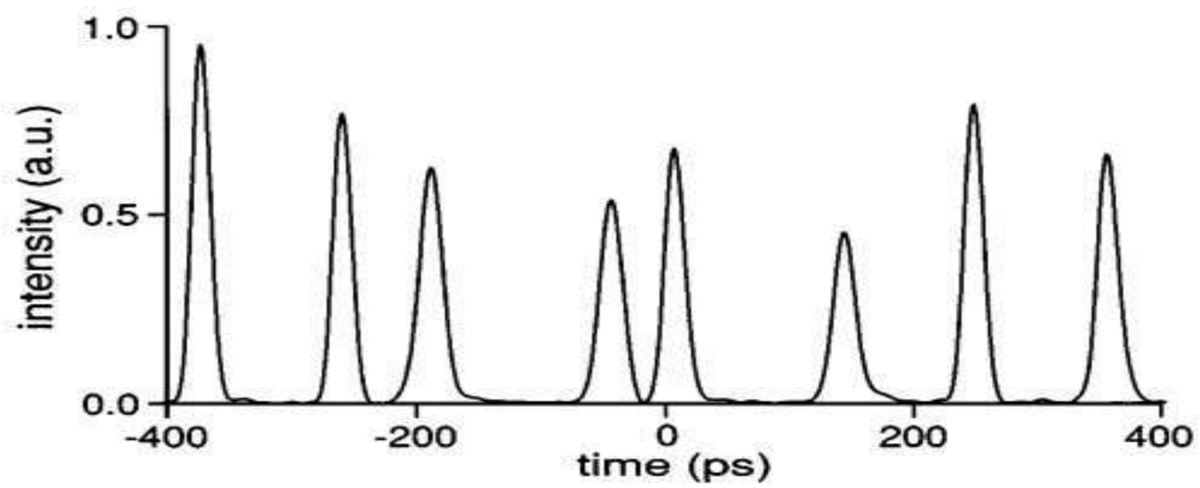

Fig*- *Intensity(a.u.) with respect to Time(p.sec)

The net results in that WDM solitons system behave quite differently from conventional WDM system e.g. channel spacing $\Delta\lambda$ in conventional WDM system must be longer than a certain critic value or satisfactory performance. But soliton system impose an additional requirement $\Delta\lambda$ must be smaller than another critical value. The growth of FWM products can be effectively eliminated through proper dispersion management. The elimination is complete when the fiber decreases exponentially with distance exactly as does the single energy. Although such dispersion tapered fiber is not yet commercially available e.g. just a twosteps approximation almost completely eliminated the timing and amplitude jitter.

Residual Four Wave Mixing energy following a single collisions of 20-ps solitons in channels spaced 0.6 nm apart in a chain of fiber spans with D=0.5ps/(nm km). For constant D and for the optical two, three, four step approximation to the ideal exponential taper. The Four Wave Mixing energy for a single sideband and is normalized to the soliton pulse energy. No noise seed was used in these simulations. Channel spaced ‘n’ times the adjacent channel spacing the Four Wave Mixing intensity should scale as n-5. The apparently rapid full of in Four Wave Mixing effect is tempered somewhat by the facts that the no of collisions tends to increase as ‘n’ and that is really the vector addition of residual field quantum from at least several successive collisions that is to be referred here. Also note that the no of steps require for total suppression of the FWM intensity increasing channel spacing just two steps are required for lamp. In the neighborhood of 30km. Whereas our steps are required for same in fig. Finally note that because of the finite nature of the pulse width and collision length are responses.

5. Four Wave Mixing in Solitons-

The power dependence of refractive index has its origin in the third order non-linear susceptibility denoted by $\chi^{(3)}$. The non-linear phenomenon known as the Four Wave Mixing also originates from $\chi^{(3)}$. If three optical fields with carrier frequencies ω_1, ω_2 and ω_3 co-propagate inside the fiber simultaneously $\chi^{(3)}$ generate four field whose frequency is ω_4 related to other frequencies by a relation $\omega_4=\omega_1\pm\omega_2\pm\omega_3$several frequencies corresponding to different pulse and minus signs combinations are possible in principal. In practice most of these combinations do not build up because of the phase matching requirement. Frequency combination of the form $\omega_4 = \omega_1+\omega_2-\omega_3$ are often troublesome for multichannel communication systems. Since they can become nearly phase matched when channel wavelength lie close to the zero dispersion wavelength. In fact the degenerate Four Wave Mixing process for which $\omega_1=\omega_2$is often the dominate process and impulse the system performance most. On the fundamental level, a four wave mixing process can be viewed as a scattering process and impacts the system performance most. The four wave mixing process may also be interpreted between four photons. A photon of frequency ω_3 combines with a photon of frequency ω_4 will produce a proton of frequency ω_1 and ω_2 shown in fig.

$$\Delta=\beta(\omega_3)+ \beta(\omega_4)- \beta(\omega_1)- \beta(\omega_2) \qquad \ldots\ldots\ldots\ldots 1.8$$

Where $\beta(\omega)$ is propagation constant for an optical field with frequency ω.in degenerate case $\omega_2=\omega_1$, $\omega_3=\omega_1+\Omega$ and $\omega_3=\omega_1-\Omega$ where Ω represents the channel spacing. This process can still occur and transfer power from each channel to nearest neighbors. Such a power transfer not only results in the power loss for a channel but also induced inter-channel cross tall that degrades.

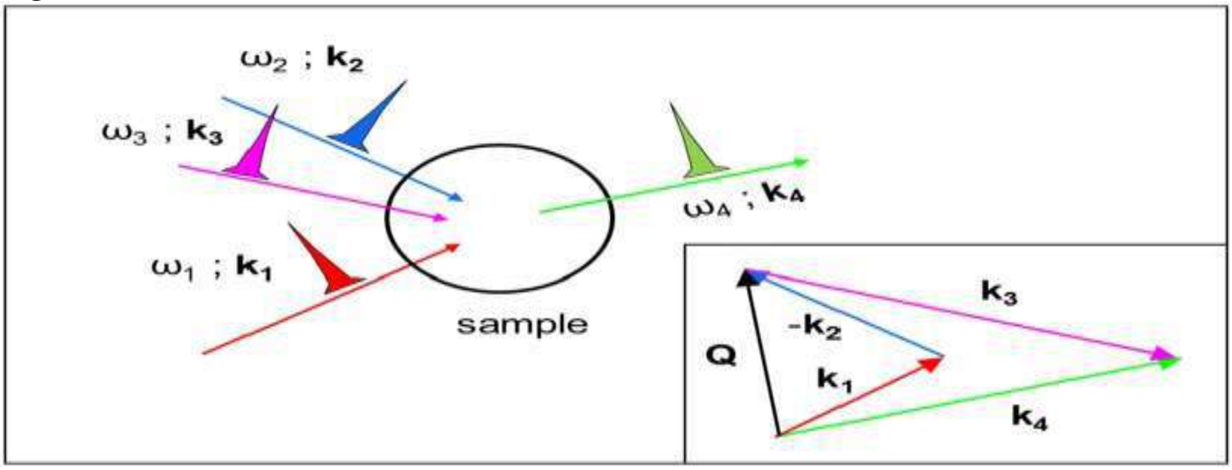

Fig-Interaction of four photons in Four Wave Mixing

Modern Wavelength Division Multiplexing system avoid Four Wave Mixing by using the technique of dispersion management I which Group Velocity Dispersion is kept locally high in each fiber section en through it is low on average. Four Wave Mixing, can also be useful in designing light wave system. It is also used for de-multiplexing individual channels when time division multiplexing is used in the optical domain. It is also used for wavelength conversion. Four Wave Mixing in optical fiber, is some time used for generating for a spectrally inverted signal through the process of optical phase conjugate. This technique is useful for dispersion compensation.

6. Stability of Solitons-We have describe what optical solitons are to creat a field with a particular shape with a particular power related to theduration of the impulses. But what if we are a bit wrong in creating such impulses then adding small perturbations to the equations and solving them numerically, it is impossible to show that memo-dimensional solitions are stable. They often referred as (1+1)Dsolitions meaning that they are limited in one dimension and propagate in another one say z.

If we create such a soliton using slightly wrong power or shape then it will adjust itself until it reaches the standard such shape with the right power. Unfortunately this is achieved at the expense of some power loss that can cause problems because it can generate another non-soliton field propagation together as we want. On the other hand (2+1)D spatial solitons are unstable so any small perturbation can cause the soliton to different as a field in a linear medium or to collapse damaging the materials. So working close this saturation level makes it possible to create a stable soliton in a three dimensional space.

7. Conclusions- The propagation of first order solitons with different pulse widths indicates that shorter initial pulse spread more than longer once although the loss coefficient in the non linear Schrodinger equations is smaller. These solitons are basically used in optical communications, optical switching, high energy physics and in solid state physics.

- **In optical communications-** The most use of solitons are in optical communications. In these cases information is encoded in light pulses and transmitted through optical fiber over a long distance in 1977. With the help of solitons theory optical cables has been developed which transmit 40,000 telephone conversations simultaneously which have been experimentally observed and theoretically confirmed. In addition we have shown that the uses of the DM soliton improve the power margin and the dispersion tolerance of long distance transmission systems without any distortion.
- **In optical switching-** The optical switching as the controlling of the gain from very low values to very high value or vice-versa. The solitons pulse having very narrow band width and highly intense so we obtain optical switching using solitons system.
- **In high energy physics-**High energy physics means the particle physics where size of the particle is very small having high kinetic energies. Ideal solitons, which propagate without waveform distortion, can exist only in a transmission line with no energy loss and no fluctuation of the group velocity dispersion along the line. For achieving soliton transmission in a real optical fiber, it has been necessary to extend the concept of the soliton.
- **In Solid State Physics-** In this case we used to measure the high energy of any object. If we want to measure the length of a person with having a box of height of several hundred meters so there is no matching of size of person and the box. It can be easily measured the height of a person accurately with the help of box. We have developed sereral novel soliton transmission techniques, such as the use of dispersion managed solitons, a pulse reshaping technique which we call soliton control and also wavelength division multiplexed (WDM) soliton transmission. By adopting these techniques, we can increase transmission capacity and upgrade installed terrestrial or submarine cables. As enabling technologies for these transmission techniques for ultra-short optical pulses; fiber gratings for the dispersion compensation and equalization and the application of ultra-fast optical pulses to optical signal processing. So we used the solitons system in solid state physics.

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आधुनिक भारत के शिल्पी : सरदार वल्लभ भाई पटेल

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सरदार वल्लभ भाई पटेल की गणना भारत के महान देषभक्तों में की जाती है। वे भारत के राष्ट्रीय स्वतन्त्रता संग्राम के अटल स्तम्भ थे। उनमें बिस्मार्क जैसी संगठन कुषलता, कौटिल्य जैसी राजनैतिक सुझ–बुझ और अब्राहिम लिंकन के समान राष्ट्र भक्ति विद्यमान थी। स्वतन्त्रता प्राप्ति के बाद उन्होंने असाधारण योग्यता एवं साहस का परिचय देते हुए देष की विभिन्न छोटी–बड़ी रिसायतों का विलनीकरण करके विष्व के मानचित्र पर एक अखण्ड भारत का निर्माण किया।

स्वतन्त्रता–प्राप्ति के समय भारत में लगभग छोटी–बड़ी 565 रियासतें थी, जिनके अन्तर्गत 715,964 वर्गमील क्षेत्रफल था और 1941 की जनगणना के अनुसार लगभग 931189233 जनसंख्या थी। परन्तु कोई भी रियासत राजनैतिक दृष्टि से स्वतन्त्र सार्वभौमिकता का प्रयोग नहीं करती थी और वे ब्रिटिष सरकार की अधिसत्तापूर्ण थी।

भोपाल के नवाब ने कैबिनेट मिषन के सामने अपना दृष्टिकोण स्पष्ट करते हुए कहा कि, ''भारत की रियासतें अधिक से अधिक प्रभुत्व के साथ अपना अस्तित्व बनाये रखना चाहती है। उन्होंने यह भी कहा कि यदि भारत के दो खण्ड बनाये जा सकते है तो रियासतों के लिए तीसरा खण्ड भी बनाया जाना चाहिए। रियासतों को भारत व पाकिस्तान में शामिल न किया जाये। ब्रिटिष भारत में जो भी सरकार बने, वह रियासतों के आन्तरिक मामलों में हस्तक्षेप न करें।'' 29 जनवरी 1947 ई0 को चेम्बर ऑफ प्रिंसेज की स्थाई समिति ने बम्बई की बैठक में कुद विषिष्ट अधिकारों की माँग की और कहा कि रियासतों का भारत संघ में शामिल होने का अन्तिम निर्णय रियासतों का होना चाहिए। परन्तु बड़ौदा के शासक ने इस निर्णय से असहमति जताते हुए व्यक्तिगत रूप से संविधान सभा में शामिल होने का निष्चय किया। 20 फरवरी 1947 को ब्रिटिष प्रधानमंत्री एटली ने जून 1948 ई0 को भारत को स्वतन्त्र करने की घोषणा की और देषी रिसायतों की सर्वोच्च सत्ता एवं दायित्वों को ब्रिटिष भारत की किसी सरकार को न सौंपने का स्पष्ट आष्वासन दिया, जिसके फलस्वरूप दोनों पक्ष प्रभावित हुए। 15 अप्रैल 1947 को बड़ौदा में सरदार पटेल ने राजाओं को सम्बोधित करते हुए कहा कि वे कांग्रेस से भयभीत न हो और संविधान सभा में भाग ले। उन्होंने चेतावनी भी दी कि, ''अन्त में हारकर आएगें, वह शोभा नहीं देगा। शादी के बाजे शादी के वक्त ही अच्छे लगते हैं, मौत के समय शोभा नहीं देते।''

16 अप्रैल 1947 को सरदार पटेल ने सूरत में अपने भाषण में रियासतों की ''ठहरो और देखो'' नीति की आलोचना करते हुए कहा कि राजाओं को शीघ्र ही अपने प्रतिनिधि संविधान सभा में भेज दें। 28 अप्रैल 1947 ई0 की संविधान सभा के अधिवेषन में बड़ौदा, जयपुर, रीवाँ, कोचीन, बीकानेर, जोधपुर, ग्वालियर एवं पटियाला के प्रतिनिधियों ने भाग लिया। लार्ड माउण्टबैण्टन ने भारत–विभाजन का निर्णय लेने के बाद जवाहरलाल नेहरू को भारत का जो प्रारूप दिखाया, उसमें भारत मात्र दो हिस्सों में नहीं वरन् अनेक छोटे–छोटे खण्डों में विभाजित था। माउण्ट बैटन ने अनुभव किया कि राजाओं के मध्य गम्भीर मतभेद है। भोपाल एवं ट्रावनकोर के राजा स्वतन्त्रता के पक्षधर थे। बीकानेर, जयपुर, जोधपुर, पटियाला एवं ग्वालियर के शासक संविधान सभा में सम्मिलत होना चाहते थे। हैदराबाद के निजाम जिन्ना के साथ समझौता करके पाकिस्तान में शामिल होना चाहते थे।

भारत स्वतन्त्रता अधिनियम के अन्तर्गत अंग्रेजी सरकार ने सभी देषी रियासतों को उनकी संप्रभुता वापस लौटा दी और उन्हें छूट दे दी गई कि वे अपनी इच्छानुसार भारत या पाकिस्तान में किसी के भी साथ समझौता कर ले अथवा अपना स्वतन्त्र अस्तित्व बनाये रखे। अतः अनेक देषी रियासतों के राजा स्वतन्त्र राज्यों का स्वप्न देखने लगे। परन्तु 15 जून 1947 को कांग्रेस ने इसका विरोध करते हुए अपने प्रस्ताव में कहा कि, ''अखिल भारतीय कांग्रेस समिति, भारत में किसी भी रियासत की स्वतन्त्रता की घोषणा करने और शेष भारत से अलग रहने की माँग को स्वीकार नहीं कर सकती। यह भारतीय इतिहास तथा जनता के लक्ष्यों की अस्वीकृति माना जाएगा।'' 5 जुलाई 1947 को भारतीय राज्य विभाग लौह पुरूष सरदार पटेल को सौंप दिया गया और वी.पी. मेनन को उनका सचिव बनाया गया। इसी दिन सरदार पटेल ने अपने ऐतिहासिक वक्तव्य में रियासतों के प्रति कांग्रेस के सहानुभूतिपूर्ण व्यवहार का आष्वासन दिया तथा ''केवल सुरक्षा, वैदेषिक सम्बन्ध और परिवहन के क्षेत्र में केन्द्रिय सरकार के अन्तर्गत आने का निवेदन किया।'' उन्होंने इतिहास की ओर इषारा करते हुए कहा, ''हमारी खण्डित अवस्था और एक होकर मुकाबला न करने की हमारी अयोग्यता का निरन्तर हमें षिकार होना पड़ा। हमारे आपसी झगड़े, ईर्ष्या, द्वेष और बैर भाव के कारण ही जो विदेषी आए, उनके सामने हम हार गए।'' सरदार पटेल ने रियासतों के शासकों और उनकी जनता को अपनी मातृभूमि के प्रति समान निष्ठा से प्रेरित होकर सबके समान हित के लिए मैत्रीपूर्ण और सहयोग की भावना से संविधान सभा में भाग लेने के लिए आमंत्रित किया।

11 अगस्त 1947 ई0 को सरदार पटेल ने अपने सम्बोधन में कहा कि, ''चार दिन पश्चात विदेषी सरकार चली जाएगी। अतः रियासतें 15 अगस्त तक भारतीय संघ में शामिल हो जाये, अन्यथा उनके साथ कठोर व्यवहार किया जाएगा।'' उन्होंने यह भी स्पष्ट रूप से कहा कि ''आज की दुनिया में अकेला रहना मुष्किल है। जब तेज आँधी आती है तब अकेला पेड़ गिर जाता है। मगर जो दूसरे पेड़ों के समूह में होता है वह बच जाता है। आप भी रामचन्द्र जी और अषोक जैसों के वंषज है। परन्तु यह भी सत्य है कि आप आजकल अंग्रेज अधिकारियों के छोटे–छोटे चपडासियों को भी सलाम मारते हैं। आपको अभी यह विष्वास नहीं है कि 15 अगस्त को अंग्रेज चले जाएँगे। परन्तु जब वे जाएँगे और आपको स्वतन्त्रता की हवा लगेगी तब आपके हृदय पट्ट खुलेगें।'' सरदार पटेल और वी.पी. मेनन के अथक प्रयासों से 14 अगस्त 1947 तक पटियाला, बीकानेर, धौलपुर, भरतपुर, बिलासपुर, ग्वालियर, नाभा, ट्रावणकौर, जोधपुर, भोपाल और इन्दौर रियासतें भारतीय संघ में शामिल हो गई। हैदराबाद, जूनागढ़, कठियाबांड एवं कष्मीर अब भी स्वतन्त्र थी।

1941 ई0 की जनगणना के अनुसार जूनागढ़ की जनसंख्या लगभग 670719 थी, इसमें 80 प्रतिषत हिन्दू थे। वहां का नवाब महावत खान रसूल खान था। उसे कुत्ते पालने का शौक था और उन पर वह अत्यधिक मात्रा में धन खर्च करता था। रियासत का सारा कार्य दीवान शाहनवाज भूट्टों देखता था, जो जिन्ना एवं मुस्लिम लीग के प्रभाव में था। जूनागढ़ में भी भावनगर, नवानगर, मौरवी, गोंडल, पोरबन्दर तथा वनकानकर इत्यादि रियासतें थी। भारत के राज्य विभाग ने जूनागढ़ में प्रवेष–लिखित पूर्ति हेतु भेजा। 13 अगस्त 1947 को शहनवाज भूट्टों ने उतर दिया कि वह विचाराधीन है। परन्तु भारत को अन्धकार में रखते हुए 15 अगस्त 1947 को जूनागढ़ पाकिस्तान में शामिल हो गया। जूनागढ़ की भीतरी रियासतों ने नवाब के इस कार्य की कडी आलोचना की। नवानगर के जाम साहब दिल्ली आए और सरदार पटेल तथा राज्य विभाग से काठियाबाद क्षेत्र में स्थाई शान्ति और व्यवस्था बनाये रखने के लिए शीघ्र कार्यवाही का अनुरोध किया।

17 सितम्बर 1947 ई0 को केन्द्रिय मन्त्रिमण्डल में फैसला लिया गया कि जूनागढ़ के चारो तरफ घेरा डाला जाए। जूनागढ़ के नवाब ने बाबरियागढ़ में सैनिक हस्तक्षेप करके 51 ग्रामों के शेखों को पाकिस्तान में सम्मिलित होने के लिए बाध्य किया, जो पहले ही भारत में शामिल हो चुके थे। सरदार पटेल के निर्णयानुसार कमाण्डर गुरदयाल सिंह के नेतृत्व में सेनाएं जूनागढ़ भेजी गई। भारतीय सेना ने जूनागढ़ की आर्थिक नाकेबन्दी कर दी। नवाब सैनिक कार्यवाही के भय से कराची भाग गया। सरदार पटेल ने जूनागढ़ जाकर वहां के लोगों की भावनाओं का आदर करते हुए उसे भारत में सम्मिलत कर लिया और पाकिस्तान को चेतावनी दी कि वो भारत के आन्तरिक मामलें में हस्तक्षेप न करें। 20 फरवरी 1948 को जूनागढ़ में जनमत संग्रह हुआ। 20 फरवरी 1949 में ये रियासतें सौराष्ट्र संघ में मिला ली गई।

भारतीय देषी रियासतों के शासकों में से हैदराबाद का निजाम मीर उस्मानअली खान बहादुर सबसे अधिक महत्वाकाँक्षी थे। उन्होंने 12 जून 1947 को घोषित किया कि अंग्रेजो के चले जाने के बाद हैदराबाद एक स्वतन्त्र राज्य की स्थिति प्राप्त कर लेगा। 29 नवम्बर 1947 को भारत सरकार एवं हैदराबाद के निजाम के मध्य एक 'यथास्थिति समझौता' हुआ, जिसके अर्न्तगत तय हुआ कि ''15 अगस्त 1947 के पूर्व तक हैदराबाद से पारस्परिक सम्बन्ध की जो व्यवस्था थी, वह बनी रहेगी। सुरक्षा, वैदेषिक सम्बन्ध और परिवहन की कोई नई व्यवस्था नहीं की जायेगी।'' समझौते की शर्तो के पालन के लिए दोनों ही एक दूसरे के पास एक–एक प्रतिनिधि रखेगी। सरदार पटेल ने के.एम. मुंषी को भारत सरकार का प्रतिनिधि बनाकर हैदराबाद भेजा। परन्तु शीघ्र ही निजाम ने ''यथास्थिति समझौते'' का उल्लंघन करते हुए पाकिस्तान को 20 करोड़ रूपये का ऋण दिया और बगैर भारत को सूचित किये पाकिस्तान में एक जन–सम्पर्क अधिकारी भी नियुक्त कर दिया। इतना ही नहीं निजाम के निर्देषों से ही 'इत्तिहादुल मुसलनीन' नामक फासिस्ट संगठन, जिसका मुखिया कासिम रिजवी था, वहां पर हिन्दुओं पर अत्याचार कर रहा था। यह संगठन खुलेआम हिन्दूओं एवं भारत सरकार के विरूद्व घृणा का भी प्रचार कर रहा था। के.एम.मुंषी ने निजाम के प्रधानमन्त्री लायक अली के पास इस विषय पर पत्र भी भेजा।

16 अप्रैल 1948 को लायकअली ने पटेल से मुलाकात की तो पटेल उसे चेतावनी देते हए कहा कि, ''मैं आपको असमजस की स्थिति में नहीं रखना चाहता। हैदराबाद की समस्या उसी प्रकार हल होगी जेसी कि अन्य रियासतों की, कोई दूसरा विकल्प नहीं है। हम कभी भारत के अन्दर एक अलग स्वतन्त्र स्थान के लिए सहमत नहीं हो सकते, जिससे भारतीय संघ की एकता भंग हो, जिसे हमने खुन तथा पसीने से बनाया है। हम मैत्रीपूर्ण ढंग से रहना तथा समस्याओं को सुलझाना चाहते है, पर इसका अभिप्रायः यह नहीं है कि हम कभी हैदराबाद की स्वतन्त्रता पर सहमत हो जायेंगे। हैदराबाद को स्वतन्त्र अस्तित्व प्राप्त करने का प्रत्येक प्रयास असफल होगा।''

हैदराबाद की समस्या दिन–प्रतिदिन विषम होती चली गई। 28 अगस्त 1948 को दिल्ली में हैदराबाद सरकार के प्रतिनिधि ने हैदराबाद समस्या को संयुक्त राष्ट्र संघ में ले जाने की सूचना दी। सरदार पटेल ने हैदराबाद में सैनिक कार्यवाही के लिए ''मेजर जनरल जे.एम.चौधरी के नेतृत्व में भारतीय सेनाएँ भेजी गई। 17 सितम्बर 1948 को हैदराबाद की सेनाओं ने आत्मसमर्पण कर दिया।

कष्मीर–भारत की उत्तर–पष्चिम सीमा पर स्थित वह राज्य है जो भारत एवं पाकिस्तान को जोड़ता है। आजादी के समय कष्मीर के शासक हरिसिंह ने स्वतन्त्र राज्य की कल्पना करते हुए भारत एवं पाकिस्तान दोनों में यथास्थिति समझौता कर लिया। कष्मीर में यातायात, डाक एवं संचार के साधन पाकिस्तान से होकर जाते थे। पाकिस्तान ने कष्मीर पर पाकिस्तान में विलय का दबाव बनाने के लिए कष्मीर के अन्न, पैट्रोल व अन्य आवष्यक वस्तुएँ भेजना बन्द कर दिया। सितम्बर एवं अक्तूबर 1947 को पाकिस्तान ने कबायलियों के रूप में सषस्त्र 5000 सैनिकों को कष्मीर पर आक्रमण करने के लिए भेजा। कष्मीर के राजा हरिसिंह ने 24 अक्तूबर को भारत से सैनिक सहायता माँगी और 26 अक्तूबर को कष्मीर के भारत में शामिल होने की लिखित घोषणा कर दी।

27 नवम्बर 1947 को भारतीय सेनाएं हवाई जहाजों के द्वारा कष्मीर भेजी गई। भारतीय सेना ने श्रीनगर से पाकिस्तानी सेना को वापस खदेड़ दिया। 1 जनवरी 1948 को सरदार पटेल की असहमती के बावजूद कष्मीर का प्रष्न संयुक्त राष्ट्र संघ की सुरक्षा परिषद् के समक्ष प्रस्तुत कर दिया गया। पटेल ने बड़े दुःख से कहा कि ''यदि जवाहर लाल नेहरू और गोपाल स्वामी आयगर ने कष्मीर को अपना व्यक्तिगत विषय बनाकर रियासत विभाग से अलग न किया होता तो कष्मीर समस्या उसी प्रकार हल होती जैसे कि हैदराबाद की।''

सरदार पटेल ने स्वतन्त्रता–प्राप्ति के पष्चात् रियासतों का विलय किया और एक अखण्ड भारत का स्वरूप प्रदान किया। पटेल ने उडीसा एवं छत्तीसगढ़ की छोटी–छोटी रियासतों को उड़ीसा एवं मध्य प्रान्त में मिलाई गई। काठियावाड़ में 14 सलामी, 17 गैर सलामी एवं 119 छोटी रियासतें थी। पटेल ने इनका विलय करके सौराष्ट्र संघ का निर्माण किया। सौराष्ट्र संघ का विधान बनाने के लिए एवं विधान परिषद् की स्थापना की। राजस्थान में भी 18 मार्च 1848 ई0 को अलवर,

भरतपुर, धौलपुर तथा करौली की रियासतों को सम्मिलित करके 'संयुक्त मत्स्य' की स्थापना की गई। दूसरे चरण में 25 मार्च 1948 को संयुक्त राजस्थान संघ में कोटा, बासबाड़ा, बूँदी, डूँगरपुर, भीलवाड़ा, किषनगढ़, प्रतापगढ, शाहपुरा तथा टोंक की रियासते शामिल की गई। तीसरे चरण में 1 अप्रैल 1948 को उदयपुर को और चौथे चरण में 18 अप्रैल 1948 को जयपुर, जोधपुर, बीकानेर तथा जैसलमेर को राजस्थान संघ में मिला लिया गया।

पटेल ने 2 अप्रैल 1948 को 38 रियासतों को एक जूट करके संयुक्त विन्धय प्रदेष की स्थापना की। 1 जनवरी 1950 को विन्ध प्रदेष का शासन केन्द्र सरकार ने अपने हाथों में ले लिया। मध्य भारत को दो संघों—ग्वालियर एवं इन्दौर में विभक्त करने का प्रस्ताव रखा। परन्तु पटेल ने इनमें संघर्ष की आषंका को लेकर एक संघ का निर्माण पर बल दिया, जो स्वीकार कर ली गई। पंजाब में पटियाला, जीन्द, नाभा, फरीदकोट, मलेर कोटला और कपूरथला का मिलाकर एक संघ 'पेप्सू' का निर्माण किया गया। वी.पी. मेनन ने ट्रावणकोर एवं कोचीन को मिलाकर एक संघ का निर्माण किया।

पटेल द्वारा नव—भारत निर्माण में देषी रियासतों का विलय अपनी अहिंसात्मक एवं शान्तिपूर्ण पद्वतियों के लिए विष्व के इतिहास में एक अभूतपूर्व क्रान्ति रहा है। प्रसिद्व राजनेता एन.वी. गाडगिल का कहना था कि, ''यदि महात्मा गाँधी हमारी स्वतन्त्रता के निर्माता है, तो सरदार पटेल भारतीय संघ के विष्वकर्मा है।'' मोरारजी देसाई ने पटेल की बिस्मार्क से तुलना करते हुए लिखा कि ''उन्होंने अधिक समय लिया और वह भी एक छोटे देष में जहाँ कुछ ही राज्य थे तथा एक ही धर्म के लोग थे। परन्तु पटेल ने यह कार्य एक विषाल देष में जहाँ विभिन्न धर्म तथा भाषा के लोग थे और जहाँ देष के प्रति अधिक देष भक्ति भी न थी।''

इस समस्या का समाधान पटेल ने अत्यधिक साहस एवं धैर्य से किया। इसी कारण भारतीय इतिहास में उन्हें लौहपुरुष एवं आधुनिक भारत के निर्माता के रूप में सदैव स्मरण किया जाएगा।

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लार्ड कार्नवालिस का स्थायी बन्दोबस्त : एक विवेचना

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16 वी ंसदी के उतरा(से लेकर 17वीं सदी तक अनेक यूरोपियन जातियाँ व्यापार करने के उद्देश्य से भारत आई। 1600 ई0 में ईस्ट इण्डिया कम्पनी की स्थापना हुई। 1600 ई0 से 1757 ई0 तक ईस्ट इण्डिया कम्पनी ने एक व्यापारिक कम्पनी के रूप में कार्य किया। अंग्रेजों ने 23 जून, 1757 ई0 को प्लासी की लड़ाई में बंगाल के नवाब सिराजुद्दौला को हराकर व्यापारिक कम्पनी को राजनैतिक शक्ति बना दिया। अक्तूबर 1764 ई0 में अंग्रेजों ने अवध के नवाब शुजादौला, बंगाल के नवाब मीर कासिम और मुगल सम्राट शाह सम्राट शाह आलम द्वितीय की संयुक्त सेना को हराया। 12 अगस्त 1765 ई0 को इलाहाबाद की सन्धि के तहत ईस्ट इण्डिया कम्पनी को बंगाल, बिहार, उड़ीसा की दीवानी प्राप्त हुई प्राप्त हुई। 1772 ई0 में वारेन हेस्टिंग्ज ने भू–राजस्व एकत्रित करने के उद्देश्य से पाँच वर्षीय व्यवस्था स्थापित की थी। 1777 ई0 में इसे एक वर्षीय व्यवस्था या इजारेदारी प्रथा में परिवर्तित कर दिया। इनके अनुसार जो जमींदार नीलामी में अधिक बोली लगाता था, उसे लगान एकत्रित करने का अधिकार दिया जाता था। लेकिन इन व्यवस्थाओं का यह दोष था कि न तो वह समय पर लगान जमा करवा पाता था अपितु किसानों से भी अधिक लगान वसूलने के लिए उन पर अत्यधिक अत्याचार करता था। भूमि की दशा को सुधारने की ओर न तो जमींदार और न ही किसान ध्यान देते थे। इस व्यवस्था में कृषि एवं व्यापार दोनों ही पतन की ओर अग्रसर हो गये। लार्ड कार्नवालिस ने 1793 ई0 में इन दोषों को दूर करने के उद्देश्य से स्थायी बन्दोबस्त लागू किया।

डॉ0 रणजीत गुहा ने अपनी पुस्तक “ A Rule of Property for Bangal” में स्थायी बन्दोबस्त की उत्पत्ति का आधार इंग्लैण्ड में प्रचलित वाणिज्यवादी आर्थिक विचारधारा तथा फ्राँस में फिजियोंक्रेटिक विचारधारा बताया है, जो निजि सम्पत्ति के सिद्धान्तों पर अधिक जोर देते थे। फ्राँस में अच्छे एवं स्थिर समाज का आधार सम्पत्ति की

सुरक्षा में देखा गया। फिजियोक्रेटिक विचारधारा में आय का मुख्य साधन कृषि माना गया। अतः कृषि के क्षेत्र में अतिरिक्त उत्पादन बढ़ाने के लिए स्थायी बन्दोबस्त को अनिवार्य माना गया। 1784 ई0 में पिट्स कानून में भी जमींदारों द्वारा लगान एकत्रित करने के अधिकारों को मान्यता दे दी गई। समकालीन विचारकों का यह मानना था कि इंग्लैण्ड के समान बंगाल में भी सम्पत्ति सम्बन्धी अधिकार ऐसे वर्ग को सौंप दिये जायें, जिसकी भूमि में गहरी दिलचस्पी हो। लार्ड कार्नवालिस का स्वयं मानना था कि बंगाल में कृषि ही धन का स्त्रोत है, वाणिजय नहीं। वाणिज्य का विस्तार कृषि क्षेत्र की समृद्धि पर ही निर्भर करता है। इंग्लैण्ड के वाणिज्य के विकास में भी भारतीय कृषि महत्वपूर्ण भूमिका अदा कर सकती है। नीलाद्वि भट्टाचार्य के अनुसार स्थायी बन्दोबस्त की विचारधारा न केवल यूरोप की बौद्विक विचारधारा से उत्पन्न हुई, अपितु स्थानीय परिस्थितियाँ भी इसके अनुकूल थी। बंगाल में भी मध्यकाल से ही बड़े–बड़े जमींदारों का अस्तित्व था, जो राजनैतिक क्षेत्र में भी महत्वपूर्ण स्थान रखते थे। N.K. Sinha के अनुसार स्थायी बन्दोबस्त का एकमात्र उद्‌ेष्य अधिकतम भू राजस्व प्राप्त करना था।

आधुनिक इतिहासकारों में अभी तक इस बात पर विवाद है कि अंग्रेजों के आगमन से पूर्व जमींदारों का कृषि व्यवस्था में क्या स्थान था, तपनराय चौधरी के अनुसार भूमि नियंत्रण और भूमि स्वामिस्व का सही अनुमान लगाना बहुत कठिन है। एस0 नुरूल, हसन के अनुसार वारेन होस्टिग्जं स्वयं यह मानता था कि जमींदार शब्द अनेक प्रकार के अधिकारों का सूचक है, परन्तु उनकी वास्तविक स्थिति से वह अवगत न था। तपनराय चौधरी का मानना है कि अंग्रेजों के प्रभुता से पहले बंगाल के जमींदार स्वतन्त्र या अर्ध–स्वतन्त्र मुखिया थे, जो पेशकश देकर प्रषासनिक स्वायत्तता प्राप्त करने में सफल हो गये थे।

बंगाल के नवाब मुर्षिद, कुली खान के शासन काल में जमींदारों ने नवाब सरकार को निश्चित रकम देकर भू राजस्व एकत्रित करने एवं ग्रामीण प्रशासन के पैतृक अधिकार प्राप्त कर लिये थे। अतः हम यह देखते है कि अंग्रेज अधिकारियों में जमींदारों के अधिकार, कार्य–क्षेत्र एवं उनके अधिकारों को लेकर पर्याप्त मतभेद था। सर जॉनषोर के अनुसार जमींदार भूमि के स्वामी है और इन्हें भूमि कर एकत्रित करने का अधिकार है। सरकार को तो उसमें से एक निश्चित भाग रस्मी भूमि कर के रूप मे लेने का अधिकार है। शोर ने जमींदारों के इस अधिकार को वंशानुभव माना है। परन्तु जेम्स ग्रांट का विचार था कि

सरकार समस्त भूमि की स्वामी है और उसे अधिकार है कि वह जमींदार या रैय्यत किसी से भी यह समझौता कर सकती है। उसका यह भी मानना था कि लम्बा या स्थायी समझौता करने से पूर्व समस्त रिवाजों एवं भूमि सम्बन्धी रिकार्ड की जानकारी प्राप्त कर ली जाये।

सर जॉन शोर के विचारों से सहमत होने के कारण और कम्पनी के अधिकारियों की अक्षमता एवं प्रशासनिक अनुभवहीनता का अहसास करते हुए जमींदार के साथ ही नई भूमिकर व्यवस्था स्थापित करने का निश्चय किया। राष्ट्रीय विचारधारा के इतिहासकारों का मानना है कि कार्नवालिस सम्पत्ति के अधिकार ऐसे वर्ग के पास सुरक्षित कर देना चाहता था, जिस पर राजनैतिक रूप से निर्भर किया जा सके और जनता के प्रतिरोध पर भी अंकुश लगाया जा सके। परन्तु B.B. Chowdhuri ने इसका खंडन करते हुए कहा है कि लार्ड कार्नवालिस बंगाल में कृषि के पतन से अवगत था और उसका मानना था कि भूमि लगान को स्थायी रूप से निर्धारित करने से न केवल लगान वसूली में स्थिरता व निरन्तरता आएगी अपितु इससे कम्पनी के व्यापार का भी अभूतपूर्व विकास होगा।

अतः लार्ड कार्नवालिस ने जमींदारों को एक वर्ष के लिए बंगाल में भू–राजस्व एकत्रित करने का अधिकार दे दिया गया। 1790 ई0 में यह लगान व्यवस्था दस वर्षीय कर दी कि लार्ड कार्नवालिस ने कम्पनी के डायरेक्टरों से स्वीकृति मिलने पर 1793 ई0 मं जमींदारों से स्थायी बन्दोबस्त किया। इस व्यवस्था के अन्तर्गत सरकार ने जमींदारों एवं उनके उत्तराधिकारियों के लिए भूमि कर की दर निश्चित कर दी गई और यह दर भविष्य में नहीं बदली जाएगी। जब तक निश्चित समय पर जमींदार निर्धारित भू–राजस्व सरकार को देते रहेगें, तब तक उन्हें भूमि का स्थायी स्वामी माना जाएगा। 1793 ई0 के विनियम XIV में लगान वसूल करने के लिए सरकार को जमींदारों की सम्पत्ति जब्त करने का अधिकार प्रदान किया गया। 1794 ई0 में संशोधन के बाद जो नए कानून बनाये गये, वे सुर्यास्त कानून 'Sun Set Laws' के नाम से जाने गये। इनके अनुसार यदि पूर्व निश्चित तिथि के सूर्यास्त तक सरकार को निर्धारित लगान या उसका कुछ भाग नहीं दिया गया तो जमींदार के विरूद्ध कानूनी कार्यवाही की जाएगी।

लार्ड कार्नविलास के स्थायी बन्दोबस्त में गुण एवं अवगुण दोनों ही विद्यमान थे। इस व्यवस्था के लागू होने पर वर्षा के कम या अधिक होने से राज्य की आय पर कोई फर्क

नहीं पड़ता था। सरकार को अब समय पर निश्चित आय प्राप्त होने से आर्थिक योजनाओं को बनाने में सुविधा हो गई। भू–राजस्व की स्थायी व्यवस्था हो जाने के फलस्वरूप इस कार्य में लगे हुए सरकारी कर्मचारियों की कुछ संख्या शासन सम्बन्धी अन्य कार्यो को करने के लिए मुक्त हो गई। तत्कालीन विद्वानों के अनुसार स्थायी बन्दोबस्त से कृषि को बढ़ावा मिलेगा। सर्वाधिक भूमि जोती जाएगी तथा जमींदारों को कृषि के क्षेत्र में नए प्रयोग जैसे :– उर्वरक का इस्तेमाल तथा फसल बदलने के तरीकों को अपनाने का अवसर मिलेगा। इस प्रकार स्थायी बन्दोबस्त के द्वारा भूमि का अधिकाधिक प्रयोग सम्भव होगा और किसान अधिक समृद्ध हो सकेगें। राजनैतिक क्षेत्र में भी जमींदारों ने कम्पनी के हितों को सुरक्षित करने में भी उनकी भरपूर मदद की जो कि 1857 के अनुभव से साबित होता है। वास्तव में प्रत्यक्ष रूप से जमींदारों का इस व्यवस्था से अधिकतम लाभ हुआ क्योंकि उन्हें भूमि का वास्तविक स्वामी स्वीकार कर लिया था। इस व्यवस्था से जमींदारों के पास अधिक मात्रा में धन संचित होने लगा, जिसे कुछ जमींदारों ने व्यापार में लगाया। लार्ड विलियम बैटिक ने स्वयं इस तथ्य को स्वीकार किया कि यद्यपि स्थायी बन्दोबस्त कई महत्वपूर्ण उद्देश्यों में असफल रहा, परन्तु इसके फलस्वरूप भारत में धनी भूस्वामियों का एक ऐसा विषाल संगठन तैयार हो गया, जो तहेदिल से यह चाहता था कि भारत में अंग्रेजी राज बना रहे और जनता पर प्रभुत्व कायम रखें रहे।

स्थायी बन्दोबस्त में अनेक अवगुण भी थे। इस व्यवस्था के फलस्वरूप ऊपरी स्तर पर सामन्तवाद तथा निम्न स्तर पर दास प्रवृत्ति को बढ़ावा मिला। इस व्यवस्था के अन्तर्गत न तो भूमि की पैमाईश ठीक ढंग से हुई और लगान की दर भी जल्दबाजी में तय की गई थी। सरकार को दीर्घकालीन दृष्टि से अधिकाधिक वित्तिय घाटा उठाना पड़ा। नई लगान व्यवस्था के कृषि पर भी घातक परिणाम देखने को मिले। राष्ट्रीय विचारकों के अनुसार अधिक भूमिकर, भूमिकर की अदायगी नकद में दिये जाने पर जोर, लगान वसूली के न केवल कठोर नियम बनाये जाना अपितु इन्हें और भी कठोरता से लागू किया जाना, किसानो के हितों को नज़र अन्दाज करना – ये सभी तथ्य ग्रामीण समाज को बदलने के लिए उत्तरदायी थे। लगान की दर अधिक होने से पुराने जमींदार समय पर लगान राशी जमा करवाने में असमर्थ रहे और वे भूमि से वंचित हो गये। किसानों पर दिन–प्रतिदिन कर्ज का दबाव बढ़ता गया और वे भूमिहीन होते गए। इस व्यवस्था से बिचौलियों का

भूमि–सम्बन्ध में प्रवेश हुआ। जिसके फलस्वरूप समाज में उपसामन्तीकरण बढ़ा। ये उप सामन्त अधिकांष व्यापारी या बनिया वर्ग से सम्बन्धित थे, जो शहरों में रहते थे।

इस प्रकार हम देखते है कि किसानों और सरकार के बीच मध्यस्थ उत्पन्न हो गये, जो किसानों से अधिकाअधिक मात्रा में लगान वसूल करते थे और उनके साथ दुर्व्यवहार भी करते थे। अषिक्षित होने के कारण किसानों को भू–राजस्व की दर का ज्ञान न था, जिसका लाभ मध्यस्थ एवं उनके कारिन्दे ही उठाते थे। अतः स्थायी बन्दोबस्त ने अनुपस्थित जमींदारी प्रथा स्वीकार कर कृषकों को पूर्णतया जमींदारों एवं उनके कारिन्दों पर आश्रित कर दिया, जो स्थायी बन्दोबस्त का वास्तविक उद्देश्य न था। अमित भादुरी ने अपने लेख 'The Evoulation of Land Relations in Eastern India under British Rule' में वर्णन किया है कि उपसामन्तकीरण के फलस्वरूप भूमि किराये में अभिवृद्धि हुई और कृषि उत्पादन में अपेक्षाकृत कम वृद्धि हुई। अतः किसान कर्जखोरी से भूमि–हीन होते चले गए।

रजत एवं रत्नाराय एवं मफखरूल इस्लाम जैसे लेखकों का मानना है कि स्थायी बन्दोबस्त के बाद कोई मूल परिवर्तन नहीं आया और जो कुछ दिखाई देता है, वो पहले से ही प्रारम्भ हो चुका था। उनका मानना है कि जमीन प्राप्त करने वाले सभी व्यापारी या बनिया थे अपितु इनमें से कई तो जमींदारों के अमले, गुमाष्ते,श्पेषेवर दलाल इत्यादि थे जो सूर्यास्त कानून के षिकार जमींदारों की जमीन खदीद लेते थे। 19 वीं शताब्दी में जेम्स मिलने अपनी पुस्तक History of India में इन जमींदारों को शहरी तत्व माना यद्यपि इस विचार धारा का केवल तथ्यों के आधार पर पूरी तरह खण्डन तो नहीं किया जा सकता परन्तु इसे माना भी नहीं जा सकता। बर्द्धवान राज्य के जमींदार ने इस दौरान न केवल अपनी सम्पति को बचाए रखा अपितु उसे बढ़ाया भी। जमींदार कभी–कभी स्वयं भी अधिक लगान वाले क्षेत्रों की नीलामी करवा देते थे, जिससे कि वे कम लगान वाली भूमि या वन क्षेत्र खरीद सके। इस दौरान नये परिवार भी अपरिहार्य कारणों से भूमि खरीदने में शहरी दिलचस्पी लेते थे और शीघ्र ही बड़े जमींदारों की श्रेणी में शामिल हो जाते थे। रंगपूर परगना के कातुबाबु और भू कैलाष के गोकूल घोषाल इत्यादि प्रमुख थे, जो व्यापार में असफल हो जाने के कारण भूमि खरीदकर बड़े जमींदार बन गए थे।

रजत व रत्नाराय के अनुसार भारत में अपसामन्तीकरण स्थाई बन्दोबस्त से पूर्व भी था। बंगाल में मध्यकाल से ही बड़े–बड़े जमींदारों अस्तित्व था। उनके अर्न्तगत अनेक छोटी श्रेणी के जमींदार भी कृषि कार्यों को देखते थे, जो उपसामन्तीकरण का उदाहरण थे। मफखरूल इस्लाम के अनुसार बंगाल का गर्वनर वारेन होस्टिंग्ज भी बिचौलियों या मध्यस्थों की समस्या से परिचित था। अबू अब्दुल्लाह का मानना है कि उपसामन्तीकरण बहुत बड़ी जागीरों की प्रबन्धकीय समस्याओं की देन थी, न कि स्थाई बन्दोबस्त की।
समकालीन अर्थषास्त्रियों का मानना है कि कृषि क्षेत्र में स्थायी बन्दोबस्त के फलस्वरूप वाणिज्यीकरण आया, क्योंकि इस व्यवस्था में नकद लगान पर अत्यधिक जोर दिया गया था। अतः कृषि के क्षेत्र में उत्पादन बाजार प्रेरित व्यवस्था से प्रभावित होकर किया जाने लगा। परन्तु यह तथ्य पूर्णतः सत्य नहीं है, क्योंकि भारत में कई शताब्दियों से रेषम, कपास, तेल, सुपारी, तंबाकु, नील इत्यादि का उत्पादन व्यापार के लिए ही किया जाता था। अतः हम कह सकते है कि स्थायी बन्दोबस्त ऊपरी सतह पर कुछ परिवर्तन लाने में सफल रहा परन्तु कृषि क्षेत्र में निम्न सतह पर यह परिवर्तन लोने में असफल रहा। एच0 बेव्रिज ने इसकी आलोचना करते हुए कहा है कि इस व्यवस्था में किसानों के हितों की उपेक्षा की गई । एस0 एन0 बैनर्जी के अनुसार हम स्थायी बन्दोबस्त के सिद्वान्तों से पूर्ण रूप से सहमत है, परन्तु हमारा मानना है कि यह देष के लिए महान बात होती यदि बन्दोबस्त रैय्यत के साथ किया गया होता। लार्ड कार्नवालिस ने जमींदारों के साथ बन्दोबस्त करके एक भयानक भूल की।

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PAPER 29

Mathematical Model on Reliability with Three Units

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Abstract: ***The evolution of the new systems is directly or indirectly connected with betterment in the old systems and hence the efficiency. Thus assessment of reliability of equipment is of great importance in the context of rapidly growing technology and its further development. A large number of studies have been carried out to evaluate the reliability by taking two-unit set-up under different conditions. This paper presents the study of the execution of steam turbine running in electric power-station. Execution of any set-up can be computed with the help of its availability and reliability. In many combined cycle power plants, the turbine generator consists of steam turbines interconnected to each other. Here one steam turbine is considered as one unit. In this paper, a system is considered in which three indistinguishable units (steam turbine) are considered in which two units are functional and third is taken as an understudy. If two units do not perform, the working of third unit is discontinued till the availableness of the other functional unit. Here inspection before failure is conducted to check functional units in a regular and schedule time. Operating units are inspected before failure to analyse whether a functional units required normal maintenance or not, otherwise repair of the failed unit. Here a independent single server system is supposed which execute normal maintenance inspection and reparation. Inspection before failure and maintenance are taken in priority over repair of discontinued unit. Also supposed that unit is failed and under reparation, no pre-failure scheduled inspection is undertaken. In this paper, system will be analyzed to determine various reliability measures by using mathematical tools MTSF/MTBF, Markov chain, Markov process, renewal process etc.***

Keywords: maintenance, availability, busy period, Inspection, steam turbine

1. Introduction

A thermal power station is a power station in which heat energy is converted to electric power. In most of area in the world-wide, the steam turbines are steam driven. A steam turbine is a machine that extricate thermal energy from compressed steam and utilize it to do automated work therefore steam turbines are used to originate a collection of apparatus type pattern of various sizes and speeds such that all production section taken in power generation and gas industries. Although there are considerable dissimilarities in set-up or plan, complexness, steam working order, dimensions of steam turbines and undergo to the identical non-performance or discontinuance technique. To hold reliable turbine performance, there require being an effectual framework, inspecting the functional working order. Here one steam turbine is considered as one unit. In this paper, a system is considered in which three indistinguishable units (steam turbine) are considered in which two units are functional and third is taken as an understudy. If two units do not perform, the working of third unit is discontinued till the availableness of the other functional unit. Here inspection before failure is conducted to check functional units in a regular and schedule time. Operating units are inspected before failure to analyse whether a functional units required normal maintenance or not, otherwise repair of the failed unit. Here a independent single server system is supposed which execute normal maintenance inspection and reparation. Inspection before failure and maintenance are taken in priority over repair of discontinued unit. Also supposed that unit is failed and under reparation, no pre-failure scheduled inspection is undertaken.

1.1 Description of system and Assumption

A working unit analyzed after a bounded or definite time period of its functioning and it is decided whether unit can running further or demand certain maintenance.

- The system having three indistinguishable units - Initially two unit is functional and third unit is kept as an understudy.
- System is supposed to be in Up-state if two units are working and in down state if one or no unit is working.
- Each of the units of the system has two modes-normal operative and failed.
- A normal functional unit is inspected for preventive maintenance before failure.
- The unit which is in understudy cannot fail.
- If an functional unit fails it is reparation by mender and no preventive maintenance inspection is carried out during the repair.
- Maintenance will be preferred over repair.
- Inspection time is too small to go for maintenance of second unit.
- A unit under maintenance would not fail.
- All the random variables are autonomous or freelance.

1.2 Notations

ஓ: Compose of renewed or regenerative states
$\ddot{\text{ஓ}}$: Compose of non-renewed or non-regenerative states
O: Unit is in working state.
S: Unit is in understudy
O_i : Unit is under inspection
O_I : Continue under inspection from previous state.
m (t): pdf of maintenance time of an unit under inspection
M (t): cdf of maintenance time of an unit under inspection
π: Invariant failure rate of a unit

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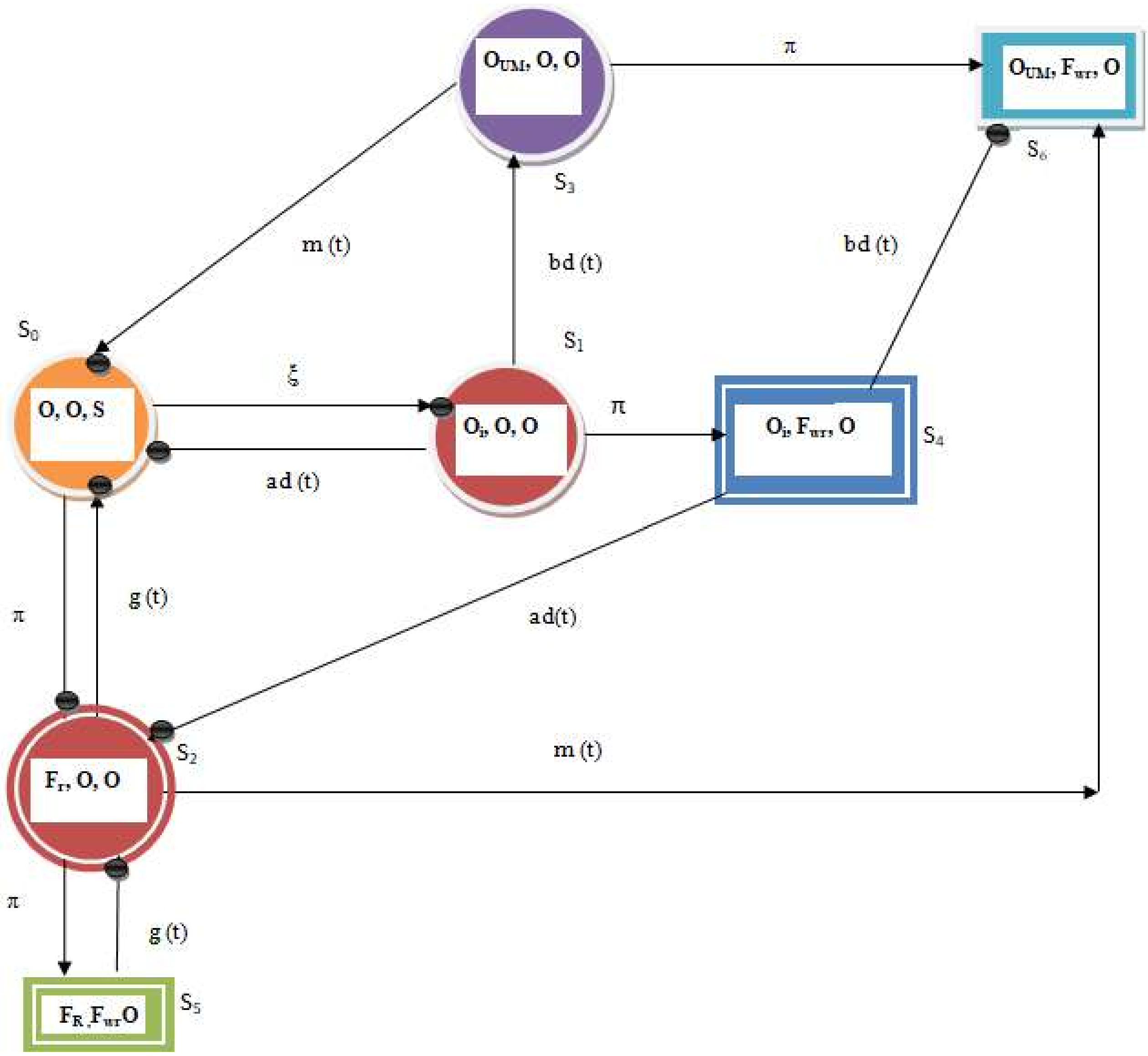
a: Chance of unit(steam turbine) required no maintenance
b: Chance of unit(steam turbine) required maintenance
d (t): pdf of observed period of a unit
D (t): cdf of observed period of a unit
α: Rate of inspection before failure
g (t), G (t): pdf and cdf of repair time period of a unsuccessful unit
O_{um}: Inspected unit under maintenance
O_{UM}: Maintenance of inspected unit continuous from previous state
F_r: unsuccessful unit under repair
F_R: Repair of unsuccessful unit continuous from previous state
F_{wr}, F_{WR}: A unsuccessful unit waiting for repair
©: Symbol for Convolution
Δ Symbol for Laplace convolution
ʘ Symbol for Laplace Stieltjes Convolution
Down-state

Regenerative Point

The system can be in any of the following states with respect of the above symbols:

RS_0 = (O,O,S)
RS_1 = (O_i,O,O)
RS_2 = (F_r, O,O)
RS_3 = (O_{um},O,O)
RS_4 = (O_I, F_{Wr},O)
RS_5 = (F_R, F_{wr},O)
RS_6 = (F_{wr}, O,O_{UM})

State Transition Diagram



2. Transition Probabilities

The era of entering into states {RS_0 , RS_1, RS_2 , RS_3} are regenerative states. The transition probabilities from the states RS_i to RS_j are given by Q_{ij} and in the steady states Tp_{ij} denotes the transition probability from states RS_i to RS_j are given under

$Tp_{01} = \xi/(\xi+\pi)$
$Tp_{02} = \pi/(\xi+\pi)$
$Tp_{10} = a\, d^*(\pi)$
$Tp_{13} = b\, d^*(\pi)$
$Tp_{14} = \{1- d^*(\pi)\}$
$Tp_{20} = g^*(\pi)$
$Tp_{30} = m^*(\pi)$

$Tp_{25} = \{1- g^*(\pi)\}$
$Tp_{36} = \{1- m^*(\pi)\}$
$Tp_{42} = a$
$Tp_{46} = b$
$Tp_{52} = 1$
$Tp_{62} = 1$
$Tp_1{}^{(4)}{}_2 = a\,\{1- d^*(\pi)\}$
$Tp_1{}^{(4)}{}_6 = b\,\{1- d^*(\pi)\}$
$Tp_2{}^{(5)}{}_2 = \{1- g^*(\pi)\}$

It can be easily verified that
$Tp_{01} + Tp_{02} = 1$
$Tp_{10} + Tp_{13} + Tp_{14} = 1$
$Tp_{20} + Tp_{25} = 1$
$Tp_{30} + Tp_{36} = 1$
$Tp_{42} + Tp_{46} = 1$
$Tp_1{}^{(4)}{}_2 + Tp_1{}^{(4)}{}_6 = Tp_{14}$
$Tp_2{}^{(5)}{}_2 = Tp_{25}$

Mean Sojourn Times

To compute the mean sojourn time $\mu_i(t)$ for state RS_i, let T_i be sojourn time for state RS_i. Then

$$\mu_i(t) = \lim_{t\to\infty} \int_0^t P[t : 0 < t < T]\,dt$$

So that in steady state we have following relations
$\mu_0(t) = 1/(\xi+\pi)$
$\mu_1(t) = \{1- d^*(\pi)\}/\pi$
$\mu_2(t) = [1- g^*(\pi)]/\pi$
$\mu_3(t) = [1- m^*(\pi)]/\pi$

The unconditional mean time taken by the system to transit from any states RS_i to RS_j is mathematically given by

$$mij = \int_0^\infty t\,dQij(t) = -q_{ij}^*(s)'/_{\text{at } s=0}$$

So that
$m_{01} = \xi / (\xi + \pi)^2$

$m_{02} = \pi / (\xi + \pi)^2$
$m_{10} = a\, d^{*'}(\pi)$
$m_{13} = b\, d^{*'}(\pi)$
$m_{14} = [\{1 - d^*(\pi)\} / \pi] + d^{*'}(\lambda)$
$m_{20} = - g^{*'}(\pi)$

$m_{25} = [\{1- g^*(\pi)\} / \pi] + g^{*'}(\pi)$

$m_{30} = - m^{*'}(\pi)$
$m_{36} = [\{1- m^*(\pi)\} / \pi] + m^{*'}(\pi)$

It can be easily verified that
$m_{01} + m_{02} = \mu_0(t)$
$m_{10} + m_{13} + m_{14} = \mu_1(t)$
$m_{20} + m_{25} = \mu_2(t)$
$m_{30} + m_{36} = \mu_3(t)$

Mean Time to System Failure

Let $\Omega_i(t)$ be the cdf of the first and foremost transition time from regenerative state i to a failed state, respecting the failed state as absorbing state. So the recursive relations for the Mean Time to System Failure (MTSF) are given by the following equations

$\Omega_0(t) = Q_{01}(t) \odot \Omega_1(t) + Q_{02}(t) \odot \Omega_2(t)$
$\Omega_1(t) = Q_{10}(t) \odot \Omega_0(t) + Q_{13}(t) \odot \Omega_3(t) + Q_{14}$
$\Omega_2(t) = Q_{20}(t) \odot \Omega_0(t) + Q_{25}(t)$
$\Omega_3(t) = Q_{30}(t) \odot \Omega_0(t) + Q_{36}(t)$

Above these equation can be Solving by taking Laplace Stieltjes transformations and solving for $\Omega_0^{**}(s)$,we get

$$\Omega_0^{**}(s) = U(s)/V(s)$$

Where
$U(s) = q_{14} q_{01} + q_{02}q_{25} + q_{01}q_{36} q_{13}$
$V(s) = - q_{01}q_{13}q_{30} + 1 - q_{01}q_{10} - q_{02}q_{20}$

$MTSF = \Omega_0 = \lim_{s\to0}[\{1-\Omega_0^{**}(s)\}/s]$
$= \{V'(0)-U'(0)\}/V(0)$
$= \frac{U}{V}$

Where
$U = m_{01} + m_{02} + (m_{13} + m_{14})\, p_{01} + m_{10}p_{13}p_{30} + p_{02}\,(m_{20} + m_{25}) + p_{01}p_{13}\,(m_{30} + m_{36})$
$V = p_{01}p_{13}p_{36} + p_{02}p_{25} + p_{01}p_{14}$

Availability of the system - (Av)-

Let $Av_i(t)$ be the chance or probability that the system which is in upstate at instant of time‘t’ given that the system entering in the regenerative state i at $t=0$. Then the recursive relations for the point wise availability $Av_i(t)$ of the system is given by

$Av_0(t) = M_0(t) + q_{01}(t)\,\Delta\, Av_1(t) + q_{02}(t)\,\Delta\, Av_2(t)$
$Av_1(t) = M_1(t) + q_{10}(t)\,\Delta\, Av_0(t) + q_1{}^{(4)}{}_2(t)\,\Delta\, Av_2(t) + q_{13}(t)\,\Delta\, Av_3(t) + q_1{}^{(4)}{}_6(t)\,\Delta\, Av_6(t)$
$Av_2(t) = M_2(t) + q_{20}(t)\,\Delta\, Av_0(t) + q_2{}^{(5)}{}_2\,\Delta\, Av_2(t)$
$Av_3(t) = M_3(t) + q_{30}(t)\,\Delta\, Av_0(t) + q_{36}(t)\,\Delta\, Av_6(t)$
$Av_6(t) = q_{62}(t)\,\Delta\, Av_2(t)$

Where

$M_0(t) = \int_0^t e^{-(\xi+\pi)t}$
$M_1(t) = \int_0^t e^{-\pi t}\, \overline{D(t)}$
$M_2(t) = \int_0^t e^{-\pi t}\, \overline{G(t)}$
$M_3(t) = \int_0^t e^{-\pi t}\, \overline{M(t)}$

Now solving these equations by taking Laplace transform and solving for $Av_0^*(s)$,we get

$$Av_0^*(t) = U_1(s)/V_1(s)$$

The steady states availability is given by
$Av_0^{**} = (\lim_{s\to0} A_{v0}^*(s)) = U_1(0)/V_1(0)$
here
$U_1(0) = - \mu_2\,[p_{01}p_{13}p_{36} + p_{01}p_{14} + p_{02}] + \mu_1 p_{01}p_{20} - \mu_3 p_{01}p_{13}p_{20} - p_{20}\mu_0$

And
$D_1(0) = 0$
$D_1'(0) = -m_{20}\,(p_{01}p_{14} + p_{01}p_{13}p_{36} - p_{02}) - [p_{10}p_{25} + p_{20}\,(1 - p_{10})]$
$m_{01} - m_{02}p_{20} - (m_{10} + m_{13} +$
$m_1{}^{(4)}{}_2 + m_1{}^{(4)}{}_6)\, p_{01}p_{20}$
$+ m_2{}^{(5)}{}_2(p_{01}p_{10} + p_{01}p_{13}p_{30} - 1)$
$- m_{62}\,(p_{01}p_{20}\, p_1{}^{(4)}{}_6 + p_{01}p_{20}p_{13}p_{36})$
$- p_{01}p_{13}p_{20}\,(m_{30} + m_{36})$

Busy Period Analysis

The recursive relations for the busy period $BP_i(t)$ of the system is given by

$BP_0(t) = q_{01}(t)\ \Delta\ BP_1(t) + q_{02}(t)\ \Delta\ BP_2(t)$
$BP_1(t) = q_{10}(t)\ \Delta\ BP_0(t) + q_1{}^{(4)}{}_2(t)\ \Delta\ BP_2(t) + q_{13}(t)\ \Delta\ BP_3(t) + q_1{}^{(4)}{}_6(t)\ \Delta\ BP_6(t)$
$BP_2(t) = S_2(t) + q_{20}(t)\ \Delta\ BP_0(t) + q_2{}^{(5)}{}_2(t)\ \Delta\ BP_2(t)$
$BP_3(t) = q_{30}(t)\ \Delta\ BP_0(t) + q_{36}(t)\ \Delta\ BP_6(t)$
$BP_6(t) = q_{62}(t)\ \Delta\ BP_2(t)$

Where
$U_2(t) = \int_0^t e^{-\pi t}\, G(t)\, dt + \int_0^t (\pi e^{-\pi t} © 1) G(t)\, dt$

Now solving these equations by taking Laplace transform and find $BP_0^*(s)$, we get
$BP_0^*(s) = U_2(s)/V_1(s)$

Then for steady states
$BP_0^{**} = \lim_{s\to 0} (s\, BP_0^*(s)) = U_2(0) / V_1`(0)$

Where $U_2(0) = -(p_{01}p_{14} + p_{02} + p_{01}p_{13}p_{36})\ \mu_2$
$D_1'(0)$ is already defined

Maintenance Time
Let K_i is the Maintenance time starting from a regenerative states S_i at t=0 is given by
$K_0(t) = q_{01}(t)\ \Delta\ K_1(t) + q_{02}(t)\ \Delta\ K_2(t)$
$K_1(t) = q_{10}(t)\ \Delta\ K_0(t) + q_1{}^{(4)}{}_2(t)\ \Delta\ K_2(t) + q_{13}(t)\ \Delta\ K_3(t) + q_1{}^{(4)}{}_6(t)\ \Delta\ K_6(t)$
$K_2(t) = q_2{}^{(5)}{}_2(t)\ \Delta\ K_2(t) + q_{20}(t)\ \Delta\ K_0(t)$
$K_3(t) = X_3(t) + q_{30}(t)\ \Delta\ K_0(t) + q_{36}(t)\ \Delta\ K_6(t)$
$K_6(t) = X_6 + q_{62}(t)\ \Delta\ K_2(t)$
Where
$X_3(t) = \mu_3$
$X_6(t) = \mu_6$

Now solving these equations by taking Laplace transform and solving for $K_0^*(s)$, we get
$K_0^*(t) = U_3(s) / V_3(s)$
$K_0^{**} = \lim_{s\to 0} (s\, K_0^*(s)) = U_3(0) / V_1`(0)$
Where
$U_3(0) = (p_{13}p_{36}\ \mu_6 + p_{13}\mu_3 + p_1{}^{(4)}{}_6\ \mu_6)\ (p_{01}p_{25} - p_{01})$
$V_1'(0)$ is already defined

Inspection Time before Failure
Let $Г_i$ is the inspection time starting from a regenerative states S_i at t=0 is given by
$Г_0(t) = q_{01}(t)\ \Delta\ Г_1(t) + q_{02}(t)\ \Delta\ Г_2(t)$
$Г_1(t) = N_1(t) + q_{10}(t)\ \Delta\ Г_0(t) + q_1{}^{(4)}{}_2(t)\ \Delta\ Г_2(t) + q_{13}(t)\ \Delta\ Г_3(t) + q_1{}^{(4)}{}_2(t)\ \Delta\ Г_2(t)$
$Г_2(t) = q_{20}(t)\ \Delta\ Г_0(t) + q_2{}^{(5)}{}_2\ \Delta\ Г_2(t)$
$Г_3(t) = q_{30}(t)\ \Delta\ Г_0(t) + q_{36}(t)\ \Delta\ Г_6(t)$
$Г_6(t) = q_{62}(t)\ \Delta\ Г_2(t)$
Where $N_1(t) = \mu_1$

Now solving these equations by taking Laplace transform and solving for $Г_0^*(s)$, we get
$Г_0^*(s) = U_4(s) / V_4(s)$

In the steady states
$Г_0^{**} = \lim_{s\to 0} (sГ_0^*(s)) = U_4(0) / D_1`(0)$
Where
$U_4(0) = -\ p_{01}p_{20}\ \mu_1$
$D_1'(0)$ is already defined

Particular cases:
If we take repair rate and inspection time as negative binomial distributions as
$g(t) = \gamma e^{-(\gamma)t}$ $\quad i(t) = \delta e^{-(\delta)t}$

Then we get,

p_{01}	=	$\xi / \xi + \pi$
p_{02}	=	$\pi / \xi + \pi$
p_{10}	=	$a\delta / \delta + \pi$
p_{13}	=	$b\delta / \delta + \lambda$
p_{14}	=	$\pi / \pi + \delta$
p_{20}	=	$\sigma / \pi + \sigma$
p_{25}	=	$\pi / \pi + \sigma$
p_{30}	=	$m/m+\pi$
p_{36}	=	$\pi / m+\pi$
p_{42}	=	a
p_{46}	=	b
p_{62}	=	1
p_{52}	=	1
$p_1{}^{(4)}{}_2$	=	$a\pi / \delta + \pi$
$p_1{}^{(4)}{}_6$	=	$b\pi / \pi + \delta$
$p_2{}^{(5)}{}_2$	=	$\pi / (\pi + \delta)$

Mean Sojourn Time:

μ_0	=	$1 / \xi + \pi$
μ_1	=	$1 / \delta + \pi$
μ_2	=	$1/\pi + \sigma$
μ_3	=	$1 / m + \pi$
μ_4	=	$1 / \delta$
μ_4	=	$1 / \sigma$
μ_4	=	$1 / m$

Unconditional Mean Time:

m_{01}	=	$\xi / (\xi + \pi)^2$
m_{02}	=	$\pi / (\xi + \pi)^2$
m_{10}	=	$a\delta / (\delta + \pi)^2$
m_{13}	=	$b\delta / (\delta + \pi)^2$
m_{14}	=	$\pi / (\delta + \pi)^2$
m_{20}	=	$\sigma / (\pi + \sigma)^2$
m_{25}	=	$\pi / (\pi + \sigma)^2$
m_{30}	=	$m / (\pi + m)^2$
m_{36}	=	$\pi / (\pi + m)^2$
m_{42}	=	a/δ
m_{46}	=	b/δ
m_{52}	=	$1/\sigma$
m_{62}	=	$1/m$

The expectable outcomes based on above particular cases can be explained with the graphs as following:

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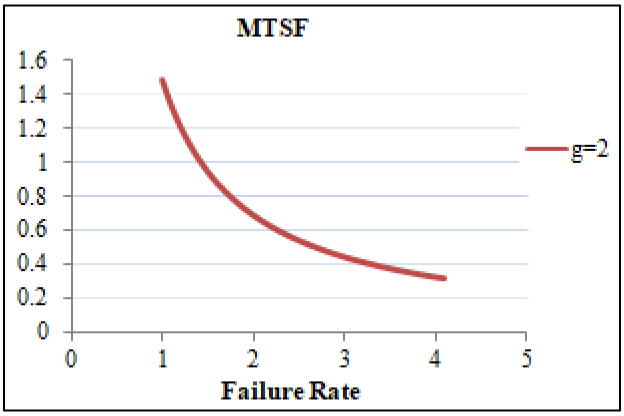

Figure 4.12: MTSF vs Failure rate

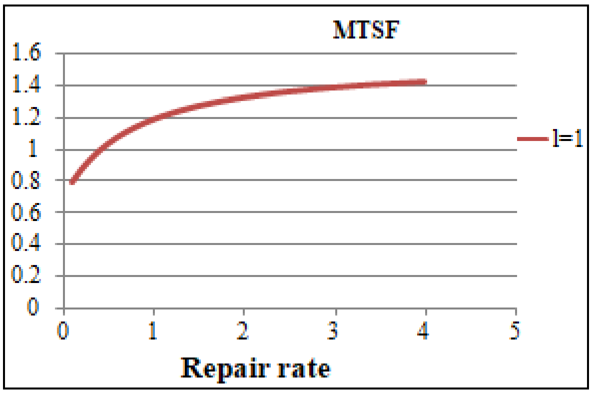

Figure 4.13: MTSF vs Repair rate

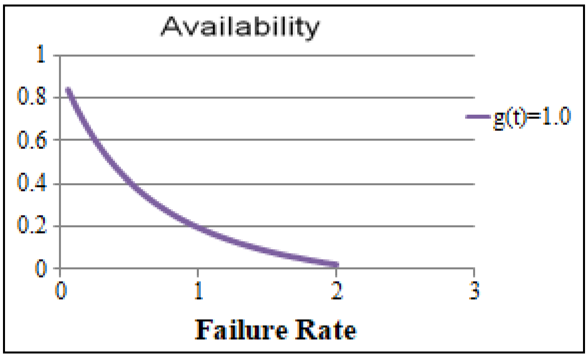

Figure 4.14: Availability vs Failure rate

Figure 4.15: Availability vs Repair rate

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दलितों को सदियों से शिक्षा से दूर रखकर कमजोर बनाया गया है। लेकिन अब दलित अपने अधिकारों के प्रति सचेत होने लगे हैं। "देश में, मध्यप्रदेश में यह सरकारी नियम बन गया है, शंकर को स्कूल से नहीं भगा सकते। नही तो कानून हमें भगायेगा। शंकर को स्कूल में आने और पढ़ने का अधिकार मिल गया है। डॉ. अम्बेडकर ने देश के संविधान में उन्हें मूलभूत अधिकार दिये हैं।"6

'जन्मदिन' कहानी में लेखिका ने भंगी समाज के साथ कैसा अमानवीय व्यवहार किया जाता है उसकी व्यथा का वर्णन किया है। कहानी के माध्यम से लेखिका ने बताया है कि भंगी समाज को अछूत मानकर बस्ती से बाहर बसाया जाता है। इनके घरों के आस–पास सवर्ण जातियों के घर नहीं होते है। यहाँ रहकर न ये कुछ कर पाते हैं न ही कुछ सोच पाते हैं। ये दूसरों का मैला अपने सिर पर ढोते हैं लेकिन अब शिक्षा के माध्यम से आगामी पीढ़ी जागरूक हो रही है मुन्ना कहता है – "हमारा देश स्वतंत्र होकर कितने वर्ष बीत गये फिर भी हम वहीं के वहीं है। हमारी आजादी हमें कब मिलेगी? आज तक, आप लोगों में से, किसी न भी यह नहीं सोचा। किसी ने भी अपने इस पुश्तैनी काम को छोड़ने का साहस नहीं किया। हम क्यों उठाये, अपने सिर पर, दूसरों का मैला? ऐसा आपने कभी क्यों नहीं सोचा?"7

दलित समाज को हमेशा से ही ज्ञान से दूर रखा गया। कभी दलितों ने ज्ञान की परम्परा से जुड़ने की कोशिश की तो उन्हें अपमानित व उत्पीड़ित किया गया। कहानी का वास्तविक उद्देश्य दलित समाज को पराधीनता की जंजीरों से मुक्ति दिलाना है। लेकिन समाज दलित समाज ने महापुरूष भीमराव अम्बेडकर को पहचान लिया है। कहानी के मुख्य पात्र मुन्ना ने निश्चय किया – "मैं बाबा साहब के कार्यों और विचारों से अपनी बिरादरी को परिचित कराऊंगा, उन्हें सच्चाई का ज्ञान कराऊंगा।"8

'सिलिया' कहानी में लेखिका ने दर्शाया है कि जब सिलिया को पानी का गिलास देने के लिए आगे बढाया जाता है तो बीच में 'जाति' आ जाती है। जाति का पता चलते ही पानी का गिलास वापस ले लिया जाता है। सिलिया मन ही मन दृढ़ निश्चय करती है – "मैं बहुत आगे तक पढूंगी, पढ़ती रहूंगी। उन सभी परम्पराओं के मूल कारणों का पता लगाऊंगी, जिन्होंने हमें समाज में अछूत बना दिया है। मैं विद्या, बुद्धि और विवेक से अपने आपको ऊंचा साबित करके रहूंगी। किसी के सामने झुकूंगी नहीं। न ही कभी अपना अपमान सहन करूंगी।"9

सिलिया जानती थी कि शिक्षा के माध्यम से समाज को जागरूक किया जा सकता है। वह सोचती है "झाडू नहीं कलम। हा, कलम ही उसके समाज का भाग्य बदलेगी।"10

'बदला' कहानी सवर्ण समाज और दलित समाज के आपस के बदले को चित्रित करती है। कहानी में बताया गया है कि गांवों में न पुलिस होती है न ही कानून होता है। सबसे पहले तो वे बुलाने वाले को ही तंग कर डालते हैं। कहानी में दलित जो कि गांव के लिए अपनी जान देने के लिए उतारू हो जाते हैं उसी गांव के लोग उनसे बुरा व्यवहार करते हैं। कल्लू की माँ अपनी छौआ से कहती है ''देख लियो अपनो गांव? ....मरी जाये है गांव के लिए। .... रातदिन जिनकी गुलामी कर है, का दे रहे है तेको? ये कहीं अपने हो सके हैं? इनके दिल में पाप भरो है ... ये कोई पे दया नहीं करें।''11

दलितों के प्रति सवर्णों का व्यवहार अमानवीय रहा है। वे उन्हें हमेशा से घृणा की दृष्टि से देखते थे। पर अब दलित समझ चुके है कि हमें एकजुट होकर अपनी ताकत दिखानी होगी। ''हम सब मिलकर रहेंगे तो हमारी ताकत बहुत बड़ी ताकत बनेगी। एकता की ताकत से ही हम दुश्मनों से बदला ले सकते हैं।''12

'छौआ मां' कहानी एक दलित महिला कीकहानी है। जिसमें वह अपने गांव में झाड़ू पौछा का काम करती है। उनके गन्दे कपड़े धोती है। वह दाईपने का काम करती है। सवर्ण लोग अपना काम निकलवाने के बाद उसे घर में प्रवेश नहीं करने देते हैं। ना चाहते ही उन्हें यह काम करना पड़ता है इनके परिवार को भी सवर्ण समाज जबरदस्ती इसमें धकेल देते हैं। छौआ मां की बेटी इनको कोसती है – ''खुद जिन्दगी भर पूरे गांव का नरम उठाती रही .... सबका दलिद्दर समेटती रही। अब मेरे पीछे ये मुसीबत लगा रही है। ये सब उसी के कारण हो रहा है। लोगों को आदत डाल दई है। करेगी उसके बिना नहीं होयगों .. .. रात दिन दौड़ती फिरे हैं। सबके लिए मरी जाये हैं .... अब मोहे भी गिरा रही है जई दल–दल में ... पीढ़ी–पीढ़ी परम्परा चलाते रहे, अब ये परम्परा मेरे गले को फंसा रही है।''13

पीढ़ी दर पीढ़ी यही सिलसिला चलता है। लेकिन तुलसा इस परम्परा को तोड़ती है। अपने बच्चों से कहती है – ''अपमान भरी इस नरक की जिन्दगी से बाहर निकलो, इन्सान बनकर जीना सीखो।''14

कहानी यही दर्शाती है कि दलित शिक्षा के कारण पीढ़ी–दर–पीढ़ी चली आ रही परम्परा को छोडने लगे है। वे अपने बच्चों को सम्मान का जीवन देना चाहते हैं।

'दमदार' कहानी में दलित औरत की ताकत को चित्रित किया गया है। दलित स्त्रियों का अपनी ताकत के बल पर शोषण करता रहा है। 'दमदार' कहानी में लेखिका ने दलित स्त्री का नया रूप सामने रखा है। कहानी में सुमन एक दलित युवती है। जग्गू सवर्ण समाज से है। जग्गू पहलवान को जब

एक दलित स्त्री ने बीच बाजार में घसीट–घसीट कर पीटा। इससे सवर्ण समाज को पता चलता है कि दलित स्त्री अब कमजोर नहीं है। अबवह अपनी अस्मिता की रक्षा स्वयं कर सकती है।

"अभी तक आदमी ही सरे आम औरतों को नंगा करके मारते आये है। क्या, औरत आदमी को नंग करके नहीं मार सकती।"15

'दमदार' कहानी का यही उद्देश्य है कि अब दलित सवर्ण समाज से अपना बदला स्वयं ले लेते हैं।

निष्कर्ष –

'संघर्ष' कहानी संग्रह में लेखिका का मुख्य उद्देश्य पिछड़े, दलित समुदाय तक अम्बेडकरवादी विचारधारा का संदेश पहुंचाना है। दलित समाज भी प्रगति, परिवर्तन के साथ जागृति, समता, सम्मान का जीवन जीये। दलित जाति अपने हक के लिए संघर्ष करती नजर आ रही है। लेखिका ने अपने इस कहानी संग्रह के माध्यम से समाज को नई दिशा प्रदान की है।

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कृष्णा अग्निहोत्री के उपन्यासों में चित्रित पारिवारिक संबंध

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सारांश

परिवार समाज की एक महत्वपूर्ण ईकाई है। परिवार और समाज के परस्पर मेल से व्यक्ति विकास होता है। स्वतंत्रता के बाद भारतीय पारिवारिक व्यवस्था में अनेक परिवर्तन आए। भारतीय पारि व्यवस्था तो संयुक्त पारिवारिक व्यवस्था रही है। लेकिन आधुनिक युग में नगरीकरण और आर्थिक दबा कारण संयुक्त परिवारिक व्यवस्था विघटित हुई है। इसका एक और कारण है कि छोटे परिवार को सुर आधार मानना। इस प्रकार पुराने जीवन मूल्यों के प्रति विद्रोह की भावना जाग उठी। गाँव भी इससे अ रहे।

मुख्य शब्द : समाज, नगरीकरण, पारिवारिक, परिवार, आधुनिक

प्रस्तावना

परिवार समाज की एक महत्वपूर्ण ईकाई है। परिवार और समाज के परस्पर मेल से व्यक्ति का विकास है। स्वतंत्रता के बाद भारतीय पारिवारिक व्यवस्था में अनेक परिवर्तन आए। भारतीय पारिवारिक व्यवस्था संयुक्त पारिवारिक व्यवस्था रही है। लेकिन आधुनिक युग में नगरीकरण और आर्थिक दबाव के कारण परिवारिक व्यवस्था विघटित हुई है। इसका एक और कारण है कि छोटे परिवार को सुख का आधार मा इस प्रकार पुराने जीवन मूल्यों के प्रति विद्रोह की भावना जाग उठी। गाँव भी इससे अछूते न रहे। वैज्ञा विकास और पश्चिमी सम्पर्क ने भारत के पारिवारिक जीवन को काफी प्रभावित किया है। पाश्चात्य शिक्ष व्यक्ति

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भौतिकवादी बन गया। इस संबंध मे कृष्णा अग्निहोत्री का कथन है "मानव के सामने नई समस्याओं ने एक स्थिति संवार कर रख दी। वैज्ञानिक आविष्कारों वर्षों की गुलामी और इसके प्रभाव ने हमारे सामाजिक रहन-सहन और जीवन के मानवीय मूल्यों को झकझोर डाला।"[1] लेकिन आधुनिक युग में पारिवारिक वातावरण में अलगाव की स्थिति का जन्म हुआ है। अलगाव की यही स्थिति पारिवारिक विघटन का करण बनती है।

डॉ. सीताराम जायसवाल कहते हैं, "कोई भी परिवार उसी समय तक गठित रह सकता है, जब तक उसके सदस्यों में सामाजिक मूल्यों, आदर्शो, अभिवृत्तियों आदि की दृष्टि में एकता पाई जाती है। सब परिवार के सदस्यों में जीवन मूल्यों को लेकर मतभेद उत्पन्न हो जाते हैं। तब परिवार का विघटन होना स्वाभाविक है।[2] इसके साथ ही भारतीय परिवारों पर विदेशी रहन–सहन का प्रभाव व्यक्ति स्वतंत्रता की बढती भावना ने भी संयुक्त परिवारों के विघटन में भूमिका निभाई हैं आज भी अनेक परिवार ऐसे हैं जहाँ संयुक्त परिवार होते हुए भी संबंधों में टूटन नहीं है। लेकिन फिर भी कहीं–न–कहीं संयुक्त परिवार व्यवस्था के विरोधी नजर आते हैं। क्योंकि वे इसे सामाजिक प्रतिष्ठा का मानदण्ड मानते हैं। सयुक्त परिवार में आ रहे विघटन के कारणों पर टिप्पणी करती हुई डॉ. सवर्णलता लिखती हैं, "आजकल आर्थिक क्षेत्र में हुई क्रांति तथा जनसंख्या के दबाव के कारण संयुक्त परिवार टूट रहे हैं। शिक्षा के प्रसार औद्योगिकरण, राजनीतिक चेतना से प्रभावित, रोजगार की तलाश में संयुक्त परिवारों को छोड़कर अपनी जीविका अर्जन के स्थानों पर जा रहे हैं।"[3]

आर्थिक अभाव के कारण नारी को जीविका कमाने के लिए घर से बाहर जाना पड़ा। अपने अस्तित्व को बनाए रखने के लिए उसे परिस्थितियों से भी लड़ना था। एक और उसे घर से बाहर की जिम्मेदारियों से जूझकर जीना पड़ा। तो दूसरी ओर नए पुराने संस्कारों का आघात भी सहन करना पड़ा अर्थात् नए परिवेश और परिस्थितियों ने नारी को दुविधाग्रस्त बना दिया। इस प्रकार अस्तित्व की रक्षा के लिए

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आर्थिक सम्पन्नता की चिंता ने पारिवारिक संबंधों को हिला दिया था। पति–पत्नी, माता–पि भाई–बहन, पिता–पुत्र आदि के संबंधों में स्पष्ट परिवर्तन आ गया है। जो हमारे समान में स्पष्ट दिखाई है। कृष्णा अग्निहोत्री ने अपनी औपन्यासिक कृतियों में बदलते पारिवारिक परिवेश और टूटते–बनते सामा संबंधों पर बहुत ही सहजता से लेखनकार्य किया है। कृष्णा जी ने अपने उपन्यास 'कौन नहीं अपरा समवयस्क बहनों के संबंधों का वर्णन किया है कि किस प्रकार परिवार में समवयस्क बहनों का संबंध मि होता है लेकिन बड़ी बहन सदैव छोटों पर सर्वस्व न्यौछावर करने को तत्पर रहती है। 'थकान व सफर कठिनाई की चिंता न कर सीमा तुरंत रीमा के होटल जा पहुँचती है।..... उसकी सहेलियों को रेस् थियेटर में ले जाकर वह उनका मनोरंजन करती है, ताकि रीमा को यह अनुभव न हो कि उसका अपना वहाँ आकर उसकी सुध भी नहीं ले सकता।" लेकिन छोटी बहन अपनी दीदी के इस प्यार, स्नेह आदर का निरंतर उपेक्षा और अपमान करे तो बड़ी दीदी पर क्या गुजरती है।.... "तो कुँए में ढकेल दो, देखो, जीजी की तारीफ... जैसे मैं किसी पेड़ से टपकी हूँ।"[4] ऐसे व्यवहार से संबंधों में खटास स्वाभाविक है।

आयु और अनुभव का सही तालमेल प्रायः कम लोगों में ही देखा जाता है और जो परिवार में स सामंजस्य बनाए रखने का प्रयास करते है। उन्हें बहुधा मानसिक आघात झेलने पड़ते हैं। "वहाँ अ जायेगी और दुहरे रहन–सहन का व्यय संभालोगी। इसमें अपने परिवार की कितनी हानि होगी, जानत कि पिता जी अस्वस्थ हैं और टीनू बहुत छोटा है। माँ व पिता जी की देखभाल कौन करेगा।"[5]

देखो सीमा जीजी, "तुम मेरे व्यक्तिगत मामलों में दखल मत दिया करो, तुम अपने घर व संभालो।"

ऐसी विकट स्थिति में बड़ी बहन को न चाहते हुए भी अपमान का घूंट पीकर रह जाना पड़ता है

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कृष्णा जी ने अपने उपन्यास 'अभिषेक' में मुख्य रूप से पति पत्नी संबंधों का खुलकर वर्णन किया है। उन्होंने अपने उपन्यास में पितृसत्तात्मक समाज में पति सदैव इस अवधारणा से ग्रस्त रहता है कि केवल वे ही समझदार और विद्वान है। पत्नी को तो कुछ ज्ञान नहीं है, लेकिन ऐसी अवधारणा से दाम्पत्य संबंधों में खटास ही आती है। परिवार में अशांति और असुरक्षा की भावना घर कर जाती है। प्रगति के सभी मार्ग अवरुद्ध हो जाते है। पत्नी को कभी–कभी कम नहीं आँकना चाहिए, वरना उसके मन में पति के प्रति ऐसी अवधारणा बनना स्वाभाविक ही है – पहली बार मनु का पूरा मुँह कड़वा हुआ। मन तो हुआ कि जाए और पति से कहे कि तुम्हारे मन में सोच नहीं, जीवन के संस्कार नहीं, पूरे समय स्वार्थ पूरा करने में मशगूल हो उन्हें भस्म करो न?

"पर पत्नी को अच्छा सोचना तो चाहिए, परन्तु उसे व्यक्त करना मूर्खता है, क्योंकि बुद्धि का ठेका तो पतियों ने ही ले रखा है।"[6]

जब दाम्पत्य जीवन में इस प्रकार की अव्यवहारिक परिस्थितियां उत्पन्न हो जाती है तो परिवार का अहित होना निश्चित है। परिवार को एकजुट रखने के लिए पति–पत्नी दोनों का ही हर पल त्याग, तपस्या और सहजता के मार्ग पर चलने का प्रयास करना चाहिए। निरर्थक एक दूसरे पर दोषारोपण अथवा स्वयं को श्रेष्ठ सिद्ध करने के लिए झूठ का सहारा लेना किसी भी स्थिति में व्यवहारिक नहीं हो सकता। इस प्रकार दाम्पत्य जीवन में जब कोई दरार आती है तो उसे खाई बनने में देर नहीं लगती।

पारिवारिक संबंधों में सर्वाधिक महत्वपूर्ण और आत्मीय रिश्ता माँ–बेटी का होता है। माँ–बेटी के भविष्य के प्रति सदैव सजग रहती है, कि उसके जीवन में कभी भी कोई ऐसी अवांछित घटना न घटे जिसके लिए उसे बेवजह कष्ट झेलने पड़े। 'कौन नहीं अपराधी' उपन्यास में एक ऐसे ही प्रसंग द्वारा लेखिका ने बहुत संवेदनशील चित्रण किया है।

माँ को बच्चों की पहली पाठशाला कहा जाता है और बेटी के लिए तो माँ का सानिध्य अनमोल माना गया है। माँ, बेटी के लिए जहाँ गुरु है

वहीं वह मित्रवत् व्यवहार से उसे दुनियादारी की समस्त छोटी–बड़ी बारिकियों से भी अवगत करातं है। "मिनी जैसे लैटते ही अपनी कॉपी मेज पर रखती कि शान्ति प्यार की चाशनी में लपटे टन से झिड़की देती – 'पहले अपने हाथ–पैर धो, कपड़े बदलो तब गले लगना और गरम कचौड़ी खाना।'[7] ऐसी अति आवश्यक व्यवहारिक ज्ञान को बेटी शनै–शनै अपने चरित्र में समाहित करके अपना और परिवार का भविष्य सुखद बनाने में सफल होती है।

परिवार में अनेक संबंध ही उसे परिवार बनाते हैं। ससुराल में सास–ससुर के अतिरिक्त देवर–जेठ देवरानी–जेठानी का संबंध यदि मित्रवत रहे तो परिवार में सुख–शांति सदैव बनी रह सकती है। यदि इन संबंधों में किसी कारण खटास आ जाती है तो परिवार निरंतर तनावग्रस्त रहता है। उसका टूटना निश्चित है। ऐसे में बिखराव ही उस परिवार का अन्त होना निश्चित है। "जेठानी के जटिल चेहरे पर कुछ पल के कोमलता उभरी, तुम्हारा क्या दोष देवराणी तो पहले ही घर कहाँ ठहरते है। आये और रूपये माँगे लोट गये रोको तो हाथापाई। हमने तो साफ कह दिया है। ससुरजी से कि हमारा हिस्ससा अलग कर दे, आपको ये जेवर पसंद हैं तो आप ले लें। मुझे पत्थरों में वैसे भी कोई रूचि नहीं है। वेणु कुछ क्षुब्ध हो उठी।

पर भाग्य में तुम्हारे पत्थर ही हों। जेठानी ने गहरी सांस ली। और वेणु के हाथों में नारियल तेल उडेल दिया। प्रायः धन–दौलत के कारण पारिवारिक संबंध खंडित होते देखे गए हैं। स्वार्थ और लालच की अन्य लालसा से सम्पन्न, सुखी और समृद्ध परिवारों को खंड–खंड होतें देखा गया है।

किसी भी परिवार की निरंतर प्रगती में सास–बहू के संबंधों के मध्य गरिमा और सम्मान का होन अत्यंत आवश्यक है। सास अपनी बहु को अपने परिवार के रीति–रिवाजों और आचार–व्यवहार से परिचित करवाती है तो बहु भी समयानुसार उन्हें आत्मसात करके परिवार की आन, बान और

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शान में बढ़ोतरी करती है, लेकिन जब सास बात–बात पर बहू के परिजनों को दोषी ठहराने प्रयास करती है तो मामला बिगड़ने की संभावन अधिक रहती है। "पूरे समय अपना मुँह खुला ही रखती कम से कम पराए मर्दों को देखकर तो घूंघट निकाल लो, वे क्या कहेंगे कि इस घर की बहू–बेटी वे हैं। मिनी ने विद्रोही स्वर में कहा, "मेरे मुँह में क्या खराबी है, जो ढक लू मैं, मुँह खोलने में शर्म कैसे मायके में पड़ी–पड़ी सड़ती रहना। तेरी माँ ने तुझे बहस करना ही सिखाया है। भेज दूंगी वापिस वहीं मेरी माँ को कुछ मत कहा, वे मुझे अच्छी–अच्छी बातें ही सिखाती हैं। मैं मायके में सड़ूंगी क्यों? खुश रहूं।[5] मायका ही एक ऐसा पड़ाव होता है जहां बेटी को भरपूर, प्यार, स्नेह और सम्मान मिलता है – शादी के बाद तो परायी हो जाती है। उसका धर्म तो पति को प्रसन्न रखना है उसके एक इशारे पर त्यागना होता है। इसलिए तो कहते हैं कि बेटी की डोली जाती है। ससुराल, अर्थी निकलती है वहां ऐसी ही संस्कारों की पाठशाला माँ–बेटी के मध्य चलती रहती है।

निष्कर्ष

अंत निष्कर्ष रूप में हम कह सकते हैं कि कृष्णा अग्निहोत्री ने अपने उपन्यासों में पारिवारिक सं का खुलकर वर्णन किया है। भले ही वे संबंध पति–पत्नी के हों, भाई–बहन, सास–बहु, पिता–पु माता–पुत्री आदि सभी के कृष्णा जी ने अपने उपन्यासों में चित्रित किया है।

संदर्भ ग्रन्थ

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PAPER 32

Synthesis and Characterization of Lanthanum doped Nickel Nanopowdered Crystallites

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Abstract: In this paper, wehave prepared nanopowder crystalline of lanthanum (La) doped zinc ferrite by co-precipitation and sonication technique using an open-air heat treatment. X-ray diffraction (XRD) was used for structural characterization. The evolution of the crystalline phases was analyzed. The effect of precursor concentration is reflected in the diffractogram. $NiLaFe_2O_4$ (x ¼ 0.01, 0.03, 0.05, 0.07 and 0.09) nanoferrites were prepared using the sono-chemical reaction method. The prepared nanoferrites were investigated using X-ray diffraction (XRD), ultra violetdiffuse reflectance spectroscopy (UV-DRS), Fourier transform infrared spectroscopy, field emission scanning electron microscopy, energy-dispersive X-ray spectroscopy, electrochemical impedance spectroscopy and a vibrating sample magnetometer to explore their structural, optical, dielectric and magnetic properties.

The analysis of the XRD pattern of these $NiLa\mathbf{x}Fe_2\mathbf{x}O_4$ nanoferrites confirmed the formation of a cubic spinel structure. The average crystallite sizes of the nanoparticles were 54, 49, 47, 43 and 40 nm for the composition x ¼ 0.01, 0.03, 0.05, 0.07 and 0.09, respectively. An impedance analysis of the prepared nanoferrites was carried out to explore the dielectric behavior.

KEYWORDS:

Ferrites, Nanoparticles, Spinel, Particle size, lanthanum zinc ferrite

1. Introduction

The general chemical formula of spinel ferrites is AB_2O_4, where A represents a divalent metal ion and B represents a trivalent metal ion [1,2]. Spinel ferrites have been the focus of many research groups due to their applications such as in low loss magnetic core materials, microwave-absorbing materials, transformer cores, antenna rods, high-frequency devices, etc. The nickel nanoferrites are important soft magnetic materials that have many applications in a wide range of frequency [3e5,7,8]. Spinel ferrite is one of the promising materials used for absorption of electromagnetic radiation in various forms such as sheets, ceramic tiles, powders etc. [1].

Characterization studies indicated that the addition of La to $NiFe_2$-xO_4 nanoparticles improved the dielectric properties of the prepared nanoferrites. The hysteresis loops promoted the ferro magnetic behavior present in the prepared $NiLaxFe_2xO_4$ nanoferrites. A decrease in saturation magnetization and an increase in coercivity were observed with an increase in the La content in the prepared nanoferrites.

In recent years, the problem of electromagnetic interference (EMI) has attracted considerable attention due to a variety of applications in telecommunication systems such as mobile phones, computers and radar systems. EMI causes considerable interruption of electronically controlled systems Thus, it leads to device malfunctions, generates false images, increases clutter on radar and reduces performance because of system-to-system coupling through EMI. To overcome these EMI problems, electromagnetic wave absorbers with the capability of absorbing unwanted electromagnetic signals are used. Extensive research has been carried out on EMI absorbing ferrites. Nowadays, rare-earth ion-doped ferrites have found important applications in modern telecommunication, electronic devices and magnetic recording, and considerable attention has been focused on microwave-absorbing materials.

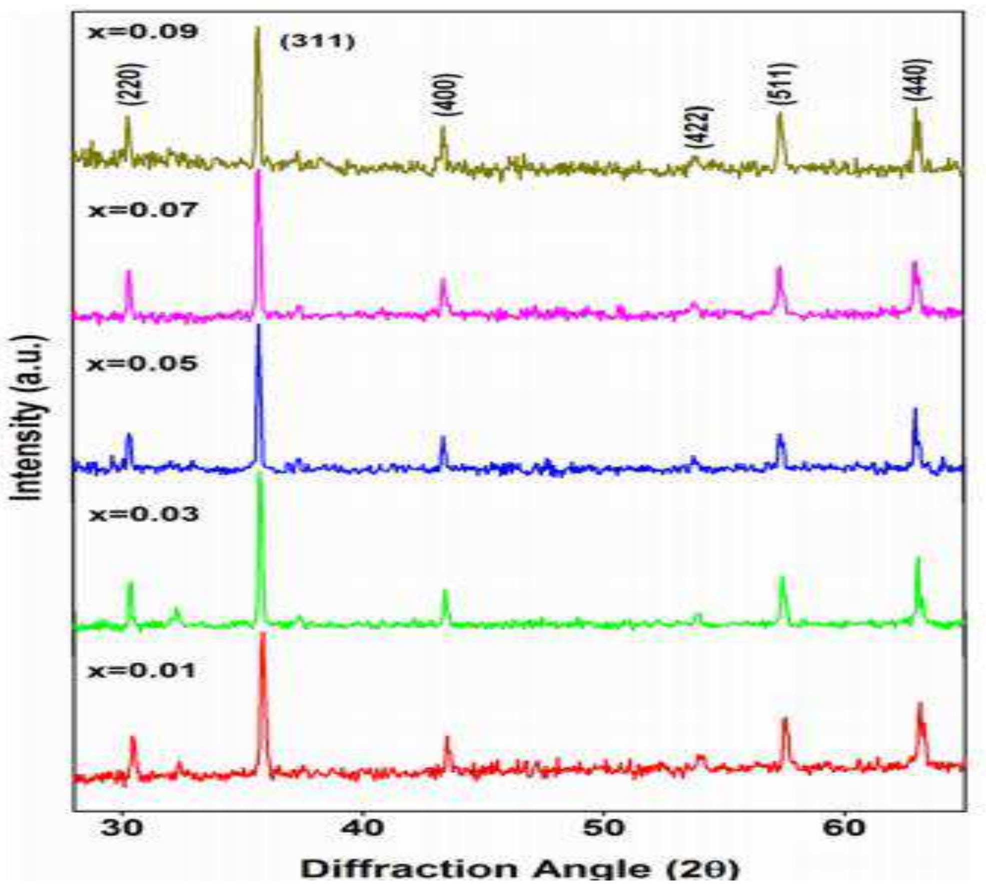
2. Experimental Setup:

Lanthanum (La) is synthesized according to our previously published article [2] and zinc ferrite is manufactured according to our other published data [3].

3. Result and discussion:

3.1 XRD Analysis:

The XRD pattern of the prepared NiLaxFe2-xO4 nanoferrites for x ¼ 0.01, 0.03, 0.05, 0.07 and 0.09. The diffraction pattern confirmed the presence of a cubic spinel structure in the prepared NiLaxFe2-xO4. Fig. 2 indicates that the prepared NiLaxFe2- xO4 nanoferrites had a cubic spinel phase (JCPDS card no. 89e4927). The indexed cubic spinel diffraction peaks corresponded to (220), (311), (400), (422) (511) and (440) diffraction planes. The DebyeeScherrer formula was used to calculate the average crystallite size (D) of the prepared NiLaxFe2-xO4 nanoferrites by measuring the full-width at half-maximum (FWHM) and Bragg's diffraction angle of diffraction peaks.



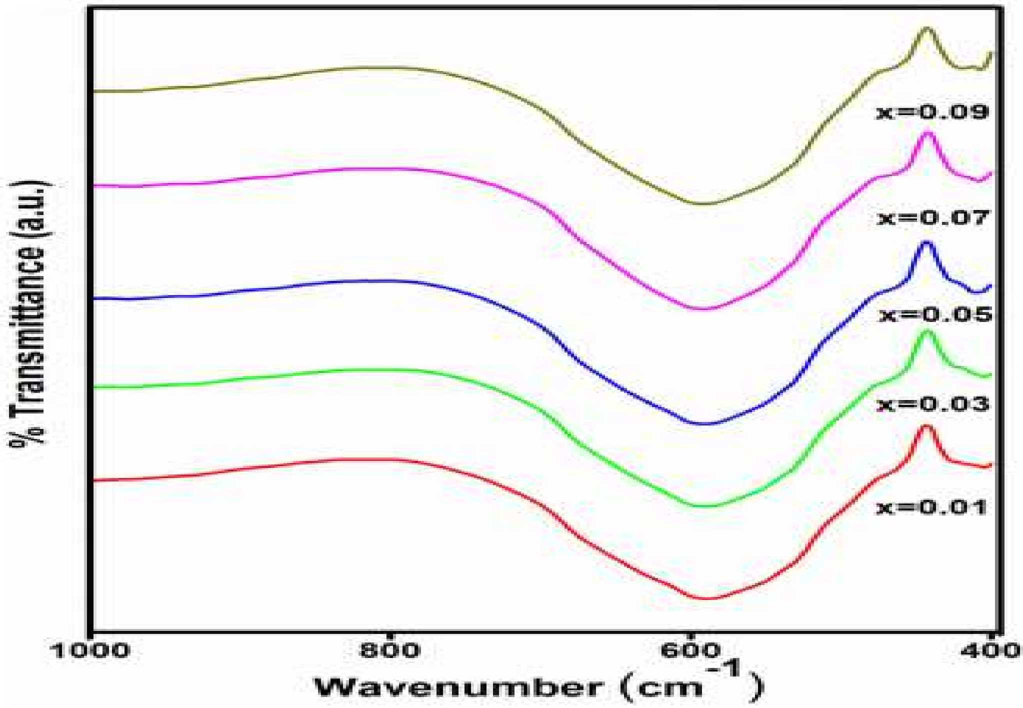
The crystallite size of the prepared NiLaxFe2xO4 nanoferrites decreased from 54 to 40 nm with the addition of La3þ ions. The addition of La3þ ions in place of Fe3þ ions induced crystalline anisotropy due to the large ionic radius mismatch between La3þ and Fe3þ ions. The strain within the unit cell of the crystal increased with the addition of La3þ ions due to the induced crystalline anisotropy [4].

Therefore, the doping of La3þ ions acts as a kinetic barrier to further grain growth. Hence, a decrease in the crystallite size was observed with an increase in La3þ ions. It can be seen from Table 1 that the lattice constant increased from 7.4494 to 7.5616 Å with the addition of La3þ in the prepared NiLaxFe2-xO4 nanoferrites. The increase in the lattice parameter with increasing La3þ ion content can be attributed to ionic radii. The ionic radius of La3þ ions (1.05 Å) is larger than that of Fe3þ ions (0.67 Å) [5]. Consequently, La3þ has a strong preference for the Bsite. The average value of XRD of the prepared NiLaxFe2-xO4 nanoferrites decreased from 7.5577 to 7.4302 g/cm3 with an increase in La3þ. The La3þ ion has no electrons in the 4f orbit, which makes it nonmagnetic. Doping of La3þ ions in spinel ferrites leads to strong spineorbit coupling of their angular momentum, which in turn improves the dielectric properties. A rare-earth ion in the spinel ferrite improves densification, electrical resistivity and low eddy current losses. The doped rare-earth ion (La) enters into the B-site (Fe) by displacing the corresponding number of Fe3þ from the B-site to the A-site.

In the present investigation, NiLaxFe2-xO4 (x ¼ 0.01, 0.03, 0.05, 0.07 and 0.09) nanoferrites were prepared using the sonication method. An attempt was made to study the dielectric constant and capacitance behavior of nickel nanoferrites using lanthanum as a dopant.

3.2 FTIR analysis:

The FTIR spectrum indicates that the presence of two absorption bands around 405-420 cm 1 and 560-620cm 1 corresponds to the intrinsic stretching vibrations of octahedral and tetrahedral complexes of NiFe2O4, respectively [4,6,8]. The absorption bands are slightlyshifts to higher frequency with an increase in La3þ ions content.



The size of the prepared NiLaxFe2xO4 nanoferrites is in the range of around 60 nm. The EDX spectra of NiLaxFe2-xO4 (x ¼ 0.01, 0.03, 0.05, 0.07 and 0.09) nanoferrites. The EDX spectra confirmed the qualitative composition of Ni, Fe, La and O in the prepared nanoferrites. It is suggested that the elemental compositions are close to the starting compositions of the prepared NiLaxFe2-xO4 (x ¼ 0.01, 0.03, 0.05, 0.07 and 0.09) nanoferrites [5,6]

The prepared nanoferrites were characterized by X-ray diffraction (XRD), ultra violet (UV) diffuse reflectance spectroscopy (DRS), Fourier transform infrared spectroscopy (FTIR), field emission scanning electron microscopy (FESEM) coupled with energydispersive X-ray analysis (EDX), dielectric spectroscopy, electrochemical impedance spectroscopy and vibrating sample magnetometer (VSM) measurements. The results obtained from the above characterization studies were analyzed in-depth to gain greater insights into NiLaxFe2-xO4 (x ¼ 0.01, 0.03, 0.05, 0.07 and 0.09) nanoferrites.

In the present investigation, high pure-grade Merck chemicals such as lanthanum nitrate hexahydrate ($La(NO_3)_3.6H_2O$), ferric nitrate nonahydrate ($Fe(NO_3)3.9H_2O$), nickel nitrate hexahydrate ($Ni(NO_3)2.6H_2O$), citric acid ($C_6H_8O_7.H_2O$), ammonia (NH_4OH) and distilled water were used as precursors for the preparation of $NiLaxFe^{2-}xO_4$ (x ¼ 0.01, 0.03, 0.05, 0.07 and 0.09) nanoferrites.

The required stoichiometric amount of chemical powder was measured separately using a digital balance (Analytical, Shimadzu) [7]. The measured powders were mixed with distilled water to obtain a homogeneous solution of the precursor. High-intensity sonication (titanium horn) was carried out using an Ultrasonic cell crusher, Lark, India operated at a frequency of 25 kHz.

3.3 Magnetic and electric characterization:

The reactants were mixed together during sonication at 80 C for 1 h. After the sonication process, ammonia was added to the ferrite solution to adjust the pH value of the mixture to ~7. The resultant dark liquid solution was collected and dried in a hot-air oven at a constant temperature of 60 C for 24 h. The resultant powders were collected and calcinated in a muffle furnace at 50^0 C for 2 h. After the calcination process, the powders were ground for 15 min to obtain a fine powder [8]. These obtained ferrite powders were well sintered at 100^0 C for 24h. Techniques such as XRD, UV-DRS spectroscopy, FTIR spectroscopy, FESEM-coupled EDX, inductance capacitance and resistance (LCR) Htester spectroscopy, impedance spectroscopy and VSM were used to characterize the prepared NiLaxFe2-xO4 (x ¼ 0.01, 0.03, 0.05, 0.07 and 0.09) nanoferrites. To identify the structural phase and the crystallite size of the prepared NiLaxFe2-xO4 nanoferrites was used by X-ray diffractometer (X'Pert PRO; PAN alytical, the Netherlands). CuKa radiation (l ¼ 1.5406 Å) was used [9] as a source to analyze the prepared nanoferrites at the 2q position from 10 to 80.

The optical properties of the prepared nanoferrites were determined using a UV invisible DRS (UV-2450, Shimadzu, USA). The UV-DRS spectra were recorded the wavelength-dependent absorption of the NiLaxFe2-xO4 nanoferrites from 200 to 800 nm. The functional groups and chemical bonds existing in the prepared NiLaxFe2-xO4 nanoferrites were identified using FTIR spectra (Perkin Elmer Spectrometer, Spectrum 100, USA) in the wavenumber range of 4000e400 cm 1 at room temperature.

A pellet was created of 95% KBr with 5% prepared nanoferrites for FTIR spectral analysis. The surface morphology and elemental composition of the prepared NiLaxFe2-xO4 nanoferrites were characterized using field emission scanning electron microscopy coupled with an energy dispersive analysis spectrum (Quanta FEG 250)

To investigate the conductivity of the prepared NiLaxFe2-xO4 nanoferrites, the spectrum was assessed using electrochemical impedance spectroscopy (PGstat302N; Autolab, the Netherlands). Magnetic measurements of the prepared NiLaxFe2- xO4 (x¼0.01, 0.03, 0.05, 0.07 and 0.09) nanoferrites were performed using a VSM (7410; Lake Shore, USA) at room temperature with an applied magnetic field of 20 to þ20 kOe.

Generally, the dielectric constant of any material depends on polarization factors such as dipolar, interfacial, ionic and electronic polarizations. Among these polarizations, dipolar and interfacial polarizations are responsible for the observed behavior in dielectric constant at lower frequencies [10]. On the other hand, electronic polarization is more effective in the higher frequency region.

4. Discussion

A huge difference in the impedance spectra was observed in the prepared nanoferrites in the high-frequency region and the lowfrequency region. A clear arc in the high-frequency region was presented for the composition x ¼ 0.01. Further, an increase in La3þ ions from x ¼ 0.01 to x ¼ 0.05 led to a decrease in the position of the arc towards the low-frequency region. In addition, an increase in the radius of curvature of arc was observed. An increase in La3þ ions beyond x ¼ 0.05 led to an increase the position of the arc towards high-frequency region. However, no arc was observed in the high frequency region for the composition x ¼ 0.09. This absence of arc implies (x ¼ 0.09) that the interfacial charge-transfer resistance for the prepared NiLaxFe2-xO4 nanoferrites is significantly high. Furthermore, decrease in conductivity with increasing frequency is attributed to the electronic exchange (Fe3þ⇔Fe2þ), which cannot follow the alternating field due to the predominance of species such as lattice defects, oxygen vacations and Fe2þ ions [43,44]. On the other hand, an increase in the content (x ¼ 0.05, 0.07 and 0.09) of La3þ ions of the prepared NiLaxFe2-xO4 nanoferrites leads to progress decrease in Warburg region value which were less than 45. The three compositions were found to show resistive behavior [11].

The resistive property of the prepared NiLaxFe2-xO4 (x ¼ 0.05, 0.07 and 0.09) nanoferrites indicates the presence of space-charge polarization in a material.

The saturation magnetization (Ms) value of the prepared NiLaxFe2- xO4 nanoferrites was 107.56, 98.08, 77.87, 70.19 and 54.67 emu g1 for the composition x ¼ 0.01, 0.03, 0.05, 0.07 and 0.09, respectively. The obtained magnetization curve indicated a ferromagnetic nature of the prepared nanoferrites. The Ms decreased with an increase in La3þ substitution in the prepared NiLaxFe2-xO4 nanoferrites. This is due to the formation of a nonmagnetic structure in the solid solution spinel by the substitution of nonmagnetic La3þ ions in the prepared NiLaxFe2-xO4 nanoferrites. The magnetic super-exchange interactions depend on the cation distribution between tetrahedral and octahedral sites. The dominant magnetization may have occurred due to the presence of Fe3þ in the octahedral B site.

5. Conclusions

NiLaxFe2-xO4 (x ¼ 0.01, 0.03, 0.05, 0.07 and 0.09) nanoferrites were prepared using the sonochemical method. XRD confirmed the cubic spinel crystal structure of the prepared nanoferrites. The average crystallite size of the prepared nanoferrites ranged from 40 to 54 nm. The unit cell parameter decreased linearly with an increase in La3þ ions substitution. The morphology characterization of the FESEM confirmed the formation of a spherical-like morphology. The UV invisible diffuse reflectance spectrum showed that the Eg of the prepared NiLaxFe2-xO4 nanoferrites ranged from 3.31 to 4.14 eV. The increases with an increase in the number of La3þ ions in the prepared nanoferrites. The FTIR spectrum indicates that the presence of two absorption bands around 405-420 cm1 and around 560-620 cm1 corresponds to the octahedral and tetrahedral sites of NiFe2O4, respectively. The dielectric constant (ε0) of the prepared nanoferrites suddenly decreased at lower frequencies and remained constant at higher frequencies. The impedance analysis of the prepared ferromagnetic materials revealed that the dielectric behavior of the prepared NiLaxFe2-xO4 nanoferrites. These materials showed ferrimagnetic ordering at room temperature for all compositions. These results confirm that the prepared NiLaxFe2-xO4 (x ¼ 0.01, 0.03, 0.05, 0.07 and 0.09) nanoferrites are useful for improving radiation-absorption properties.

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Impact of COVID-19 on Our Ruler Education System

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Abstract

Corona viruses are a large family of viruses which may cause illness in human beings. COVID-19 is the infectious disease caused by the most recently discovered corona virus. The most common symptoms of COVID-19 are fever, tiredness, and dry cough. This disease spread from the contact with person to person directly or indirectly. Due to this disease, it mainly affects our Rural Education System and resources of Technology. Schools Colleges, Universities and other educational institute closures in response to the COVID-19 pandemic have shed a light on numerous issues affecting access to Education, Technology as well as broader Socio-Economic issues. Their impact is more severe for rural areas disadvantaged students. Distance learning/online classes can be effective only if all students have computers, smart phones and high-speed internet access. But mostly students from rural areas and disadvantaged families are affected from education. The spread of COVID-19 is a stressful event that may have a direct effect on students' preparation. Along with the effect of COVID19, closure of educational institutes play an important role in reducing or breaking the chain of spreading of COVID19 with some simple precautions as regularly washing your hands with soap and water, using alcohol-based sanitizers and maintain at least one metre distance between yourself and anyone. So Stay Home Stay Safe till no vaccine discovered.

Keywords- *Corona viruses, disease, spread¸ epidemic, Impacts, Education, Network, Technology*

Introduction

Corona viruses are a large family of viruses which may cause illness in human beings. COVID-19 is the infectious disease caused by the most recently discovered corona virus. The most common symptoms of COVID-19 are fever, tiredness, and dry cough. This disease spread from the contact with person to person directly or indirectly. Still now there is no vaccine found so it called epidemic disease. Due to this disease, it mainly affects our Rural Education System and resources of Technology. Schools Colleges, Universities and other educational institute closures in response to the COVID-19 pandemic have shed a light on numerous issues affecting access to Education, Technology as well as broader Socio-Economic issues. As of March 2020, more than 370 million students are not attending their classes because of temporary or indefinite countrywide educational institutes are closures mandated by governments of India in an attempt to slow the spread of COVID-19. Their impact is more severe for rural areas disadvantaged students and their families including interrupted learning, compromised nutrition, childcare problems and consequent economic cost to families who cannot work. Distance learning/online classes can be effective only if all students have computers, smart phones and high-speed internet access. But mostly students from rural areas and disadvantaged families are affected from education. First, campus closures and online teaching have direct consequences on complete the syllabus and student's preparation. But now is the timing of the COVID-19 spread is affecting how final exams will be managed. No one possibility is to eliminate for final exams, but this would be especially problematic for students who were counting on this year's results to increase their average performance and their final degree classification. Delaying the exams would also generate some problems, as this would lengthen the time to graduation and add uncertainty to the timing of the assessments, and could also affect students through learning loss. The spread of COVID-19 is a stressful event that may have a direct effect on students' preparation. Now the major problem is how the COVID-19 emergency is likely to affect students' entrance in higher classes in university as well as in job opportunities. Along with the effect of COVID19, closure of educational institutes play an important role in reducing or breaking the chain of spreading of COVID19 with some simple precautions as regularly washing your hands with soap and water, using alcohol-based sanitizers and maintain at least one metre distance between yourself and anyone. So Stay Home Stay Safe till no vaccine discovered.

What is COVID-19

Corona viruses are a large family of viruses which may cause illness in animals or humans. In humans, several coronaviruses are known to cause respiratory infections ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). The most recently discovered coronavirus causes coronavirus disease COVID-19. What is COVID-19 COVID-19 is the infectious disease caused by the most recently discovered Corona virus. This new virus and disease were unknown before the outbreak began in Wuhan, China, in December 2019.

Symptoms

The most common symptoms of COVID-19 are fever, tiredness, and dry cough. Some patients may have aches and pains, nasal congestion, runny nose, sore throa. These symptoms are usually mild and begin gradually. Some people become infected but don't develop any symptoms and don't feel unwell. Most people (about 70%) recover from the disease without needing special treatment. Around 1 out of every 6 people who gets COVID-19 becomes seriously ill and develops difficulty breathing. Older people, and those with underlying medical problems like high blood pressure, heart problems or diabetes, are more likely to develop serious illness. People with fever, cough and difficulty breathing should seek medical attention. How does COVID-19 spread People can catch COVID-19 from others who have the virus. The disease can spread from person to person through small droplets from the nose or mouth which are spread when a person with COVID-19 coughs or exhales. These droplets land on objects and surfaces around the person. Other people then catch COVID-19 by touching these objects or surfaces, then touching their eyes, nose or mouth. People can also catch COVID-19 if they breathe in droplets from a person with COVID-19 who coughs out or exhales droplets. This is why it is important to stay more than 1 meter (3 feet) away from a person who is sick. Can the virus that causes COVID-19 be transmitted through the air? Studies to date suggest that the virus that causes COVID-19 is mainly transmitted through contact with respiratory droplets rather than through the air. See previous answer on "How does COVID-19 spread?" Can CoVID-19 be caught from a person who has no symptoms? The main way the disease spreads is through respiratory droplets expelled by someone who is coughing. The risk of catching COVID-19 from someone with no symptoms at all is very low. However, many people with COVID-19 experience only mild symptoms. This is particularly true at the early stages of the disease. It is therefore possible to catch COVID-19 from someone who has, for example, just a mild cough and does not feel ill. Can I catch COVID-19 from the feces of someone with the disease? The risk of catching COVID-19 from the feces of an infected person appears to be low.

Impacts of COVID-19

Corona virus effects all fields in all over the world such as Education system, IT and Communication Sector, Labour market outcomes, Manufacturing Market, Transport Department. In this paper we discuss about effects on Rural Education System and Information Technology.

On Education System

After some initial uncertainty in higher education institutions in the India switched to online teaching in March, not without some debate accompanying the decision. Even if technology enables distance learning in a relatively smooth way, the fact that by the end of March most universities decided to close at least part of their campus facilities is likely to have a number of consequences.

On Online assessments

The most realistic alternative is online assessments. But this also comes with some issues. The spread of COVID-19 is a stressful event that may have a direct effect on students' preparation, while the closure of some campus facilities may also impact on their preparation. For example, library closures, though necessary, will be particularly disruptive for some students, and a lack of quiet space to study at home might be a relevant issue, particularly for students from low-income backgrounds. Also, access to technologies at home is particularly crucial in times of online lectures and classes, and this is unlikely to be evenly distributed across income groups.

The design of online assessments should take these aspects into account. To reduce inequalities among students, it may help to allow more time to complete the exam than usual, and to keep a high degree of flexibility in terms of how students can submit the exam. To reduce the risk of plagiarism, as trust relationships are not likely to change in the very short term and blocking students from accessing resources is technically unfeasible, assessments should take into account the fact that exams will be *de facto* open book, and focus more on the re-elaboration of the course material rather than a more simple recall of what was covered in class.

On Conduct of Examinations

First, campus closures and online teaching have direct consequences on exams and students' preparation. The timing of the COVID-19 spread is affecting how final exams will be managed. One possibility is to eliminate final exams, but this would be especially problematic for students who were counting on this year's results to increase their average performance and their final degree classification. Delaying the exams would also generate some problems, as this would lengthen the time to graduation and add uncertainty to the timing of the assessments, and could also affect students through learning loss. Moreover, online exams can have a higher risk of plagiarism, as students can have full access to the whole course material and to other resources.

On Entrance to University

The COVID-19 emergency is likely to affect students' entrance to university. A-level exams are not going to take place this year. The qualifications' watchdog, Ofqual, has consulted on how to receive grades in these qualifications through teachers' evaluation of each students' performance, based on information such as coursework, participation, and previous performance. A-level and equivalent exams have been traditionally used to evaluate university applications. Currently, most students have submitted their application for entry in September 2020 and universities are issuing offers. In a standard year, students will then sit their A-level exams and attempt to meet the requirements of the university offers. This year, as the exams will be substituted by more elaborate forms of grade prediction, it is hard to say how accurate the process will be. But past research shows that grade predictions are not particularly accurate. If this is confirmed by the new prediction process, this could worsen the probability of mismatch between students and universities, particularly in a context where universities may have a bigger incentive this year to make offers to marginal students, due to the possibility of a fall in international student numbers.

Mismatch refers to the situation where students enter 'lower quality' universities than their prior attainment would suggest they are able to. Research shows that this affects students from low-income groups more than those from high-income groups. Any increased mismatch could therefore have long-term impacts on social mobility. Furthermore, teacher discretion in the grading of high-stakes tests can have long-term consequences.At the moment, the offer process is on-going, but discussing alternative selection methods that overcome the lack of information related to A-level disruptions is still relevant, in order to prevent similar problems happening in the future. One possibility is that universities provide their own entry tests. An alternative is to extend the weight given to previous assessed results, such as GCSEs, so as to have a more comprehensive overview of the students' school paths, which can complement the information coming from A-level coursework.

On IT Sector

The significant weaknesses the IT industry is facing now is due to the fall in the economy, as a lot of companies are faced to ask their employees to work from home keeping in the account of the public health concerns. Due to this, there is a massive loss in opportunity for many companies who have international dealers. For example- Apply inc. is estimated to have at least 10% fall in its shares because of the lack of availability of iPhones in the market. The parts that are required to build the iPhones are supposed to come from China, and it is facing a major lockdown. The spread of this deadly virus has caused a lot of tech conferences to get cancelled, which could have been a great partnership opportunity for many companies to expand their horizons. A few of the meetings were shifter to teleconferences, but this won't have the same reach, and the conference attendees will not be able to have the networking opportunities as they would be attending the actual conference. Due to the cancellation of these major tech conferences, there is an estimated loss of 1 Billion dollars.

Need of Recommendations

Distance-based learning

The digital divide will impact many students' ability to learn and remain on target for academic progress. Strengthening wireless hotspots outside of libraries and other city facilities (even if the facility is closed) will be critical. Fortunately, the Federal Communications Commission has secured a voluntary commitment from many internet service providers (ISPs) for the next 60 days. The "Keep Americans Connected Pledge" asks that companies not terminate service for residential or small business customers, waive any late fees incurred due to the economic effects of the virus, and open access to public Wi-Fi hotspots to "any American who needs them." Cities should check if their local-area providers are on the list of pledged companies and remain in contact with them about these commitments and any additional ones they can make. The American Federation of Teachers has published an important Checklist of questions you should ask your institutions district now to ensure everyone is prepared for distance leanings. This checklist covers important questions on topics such as technology access, preparation and training, and technology "help desk" support for students and parents' writ large, specific to English language learners and for students with disabilities. The AFT site also includes access to the Remote Learning Community for educators, Institute support staff, and parents to engage/share ideas, and lesson plan resources.

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Meals to ensure food security for our nation's students

City leaders can bring various city agencies and community-based partners together to identify organizations and facilities that can be used to serve meals for students, such as school or college's sites and the city's recreation centres. Identify non-institutional locations and transportation for non-essential staff who can be deployed to coordinate sites where students can pick up meals. Ensure that your state nutrition and social services agencies are making plans with your institutions district(s) to submit waivers to the federal government to ensure low-income families relying on school/college lunch and school/college breakfast will continue to have access to institutional meals. These measures include waiving eligibility requirements for summer nutrition programs, allowing multiple meals and meal supplements to be offered at a time, flexibility of meal items and for procurement.

Finding safe spaces and/or housing for students while institutions are closed-

City leaders can bring various city agencies and community-based partners together to ascertain facilities that can be used and services that can be redeployed to support safe, productive activities for student and families. This includes recreation centres and gyms, the local Y and other organizations with facilities for safe activities. City leaders can work with higher education institutions to convert part of their on-campus dorms to house students who cannot afford to or are unable to get home, or who do not have a home to go to, with the proviso to practice safe distancing and that campus services would be highly limited. Some hotels are offering severely discounted rates for students who have nowhere to go if their colleges are closed. City leaders can encourage this practice with hotels. The Hope Centre, an NLC partner, offers a very useful toolkit for educational institutions trying to support students' food and housing needs during this crisis.

Ensuring Healthcare Access for students while educational institutes are closed

City leaders can work with partners to ensure access to health care by engaging community health centres, public health departments and other healthcare providers to explore strong access to care, including through tele-health options. Hospitals and healthcare providers are likely to be stretched under the current crisis, and individuals showing symptoms of COVID-19 should always call in advance before going in for services. However, students have a wide range of other health care needs that may require medical attention. Cities have a role to play to promote alternate sources of healthcare and in communicating ways to access them. Many students are uninsured. If they are eligible for CHIP and/or Medicaid, they can get emergency coverage to get screened and treated. Some states may be opening a special enrolment period for health coverage due to the Coronavirus crisis. For students who are not eligible for Medicaid or are undocumented, they can go to a health centre and access care sites with sliding scale fees.

Conclusions

- Closing educational institutes' cafeterias/dining halls will affect students who will go hungry without school breakfast and lunch and after school snacks and suppers.
- Distance learning/online classes canbe effective only if all students have computers and high-speed internet access.
- Many students who already face housing and food insecurity are further challenged as their institutions close and force them to leave without access to food pantries on campus.
- Many students who really on campus jobs or work-study job may face unexpected expenses and loss of wages during this time.

- Many students may not have health insurance and access to health care with the closure of student health services on campus.
- Along with the effect of COVID19, closure of educational institutes play an important role in reducing or breaking the chain of spreading of COVID19 with some simple precautions as regularly washing your hands with soap and water, using alcohol-based sanitizers and maintain at least one metre distance between yourself and anyone. So Stay Home Stay Safe till no vaccine discovered.

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Thus it is concluded that child ragpickers are exposed to defiling and unhygienic environmental conditions mostly in the dump yards which worsens their health conditions and moreover to overcome such working conditions they are involved in taking substance abuse which further worsens their health.

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18

कबीर की वैचारिकता : धार्मिक आस्था और सामाजिक आधार का प्रश्न

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अलौकिक सत्ता में विश्वास का नाम ही धर्म है, जो प्रत्येक मनुष्य के हृदय में अनिवार्य रूप से विद्यमान रहता है। प्रबुद्ध हो या अज्ञानी सभी मनुष्य प्रायः ईश्वर में विश्वास रखते हैं। जिस प्रकार मनुष्य का अलौकिक शक्ति में आस्था या विश्वास स्वाभाविक है, उसी प्रकार उस शक्ति के प्रति श्रद्धा, प्रेम या भक्ति–भावाना भी मानव हृदय का स्वाभाविक गुण है। यदि हम आस्था, प्रेम एवं भक्ति को धर्म का क्रमगत आवश्यक अंग कहें तो असत्य नही होगा। अतः धर्म मानसिक प्रवशत्तियों से प्रेरित अलौकिक शक्तियों में विश्वास एवं उपासना पर आधारित है।

धर्म अपने परम्परागत रूप में लोगों द्वारा समाज की सुव्यवस्था और विकास में सहायक माना जाता है। अतः पूर्व में जो धर्म सामाजिक एकता का परिचायक था, कालान्तर में यह अनेक बुराइयों से ग्रस्त हो गया और वही धर्म सामाजिक एकता के लिए खतरा बन गया। आश्चर्य की बात है कि आज धर्म से जुड़ी विभिन्न प्रकार की परम्पराएँ रूढ़िवादिता को जन्म देती है अति रूढ़िवादिता समाज की भलाई के लिए अत्यंत घातक है। इस बात को हम सब जानते हैं फिर भी इसे छोड़ना नहीं चाहते। 'हमारे शिष्टाचार और हमारी प्रथाएं कुछ अंशों में अपने चिन्तन पर, कुछ अंशों में वंशानुगतक्रम

से प्राप्त होने वाली भावनाओं से उत्पन्न आदतों पर, कुछ अंशों में अपने वातावरण के प्रति क्रमिक और अनजान समायोजन पर, कुछ अंशों में महान व्यक्तित्व वाले लोगों के आकर्षक प्रभावों, कुछ अंशों में मूलत: अज्ञात प्रथाओं पर, और प्राय: कुछ अंशों में विशेष लोगों, समूहों तथा दूसरे लोगों के दबावों पर आधारित होती है। इस तरह से प्राप्त रूप अन्त में परम्परागत बन जाते हैं और फिर से परम्पराएं मनुष्य के लिए स्वाभाविक हो जाती हैं।'' मनुष्य चाहकर भी इन परम्पराओं को त्याग नहीं पाता, चाहे वह व्यर्थ तर्कहीन तथा अन्धविश्वासों पर ही क्यों न आधारित हो।

धर्म के नाम समाज में कितनी भी बुराइयाँ दृष्टिगत हो रही हों फिर भी लोग उस पर बहस करना पसन्द नहीं करते बल्कि वे उस पर अन्धविश्वास करते है और बड़ी ही श्रद्धा के साथ उसका अनुसरण भी करते हैं किन्तु क्रांति के अग्रदूत को यह बात स्वीकार नही थी। वे धर्म की केवल उन्हीं बातों को धारण करने की बात कहते है जो वास्तविक हो। तत्कालीन समाज का प्रत्येक व्यक्ति धर्म से जुड़ा हुआ था किन्तु उसका संबंध धर्म के वास्तविक रूप से न होकर बल्कि बनावटी रूप से था। वह अपने पथ से विचलित हो गया था। उसकी आस्था सत्य से हटकर असत्य में संलग्न थी। अहिंसा, त्याग और सत्य का स्थान पशु—बलि, नर—बलि और हिंसा ने ले लिया था जो कबीर के लिए असहनीय था। उन्होंने हिंसा, मूर्ति—पूजा, साम्प्रदायिकता, बाह्याडम्बर, ऊँच—नीच छुआछूत आदि बुराइयों की कड़ी निन्दा की और धर्म के परम्परागत रूप पर प्रश्न चिन्ह लगा दिया।

प्राय: कहा जाता है कि ईश्वर सम्पूर्ण सृष्टि में व्याप्त है, जीव उसी का अंश हैं कबीर कहते है कि यह कैसी विडम्बना है, जब सभी मनुष्यों को ज्ञात है कि प्रत्येक जीव में ईश्वर का निवास है फिर जीव हत्या क्यों? हिन्दू लोग यज्ञ के नाम पर अश्वमेघ, नरमेध, गोमेध तथा अजामेध करते है, तो मुसलमान स्वभक्षण के लिए जीवों का गला काटते है और कहते है कि हमने हलाल किया है। इस तरह देखा जाए तो दोनों अपने—अपने राग्ते से भटक गये हैं और कुकर्म करते हैं और इसे धर्म बताते है। अरे भई जहाँ जीव हत्या हो, वहाँ पाप है। धर्म कैसा?

हिन्दू—मुसलमान दोनों ने ही दया छोड़ दी है और हिंसा के पुजारी बन गये हैं। अन्तर बस इतना है कि एक जीव हत्या को झटका तो दूसरा उसे हलाल बताता है—

''हिन्दू की दया मेहरतुरकन की। दूनों घट सो त्यागी।।
ई हलाल वै झटका मारै। आगि दूनों घर लागी।।''

कबीर को इस बात पर बड़ा आश्चर्य होता है कि एक जीव की मृत्यु के पश्चात घर के अन्य सदस्य भोजन नहीं करते अथार्त यदि परिवार के किसी सदस्य की मृत्यु हो जाए तो लोग खाना, खाना भी पसन्द नहीं करते, किन्तु दूसरी ओर खाने के लिए ही जीव जीव हत्या करते है। यह कैसा धर्म है —

''पंडित इक अचरज बड़ होई।।
इक मरि मुअै अन्न नहिं खाये। इक मरे सीझे रसोई।।

कबीर के अनुसार मूर्ति पूजा धर्म नही अपितु भ्रम है। वह मनुष्य अज्ञानी है, नादान है, जो जीवित मनुष्य की सेवा नही कर सकता और पत्थर के देवालय में रखी प्रस्तर मूर्ति के सम्मुख समृद्धि—कामना करता है। इस अज्ञानी एवं अन्धविश्वासी मानव की पूजा निश्चय ही व्यर्थ जाने वाली है—

''पाहन केरा पूतला, करि पूजै करतार।
ठही भरो स ै जे रहे, ते बूड़े काली धार।।''

मध्यकालीन समाज में जाति—पाँति की संकीर्ण भावना की भाँति ऊँच—नीच का भाव भी दृढ़ था। समाज की निम्न जातियाँ घृणित जीवन जीने के मजबूर थी किन्तु कबीर ने इस कुप्रथा पर जबरदस्त चोट की। उन्होंने स्पष्ट शब्दों में कहा है कि ऊँचे कुल में जन्म लेना उच्चता नहीं है —

''ऊँचे कुल क्या जनमियाँ, जे करणी ऊँच न होइ।।
सेवन कलस सुरे भर्‌या साधूँ निद्यां सोई।।''

अत: ऊँच और नीच मनुष्य अपने कर्मों के आधार पर बनता है। इस प्रकार स्पष्ट है कि मध्यकालीन भारतीय समाज दिग्भ्रमित हो गया था। धर्म के नाम पर अनेकानेक ढकोसले, जकड़बन्दी मान्यताओं ने अपना अधिकार जमा लिया था, जिसका लोग चेतनहीन होकर अन्धानुकरण कर रहे थे, किन्तु संत कबीर ने अपने विद्रोही प्रकृति से जनमानस का ध्यान अपनी ओर आकृष्ट किया और समाज में व्याप्त इन निरर्थक एवं निराधार मान्यताओं के खोखलेपन को जनमानस के सम्मुख नि:संकोच भाव से प्रकट किया।

नि:संदेह धर्म और समाज का आपस में घनिष्ठ संबंध है। नियमों एवं मान्यताओं पर आधारित एक संस्थागत रूप में धर्म का समाज शास्त्रीय महत्त्व अत्यधिक है, वह अपने नैतिक मान्यताओं के माध्यम से समाज को दृढ़ता प्रदान करता है, व्यक्ति को परिस्थिति के अनुसार निर्देशित एवं नियंत्रित करता है। पाप और पुण्य का भय दिखाकर बुराई से अच्छाई की ओर ले जाता है। किंतु ये विशेषताएं धर्म के नैतिक मान्यताओं पर आधारित होती हैं। यह धर्म को दूसरा रूप है, कर्मकाण्ड जो पूजा–पाठ, यज्ञ आदि पर आधारित होता है। जिस प्रकार धर्म के नैतिक नियम समाज को प्रभावित करते हैं उसी प्रकार धार्मिक क्षेत्र में प्रचलित कर्मकांड भी सामाजिक जीवन को प्रभावित किये बिना नहीं रह सकते। जैसाकि मध्ययुगीन समाज में धार्मिक क्षेत्र की कर्मकाण्ड बहुलता, सामाजिक क्षेत्र में वर्ण व्यवस्था जन्म जाति–पांति, ऊँच–नीच, छुआछूत आदि की कट्टरता को बढ़ावा दे रही थी। समाज का विशाल जन समुदाय वर्ण एवं जाति के आधार पर सभी मानवीय अधिकारों से वंचित कर दिया गया था। इसका एक बड़ा कारण यह है कि कभी–कभी धर्म से जुड़ी ये रूढ़ियां एवं प्रथाएं कुछ अंशों में विशेष लोगों के स्वार्थों को पूर्ण करती रहती है। इस सन्दर्भ में भारतीय समाज के प्रचलित वर्ण–व्यवस्था का नाम सर्वोपरी है। इस युग में शासक पद पर ब्राह्मण वर्ण आसीन हो गया। इस प्रकार धार्मिक संस्था के पुजारी बन बैठे ब्राह्मणों ने न केवल नीच जातियों को सामाजिक प्रताड़ना पहुँचायी बल्कि उन्हें धर्म, शिक्षा आदि सभी अधिकारों से भी वंचित रखा। इस प्रकार कबीरकालीन समाज में धर्म और धार्मिक संस्था के ठेकेदार पण्डित–पुरोहित के जाल में फंसी सामान्य जनता बुरी तरह तड़प रही थी। उनकी तड़प को महसूस किया मध्ययुगीन सन्त–कवियों ने, जिनमें कबीर अग्रणी है। उन्होंने मध्यकालीन समाज में प्रचलित समस्त बुराइयों का विरोध किया। अन्याय तथा अत्याचार के खिलाफ आवाज बुलन्द की तथा हाथ में कोड़ा लेकर मानवीय अधिकारों की रक्षा के लिए समाज से लड़ने निकल पड़े। कबीर ने पुस्तकीय ज्ञान और उसको अर्जित कर समाज में उसका प्रचार–प्रसार करने वाले पण्डितों की जड़ता का अत्यंत निर्ममता से उपहास किया है। कबीर ने वेद–शास्त्रों की कड़ी निंदा की है। वे लोक, वेद और कुल की मर्यादा तथा उनके अनुकूल किये जाने वाले बाह्यआडम्बरों को मनुष्य के गलों का बन्धन मानते हैं –

'लोक लाज कुल की मर्यादा यही गले की फांसी।।'

उनके अनुसार वेद आदि ऐसा बन्धन अथवा फांसी है जो त्याग और ग्रहण दोनों के मार्ग में ग्रहण बना हुआ था। यदि वे वेद शास्त्रों पर आधारित आचार–विचारों का त्याग करते हैं तो धर्म पर ग्रहण लगता है, क्योंकि वेदशास्त्रों का सीधा संबंध धर्म से है तथा यदि वे इसका ग्रहण (धारण) करते हैं तो यह उनके अधिकारों को उसी प्रकार ग्रसने की भूमिका निभाता है जिस प्रकार नौ ग्रहों में से एक राहु ग्रह जो सूर्य और चन्द्र का ग्रसन करता है। किंतु न्यायप्रिय एवं क्रांतिकारी व्यक्तित्व के स्वामी कबीर, ने कभी भी कशमकश में पड़कर समझौते का मार्ग नहीं अपनाया, बल्कि तर्क और बुद्धि के बल पर सदैव सत्य और न्याय का रास्ता चुना है। कबीर के अनुसार उन वेदशास्त्रों का क्या लाभ जो गले की फांसी अर्थात् प्रगति में बाधक हो। वे कहते है कि उन लोगों को ही स्वर्ग की प्राप्ति हो सकती है, जिसमें इन लोक वेद रूपी फंदे को काटकर फेंक देने का साहस है–

''कहै कबीर बिचारि। बहुरि नाहिं आवई।।
लोक लाज कुल मेटि। परमपद पावई।।''

इसी कारण कबीर ने वेदादि धार्मिक ग्रन्थों को पढ़ने –पढ़ाने के फेर में न पड़ने की जोरदार नसीहत की है–

''पोथी पढ़ि पढ़ि जग मुवा, पंडित भया न कोइ।''

कबीर ने सामाजिक तथा आध्यात्मिक दोनों ही पक्षों के लिए भक्ति का ही मार्ग चुना है क्योंकि जीव के पूर्ण ईश्वरोन्मुख होते ही आध्यात्मिक जगत की एकात्म स्थिति उसके आचरण में अपने आप उतर जाती है। फिर उच्च और निम्न का भाव समाप्त हो जाता है। शुद्ध आचरण युक्त व्यक्ति अथवा सच्चा साधक कभी भी वर्ण, जाति, लिंग आदि के आधार पर मानव –मानव में भेद नही कर सकता। फिर धर्म के नाम पर भेद–भाव करना तथा मानव को उसके अधिकारों से वंचित रखना तो निराधार सिद्ध होता है। जो धर्म मानव को उसके अधिकारों से वंचित करे वह धर्म नहीं बल्कि अधर्म कहलायेगा। इतनी धार्मिक बुराइयां करने के पश्चात् भी कबीर धर्म को बुरा नहीं बताते। कबीर के मतानुसार –

''बेद कतेब कहौ क्यूँ झूठा, झूठा जोनि बिचारै।''

अत: स्पष्ट है कि कोई भी धर्म बुरा नही होता बल्कि वह संस्था से संयुक्त होकर संस्थागत रूप धारण करता है और मठ तथा मठाधीश के अधीन हो जाता है तब उसमें अधार्मिकता के तत्त्व विकसित हो जाते हैं।

संक्षेप में कहा जा सकता है कि धार्मिक संस्थाओं तथा मानवीय अधिकारों का आपस में घनिष्ट संबंध है। यह उसक पर गहरा प्रभाव डालते है। धार्मिक संस्थाओं में सामाजिक कल्याण का भाव छुपा होता है। अत: ये संस्थाएं सदैव ही मानव व्यवहारों को नियत्रित एवं निर्देशित करती है, किन्तु कभी–कभी ये संस्थाएं ही धार्मिक मुखौटा पहनकर मानवीय सामाजिक अधिकारों का शोषण भी करती है। कबीर ने इन्हीं घृणित धार्मिक मान्यताओं के प्रति खिन्नता प्रकट की और इसी कारण वे पण्डित–मुल्ला द्वारा लिखी हुई बातों को छोड़कर आगे बढ़ गये है।

सन्दर्भ सूची–

१. जे.एस. मेकेन्जी, समाज दर्शन की रूपरेखा, प्र. संव १९६२ पृ० ४०, राजकमल प्रकाशन, दिल्ली।
२. डॉ० सावित्री शुक्ल, संत साहित्य की सामाजिक एवं सांस्कृतिक पृष्ठभूमि, अगस्त १९६३, विश्वविद्यालय हिन्दी प्रकाशन, लखनऊ पृ० ३४
३. वही पृ० ४५
४. डॉ० श्याम सुन्दर दास (संपा) कबीर ग्रंथावाली २४वां संस्करण सं. २०६१, नागरी प्रचारिणी सभा, वाराणसी पृ० ३४
५. वही पृ० ३७
६. प्रदीप सक्सेना नवजागरण इतिहास और चेतना पृ० १६८ ''पहल'', १०१, रामनगर आधारतल, जबलपुर
७. आचार्य महन्त गंगाशरण (संपा) महाबीजक प्र. सं २०५५ वि०, पृ० ७२६, कबीर वाणी प्रकाशन केन्द्र श्री सदगुरू, कबीर मंदिर
८. वही पृ० २८२
९. डॉ० श्यामसुन्दर दास (संपा) कबीर ग्रंथावाली २४वां संस्करण सं. २०६१, नागरी प्रचारिणी सभा, वाराणसी पृ० ८४

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तरह एक एन०जी०ओ० की माध्यम से अपना जीवन यापन भी कर रही है तथा महिलाओं के विकास के लिए भी काम रही है और बच्चों के टीकाकरण कार्यक्रम पर भी बहुत मेहनत की है। इसलिए इसे वर्ष २००५—०६ का राष्ट्रीय युवा पुरस्कार से सम्मानित किया गया है। (The Times of India, Patna, Ranchi, National January 02, 07 के अंक में प्रकाशित) ऐसा इसलिए संभव हो सका क्योंकि उसके अन्दर दृढ़ इच्छा शकित कूट—कूट कर भरा हुआ था।

वर्ष २००६ में बिहार में नितीश कुमार सरकार ने महिलाओं की स्थिति सुधारने के लिए बिहार के ग्राम पंचायत आम चुनाव में ५० प्रतिशत का आरक्षण दिया ताकि महिलाओं के विकास के लिए एक Platform मिल सके। इसी वर्ष आर्थिक रुप से महिलाओं को सुदृढ़ करने के लिए शिक्षकों के लाखों पदों की नियुक्ति में ५० प्रतिशत का आरक्षण दिया गया ताकि मेधावी युवतियों को अपने जीविका उपार्जन के लिए एक धन संचित हो सके इस बात को बिहार विधान परिषद में कार्यकारी सभापति प्रो० अरुण कुमार ने भी स्वीकारा है। (The Times of India, Patna, Ranchi, National January 30,07 के अंक में पृष्ठ सं०—०३ पर प्रकाशित)

कुल मिलाकर उपर्युक्त तथ्यों के अवलोकन से यह बात स्पष्ट हो रहा हे कि महिलाओं को सशक्त करना आज के युग की एक अहम पुकार है और हमारे समाने जो पश्चिमी देशों की चुनौति हे उसे तभी जाकर सामना कर सकते हैं। इस प्रकार बिहार के सम्पूर्ण भारतवर्ष में एक ऐसा पहला राज्य है जहाँ नितीश कुमार सरकार ने महिलाओं को सशक्त करने के लिए बिगुल बजा दिया है। अब देखना है कि हमारे अधिकारी और हम जनता इसमें कहां तक सफल जो पाते हैं क्योंकि हमने अभी जिस मुद्दा का बिगुल बजाया है वह एक ज्वलन्त मुद्दा हे और इसे हमें बिम करने के लिए बहुत कड़ा संघर्ष करना पड़ेगा तभी जाकर बिहार की महिलाओं को सशक्त करने का आन्दोलन अपना यथार्थ रुप ले पाएगा।

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नयी कहानी और कमलेश्वर

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आधुनिक युग की सबसे लोकप्रिय और सशक्त साहित्यिक विधा है कहानी। हिंदी साहित्य में भी कहानी को महत्त्वपूर्ण स्थान प्राप्त हुआ है। जीवन से सर्वाधिक गहरा संबंध रखनेवाली एक विधा है कहानी। जीवन—यथार्थ को कल्पना के साथ मिलाकर, कहानीकार उसे छोटी—छोटी इकाइयों में बदलकर हमारे सामने प्रस्तुत करते हैं। कहानी की अपनी एक दीर्घ परम्परा रही है और यह परम्परा संस्कश्त साहित्य से हिंदी में आती है। हमारे पौराणिक कथानक इस परम्परा के उत्स है। लेकिन हिन्दी में कहानी का जो स्वरूप आधुनिक काल में उभरकर आया, वह सर्वथा नवीन रहा। बंग महिला की दुलाई वाली कहानी हो या इंशा अल्ला खाँ की रानी कतेकी की कहानी अथवा किशोरीलाल गोस्वामी की इन्दुमती हो सब की सब मानव जीवन को रूपायित करती है। लेकिन हिन्दी की पहली कहानी किसे माना जाए यह प्रश्न आज तक विवादित है, आलोचकों ने अपने ढंग से इस प्रश्न का उत्तर देने की कोशिश की है। कोई वंग महिला की दुलाईवाली को हिन्दी की पहली मौलिक कहानी मानता है तो कोई किशोरी लाल गोस्वामी की इन्दुमती को हिन्दी प्रथम मौलिक कहानी के शिखर विराजित करता है, किसी ने आचार्य रामचन्द्र शुक्ल की कहानी ग्यारह वर्ष का समय को प्रथम मौलिक कहानी माना है। हिन्दी की पहली मौलिक कहानी को लेकर आलोचकों के बीच विवाद के कुहासे को आचार्य रामचन्द्र शुक्ल की ये पंक्तियाँ छाँटती हुई दिखाई देती है— यदि इन्दुमती किसी बंगला साहित्य की छाया

नहीं है, तो हिन्दी की यही पहली मौलिक कहानी ठहरती है, इसके उपरान्त ग्यारह वर्ष का समय फिर दुलाईवाली का नम्बर आता है। जो भी हो, इसमें कोई सन्देह नहीं कि भारतेन्दु युग में ही हिन्दी कहानी का आविर्भाव हुआ और उसने अपना एक अलग स्वरूप धारण कर लिया।

भारतेन्दु युग में यह विधा अपना शैशव काल बिताकर जब प्रेमचन्द युग में प्रवेश करती है, तो उस समय तक उसे प्रौढ़ रूप मिल चुका होता है। प्रेमचन्द ने हिन्दी कहानी को यथार्थ रूप में निरूपित किया। हिन्दी कहानी के इस प्रथम चरण में प्रसाद ने महत्त्वपूर्ण भूमिका अदा की। उनकी कहानियों में जीवन के सामान्य यथार्थ को कम और स्वर्णिम अतीत के गौरव, मसृण, भावुकता, कल्पना की ऊँची उड़ान तथा कात्यात्मक चित्रण को अधिक महत्त्व मिला है। प्रेमचन्द युग के सशक्त कथाकर यशपाल ने हिन्दी कहानी को एक नया मोड़ दिया। उनकी कहानियों में मार्क्सवाद का पुट मिलता है। प्रेमचन्द की ही परम्परा के सशक्त कहानीकार जैनेन्द्र ने व्यक्ति–मन की शंकाओं, प्रश्नों तथा गुत्थियों को मनोविज्ञान के धरातल पर निरूपित किया। इसकी कहानियों का मुख्य विषय नारी है।

हिन्दी कहानी जब पाँचवे दशक में कदम रखती है तो उसका स्परूप बदला–बदला दिखाई देता है। सन् १९५० के बाद कविता के क्षेत्र में नयापन दिखाइ देने लगा। हिन्दी कहानी भी अपने नये रूप में उभर रही थी। वस्तु और शिल्प दोनों दृष्टियों से सन् १९५० की कहानी एक नवीन कलेवर लेकर पाठकों के सामने आती है। यहाँ तक आते–आते उसने आधुनिकता की चुनौती स्वीकार कर ली थी। कथाकार भी पुरानी लीक से हटकर कहानी सृजन में अपना योगदान दे रहे थे। इस प्रकार की नूतन प्रवृत्ति देखकर आलोचक हिन्दी कहानी को नयी कहानी के नाम से सम्बोधित करने लगे। नयी कहानी के स्वरूप को स्पष्ट करते हुए इन्द्रनाथ मदान का यह कथन काफी न्यायसंगत लगता है – आज इसके पुराने बंधन टूट चुके हैं, जीवन के पुराने सत्य गिर चुके हैं। इसलिए आज जीवन में नए सन्दर्भो की खोज है, अभिव्यक्ति के नये माध्यमों की आवश्यकता है।

वस्तुतः नयी कहानी अचानक से चर्चा में नहीं आई। सन् १९५० के बाद जब परम्परा से हटकर आधुनिकता से सम्पृक्त नूतन जीवन मूल्यों को अपने में समेटे हुए यह विधा सामने आयी, तो उसके नूतन स्वरूप को देखकर समीक्षकों ने अपने–अपने ढ़ंग से नयी कहानी को परिभाषित किया। नयी कहानी का कहानीकार पारम्परिक मूल्यों को छोड़कर मानव के यथार्थ जीवन का चित्रण करने में विश्वास रखता है। इस संबंध में गजेन्द्र यादव का यह कथन तर्कपूर्ण लगता है – शायद यही कारण है कि हमारे इस कथाकाल की सारी कहानियाँ नये संबंधों के बनाने की कहानियाँ नहीं, संबंधों के टूटने की कहानियाँ है, सारे संबंधों से टूटा हुआ व्यक्ति अधिक से अधिक अकेला, अजनबी होता चला जाता है, पिछली पीढ़ी के प्रति अविश्वास, घृणा और आपस में अपरिचय, अनिश्चय .. यही यथार्थ नयी कहानी के माध्यम से बार–बार सामने आता है।

नयी कहानी अपने पूर्व की कहानी से पूर्ण से भिन्न नहीं है। किसी न किसी से उसका उससे संबंध है क्योंकि उस समय भी पुरानी पीढ़ी के कहानीकार जिस तरह की कहानी लिख रहे थे, वह नयी कहानी से किसी रूप में कम नहीं थी। रामबक्ष की यह दृष्टि नयी और पुरानी कहानियों के बीच सेतु का काम करती है– इन कहानियों में नये और पुराने का संघर्ष है ही नही (क्योंकि जीवन में नहीं था) एक अजीब–सी स्थिति है कि दोनों पीढ़ियाँ घर में एक साथ मिलती ही नहीं। दोपहर का भोजन भी एक के बाद एक चुपके से कर जाते हैं।

नई कहानी के कथाकार अतीत को लेकर पूरी तरह से मुक्त थे। उनके सामने वर्तमान मौजूद था, जो संघर्ष और चुनौतियों से भरा पड़ा था। इस दौर में ऐसी कहानियों की रचना हुई, जो वर्तमान को बड़े यथार्थ ढ़ंग से प्रस्तुत करती है। कर्मनाशा की हार, गुलकी बन्नो, गुलरा के बाबा, आदि रचनाएं इस दृष्टि से विशेष उल्लेखनीय है। इस प्रकार हम देखते है कि नयी कहानी नूतन दृष्टिकोण को लेकर हमारे सामने आती है और समाज के यथार्थ को दुनिया के सामने पेश करती है। उसमें नूतनता के प्रति दुराग्रह बिल्कुल

दिखाई नहीं देता। वह जीवन की जटिलताओं, सामाजिक विसंगतियों, कुंठाग्रस्त अवसाद, पति–पत्नी के बीच तनाव को सहज रूप में निरूपित करती दिखाई देती है।

नयी कहानी के प्रणेता कमलेश्वर हिन्दी कहानी को एक ऐसे मोड़ पर लाकर खड़ा कर देते है जहाँ कहानी अपने पुरानेपन को छोड़कर एक नये शिल्प में ढलती दिखाई देती है। उनकी कहानियों का कथ्य पूर्ववर्ती कहानियों के ढर्रे से अलग दिखाई देता है। लीक से हटकर नूतन मार्ग अपनाना उनकी कहानियों की प्रकृति है। राजा निरबंसिया, कस्बे का आदमी, गर्मियों के दिन, नीली झील, आदि कहानियाँ एक नयापन लिए हुए है। एक जगह उन्होंने परम्परागत मूल्यों के प्रति अपनी असहमति प्रकट भी की है– जीवन और उसके परम्परागत मूल्यों के प्रति उन पात्रों की असहमति ही मेरी असहमति है।

सच तो यह है उनकी इस दौर की कहानियों में नयी कहानी के सारे लक्षण दिखाई देते हैं। इनमें जहाँ शिल्पगत नूतनता है, वही कथ्यगत विशिष्टता भी है। आदर्शों के प्रति अनावश्यक लगाव इन कहानियों में कतई दिखाई नहीं देता। कहानियों में पात्र वही करते दिखाई देते हैं जो परिस्थितियाँ उनसे करवाती है। नयी कहानी दो दिशाओं में आगे बढ़ती है। पहली दिशा में जाने वाली कहानियाँ ग्रामीण जीवन की बड़ी सहजता एवं ईमानदारी के साथ चित्रित करती है और दूसरी दिशा में जाने वाली कहानियाँ नगरीय जीवन चित्रण करती है। लेकिन कमलेश्वर की कहानियों में कस्बाई जीवन अधिक देखने को मिलता है। कस्बे का आदमी कहानी में कस्बाई संस्कृति और संस्कार देखने को मिलते है। गर्मियों के दिन कहानी में कमलेश्वर अपने युग के जीवन मूल्यों की तलाश करते दिखाई देते हैं और इस निष्कर्ष पर पहुँचते है कि आज के जीवन में जीवन मूल्य खण्डित हो चुके हैं।

कस्बाई जीवन का चित्रण करने वाले कथाकार कमलेश्वर सन् १९६० तक आते–आते महानगरीय जीवन को नजदीक से देखने लगे और महसूस करते है कि यहाँ तो अपनापन धीरे–धीरे लुप्त–सा हो गया है। संवेदन–शून्यता और कृत्रिम जीवनशैली ने महानगरीय जीवन को पूरी तरह जकड़ लिया है। दिल्ली में एक मौत कहानी पूर्ण रूप से संवेदनशून्यता की कहानी है। सेठ दीवान चन्द की मृत्यु पर पड़ोसियों को दुखी होने की कौन कहे, उन्हें इस बात की चिन्ता अधिक सता रही है कि कहीं इस कड़ी सर्दी में शव यात्रा में शरीक न होना पड़े और जब लोगों को शरीक होना पड़ा, तो वहाँ लोगों में प्रसंग से हटकर बातें होती है। लेखक महसूस करता है कि यह संवेदन शून्यता गाँवों में व कस्बों में कहीं देखने को नहीं मिलती। खोई हुई दिशा कहानी में हर व्यक्ति एक दूसरे को अजनबी दिखाई देता है। अपनापन ढूढ़ने पर भी नही मिलता। कहानी का पात्र चन्द्र इस पीड़ा को दिल से महसूस करता है। कस्बे से दिल्ली आने तक के सफर में वह इतना अकेला हो जाता है कि वह अपनी पहचान भी खोने लगता है। सच तो यह है कि महानगरीय जीवन में हर व्यक्ति अकेला है। अपने पन की भावना धीरे–धीरे लुप्त हो गई। तलाश कहानी में बदलते जीवन मूल्यों की और लेखक ने संकेत किया है। विधवा माँ को अपनी युवा बेटी की चिन्ता कम, अपने सुख की चिन्ता अधिक है। बेटी अपनी माँ के अन्दर वात्सल्य की तलाश करती है। वह अपनी माँ के विषय में कहती भी है – उनके तन से ऐसी अछूती गंध उड़ती थी, जो सबकों आनी तरफ खींचती थी। एक तरफ मातृत्व है, तो दूसरी तरफ नारी। दोनों के बीच लगातार संघर्ष होता रहता है और अन्तत: नारी जीत जाती है और विधवा माँ आधुनिक परिवेश में अपने आप को ढाल लेती है और आत्मसुख के लिए मातरत्व का त्याग कर देती है। महानगरों में जीवन मूल्य, पारम्परिक संबंध, नैतिकता सब के सब विखण्डित हो चुके है। जहाँ मूल्य है ही नही वहाँ उनकी तलाश करना बेमानी है। वस्तुत: आज के युग मूल्य अपनी पहचान खो चुके हैं। संबंध अपनत्व के मोहताज हो गए है। हर व्यक्ति सिर्फ अपने बारे सोचता है। समाज या देश उसके लिए कोई मायने नहीं रखता।

कमलेश्वर के तीसरे दौर की कहानियों में महानगरीय जीवन ओर खुलकर सामने आता है। इस दौर की कहानियों में व्यक्ति संघर्ष करता दिखाई देता है। हर व्यक्ति अपने अस्तित्व की रक्षा के लिए संघर्ष

करता दिखाई देता है। हर वस्तु, रिश्ते व संबंधों को भौतिकता की तराजू में तोले जाने लगा। सांस्कृतिक संकट और संवेदनशून्यता मानवीय मूल्यों को आहत करते दिखाई देते है। नागमणि कहानी देश में व्याप्त भ्रष्टाचार एवं बेईमानी पर तीखा प्रहार करती है। इस दौर की बयान कहानी समाज की जटिलताओं को बड़े यथार्थ रूप में सामने लाती है।

असवित कहानी युवा पीढ़ी की असहाय स्थिति को रेखांकित करती है। वस्तुतः यहाँ तक पहुँचते—पहुँचते कमलेश्वर की कहानियों में सामान्य आदमी की विवशता, उसका मोहभंग, उसकी असहाय स्थिति, क्रूर व्यवस्था में उसका पिसता आत्मविश्वास सबके सब अपने अस्तित्व के लिए संघर्ष करते दिखाई देते है। अपने इस दौर की कहानियों के विषय में कमलेश्वर जी स्वयं अपना ब्यान देते है— यातनाओं के जंगल से गुजरते मनुष्य की इस महायात्रा का जो सहयात्री है, वही आज का लेखक है। सह और समान्तर जीने वाला आदमी के साथ।

निष्कर्ष रूप में हम कह सकते है कि कमलेश्वर का कहानी—लेखन नयी कहानी—आन्दोलन को सम्बन्धित कर उसे जीवन्तता प्रदान करता है। आधुनिकता—बोध उनकी कहानियों का उत्स है। नयी कहानी को स्वस्थ स्वरूप प्रदान करने में कथा कमलेश्वर ने महत्त्वपूर्ण भूमिका निभाई। उनकी कहानियाँ हर मोड़ पर समाज के यथार्थ को दिखाती नजर आई है। नई कहानी के पुरोधा कमलेश्वर भारतीय समाज यथार्थ दश्ष्टा है। समाज के कटु यथार्थ का पर्दाफास करने में कमलेश्वर ने महत्त्वपूर्ण भूमिका निभाई है। इनकी कहानियों में आदर्शों बिल्कुल को बिल्कुल थोपा नहीं गया। उन्होंने समाज के यथार्थ को पाठकों के सामने रखा और अप्रत्यक्ष रूप से संकेत करते है कि इस यथार्थ को अनदेखा करके समाज को स्वस्थ स्वरूप प्रदान नहीं किया जा सकता। संघर्ष से पलायन करके व्यक्ति अपने अस्तित्व की रक्षा नहीं कर सकता। उनकी कहानियों का यथार्थ समाज का यथार्थ है। उनकी कहानियाँ यथार्थ के धरातल पर खड़ी नजर आती है। ये यथार्थ और संघर्ष के कथाकार है कल्पना के पंख लगाकर उड़ान भरना उनकी रचनाधर्मिता के प्रतिकूल है। उनकी कहानियों का सही मूल्यांकन करते हुए डॉ० बच्चन सिंह का यह कथन ध्यातव्य है — कमलेश्वर इस कालखंड के अत्यन्त सशक्त कहानीकार है। यह शक्ति कथानियत से अलग होने और भाषा-संरचना के संयम में निहित है। सम्पूर्ण संरचना में इतनी निःसंगता किसी अन्य कहानीकार में नहीं पा पाती है।

सन्दर्भ ग्रंथ सूची—

१. हिन्दी साहित्य का इतिहास —आचार्य रामचन्द्र शुक्ल, नागरी प्रचारिणी सभा, काशी पृष्ठ ३४४

२. हिन्दी कहानी : पहचान और परख— डॉ० इन्द्रनाथ मदान पृष्ठ २४

३. एक दुनिया : समानान्तर — राजेन्द्र यादव, पृष्ठ ३१

४. हिन्दी कहानी : पहचान और परख — डॉ० इन्द्रनाथ मदान पृष्ठ १३५

५. आधुनिक हिन्दी कहानी — गंगा प्रसाद विमल पृष्ठ १३०

६. मेरी प्रिय कहानियां — कमलेश्वर, राजपाल एण्ड सन्स, दिल्ली पृष्ठ ६

७. वही पृष्ठ १४०

८. वही पृष्ठ ६

९. हिन्दी साहित्य का इतिहास — डॉ० नगेन्द्र पृष्ठ ६९२

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सुनीता जैन के काव्य में मानव मूल्य

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एक सच्चे रचनाधर्मी, कवि या साहित्यकार के अस्तित्व का सारतत्त्व मुख्य रूप से उसके मूल्य-विषयक चिन्तन और सृजन में व्याप्त रहता है;जो कवि या साहित्यकार जीवन-मूल्यों के प्रति समर्पित हुए बिना सृजन कार्य नहीं करता उसकी रचनात्मक दृष्टि प्रायः निर्मूल ही होती है।वस्तुतःकवि के सृजन की सार्थकता जीवन मूल्यों की अनवरत तलाश में होती है।डॉ. सुनीता जैन ने एक शोधक एवं कवि के रूप मेंअपने सृजन में 'मूल्यों' के प्रति गहन सरोकारों को साहित्य जगत के समक्ष प्रस्तुत किया है। उनकी मान्यताएं व्यापक रूप में उनके सृजन में समाहित हुई है। प्रमोद त्रिवेदी के शब्दों में-"सुनीता जी आधुनिकता और उत्तर आधुनिकता के आतंककारीप्रभावों से बची रही। आधुनिक वोहैं पर आदर्शवादी भी हैं।जहां तक दोनों का निर्वाह होसका किया पर यदि किसी एक को चुनने का अवसर आया होगा उन्होंने मूल्य और मर्यादा को ही चुनाहोगा।यह सब उनके लेखन में साफ झलकता है।"[1] सुनीता जी की दीर्घकालीन साहित्य साधना का मुख्य उद्देश्य श्रेष्ठतम जीवन मूल्य प्रेम, दया,करुणा, ममता, विश्वमैत्री, सत्य, सेवा, सहानुभूति, कर्तव्य परायणता, उत्साह आदिको उजागर करते हुए जीवन संघर्षों से थके-हारे मानव को कुंठा एवं निराशा के कुएं से निकालकर जीवन-संघर्षों से जूझने की क्षमता प्रदान करना है।

डॉ. सुनीता जैन के काव्य में मुख्यतः प्रकृति प्रेम, सौंदर्य,जीवनोंल्लास.आधुनिक भावबोध, सभ्यता और संस्कृति,त्याग आस्था, विश्वास, उत्कट जीजिविषा आदि भावानुभूतियाँ अभिव्यक्त हुई हैं।वे मानव मूल्यों की सजग प्रहरी के रूप में जीवन पर्यंत साहित्य साधना करने में लगी रही।जीवन मूल्यों पर प्रकाश डालने वाली उनकी विभिन्न कविताओं में उनके जीवन दर्शन की एक आलोकमयी दृष्टि उजागर होती है।सुनीता जी को उच्च मानव मूल्यों के प्रति अनुराग तो है ही इसके साथ ही उनके पोषण, रक्षण और समृद्धि की आकांक्षा भी अत्यन्त बलवती है जिसे उनके काव्य में स्पष्ट रूप में देखा जा सकता है।उनका काव्य सत-पथ प्रदर्शित करने के कारण वरण करने योग्य है।

मूल्य शब्द का प्रयोग विस्तृत एवं वैविध्यपूर्ण है। मूल्य परिवर्तनशीलहोते हैं; क्योंकि इनका सम्बन्ध परिवेश, कालचक्र और समाज से रहता है।इसलिए ही विद्वजन अलग-अलग तत्त्वों के मूल्यों को स्वीकार करते हैं। डॉ.रामेश्वर लाल खण्डेलवाल 'तरुण'के विचारानुसार-"जिन उपकरणों या तत्वों से मानव-जीवनअर्थवान, महत्वपूर्ण या महिमाशाली होता है वे ही मानव-जीवन के वास्तविक मूल्य है।मानव-जाति का इतिहास बताता है कि पशु-सुलभ वृत्तियों से ऊपर उठने का प्रयत्न करते हुए ही मनुष्य ने अपनी मनुष्यता को पाया है।अतः ये उदात्तवृतियाँ ही मानवमूल्यों–सत्यं, शिवम, सुन्दरं की निर्णायिका है।"[2]जिसमें सत्य उनका आधार है, शिव उनका लक्ष्य है और सुन्दर उस लक्ष्य तक पहुँचने का साधन है।अतः इन तीनों मानव मूल्यों के समन्वय से ही श्रेष्ठ कला का निर्माण होता है।यह मानव जीवन को सुरक्षित और व्यवस्थित बनाएं रखने के लिए आवश्यक है।यह आवश्यक नहीं है कि कवि मानव-मूल्यों को अभिव्यक्ति प्रदान करते हुए सीधे तौर पर 'मूल्य' शब्द का प्रयोग करें।उसके सृजन में तो ये पुष्प में सुगंध की भांति समाये होते है।इस दृष्टि से जब हम कवयित्री सुनीता जैन के काव्य का अध्ययन करते है तो पाते है कि उनका सम्पूर्ण साहित्य मानव-मूल्यों की सुगंधि को अपने में समाहित किये हुए है।

वास्तव में वही साहित्य चिरंजीवी होता है जो मानव-जीवन को प्रत्येक देशकाल में अपने अमृत-तत्त्व से सींचने की क्षमता रखता हैऔर यह क्षमता तभी आती है जब मानवीय मूल्यों का संवर्धन किया जाता है। इन मानव-मूल्यों से ही मनुष्य और समाज के बीच सामंजस्य स्थापित होता है। मूल्य ही जीवन में व्याप्त कटुता को मृदुता में परिवर्तित करके विश्व बंधुत्व की भावना को बल प्रदान करते है।हिंदी साहित्य के विकास पर विहंगम दृष्टिपात करने पर कहा जा सकता है कि यद्यपि हर कालखण्ड में परिवर्तन हुआ है किन्तु प्रेम, करुणा, दया, समता, सद्भाव और अहिंसा जैसे वृहत्तर मानवीय मूल्य प्रत्येक कालखण्ड में अपनी उपस्थित दर्ज करते है। पूर्व-मध्यकाल में तो मनुष्य को उदार एवं उदार बनाकर महामानव की पदवी पर प्रतिष्ठित करने का उपक्रम रहा। आधुनिक काल मे भी परिवर्तन की आंधी के बीच रचनाकार का लक्ष्य मानव जगत कोऔर अधिक सुंदर, समृद्ध,समुन्नत बनाना रहा है किन्तु इसके पश्चात भी साहित्य जगत में-"सांस्कृतिक संकट या मानवीय तत्त्व के विघटन की जो बात बहुधा उठाई जाती रही है उसका

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तात्पर्य यही रहा है कि वर्तमान युग में ऐसी परिस्थितियां उत्पन्न हो चुकी है कि जिनमें अपनी नियति के इतिहास निर्माण के सूत्र मनुष्य के हाथों से छूटे हुए लगते है।मनुष्य दिनों-दिन निरर्थकता की ओरअग्रसर होता प्रतीत होता है।यह संकट केवल आर्थिक और राजनीतिक संकट नहीं है वरन्जीवन के सभी पक्षों में समान रूप से प्रतिफलित हो रहा है। यह संकट केवल पश्चिम या पूर्व का नहीं है वरन् समस्त संसार में विभिन्न धरातलों पर विभिन्न रूपों में प्रकट हो रहा है।"[3] आज कुंठा, संत्रास, घुटन, द्वेष, बाज़ारवाद, साम्प्रदायिकता,भ्रष्टाचार,अजनबीपन, अकेलापन, धार्मिक विखंडनवाद, लिंगानुभेद, बलात्कार, शोषण, यौन शोषण, भुखमरी, भाषावाद-प्रान्तीयवाद, निरक्षरता, हिंसा, कन्याभ्रूण हत्या, दहेज उत्पीड़न, आतंकवाद जैसी बुराइयां समाज को विद्रूप बना रही है।सुनीता जैन एक ऐसी कवयित्री है जो वस्तुजगत की विभीपिकाओं तथा विसंगतियों से भलीभांति परिचित है किन्तु उनकी तत्त्वभेदी सौन्दर्यमयी दृष्टि सृष्टि के मूल में विद्यमान हर्ष,उल्लास एवमसौंदर्य को देख पाने में सर्वथा समर्थ है। वे अपनी 'क्यों कह दूँ' कविता में लिखती भी है कि-

"यदि मैंने दुष्यंत संग
अनाघ्रातपुष्प
अनबींधे मुक्ता देखे हैं
तो मैं क्यों कह दूं कि
बस स्टेनगन चलते है
जीते जी मरते है
जीवन यह कुआँ है
अंधे हो गिरते है।"[4]आज के त्रासदीपूर्ण वातावरण में भी कवयित्री जीवन को कुएं की भांति न मानकर अनेक सम्भावनाओं का द्वार मानती है। इनकी यही जीवन दृष्टि मनुष्य को निरंतर श्रमशील बने रहने का संदेश देती है। उनकी 'तौर-तरीके' कविता श्रमशील मानव केसम्बन्धों में प्रेम प्रगाढ़ता को दर्शाती है-

"जब वह खोदता है धरती/अपने बहते स्वेद में
स्त्री खोजती है जल सौ नदियों की शीतलता में
जब वह चलता है/हल के पीछे/ताज़े बीज उगाने
स्त्री उगती है जल्दी-जल्दी/अंकुर में, उसको हर्षाने।"[5]

सुनीता जी के काव्य में दृष्टिगोचर ये मानवीय मूल्य ही है जो अजनबीयत के युग में अपनेपन, प्रेम, स्नेह के बीज बोते है।यह सुनीता जैन के काव्य की उपलब्धि ही है कि वे समय की विपरीत धारा में भी अपना धर्म निभाने के लिए संकल्पबद्ध है।मानव की आस्था एवं विश्वास को सहेजे परम्परागत रूप से पूज्य सूरज ही उनके विश्वास का आधार है 'सूरज आया था कल'कविता में वे कहतीभी है कि-

"इन अकारण विश्वासों का/कारण क्या है/नहीं पता
सूरज आएगा कल/क्योंकि सूरज/आया था कल
उससे पहले कल/उससे/उससे/उससे पहले
हर कल/आया था सूरज/आएगा कल
कल तुमने/मुझको याद किया
इसका केवल यही प्रमाण/कि मैंने विश्वास किया।"[6]

सूरज का उगना स्वयं में ही कर्म करने को प्रेरित करता है।सुनीता जैन इसी कर्म को जीवन मूल्य के रूप में स्वीकारती है इसलिए ही वे अपनी कविता'कोर किसी सपने की' में कर्म करने के लिए संकल्पबद्ध दिखाई देती है-

"पल्ले में कुछ तो।
गांठे होगी ही
खुलती कुछ यादों की
ढलती संकल्पों की।"[7]

उनकी'कहीं न मेल होगा' कविता भी कर्म के मार्ग पर चलते हुए समय के सदुपयोग पर बल देती है।वे लिखती है कि-

"जब तक यह घनघोर
बरखा सीमित है कुछ रोप, कुछ उगा

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क्यों नहीं लेते?"[8]

यह रोपना, उगाना मनुष्य के हाथों में होता है।वह निरन्तर संघर्परत रहकर हर लक्ष्य को पा सकता है।कवयित्री जीवन में श्रेष्ठ मूल्यों की स्थापना के लिए जीने के पक्ष में रात-रात भर जागकर काव्य सृजन करती हुई कहती भी है कि-

"शायद जीने के पक्ष में
फिर-फिर अपना यों
हाथ खड़ा करती हूँ।"[9]

यही जिजीविषा मानवीय मूल्यों में से एक है जो संघर्पमयी स्थितियों से जूझने की क्षमता प्रदान करती है।इसी तरह प्रेम भी मानव जीवन का वह महामूल्य है जो हर परिस्थिति में जीने की प्रेरणा देता है इसलिए ही कवयित्री मानव मन को प्रेम का गीत गाते रहने के लिए कहती हैयहाँ सुनीता जी की'ढाई अक्षर प्रेम के के'कविता दृष्टव्य है-

"ढाई अक्षर/प्रेम के/मन गाना
दोहराना/कभी झील में/कभी कमल में
कभी हंस के धवल-युगल में/इसको सुनने जाना
मन गाना/दोहराना जब/शंपा से/टूट चले/अम्वर का तन
कांधे चढ़ निज/चले प्रिय जब
घर के हो जब/कपाट वंद
ढाई अक्षर/चुक नहीं जाना/चुक नहीं जाना।"[10]

सुनीता जी अपनी'उत्तराधिकार-2' कविता के माध्यम से मानवीय मूल्यों में से एक 'समता' के महत्व पर दृष्टिपात करती है। वे कहती है कि-

"जिस दिन बनवाओ/बेटे के लिए मकान
उस दिन लाना एक ईंट/बेटी के लिए।
ईंट पर ईंट रखते प्रतिदिन
बन जाये शायद/उसकी भी झोपड़ी।"[11]

स्वच्छ समाज की कल्पना समता, सद्भाव, समन्वय जैसे मानवीय मूल्यों के रहने पर ही की जा सकती है। सुनीता जैन ने अपने काव्य में इसी सामाजिक दायित्व का पूर्णतः निर्वहन किया है।उनका हृदय समाज कल्याण के लिए ही उन सभी वृद्धजनों के पक्ष में खड़ा दिखाई देता है जिन्हें आत्मकेंद्रित सोच का शिकार होना पड़ा है। 'पिछवाई' कविता में वे कहती है कि-

"तुमने जो सहा, सहा/सहा
मैंने जब उसको/कहा,/ज़रा/ज़रा
अंगारों का/आकाश फटा
किस-किसने/विष उगला
वे मुझको/झुलसा भी देंगे/तो क्या-
तेरे जितने आँसू थे
समझूँगी, उनका/कुछ तो/मोल चुका।"[12]

मानवीय मूल्यों में से एक मूल्य अहिंसा भी है।अहिंसा के मार्ग पर चलकर ही समाज में शांति स्थापना की जा सकती है। आज जब चहुंओर भय, आतंक का साया पसरा पड़ा है, ऐसे में कवयित्री अपनी 'इस आग को बुझा जरा' कविता के माध्यम से मानव को हिंसा के मार्ग को त्यागकर अहिंसा के पथ पर चलने के लिए प्रेरित करती है। वे कहती है कि-

"यह खून था तेरा मेरा
यह खून तू बहा नहीं
इस आग को बुझा ज़रा
यह आग को बुझा ज़रा
यह आग तू लगा नहीं
जो चल रहे हैं चाल वो

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क्या मातमों से मौत के
ये दिल तेरा भरा नहीं
इस आग को बुझा ज़रा..."[13]

अतः उपरोक्त विवेचन के आधार पर हम कह सकते है कि सुनीता जी मानव मूल्यों की सजग प्रहरी है।उनका मूल स्वर आस्था और विश्वास से पूरित है। आपका काव्य निराशा के अंधकार से निकल आशा के प्रकाश में उत्साहित करने वाला है।सुनीता जी अपनी कविताओं के माध्यम से विसंगतियों के विरूद्ध डटकर खड़े होने और दृढ़ विश्वास के बूते उन पर विजय पाने का संदेश देती है। वे कर्म को ही अपना धर्म मानकर अपने ईष्ट को पा लेना चाहती है इस प्रकार वे स्वयं और उनका काव्य दोनों पाठक में मानवीय मूल्यों को प्रतिष्ठापित करने में सहायक सिद्ध होते है।

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Swami Vivekanand's Ideas Towards Women

Surender Kumar *

ABSTRACT

Swami Vivekanand was highly sympathetic towards women's oppression instead of their emancipation. In the 19th century, free minded social reformers like Raja Rammohan Rai, Keshav Chandra Sen, Jyotibaphulle, Atmaram Pandurang and Vidyasagar fought against the cruel injustice against women. But in the middest of modern day decision on feminism one name is until forgotten or forbidden, the great Indian Yogi Vivekananda. He is also known as a great nationalist leader, Karamyogi and a devotee of veda in modern Indian history. He stated that forthcoming Indian women will attain glorious achievements. Women like man must be acceptable to enjoy independence and accountability. Swami Vivekananda was the leading monastic to do work for the liberty and impartiality of women and realising her prominence for the proper working of home and society. Swami Ji thought that the main motive behind the numerous glitches of the women in our country was due to lack of good education. Swami Ji quantified that if the women get good education then they can resolve their own difficulties in their own means and they must also understand what chastity means, as it is her legacy.

Keywords: Swami Vivekananda, Feminism, Oppression, Equality, Emancipation, Society.

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Introduction:

Swami Vivekanand was a great son of India born on 12th June 1863 and died on 4th July 1902 at the young age of less than forty. Though he lived for a short period but his achievements in different fields had been remarkable. His stimulating character was well known in India, USA and some other countries during the last decade of the nineteenth century and the first decade of twentieth century. The unidentified monk of India rapidly dove into fame at the speech delivered by him on September 11, 1893, at first World's Parliament of Religions on the site of the present-day Art Institute in Chicago, where he represented Hinduism. He started his discourse in a profound voice with the words, "Sisters and Brothers of America" and the entire audience applauded and praised widely for two entire minutes. He was not only a great teacher with an international message but he was also a very great Indian, a patriot and his message inspired our countrymen down to the present generation. He gave his ideas on various issues on mankind, peace and human brotherhood, spiritually, morality, philosophy, womanhood and several others. However, our focus in this paper would be on Vivekanand's views on womanhood.

Research Methodology:-

Research methodology is a way to analytically explain the research problem. Through proper research methodology objectives of any research are encountered. Methodology, broadly comprises of the research strategy and the method hired for collecting records, information and substantial. The research design should be compatible with the accessibility of source substantial. Two major components research methodology, viz research Strategy and Source Substantial.

Research Design:

The search proposal implemented for our research paper is of a composite nature mixing descriptive strategies. Most of the ancient search comes under this compound class of plan.

Source Material:

The history is not mere description of past proceedings of deeds and misdeeds of ruling sovereigns. This is emphasis on social organizations, their monetary, spiritual and ethnic conditions. The evidences and material were garnered, collected and ordered from diverse scattered source such as journals, books, government reports etc for writing this paper.

Analysis:

We now proceed to analyse the views of Swami Vivekanand on womanhood. As we know that women in India enjoyed high status in vedic age but with the passage of time the position of women deteriorated and during Mughal period it was far from satisfactory. They were expected to be subjected to men all their lives, first to father and brother then to their husbands and lastly to their sons. The social evils like Purdah System, Killing of Female Child, Early Child Marriage, Sati partha were prevalent in the society. He said that welfare of the world is not feasible till condition of women is not improved. He remarked that it is not conceivable for a bird to fly on only one wing. He discoursed that motherhood of a woman is the depiction of "Divine Mother". He further added that if you do not permit one to become a lion, then she will turn out to be a fox. He preached that the Hindu women are spiritual and religious as compare to other women in the world. He said that a sprint must first nurture a great respect for maternity. The God should be worshiped as "Mother". The woman is a form of "Shakti" (power) and there has been no revival of this power and that is why India is the feeblest and the most retrograde of all countries. Without the grace of Shakti, nothing is to be proficient. To me, mother's grace is far more valued than Father's. India has so many powerful women like Sita, Gayatri, Ahalyabai, Mirabai who were peerless on the earth. He said that through education, women problems can be solved.

According to him men and women are equal. We, human beings are born to apprize and to help each other. Since man thinks himself superior to woman is the great cause of divorce. The beauties of home life and principles that may develop an ideal character with the help of modern science and the female students must be trained up for ethical and spiritual life. It is only in the home of educated and pious mothers that great men are born. For the upliftment of women, men must come first.

Swami Vivekanand considered Sita as an idyllic woman. **He also told, "The ideal womanhoodd of India's motherhood that marvelous, Unselfish, all suffering ever for giving mother"** He assumed that the day India starting abandoning their woman, the demise of the nation started.

The best parameter to measure the growth of a nation is its treatment to women. In ancient Greece, there was no significant difference in the status of man and woman. The idea of prefect parity existed. Only a married man can be priest, the idea behind this works that a single man is only half a man, and flawed.

Swami Vivekananda was in favour of liberty of women so that they could live on their own principles could be able recommend ideas for their own improvement. He thought that if women were properly educated than they could be able to use their capabilities. He was in the favour of self-esteemed and dignified status women and wanted no man to crush upon it.

Swami Vivekananda emphasized on the fact that there was a significant difference in the approach of Indian men and others towards women status. This was hard fact that Indian men consider women are born for their pleasure. The real Shakti worshipper is one who knows that God is the ubiquitous force in the cosmos, and sees the women as the sign force in the cosmos. American men considered women in this view and treated women as well hence they are so affluent, so cultured, so factual and so enthusiastic.

Swami Vivekananda was a great admirer of Indian women past for their great achievements. He pompously said that "women's statesmanship, managing territories, governing countries, have proved themselves equal to men, if not superior. In India I have no doubt about that, whenever they have had the opportunity they proved that they have as much ability as men, With this advantage they seldom degenerate. They keep to the moral standard, which is innate in their nature and thus governors and rulers of their state they prove at least in India far superior to men". John Stuart Mill mentions this statement.

Swami Vivekananda stated that Although he had more chance than others to know women in general from his situation and his profession as a missionary continuously roaming from one place to another and had contact with all kind of society. He said “Ideal woman in India is the mother first, and the mother last”.

According to Swami Vivekanand, Liberty was the first condition of development. It is highly wrong if some one says that he will work out for the resolution of the women status. Women will solve their own problems. We should have to create such an environment that an women will be able to solve their own problems in their own ways.

Swami Vivekanand evoked so much admiration among American women. The relationship between Vivekanand and American women became strong, Miss Kathenie became the first hostess of Swami in America. Similarly, he came in contact with Professor Wright, Mrs. Katewoods, George W.Hale, Mrs. B. Lyon, Miss S.E. Words, Mrs. S.R. Shephard etc. He became so popular among women that most of the audience in America was women. The audience used to be spell bound. Vivekananda criticized the Christian Missionaries for their insular approach and outlook towards women and remarked that their religion preached in the name of luxury. The wonder audience always became frenzy to hear his speeches and his sense of respect and compliments towards women. The Swami repaid their admiration by writing both "religious and semi sentimental verses" in his autographies and books. The result was that the "New thought Movement" was launched by Mrs. Ella and regarded the Swami's teachings on anyone for despair and gloom.

Swami Vivekanand's contact with the American women provided with ideas which set into motion the process of the spread of Hindu thought in America. His message caused "the frivolous society women to think" and imbued "the wife and mother, the husband and father with a larger and holier compression of duty". The American women took him up and made him a celebrity. The swami also reciprocated by paying glowing tributes to them. He said "The United States has inspired me with hopes for great possibilities in the future, but our destiny, as that of the world rests not in the law-makers of today, but in the women".

Conclusion:

Swami Vivekanand's social regeneration of women in America, India and other countries was based on Vedic principles. Today in Modern India Swami's Doctrines are still needed more to free the women in India from Social evils and pressures under which women are groaning in almost every field and their conditions are far from satisfactory. The women though are marching ahead yet their position is not pleasant from her birth to death. The task can only be accomplished if we follow the teachings of Swami Vivekanand with all its earnest.

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DERIVATION IN NON-ASSOCIATE ALGEBRAIC

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ABSTRACT

In this paper we will explain about the basic of non-associative algebra using triality group and some were matric and graph representation.A Non-associative algebra structure can be studied with other associative algebraic as K-endomorphisms of A just like K-Vector Space. Whereas as some of the researchers we have also consider non-associative algebraic as a multiplicative operation of a commutative Ring R.

KEY WORDS

Non-associative, Triality, multiplicative operation, associator, vector space.

INTRODUCTION

Non-associative algebra: A Non-associative algebra also known as distributive algebra.Non-associative algebra is a vector space over a field because its vector space provides a bilinear product. An algebra known as an algebraic structure which consists of a set with an additive, multiplicative and scalar operations of the elements of a field of vector space. Thus, an algebraic structure A, is a non-associative algebra with binary multiplicative operation over a field K. An algebraic structure $A \times A \to A$ may or may not be associative.

R-module in mathematics is one of the fundamental algebraic structures. The notation of vector space over a field is a module over a ring R with operation of a scalar multiplication known as R-binary multiplication operation. Some of the researcher also stated that Z-algebra as a non-ass0ciative rings. Where Z-algebra is an algebra which obeys all the properties and laws of ring for example as R-algebra. An algebraic structure ring act with two binary operations. Associative is a part of one of the binary operations in which rearranging of the paratheses is done .

The linear algebra multiple mapping is a function $f : V_1 \times V_2 ....V_n \to W$ known as K-multiple linear maps. Therefore associator of A is a K-multiple linear map with the operation as $[\square,\square]: A\times A\rightarrow A$ and with three operations are as $[\square,\square,\square]: A\times A\times A\rightarrow A$. Thus, the associator on A is given by $[x,y,z]=(xy)z-x(yz)$ where x,y,z is an arbitrary element of the algebra.

Derivative algebra is equipped with number of derivations as differential rings, differential fields which satisfied Leibniz's product rules. A K-derivation is also a K-linear map for an algebraic A over a ring or a field is such that $D: A\rightarrow A$ which satisfies Leibniz's product rules.

$D[xy]=xD(y)+D(x)y$

Triality Group:Let A be an algebra with a bi-linear product over a field F denoted by x y for all x and y an element of A. Let us suppose **a first triple** $h=(h_1,h_2,h_3)\in(E_{pi}A)^3$

Equipped with
$$h_j(x+y)=h_jx+h_jy$$
$$and \quad h_j(\alpha x)=\alpha h_j(x)$$

$E_{pi}A$ represents the set of epimorphisms of A, for $\alpha\in F$

By the Global Triality relation we have,

$h_j(x,y)=(h_{j+1}x)(h_{j+2}y)$……………………………………(1)

And $h_{j+3}=h_j$ ………………………………………………………… (2)

Where j=1,2,3 is a module3 , $\forall x,y\in A$

Similarly **for second triple**

$h'=(h_1',h_2',h_3')\in(E_{pi}A)^3$

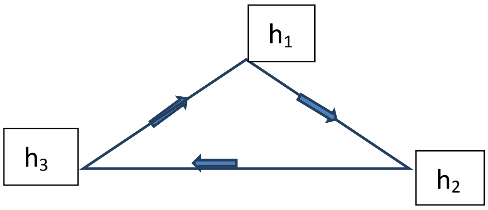
Equipped with $hh'=(h_1h_1',h_2h_2',h_3h_3')$ …………………………………(3)

$\therefore$ $\mathrm{Trig}(A)=\left\{h=(h_1,h_2,h_3)\in(E_{pi}A)^3 : h_i(xy)=(h_{j+1}x)(h_{j+2}y)\right\}$ …………………………(4)

$Auto(A)=\left\{h\in E_{pi}A: h(xy)=(hx)(hy),\forall x,y\in A\right\}$ ………………………………. (5)

Let us assume a function $f\in End(Trig(A))$

So as $f: h_1\rightarrow h_2\rightarrow h_3\rightarrow h_1$ ……………………………………………………………………………….. (6)



It is a closed walk with cyclic graph and satisfying $f^3 = id$

Trig(A) is invariant for the cyclic group Z_3 by the generation function f.

Similarly let there be three functions $\gamma_1, \gamma_2, \gamma_3$ by *for* μ=1,2,3 $\gamma_\mu \in End\left(Trig\left(A\right)\right)$

i.e ,
$$\left.\begin{array}{l} \gamma_1 : h_1 \to h_1, h_2 \to -h_2, h_3 \to -h_3 \\ \gamma_2 : h_1 \to -h_1, h_2 \to h_2, h_3 \to -h_3 \\ \gamma_3 : h_1 \to -h_1, h_2 \to -h_2, h_3 \to h_3 \end{array}\right\}$$

……………………………………………………..(7)

In Matrix form it is $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ unit matrix of order 3

i.e I_3

Which satisfies and is isomorphic to K_4 $\begin{array}{l} \gamma_\mu \gamma_\nu = \gamma_\nu \gamma_\mu, {\gamma_\mu}^2 = id \\ \therefore \quad \gamma_1 \gamma_2 \gamma_3 = id \end{array}$

………………………………………(8)

For $\gamma_4 = \gamma_1 \qquad f \gamma_\mu f^{-1} = \gamma_{\mu+1}$

…………………………………………………………(9)

For $x \to x'$ which fulfil $\left(x'\right)' = x$ & $\left(xy\right)' = y'x'$

………………………………………………….(10)

We define $\overline{R} \in End(A)$ *for* $R \in End(A)$

$\overline{Rx} = \overline{R}\ \overline{x}$

……………………………………………………………………………………(11)

Take $x \leftrightarrow \overline{y}$

$\overline{h}_j\left(xy\right) = \left(\overline{h}_{j+2} x\right)\left(\overline{h}_{j+2} y\right)$ ……………………………………………………………….(12)

For $\theta \in End\left(Trig\left(A\right)\right)$

$\theta : h_1 \to \overline{h_2}, h_2 \to \overline{h_1}, h_3 \to \overline{h_3}$ ……………………………………….(13)

$$f\theta f = \theta, \theta^2 = id,$$

Now,
$$\left.\begin{array}{l}\theta_{\gamma_1}\theta^{-1} = \gamma_2 \\ \theta_{\gamma_2}\theta^{-1} = \gamma_1 \\ \theta_{\gamma_3}\theta^{-1} = \gamma_3\end{array}\right)$$

…………………………………………………………………………………(14)

METHODOLOGY

If $D(x,y) = d_0(x,y) + d_1(x,y) + d_2(x,y)$

Then it holds a derivative $D(x,y) \& D(x,yz) + D(z,zx) * D(z,xy) = 0$

Therefore, a model global triality is $\overline{h_j}(x*y) = (h_{j+1}x)*(h_{j+2}y)$

CONCLUTION

Thus, a researcher stated that automorphism of Cayley algebra can be constructed. Also, Triality algebra (Trig(A) is an important concept of lie algebra.

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E-BANKING COMPARATIVE STUDY OF PUBLIC AND PRIVATE SECTOR BANKS IN HARYANA STATE

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ABSTRACT

Studying the subject from several angles is possible through the use of research methods. There is an explanation of the research topic and its aims as well as the structure of the chapter and the necessity for it. It has also been explored in detail the statistical tools and procedures that are used to examine data. The current investigation is both descriptive and analytical. E-banking customer impression in Haryana is the focus of this study. It has to do with the collection of primary and secondary data using a well-crafted and well validated questionnaire.

Customer awareness and satisfaction with e-banking services in public and private sector banks are the primary goals for this study. In Haryana, both private and public sector banks offer e-banking services.Because of their computer proficiency, today's young people are more likely to utilize electronic banking services, according to the study's findings. E-banking is preferred by those in the high-income and professional categories (such as teachers, physicians, surgeons, and dentists). As a result of their higher levels of education, the residents of Ambala and Rohtak districts utilize e-banking services at a higher rate than those in the other districts studied.

Keywords: E-Banking,comparative study, public, private sector, banks in Haryana

INTRODUCTION

India has been praised for its ability to remain relatively unharmed during the global financial crisis. A large part of it depended on the country's financial sector. The banking system underwent a major overhaul as a result of these changes. The changes have a significant influence on the financial system's overall efficiency and stability. The number of branches and ATMs owned by banks rose.

They also expanded in terms of both their balance sheets and their total banking business Profitability, net interest margin, return on assets (ROA) and return on equity (ROE) of Indian banks improved as a result of increasing competition (ROE). The banks' non-performing assets dropped dramatically as a result of the significant improvement in their capital position. During this time of change, technology was increasingly used, which helped to enhance the quality of customer service.

While the Reserve Bank's law (RBI Act, 1934) does not specifically mention that financial stability is a goal, numerous steps were taken from time to time to enhance the system's financial stability and spanned a wide range. As a result of a continual exchange between micro- and macroeconomic judgments, the methodology has evolved. “Financial stability has been maintained in India thanks to the Reserve Bank's multiple-indicator monetary policy, as well as prudent financial sector management and a synergetic approach through tight interaction with other financial sector authorities.”

Capital Account management, systemic interconnectivity management, enhancing the regulatory framework, and steps to improve financial market infrastructure are a few more examples of policy interventions. In order to deal with systemic issues arising from interbank and bank-to-nonbank financial company (NBFC – our shadow banks) interconnections and common exposures, prudential limits were placed on aggregate interbank liabilities as a percentage of banks' net worth, banks and primary dealers were restricted access to the uncollateralized funding market with borrowing and lending limits, and increasingly subjected to risk-based regulation.

It has also been observed that countercyclical initiatives have been used to solve the pro-cyclicality difficulties. While the RBI has utilized time-varying sectoral risk weights and funding intermittently even before, the countercyclical measures were first implemented in 2004. It is widely accepted that these unusual steps implemented in response to rising concerns were essential in shielding the Indian financial system from critical vulnerabilities.

Much progress has been made since the changes of 1991, and we may be proud of that. Our accomplishments and success should not blind us to the fact that we still have a long way to go in our quest of perfection. Look ahead to see what is ahead of us.

CUSTOMER PERCEPTION ON SERVICE QUALITY OF PUBLIC AND PRIVATE BANKS

The development of the economy is greatly influenced by the performance of the banking sector. As a result, the Indian government is concerned about the growth of the bank's customer base. In today's retail banking market, the focus has changed from pricing to service quality. The rivalry has grown as technology has advanced and other banks have stepped up their service offerings. Now, financial institutions are making an effort to improve the quality of their services. The banking industry's profitability is heavily reliant on the services it provides to other institutions. In today's competitive economy, it's becoming increasingly difficult to maintain service quality. The level of service supplied to potential clients of the bank has been evaluated as an overall measure. A customer's needs and expectations are often considered while determining the quality of a service. Another way of defining service quality is by comparing it to client expectations. It has been categorized into five categories based on the amount of time spent using the service.

NEED OF THE STUDY

There is a fierce battle between Indian banks and new-generation and global banks nowadays. The banking business has seen radical transformations as a result of the rapid progress of information technology. Customers are growing increasingly demanding, and banks are able to meet their needs thanks to their widespread use of technology. With the advent of Ebanking services, banks now provide a wider range of services. E-banking services and their effects on operational efficiency and customer satisfaction necessitate more investigation. E-banking services have become increasingly important, although research on e-banking in India has been minimal.

Research on Haryana consumers' perceptions has been mostly limited to studies undertaken on a national and international scale. In this context, the current study aims to determine if clients in Haryana favour e-banking or not. E-impact banking's on customers' perceptions is examined in a small-scale experiment.

SCOPE OF THE STUDY

Customers in Haryana's E-banking sector were surveyed in this study. Haryana's 6 six districts were chosen based on population density. According to Indian Banking at Glance 2015, two public sector banks (PNB and SBI) and two private sector banks (HDFC Bank and ICICI Bank) were selected for the research (www.iba.org.in). The research spans the years 2012-13 through 2016-17. Pooled data is used in the study.

LITERATURE REVIEW

Kapoor, Sheetal &Vashishth, Vibhuti (2021) The Indian banking industry exemplifies the sturdiness and adaptability required of a business its size and scope. Banking is widely understood to be a relationship built on trust. Our country's entire financial structure revolves around the banks. Protecting retail financial services consumers effectively while empowering them to exercise their rights and fulfill their duties is the goal of an effective customer protection regime in the financial industry.

Buddhika, H &Gunawardana, T.S.L.W. (2020) For their everyday operations, the vast majority of contemporary financial institutions rely on computerized banking processes rather than traditional banking techniques. Experts report that Sri Lankan e-banking services fall short of international standards. Sri Lankans' views on e-banking vary from nation to country, according to a study. Surveys were distributed to 150 people in Galle district who use e-banking through the purposive sample approach and the snowball method.

Kadam, Mahesh &Sapkal, Deepak (2019)the banking industry is one of the most rapidly expanding in today's world and a large amount of money is being invested there. When it comes to rating financial institutions, particularly commercial banks, for their capital sufficiency, asset quality, management capabilities, profits potential and liquid assets, CAMEL Rating is one of the commonly utilized techniques by major regulators throughout the world.

Shimpi, Leena (2018) Because of this, the banking industry's capacity to expand and deliver better customer service is significantly impacted. E-banking services are expected to increase customer pleasure and satisfaction, as well as lower operating costs, improve competition, and increase profitability for banks. As a result, e-impact baking’s on customer satisfaction must be assessed in terms of its many components.

Glara, K.Thanga& Franco, C. (2017)

The banking business has undergone several changes during the past two decades in order to compete with its rivals. The banking sector is putting a lot of emphasis on technology in this rivalry. E-banking is the most widely utilized technology in banks today. Technological advancements and competition have led to the development of e-banking.

RESEARCH METHODOLOGY

A research technique is a method for investigating an issue in a methodical manner. A thorough explanation of the study's issue statement and objectives, as well as its purpose, scope, hypotheses, and data source are provided. In addition, the data analysis methods and tools have been described. The following is a brief summary of the study's research methodology:

It was decided to adopt a survey approach in order to acquire primary data from a large number of respondents. Structured questionnaires and one-on-one interviews are used to gather the bulk of the main data. Open-ended and closed-ended questions were included in the survey. It was divided into two halves. To begin, we'll look at some basic demographic data, including things like race and income level. Gender, marital status, educational attainment, employment, and family income were all included in this survey's findings about its participants. Section two is broken into three parts once more. First, there are questions about customers' preferences for E-banking, and then there are questions about customers' preferences for E-banking that don't exist.

ANALYSIS

Customers are critical to the success of the banking industry. So banks provide a wide range of products and services to attract new consumers as well as keep current ones. Banking institutions, too, have a strong desire to learn about and meet the desires of their customers. Customers' preferences and disfavorites for private (HDFC & ICICI) and public sector (PNB & SBI) E-banking services have been explored in this chapter. There are two parts to this chapter. For example, consumers' names, ages, genders and marital statuses as well as their occupations and incomes are all included in Section A's demographic and background information. Section B focuses on a series of comments that indicate whether or not clients like or reject E-banking.

Table 1:Distribution of respondents on the basis of types of account in different banks

Type ofbankaccount/Bank	Privatesectorbanks				Publicsectorbanks				Total	
	HDFC		ICICI		PNB		SBI			
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Savinga/c	72	48	83	55	108	72	109	73	372	62
Currenta/c	16	11	29	19	6	4	17	11	68	11
Saving a/c&Currenta/c	23	15	24	16	19	13	9	6	75	13
Savinga/c,FixedDeposita/c	17	11	6	4	5	3.3	4	2.7	32	5.3
Saving a/c, Currenta/c,FixedDeposita/c	22	15	8	5.3	12	8	11	7.3	53	8.8
Total	150	100	150	100	150	100	150	100	600	100

Responses are shown in Table based on the kind of account in private (HDFC& ICICI) and public (PNB& SBI) sector banks, respectively. Of those who responded, 62% have a savings account, followed by 12.5% who have both a savings and a current account. A bank-wise research shows that SBI and PNB of Savings A/c have the greatest percentage of responders (72%) followed by ICICI (55.3 percent). Fewer than 5% of ICICI, PNB, and SBI customers have combined accounts (Current a/c and Fixed Deposit a/c).

Table2: Distribution of respondents on the basis of awareness of net banking services offered by bank

Response/Bank	Privatesectorbanks				Publicsectorbanks				Total	
	HDFC		ICICI		PNB		SBI			
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Yes	110	73.3	102	68	95	63.3	93	62	400	66.7
No	40	26.7	48	32	55	36.7	57	38	200	33.3
Total	150	100	150	100	150	100	150	100	600	100

Net banking services supplied by private (HDFC & ICICI) and public (PNB & SBI) sector banks are shown in Table 66.7 percent of respondents replied "Yes" and 33.3 percent said "No" when asked if they were aware of online banking services. Bank-wise, HDFC has the largest percentage of net banking users (73.3 percent), followed by ICICI (68 percent), and PNB (63.3 percent). Only 26.7 percent of the respondents are aware of net banking, and the majority of those are HDFC customers).

FINDINGS RELATED TO CUSTOMERS ON THE BASIS OF DEMOGRAPHIC PROFILE

- HDFC and ICICI, as well as Public (PNB and SBI) sector banks, have the highest percentage of respondents in the 21-30 age group, followed by 31-40 age group. ICICI bank has the biggest percentage of customers in the 21-30 age bracket, while SBI comes in second. Only a small percentage of those over the age of 60 are customers of ICICI bank or HDFC.
- Private (HDFC& ICICI) and Public (PNB& SBI) sector banks had the highest percentage of married respondents. Respondents from HDFC and ICICI have the greatest percentages, while those who are not married have the lowest percentages. SBI and ICICI had approximately the same percentage of married and unmarried respondents.

- Graduates (HDFC& ICICI) and postgraduates (PNB & SBI) make up the majority of responses, with matriculants and postgraduates following closely behind. HDFC has the greatest percentage of responders, followed by ICICI, SBI, and HDFC, according to a bank-by-bank analysis.
- Among private and public sector banks, the majority of responders are servicemen, followed by businessmen, in terms of occupation. An examination of responses by bank reveals that ICICI and SBI had the most serviceman responders, followed by HDFC. For all banks, the proportion of respondents who are retired is lower than that of other groups.
- Among respondents from the private (HDFC& ICICI) and public (PNB& SBI) sector banks, the highest percentage came from the income brackets of 10001-20000 and 20001-30000. According to a bank-by-bank study, ICICI has the greatest percentage of respondents in the 10001-20000 income bracket, followed by SBI and PNB.

Conclusion

Incorporating human assistance via E-banking service delivery channels might alleviate consumers' concerns about security and so increase their adoption of E-banking and use of complicated banking services and product facilities.. Because of this, customers frequently rely on one another to help them cope with the stress of a new product or service. In addition, there are just a few researches examining Indian customers' use of E-banking. As a result, future study should focus on identifying the major factors that influence the adoption of E-banking in India.

The present study is centred on Customers perspective about E-banking in Haryana. In future, investigations can be carried out in the following areas: The research of acceptability and satisfaction of various E-banking goods and services in other states even all over the India which would offer better image on Customers perspective regarding E-banking services at National Level. A comparison research may also be undertaken on E-banking adoption across public sector, private sector and overseas banks.

A comprehensive analysis may be done to determine the Information Communication Technology hazards associated in the delivery of E-banking services for improved adoption of E-banking services.

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Cost benefit study of two-unit system with dual maintenance under guarantee period

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Abstract

This paper explain stochastic model having dual non-identical units. Here a routine inspection is carried out on the operating unit after doing a normal maintenance. It is also assumed that the operative unit is inspected if another unit is failed. After inspection either the unit is maintained or assumed to be failed after inspection. The decisions about failed unit is done by taking the concept of guarantee period. It is also considered that the unit under maintenance would not fail. After guarantee period, it is to be decided that whether minor replacement or major replacement. A new concept of paid maintenance is taken in this second part. This system is analyzed to determine various reliability measures by using mathematical tools MTSF/MTBF Markov chain, Markov Process. It is assumed that a repaired and replaced unit is good as new.

Keywords: Maintenance, Availability, Busy period, Inspection, Repair,Replacement

INTRODUCTION

In order to develop a good reliability program for a system, the system must have good reliability specifications. These specification most, if not all, of the conditions in the reliability definition including MTSF, limitations, operating environment instances, this will require a detailed description of how the system is expected to perform reliability- wise. A proper balance of financial goals and realistic performance are necessary to develop a detailed and balanced reliability specification. Another important foundation for a reliability program is the development of universally agreed upon definitions of the system failure. It should be fairly obvious whether a product has failed or not.

Reliability testing is the cornerstone of a reliability program. It provides the most detailed forms of data in that the data are collected can be carefully controlled and monitored. Furthermore, the reliability tests can be designed to uncover suspected failure modes and other problems.

The development of the new systems is directly or indirectly associated with improvement in the old systems and hence the efficiency. Thus assessment of reliability of equipment is of great importance in the context of rapidly growing technology and its further development. A large number of studies have been carried out to evaluate the reliability by taking two-unit models under different conditions.

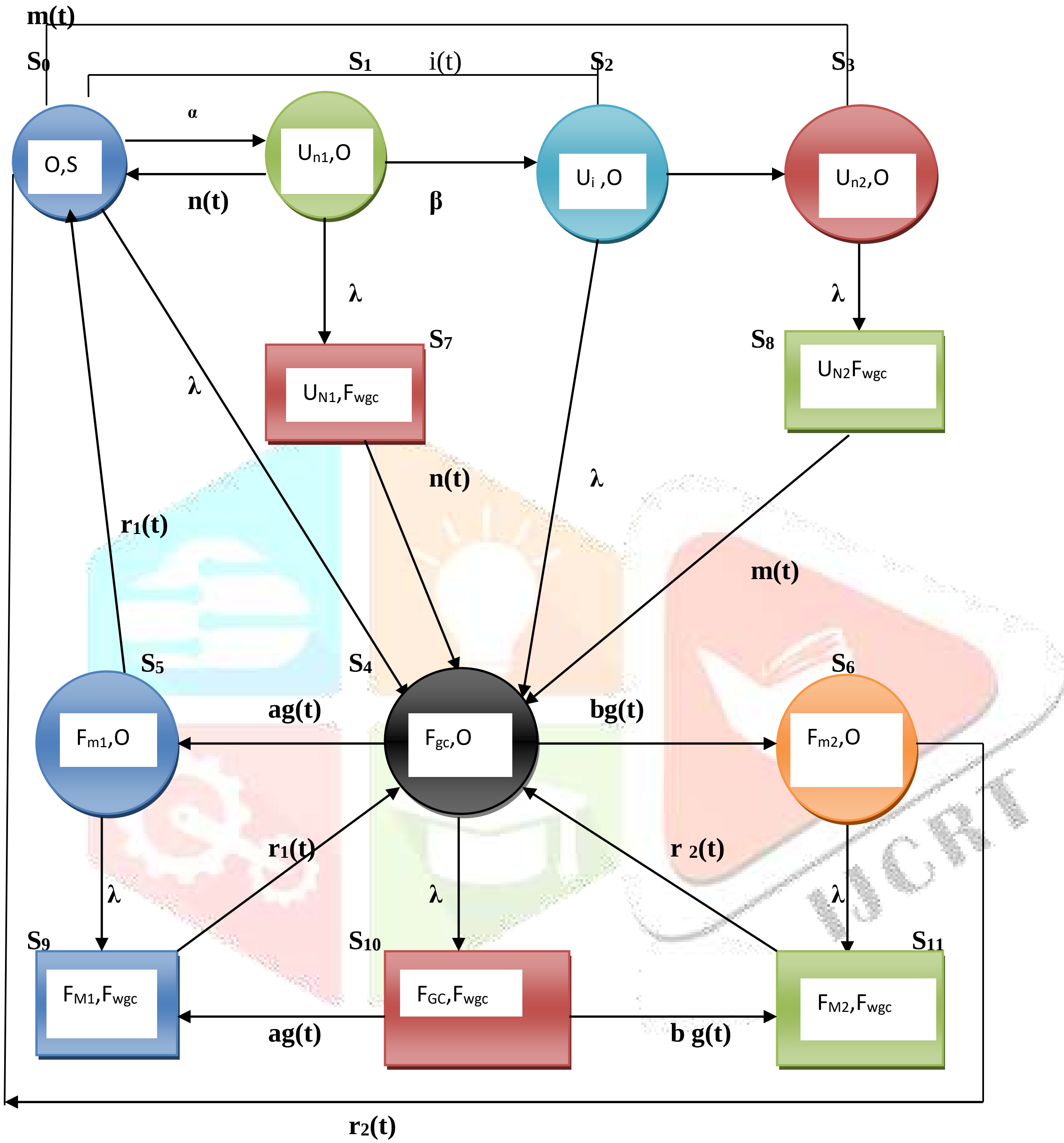
This paper explain stochastic model having dual non-identical units. Here a routine inspection is carried out on the operating unit after doing a normal maintenance. It is also assumed that the operative unit is inspected if another unit is failed. After inspection either the unit is maintained or assumed to be failed after inspection. The decisions about failed unit is done by taking the concept of guarantee period. It is also considered that the unit under maintenance would not fail. After guarantee period, it is to be decided that whether minor replacement or major replacement. A new concept of paid maintenance is taken in this second part. This system is analyzed to determine various reliability measures by using mathematical tools MTSF/MTBF Markov chain, Markov Process. It is assumed that a repaired and replaced unit is good as new.

Description of system and Assumption:-

In this paper, an operative unit is analyzed after a bound or definite period of its functioning and it is decided whether unit can run further or demand certain maintenance. A new concept of normal maintenance and major maintenance are introduced in this part.

- ➢ The system consists of two indistinguishable units - Initially one unit is functional and second unit is kept as cold standby.
- ➢ System is supposed to be in Up-state if one unit is working and in down state if no unit is working.
- ➢ Each unit of the system has two stages - normal operative or failed.
- ➢ Firstly working unit is analyzed for normal maintenance before taken routine inspection.
- ➢ After routine inspection it is to be decided that whether the unit needs major maintenance or the unit is unsuccessful under guarantee period.
- ➢ A unit under maintenance would not fail.
- ➢ Check the guarantee of the failed unit, either it is in under the guarantee period or not.
- ➢ If the unit is in the guarantee period, the failed unit is minor maintenance and if the unit is not under the guarantee period then it is major maintenance.

State Transition Diagram



Notations

U_{n1}:	Normal maintenance
α :	Invariant normal maintenance rate of unit
i(t):	pdf of inspection time period of a unsuccessful unit
I(t):	cdf of inspection time period of a unsuccessful unit
β :	probability that unit is in under maintenance
U_i	Invariant inspection rate of unit
$U_{M1}U_{M2}$:	Maintenance of unit is continuous
F_{m1}:	unsuccessful unit under minor maintenance
F_{m2}:	unsuccessful unit under major maintenance
$F_{gc:}$	unsuccessful unit under guarantee check
F_{wgc}:	unsuccessful unit waiting for guarantee check
m(t)	Maintenance rate
$r_1(t)$	Minor maintenance rate
$r_2(t)$	Major maintenance rate
A:	$\{1- m^*(\lambda)\}$
B:	$\{1- g^*(\lambda)\}$
C:	$\{1- r_1^*(\lambda)\}$
D:	$\{1- r_2^*(\lambda)\}$

The system can be in any of the following states with respect of the above symbol RS_0 = (O,S) RS_1 = $(U_{n1,}O)$

RS_2 = (U_i, O) RS_3 = (F_{n2},O)

RS_4 = (F_{gc},O) RS_5 = (F_{m1}, O)

RS_6 = (F_{m2}, O) RS_7 = (F_{N1}, F_{wgc})

RS_8 = (F_{N2}, F_{wgc}) RS_9 = $(U_{M\,1}, F_{wgc})$

RS_{10} = $(F_{M\,2}, F_{wgc})$ RS_9 = (F_{GC}, F_{wgc})

Transition Probabilities

The era of entering into states $\{RS_0$, RS_1, RS_2 , RS_3,RS_4,RS_5,$RS_6\}$ are Renewed states. The change of state probabilities from RS_k to RS_l states are given by Q_{kl} and in the steady states Tp_{kl} denotes the change of state probability from states RS_k to RS_l are given under

Tp_{01} = $\alpha/(\alpha+\lambda)$ Tp_{04} = $\lambda/(\alpha+\lambda)$

Tp_{10} = $n*(\beta+\lambda)$ Tp_{12} = $\beta\{1- n^*(\beta+\lambda)\}/((\beta+\lambda))$

Tp_{17} = $\lambda\{1- n^*(\beta+\lambda)\}/((\beta+\lambda))$ Tp_{20} = $i*(\gamma+\lambda)$

Tp_{23} = $\gamma\{1- n^*(\gamma+\lambda)\}/((\gamma+\lambda))$ Tp_{12} = $\lambda\{1- n^*(\gamma+\lambda)\}/((\gamma+\lambda))$

Tp_{30} = $m^*(\lambda)$ Tp_{38} = A

Tp_{1^74} = $\lambda\{1- n^*(\beta+\lambda)\}/((\beta+\lambda))$ Tp_{3^84} = A

Tp_{45} = $ag^*(\lambda)$ Tp_{46} = $bg^*(\lambda)$

$Tp_{4,10}$ = B $Tp_{4^{10,9}4}$= B

$Tp_{4^{10,11}4}$= B Tp_{50} = $r_1^*(\lambda)$

Tp_{59} = C Tp_{5^94} = C

Tp_{60} = $r_2^*(\lambda)$ $Tp_{6^{11}4}$ = D

$Tp_{6,11}$ = D

With the help of following calculated values, we can easily check that

$Tp_{01} + Tp_{04} = 1$

$Tp_{10} + Tp_{12} + Tp_{17} = 1$

$Tp_{20} + Tp_{23} + Tp_{24} = 1$

$Tp_{30} + Tp_{38} = 1$

$Tp_{17} = Tp_{1}{}^{7}{}_{4}$

$Tp_{38} = Tp_{3}{}^{8}{}_{4}$

$Tp_{45} + Tp_{46} + Tp_{4,10} = 1$

$Tp_{4'10} = Tp_{4}{}^{10,9}{}_{4}$

$Tp_{4'10} = Tp_{4}{}^{10,11}{}_{4}$

$Tp_{50} + Tp_{59} = 1$

$Tp_{59} = Tp_{5}{}^{9}{}_{4}$

$Tp_{60} + Tp_{6,11} = 1$

$Tp_{6'11} = Tp_{6'}{}^{11}{}_{4}$

Mean Sojourn Times

To compute mean value of stay/sojourn time $\mu_k(t)$ for state RS_k, let T_k be sojourn time for state RS_k. Then

$$\mu_k(t) = \lim_{t\to\infty}\int_0^t P[t:0<t<T]dt$$

So that in steady state we have following relations

$\mu_0 = 1/\alpha+\lambda$ $\quad\mu_1 = \{1- n^*(\beta+\lambda)\}/(\beta+\lambda)$

$\mu_2 = \{1- i^*(\gamma+\lambda)\}/(\gamma+\lambda)$ $\quad\mu_3 = A/\lambda$

$\mu_4 = B/\lambda$ $\quad\mu_5 = C/\lambda$

$\mu_6 = D/\lambda$

The unconditional mean time is mathematically given by

$$m_{kl} = \int_0^\infty tdQ_{kl}(t) = -q_{kl}{}^*(s)'/_{at\ s=0}$$

So that

$m_{01} = \alpha/(\alpha+\lambda)^2$ $\quad m_{04} = \lambda/(\alpha+\lambda)^2$

$m_{10} = -n^{*'}(\beta+\lambda)$

$m_{12} = [\beta\{1- n^*(\beta+\lambda)\}/(\beta+\lambda)n^2]+\beta n^{*'}(\beta+\lambda)/(\beta+\lambda)$

$m_{17} = [\lambda\{1- n^*(\beta+\lambda)\}/(\beta+\lambda)n^2]+\lambda n^{*'}(\beta+\lambda)/(\beta+\lambda)$

$m_{20} = -i^{*'}(\gamma+\lambda)$

$m_{23} = [\gamma\{1- i^*(\gamma+\lambda)\}/(\gamma+\lambda)^2]+\gamma i^{*'}(\gamma+\lambda)/(\gamma+\lambda)$

$m_{24} = [\lambda\{1- i^*(\gamma+\lambda)\}/(\gamma+\lambda)^2]+\gamma i^{*'}(\gamma+\lambda)/(\gamma+\lambda)$

$m_{30} = -m^{*'}(\lambda)$ $\quad m_{38} = A/\lambda - m^{*'}(\lambda)$

$m_{45} = -ag^{*'}(\lambda)$ $\quad m_{46} = -bg^{*'}(\lambda)$

$m_{4,10} = A/\lambda - g^{*'}(\lambda)$ $\quad m_{50} = -r_1{}^{*'}(\lambda)$

$m_{59} = C/\lambda - r_1{}^{*'}(\lambda)$ $\quad m_{60} = -r_2{}^{*'}(\lambda)$

$m_{6,11} = D/\lambda - r_2{}^{*'}(\lambda)$

It can be easily verified that

$$m_{01} + m_{04} = \mu_0$$
$$m_{10} + m_{12} + m_{17} = \mu_1$$
$$m_{20} + m_{23} + m_{24} = \mu_2$$
$$m_{30} + m_{38} = \mu_3$$
$$m_{40} + m_{46} + m_{4,10} = \mu_4$$
$$m_{50} + m_{59} = \mu_5$$
$$m_{60} + m_{6,11} = \mu_6$$

Mean Time to System Failure

The recursive relations for (MTSF) are given by the following equations

$$\Omega_0 = Q_{01} \odot \Omega_1 + Q_{04} \odot \Omega_4$$
$$\Omega_1 = Q_{10} \odot \Omega_0 + Q_{12} \odot \Omega_2 + Q_{17}$$
$$\Omega_2 = Q_{20} \odot \Omega_0 + Q_{23} \odot \Omega_3 + Q_{24} \odot \Omega_4$$
$$\Omega_3 = Q_{30} \odot \Omega_0 + Q_{38}$$
$$\Omega_4 = Q_{45} \odot \Omega_5 + Q_{46} \odot \Omega_6 + Q_{4,10}$$
$$\Omega_5 = Q_{50} \odot \Omega_0 + Q_{59}$$
$$\Omega_6 = Q_{60} \odot \Omega_0 + Q_{6,11}$$

Here Ω_i and q_{kl} are all function of t

Above these equation can be Solving by taking L. S.T and solving for $\Omega_0^{**}(s)$,

we get $\Omega_0^{**}(s) = U(s) / V(s)$

Where

$$\text{MTSF} = \Omega_0 = \lim_{s\to 0}[\{1-\Omega_0^{**}(s)\}/s]$$
$$= \{V'(0)-U'(0)\}/V(0)$$
$$= \frac{U}{V}$$

After solving, we have

$$U(s) = -[q_{01} q_{17} + q_{01} q_{12} q_{23} q_{38} + q_{01} q_{12} q_{24} q_{4,10} + q_{01} q_{12} q_{24} q_{45} q_{59} + q_{01} q_{12} q_{24} q_{46} q_{6,11} + q_{04} q_{4,10} + q_{04} q_{45} q_{59} + q_{04} q_{46} q_{6,11}]$$

$$V(s) = -1 + q_{01} q_{10} + q_{01} q_{12} q_{20} + q_{01} q_{12} q_{23} q_{30} + q_{01} q_{12} q_{24} q_{45} q_{50} + q_{01} q_{12} q_{24} q_{46} q_{60} + q_{04} q_{45} q_{50} + q_{04} q_{46} q_{60}]$$

Where

$$U = V'(0)-U'(0) = -[1+Tp_{01}\mu_1 + Tp_{01} Tp_{12}\mu_2 + Tp_{01} Tp_{12} Tp_{23}\mu_3 + (Tp_{04}+Tp_{01} Tp_{12} Tp_{24})(\mu_5+Tp_{45}\mu_5+Tp_{46}\mu_6)]$$

$$V = V(0) = -1+Tp_{01} Tp_{10} + Tp_{12} Tp_{01} (Tp_{20} + Tp_{23} Tp_{30}) - (Tp_{01} Tp_{12} Tp_{24} + Tp_{04})(Tp_{45} Tp_{50} + Tp_{46} Tp_{60})$$

Availability of the system -(Av)-

The recursive relations for the availability $Av_i(t)$ at each point of the system is given by

$$Av_0 = q_{01} \Delta Av_1 + q_{04} \Delta Av_2 + \Psi_0$$
$$Av_1 = q_{10} \Delta Av_0 + q_{12} \Delta Av_2 + q_{1}{}^{7}{}_{4} \Delta Av_4 + \Psi_1$$
$$Av_2 = q_{20} \Delta Av_0 + q_{23} \Delta Av_3 + q_{24} \Delta Av_4 + \Psi_2$$
$$Av_3 = q_{30} \Delta Av_0 + q_{3}{}^{8}{}_{4} \Delta Av_4 + \Psi_3$$
$$Av_4 = q_{45} \Delta Av_5 + q_{46} \Delta Av_6 + (q_4{}^{(10,9)}{}_3 + q_4{}^{(10,11)}{}_4) \Delta Av_4 + \Psi_4$$
$$Av_5 = q_{50} \Delta Av_0 + q_5{}^{(9)}{}_4 \Delta Av_4 + \Psi_5$$
$$Av_6 = q_{60} \Delta Av_0 + q_6{}^{(11)}{}_4 \Delta Av_3 + \Psi_6$$

Here Av_i, Ψ and q_{kl} are all function of t

Where $\Psi_0 = \mu_0$ $\Psi_1 = \mu_1$
$\Psi_2 = \mu_2$ $\Psi_3 = \mu_3$
$\Psi_4 = \mu_4$ $\Psi_5 = \mu_5$
$\Psi_6 = \mu_6$

Now solving these equations by taking Laplace transform and solving for $Av_0^*(s)$,we get

$$Av_0^*(t) = U_1(s)/V_1(s)$$

The steady states availability is given by

$$Av_0^{**} = U_1(0) / V_1(0)$$

Where

$U_1(0) = -[\{\mu_0+\mu_1 Tp_{01}+(Tp_{12} Tp_{01} + Tp_{04})\mu_2 + (Tp_{12} Tp_{01} Tp_{23} + Tp_{04} Tp_{23})\mu_3\}+(Tp_{45} Tp_{50} + Tp_{46} Tp_{60}) + (\mu_4 + Tp_{45}\mu_5 + Tp_{46}\mu_6)\{(Tp_{23} Tp_3{}^8{}_4(Tp_{12}+Tp_{01}+Tp_{04}) + Tp_{01}(Tp_{12} Tp_{24} + Tp_1{}^7{}_4\}]$

And $V_1(0)=0$

$V_1'(0) = -[(1+Tp_{01} Tp_{12} + \mu_0 (Tp_{01} Tp_{12} Tp_{23} + Tp_{04} Tp_{23})\mu_3) (Tp_{45} Tp_{50} + Tp_{46} Tp_{60}) + (Tp_{01} Tp_{12} Tp_{23} Tp_3{}^8{}_4 + Tp_{01} Tp_{12} Tp_{24} + Tp_{01} Tp_1{}^7{}_4 + Tp_{04} Tp_{23} Tp_3{}^8{}_4 + Tp_{04} Tp_{24})$
$(\mu_4 + Tp_{45}\mu_5 + Tp_{46}\mu_6)$ ………………………………….(a)

Normal Maintenance Time

The recursive relations are

$Nm_0 = q_{01} \Delta Nm_1 + q_{04} \Delta Nm_2$
$Nm_1 = q_{10} \Delta Nm_0 + q_{12} \Delta Nm_2 + q_1{}^7{}_4 \Delta Nm_4 + \tilde{N}$
$Nm_2 = q_{20} \Delta Nm_0 + q_{23} \Delta Nm_3 + q_{24} \Delta Nm_4$
$Nm_3 = q_{30} \Delta Nm_0 + q_3{}^8{}_4 \Delta Nm_4$
$Nm_4 = q_{45} \Delta Nm_5 + q_{46} \Delta Nm_6 + (q_4{}^{(10,9)}{}_3 + q_4{}^{(10,11)}{}_4) \Delta Nm_4$
$Nm_5 = q_{50} \Delta Nm_0 + q_5{}^{(9)}{}_4 \Delta Nm_4$
$Nm_6 = q_{60} \Delta Nm_0 + q_6{}^{(11)}{}_4 \Delta Nm_3$

Here Nm_i, $\tilde{N}$ and q_{kl} are all function of t

Now solving these equations by taking Laplace transform and find ¶$_0^*(s)$, we get

¶$_0^*(s) = U_2(s)/V_1(s)$

Then for steady states

¶$_0^{**} = \lim_{s\to 0}$ (s¶$_0^*(s)$) $= U_2(0) / V_1`(0)$

Where $U_2(0) = -\tilde{N}\, Tp_{01}(Tp_{45} Tp_{50} + Tp_{46} Tp_{60})$

$V_1'(0)$ is specified in eq. (a).

Paid Maintenance Time

The recursive relations are

$Mm_0 = q_{01} \Delta Mm_1 + q_{04} \Delta Mm_2$
$Mm_1 = q_{10} \Delta Mm_0 + q_{12} \Delta Mm_2 + q_1{}^7{}_4 \Delta Mm_4 + £$
$Mm_2 = q_{20} \Delta Mm_0 + q_{23} \Delta Mm_3 + q_{24} \Delta Mm_4$
$Mm_3 = q_{30} \Delta Mm_0 + q_3{}^8{}_4 \Delta Mm_4 + ɱ$
$Mm_4 = q_{45} \Delta Mm_5 + q_{46} \Delta Mm_6 + (q_4{}^{(10,9)}{}_3 + q_4{}^{(10,11)}{}_4) \Delta Mm_4$
$Mm_5 = q_{50} \Delta Mm_0 + q_5{}^{(9)}{}_4 \Delta Mm_4$
$Mm_6 = q_{60} \Delta Mm_0 + q_6{}^{(11)}{}_4 \Delta Mm_3$

Here Mm_i, £ and q_{kl} are all function of t

Now solving these equations by taking Laplace transform and find $\acute{M}_0^*(s)$, we get

$\acute{M}_0^*(s) = U_3(s)/V_1(s)$

Then for steady states

$\acute{M}_0^{**} = \lim_{s\to 0} (s\,\acute{M}_0^*(s)) = U_3(0) / V_1`(0)$

and

$U_3(0) = -£[Tp_{45}\,Tp_{50} + Tp_{46}\,Tp_{60}]\,[Tp_{01}\,Tp_{12}\,Tp_{23} + Tp_{04}\,Tp_{24}]$

$V_1'(0)$ is specified in eq. (a).

Minor Replacement Time

The recursive relations are

$Mr_0 = q_{01}\ \Delta\ Mr_1 + q_{04}\ \Delta\ Mr_2$

$Mr_1 = q_{10}\ \Delta\ Mr_0 + q_{12}\ \Delta\ Mr_2 + q_1{}^7{}_4\ \Delta\ Mr_4 + §$

$Mr_2 = q_{20}\ \Delta\ Mr_0 + q_{23}\,\Delta\ Mr_3 + q_{24}\ \Delta\ Mr_4$

$Mr_3 = q_{30}\ \Delta\ Mr_0 + q_3{}^8{}_4\,\Delta\ Mr_4 + ɱ$

$Mr_4 = q_{45}\ \Delta\ Mr_5 + q_{46}\,\Delta\ Mr_6 + (q_4{}^{(10,9)}{}_3 + q_4{}^{(10,11)}{}_4)\ \Delta\ Mr_4$

$Mr_5 = q_{50}\ \Delta\ Mr_0 + q_5{}^{(9)}{}_4\,\Delta\ Mr_4$

$Mr_6 = q_{60}\ \Delta\ Mr_0 + q_6{}^{(11)}{}_4\,\Delta\ Mr_3$

Here Mr_i ,§ and q_{kl} are all function of t

Now solving these equations by taking Laplace transform and find $Ir_0{}^*(s)$, we get

$Mr_0{}^*(t) = U_4(s) / V_1(s)$

$Mr_0{}^{**} = \lim_{s\to 0} (s\,Mr_0{}^*(s)) = U_4(0) / V_1`(0)$

Where

$U_4(0) = -Tp_{45}\,§\,[Tp_{01}\,Tp_{12}\,Tp_{23}\,Tp_3{}^8{}_4 + Tp_{01}\,Tp_{12}\,Tp_{24} + Tp_{01}\,Tp_1{}^{(7)}{}_4 – Tp_{04}\,Tp_{23}\,Tp_3{}^{(8)}{}_4 + Tp_{04}\,Tp_{24})]$

and

$V_1'(0)$ is specified in eq. (a)

Major Replacement Time

The recursive relations are

$Mj_0 = q_{01}\ \Delta\ Mj_1 + q_{04}\ \Delta\ Mj_2$

$Mj_1 = q_{10}\ \Delta\ Mj_0 + q_{12}\ \Delta\ Mj_2 + q_1{}^7{}_4\ \Delta\ Mj_4$

$Mj_2 = q_{20}\ \Delta\ Mj_0 + q_{23}\,\Delta\ Mj_3 + q_{24}\ \Delta\ Mj_4$

$Mj_3 = q_{30}\ \Delta\ Mj_0 + q_3{}^8{}_4\,\Delta\ Mj_4 + ɱ$

$Mj_4 = q_{45}\ \Delta\ Mj_5 + q_{46}\,\Delta\ Mj_6 + (q_4{}^{(10,9)}{}_3 + q_4{}^{(10,11)}{}_4)\ \Delta\ Mj_4$

$Mj_5 = q_{50}\ \Delta\ Mj_0 + q_5{}^{(9)}{}_4\,\Delta\ Mj_4$

$Mj_6 = q_{60}\ \Delta\ Mj_0 + q_6{}^{(11)}{}_4\,\Delta\ Mj_3 + Ƕ$

Here Mj_i ,ɱ and q_{kl} are all function of t

Now solving these equations by taking Laplace transform and find $\hat{R}_0{}^*(s)$, we get

$Mj_0{}^*(t) = [U_5(s) / V_1(s)]$

$Mj_0{}^{**} = \lim_{s\to 0} (s\,Mj_0{}^*(s))$

$= [U_5(0) / V_1(0)]$

Where

$U_5(0) = Ƕ\,Tp_{46}\,[Tp_{01}\,Tp_{12}\,Tp_{23}\,Tp_3{}^{(8)}{}_4 + Tp_{01}\,Tp_{12}\,Tp_{24} + Tp_{01}\,Tp_1{}^{(7)}{}_4 + Tp_{04}\,Tp_{23}\,Tp_3{}^{(8)}{}_4 + Tp_{04}\,Tp_{24}]$

And $V_1'(0)$ is specified in eq. (a)

Inspection Time

The recursive relations are

$IT_0 = q_{01}\ \Delta\ IT_1 + q_{04}\ \Delta\ IT_2$

$IT_1 = q_{10}\ \Delta\ IT_0 + q_{12}\ \Delta\ IT_2 + q_1{}^7{}_4\ \Delta\ IT_4$

$IT_2 = q_{20}\ \Delta\ IT_0 + q_{23}\,\Delta\ IT_3 + q_{24}\ \Delta\ IT_4 + ѫ$

$IT_3 = q_{30}\ \Delta\ IT_0 + q_3{}^8{}_4\,\Delta\ IT_4 + ɱ$

$IT_4 = q_{45}\ \Delta\ IT_5 + q_{46}\,\Delta\ Mj_6 + (q_4{}^{(10,9)}{}_3 + q_4{}^{(10,11)}{}_4)\ \Delta\ IT_4$

$IT_5 = q_{50}\ \Delta\ IT_0 + q_5{}^{(9)}{}_4\,\Delta\ IT_4$

$IT_6 = q_{60} \;\Delta\; IT_0 + q_6^{(11)}{}_4 \,\Delta\; IT_3 + \text{Ƕ}$

Here IT_i , ꞥ and q_{kl} are all function of t

Now solving these equations by taking Laplace transform and find $\hat{R}_{p0}^{*}(s)$, we get

$IT_0^{*}(t) = U_6(s) / V_1(s)$

In the unvarying state,

$IT_0^{**} = \lim_{s \to 0} (s\, IT_0^{*}(s))$

$= U_6(0) / V_1`(0)$

Where

$U_6(0) = -$ ꞥ $(p_{01}p_{12} + p_{04})\,(p_{45}p_{50} + p_{46}p_{60})$

And

$V_1'(0)$ is specified in eq. (a)

Busy Period of Repairman :-

Inspection Time + Normal Maintenance Time + Paid Maintenance Time + Minor Replacement Time + Major Replacement Time

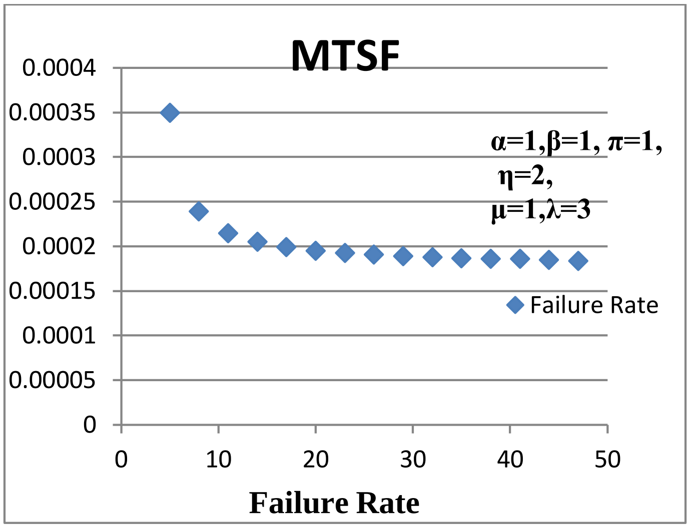
Particular cases:

If we take repair rate and inspection time as negative binomial distributions as

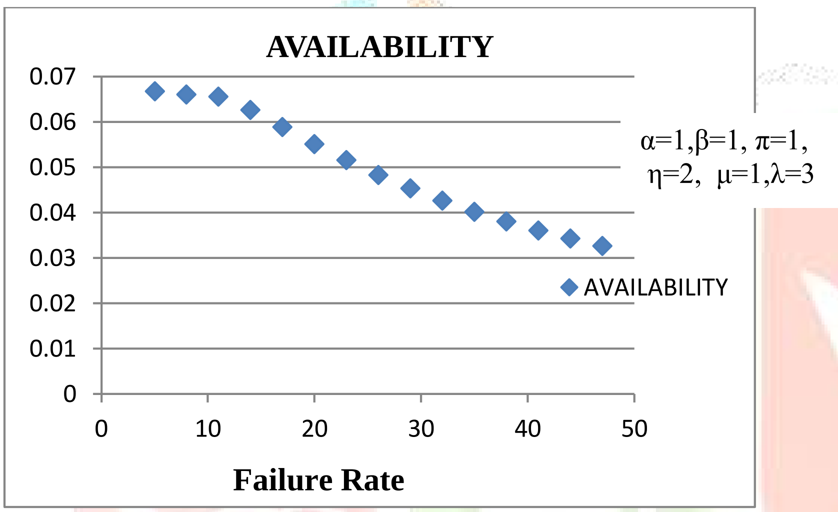
g(t)	=	$\theta e^{-\theta t}$	m(t)	=	$\pi e^{-\pi t}$
i(t)	=	$\delta e^{-\delta t}$	n(t)	=	$\gamma e^{-\gamma t}$
$r_1(t)$	=	$\mu e^{-\mu t}$	$r_2(t)$	=	$\rho e^{-\rho t}$
k	=	$\alpha+\lambda$	w	=	$\lambda+\gamma+\delta$
e	=	$\beta+\lambda+\gamma$	f	=	$\lambda+\rho$
h	=	$\lambda+\pi$	j	=	$\lambda+\theta$
x	=	$\lambda+\mu$			

Then we get,

Tp_{01}	=	α/k	Tp_{04}	=	λ/k
Tp_{10}	=	γ / e	Tp_{12}	=	β / e
Tp_{17}	=	λ / e	Tp_{20}	=	δ/w
Tp_{23}	=	γ/ w	Tp_{24}	=	λ / w
Tp_{30}	=	π / h	Tp_{38}	=	λ / h
$Tp_{1}{}^{7}{}_{4}$	=	λ / e	$Tp_{3}{}^{8}{}_{4}$	=	λ / h
Tp_{45}	=	$a\theta/ j$	Tp_{46}	=	$b\theta / j$
$Tp_{4,10}$	=	λ / j	Tp_{50}	=	μ / x
Tp_{59}	=	λ / x	$Tp_{5}{}^{9}{}_{4}$	=	λ / x
Tp_{60}	=	ρ / f	$Tp_{6,11}$	=	λ / f
μ_0	=	$1 / k$	μ_1	=	$1/ e$
μ_2	=	$1/ w$	μ_3	=	$1/ h$
μ_4	=	$1/ j$	μ_5	=	$1/ x$
μ_6	=	$1/f$			



Failure rate vs MTSF graph



Failure rate vs Availability

CONCLUSION:

In this paper, a new conception of maintenance, repair and was taken together in system to avoid the loss of production and extensive damage for safety reasons. Also routine inspection concept also taken with these assumptions. By the particular cases, we conclude that

For the invariant value of $\alpha=1,\beta=1,\mu=1,\pi=1,\eta=2, \lambda=3$

MTSF goes on increases with the increase of failure rate.

Availability goes on decreases very sharply with the increases of failure rate.

Thus above conclusions help to get the desirable results in the field of design, development and production of individual production.

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