

**PROCEEDINGS OF THE  
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RESEARCH CONFERENCE THAILAND 2019**

March 29-30, 2019

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Special Presentations  
Abstracts & Full Papers

Jointly Organized by

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Confederation of Indian Universities (CIU), New Delhi, India  
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**Sant Baba Dlawar Singh Ji (Brahm Ji)**  
**Chancellor**  
**Sant Baba Bhag Singh University**  
**Jalandhar, Punjab, India**



**Message:**

*The entire world is celebrating the 550th Birth Anniversary of Shri Guru Nanak Dev Ji, the first Sikh Guru who gave the message of love, equality, fraternity and virtue. He spread the message of “one God” and that God constitutes the eternal truth and He resides in His creations. According to Shri Guru Nanak Dev Ji, Guru is the voice of the God, the true source of knowledge and salvation. His teachings emphasized on the “Sach Sunaisi Sach Kee Bela” which means “to speak the truth”. In the pursuance of this ideology, only a true teacher and/or an intellectual researcher can actually impart the genuine knowledge, moral values, basic human and scientific ethics to the students or young researchers. Such knowledge can be achieved through education and scientific interactions at both National and International level.*

*Sant Baba Bhag Singh University (SBBSU), Punjab, India is an academic centre committed to the spreading of education and progression of knowledge. As a Chancellor of the SBBSU, I would like to dedicate the International Multidisciplinary Research Conference Thailand 2019 (IMRC Thailand-2019) being organized jointly by IMRF Institute for Education & Research Thailand Chapter and SBBSU on March 29-30, 2019 going to held at AIT University Conference Center, Bangkok, Thailand to the Celebrations of 550th Birth Anniversary Year of Shri Guru Nanak Dev Ji.*

*I extend a warm welcome to the participating students, eminent scientists, extraordinary academicians, brilliant researchers and keen delegates from all over the world to IMRC Thailand-2019. This conference will help in understanding the role of human beings for the welfare of Mother Nature. I appreciate the efforts of the organizers and all the participants for organizing this conference where both delegates and organizers can share their experiences, perceive new ideas and exchange their views to meet the common goal to promote the scientific culture as well as knowledge.*

*I look forward to highly successful IMRC Thailand – 2019 and wish it a memorable event.*

*-- Sant Baba Dlawar Singh Ji (Brahm Ji)*



**Prof. Dr. Jatinder Singh Bal**  
**Vice-Chancellor**  
**Sant Baba Bhag Singh University**  
**Jalandhar, Punjab, India**



**Message:**

*On the behalf of Sant Baba Bhag Singh University (SBBSU), Punjab, India, I feel honoured to welcome all the delegates participating in the International Multidisciplinary Research Conference Thailand 2019 (IMRC Thailand-2019) being organized at AIT University Conference Center, Bangkok, Thailand, jointly by IMRF Institute for Education & Research Thailand Chapter and SBBSU from March 29-30, 2019. The SBBSU is a best rural and private university with the state-of-art infrastructure and facilities in the lush green fields of Punjab, India. Our focus at SBBSU is to provide conducive learning environment and a balanced relationship between teaching and research.*

*The "IMRC Thailand-2019" is very timely meet and themes are devoted to the major areas of the contemporary developments in research and technology which is driven by knowledge and innovations. This conference is a research orientated congregation to discuss diverse interconnected issues of associated disciplines that will inspire many young scientific brains. In this conference, the continual efforts of the researchers from social sciences, humanities, engineering, languages, allied life/health sciences, applied and basic sciences may be helpful in satiating the knowledge and skill appetite of the participating students and delegates or researchers. This scientific meeting shall be a promising platform to intermingle with the highly experienced academicians and dynamic researchers. IMRC Thailand-2019 will witness the rational scientific discussions of ideas and healthy interactions or exchange of technologies. I am sure that such scientific deliberations will bring out useful information for updating the knowledge of all the delegates, organisers and participants.*

*I extend my best wishes to all the participants of IMRC Thailand- 2019 for efficacious organization of the conference. I am confident that you will enjoy every moment of this conference.*

*I wish IMRC Thailand- 2019 a great success!*

*-- Prof. (Dr.) Jatinder Singh Bal*



**Prof. Dr. Ratnakar D Bala**  
**CEO & Director (Academics)**  
**IMRF Institute for Education & Research**



Dear Associates

Welcome to each and every one of you congregated for the prestigious IMRF's 101<sup>th</sup> International Gathering - Proceedings of the International Multidisciplinary Research Conference Thailand 2019 hosted at Asian Institute of Technology Conference Center, Bangkok Thailand organized by IMRF Institute for Education & Research - Thailand Chapter which is considered to be one of the premier events for the distinguished academic and research cult with the encouragement of Sant Baba Bhag Singh University, Jalandhar, Punjab, India ; Confederation of Indian Universities (CIU), New Delhi, India.; Diplomatic Research & Policy Foundation (DRPF), Macedonia ; International Institute of Management (IIM), Australia.

We know that an academic conference is a symposium for inventive academicians and imaginative researchers to give academics an opportunity to present their academic works, concepts and new discoveries and to exchange their ideas and develop their works and also to share idea in presenting for development in the new research and topics and so forth. Together with academic or scientific journals, conferences plausibly provide a central channel for exchange of information among earnest researchers.

IMRF with its Academic Chapters in many Countries, since inception, has a great academic, research and social priorities to promote the spirit of values and orientations in multidisciplinary research functions of education by working out in dexterity required by the integrity of a sophisticated social world order duly transmitting central heritage with scientific bent of mind forming socialization process in respect of reformation of attitudes to confer a serene status for a rational being called man on this civilized planet, of course, from the threshold of Ratna Prasad Multidisciplinary Research and Educational Society.

IMRF with its collaborative organizations like SBBS University, has left no stone unturned for the accomplishment of its vision and mission catering its influential services in the academic and research disciplines comprising the streams of Human Rights, Social Sciences, Arts and Education, English Studies, Business Sciences, Engineering Sciences, Mathematical Sciences, Life Sciences, organizing International Conferences humbly witnessing the virtuous presence and innovative presentations of investigating pioneers, potential leaders, promising researchers, intellectual academicians, working faculty, industry magnates, advanced educationists, eminent scientists, rational thinkers, earnest scholars and superior students with their bonafide work of discovery from as many as 50 and more countries in the world (with their recurring presence) including

home towards showcasing their professional performance with excellent communication skills based on their accumulated experience in the fields concerned successfully.

Globalization is a fact. Its internalization process integrates multidisciplinary fields to embark on an adventure in the realm of academics and research. As such, this conference by International Multidisciplinary Research Foundation (IMRF). I am pleased to unveil the fact that this Copy of Proceedings marked with ISBN No 978-93-86435-70-5 presents an educative network of research with strength of quality, originality and contribution to knowledge of significant fields of multidisciplinary realms duly identified by the solemn research portals and academic destinations in the world.

While presenting you with this sonata of latest academics and research findings, I humbly place on record my loyal acknowledgement of sincere appreciation, due recognition and heart-felt thanks to all intellectual paper presenters, article contributors, members on the esteemed Editorial Board, centres of higher learning in collaboration with IMRF, foreign-national delegates, erudite plenary speakers, scholarly participants and all those who are directly or indirectly in conformity with this IMRF conferences from home and abroad for their righteous everlasting support in one and all aspects and my sincere thanks to Asian Institute of Technology, Bangkok, Thailand for their ever dynamic support and cooperation. I Extend my sincere thanks to Sant Baba Bhag Singh University, Jalandhar, Punjab, India for their support and encouragement. I place a special note of thanks to Sant Baba Dlawar Singh Ji (Brahm Ji), Chancellor and Prof. (Dr.) Jatinder Singh Bal, Vice-Chancellor for their blessings and strong support. Gratitude is attitude!

With effusive thanks,

Dr.Ratnakar D. Bala  
Conference Director

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Advances in  
Mathematics, Computers  
& Physical Sciences



## SENTIMENT ANALYSIS ON DIABETES: A STUDY OF PATIENTS' OPINIONS

HARBHAJAN SINGH, PROF. (DR.) JATINDER SINGH BAL, DR. VIJAY DHIR

**Abstract:** With the advent of social networking, there has been a rise in the data generated online at various platforms such as Twitter, Facebook, Instagram, etc. Sentiment Analysis is the study of opinions and emotions of people using the data posted by users online. Various organizations can put this data to use by categorizing the data as positive, negative or neutral. Moreover, the data posted online can be used to analyze the sentiments of people suffering from various diseases like diabetes and it can help us to understand the opinion of patients about their treatment, medicine and diet related to the diabetes. This paper studies some of the techniques that have been used till date to perform Sentiment Analysis. Also, we have discussed how we can perform Sentiment Analysis in diabetes domain and analyze the opinion of patients regarding their condition.

**Keywords:** Big Data, Diabetes, Emoticons, Health, Opinion Mining, Slang Detection, “t1d”, “t2d”.

**Introduction:** Sentiment Analysis is computational investigation of individuals' assessments, mentalities and feelings towards an entity. Entity can represent events, individuals or topics. Often, Sentiment Analysis is done on the data that is collected from the Internet and from various social media platforms. Sentiment Analysis includes a framework to gather and look at sentiments about the item mentioned in blog entries, remarks, audits or tweets. Sentiment Analysis systems have found their applications in almost every business and social domain. In the most recent years, Sentiment Analysis has turned out to be critical theme of logical and statistical surveying in the field of Natural Language Processing (NLP) and Machine Learning. People suffering from diseases such as diabetes are using social media to post their opinions about their condition, medicine and treatment effectiveness.

Sentiment Analysis can be partitioned into three principle classifications Lexicon based strategies, Machine learning techniques and Hybrid techniques. Lexicon based techniques use dictionary to label words occurring in sentence into positives or negatives labels, then sentiment of the entire document is judged by summarizing the tagged words. These methods are unsupervised. It intends to ascertain the polarity of a document from the semantic introduction of words or expressions in the report. The advantage of this procedure is that it doesn't require any training information, while its weakest point is that an extensive number of words and articulations are not included in sentiment lexicons.

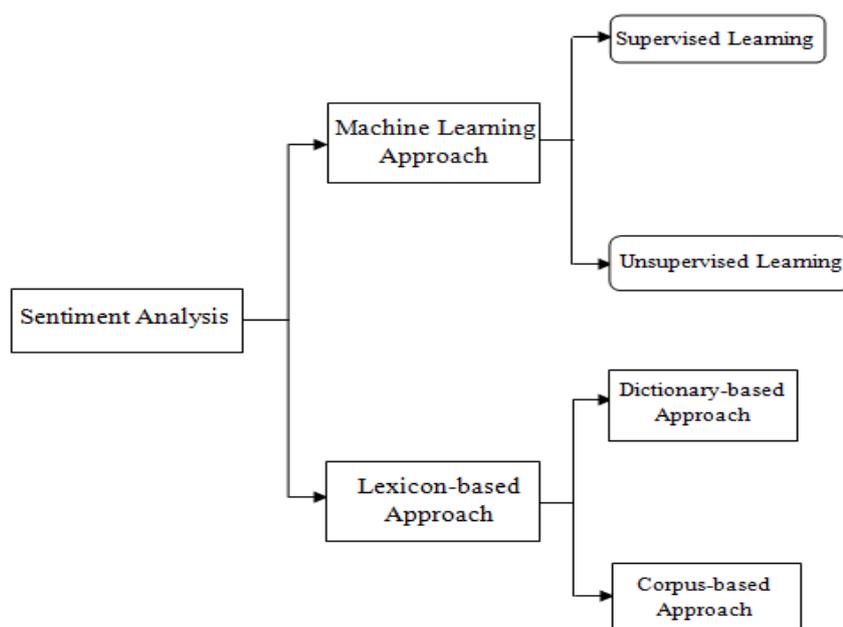


Fig. Sentiment Analysis Techniques

Machine learning methods are supervised and need a lot of training data with polarity labels. The accuracy of sentiment classification is related to size of training data. Deep-learning methods are very useful for data learning portrayals. Hybrid methods are the combination of machine learning and lexicon-based methodologies of Sentiment Analysis. Politicians and governments often use Sentiment Analysis to understand how the people feel about them and their policies. Social media plays very important role in business to improve product quality, customer service and adjust marketing strategy. The aim of this study is to perform Sentiment Analysis of the patients' opinion about type-1 and type-2 diabetes and understand the effectiveness of their treatment, medicine, diet, etc. The results obtained from this study can be used by healthcare centers to improve their services and provide better treatment to the patients.

**Literature Survey:** Manuel, K., Indukuri, K., & Krishna, P., (2010), "*Analyzing Internet Slang for Sentiment Mining*" People, these days, are using social networking sites to express their opinion about different products online. The use of slang has increased in expressing emotions. In this paper, the author has presented an approach for discovering the sentiment score of slang words in the data posted by people online. The author used Delta Term Frequency and Weighted Inverse document frequency technique for calculating the sentiment score of slang words. The system is capable of analyzing sentiment slang in the document and determining the polarity of the slang words used. The author observed that the best analysis is Unigrams. Sarcastic sentences were easy to interpret, but their overall polarity was hard to observe [1].

Pak, A., & Paroubek, P., (2010), "*Twitter as a Corpus for Sentiment Analysis and Opinion Mining*" The authors discussed about how twitter can be used for Sentiment Analysis. They have collected a corpus for Sentiment Analysis and opinion mining. In this paper, the authors have used the corpus to build a sentiment classifier for classifications of positive negative and neutral sentiments. This technique can be used in English and any other language. Using Twitter API, the corpus forms three classes of positive, negative and neutral sentiments. This paper discussed Tree-Tagger for parts of speech tagging (POS) to observe the differences among different sentiments and the use of collected corpus to train the sentiment classifier [2].

Kumar, A., & Sebastian, T. (2012), "*Sentiment Analysis on Twitter*", As people are using social networking sites more and more, there is a rise of user generated content online. People share their thoughts on websites such as Facebook and twitter and express their opinion on particular topic. The purpose of Sentiment Analysis is to analyze these opinions and categorized into positive, negative and neutral. The motive of this study was to use a hybrid approach using Corpus based approach and dictionary based approach for sentiment orientation of the tweets. Words such as love, like, enjoy are categorized as positive, while words such as hate, dislike, suffer are negative. This study presented a new approach where we extract the opinion words, for example adjectives and verbs to find their semantic orientation and then calculate the overall polarity of the tweet [3].

Chandrakala, S. & Sindhu, C., (2012), "*Opinion Mining and Sentiment Classification: A Survey*", This paper discussed about how online data posted by users can be used for opinion and sentiment mining [4]. Sentiment polarity is a task where a document is labeled positive or negative. The author touched upon subjectivity detection which is the process of selecting opinion containing sentences [5]. The sentences containing a fact do not contribute towards sentiment. Intensity Assignment deals with analyzing the aspect that how strong the statements are. This study discussed about various approaches of opinion mining and Sentiment Analysis like Naïve Bayes, Maximum Entropy and Support vector machines and different challenges regarding these techniques [6].

Sarlan, A., et al. (2014), "*Twitter Sentiment Analysis*", In this paper, the author discussed about the fact that most of the people are using social network sites to express their emotions, opinion and share about their daily lives. The users are influenced by the customer reviews before making their purchase online. Twitter is being used as a platform to express opinion in the form of tweet which has a 280-character limit. These days, people are using emoticons, a pictorial representation of human facial expressions. For example, ☺ represents a happy face. It is important to interpret the underlying English meaning of the

emoticons. The motive of this paper is to study the Sentiment Analysis of micro-blogging sites such as twitter in order to understand the polarity of data. The motive of this study was to use a program for machine learning approach for more accurate Sentiment Analysis. This program categorizes sentiments into positive and negative using a pie chart [7].

Sağlam, B., & Temizel, T. (2015), “*A framework for automatic information quality ranking of diabetes websites*”, In this paper, the authors have discussed about assigning ranks to various websites related to diabetes based on relevance information quality. The authors have proposed a framework that would rank diabetes websites according to their content using Sentiwordnet. Pearson-correlation, true positives, false positives and accuracy were used as evaluation measures. Information seekers were then able to acquire accurate information from these websites based on their ranking [8].

Li, J. et al., (2015), “*Big Data in product Lifecycle Management*”, In this paper the basic concepts and applications of big data were introduced. The authors talked about whether the enormous information procedures can be utilized by assembling organizations to improve the effectiveness of plan, generation and services. The creators have outlined the potential uses of enormous information strategies. Huge information tells about the measure of information, yet in addition different properties like variety of information and speed. Organizations like Amazon and Wal-Mart utilize big data to keep up their client database. The essential undertaking is to address the issue of how to apply big data in various phases of various fields [9].

Yang, F. C., & et al. (2016), “*Mining health social media with Sentiment Analysis*”, In this paper, the authors have discussed about people nowadays are using social media to discuss about their health issues at online forums. The authors have proposed a framework for analyzing user generated content. Extracting medical terms, modifying Latent Dirichlet Allocation (LDA) and analysis of clustered C-topics by sentiment polarities are three main steps in this framework. It was concluded that forums with strong positive and negative sentiment provided useful information about patients suffering from various diseases [10].

Dave, A., & Desai, N. (2016), “*A Comprehensive Study of Classification Techniques for Sarcasm Detection on Textural Data*”, Sarcasm is a sort of portrayal to convey on the unexpected sentiment in comparison to exhibited. The author has tried to identify different supervised classification techniques on textual data in distinct languages on different social media sites. The author has also conducted an experiment to detect sarcasm in “Hindi Language”. In this paper different techniques for sarcasm detection in different languages and the generation have been studied. This study provides an overview of the work done in sarcasm detection and generation of sarcasm in non-Indian languages, such as Dutch and Indonesian languages [11].

Mehta, J., et al., (May 2016), “*Sentiment Analysis on Product Reviews using Hadoop*”, The aim of this research paper is reducing time limit by providing an effective summarization of reviews in a manner appropriate for users. Usage of Map Reduce technique provided by Apache Hadoop is highlighted for processing reviews. In this paper, the technique used for the same is described which substantially reduces time complexity when implemented. In future work, these techniques and rating process can be improved by taking into consideration the usage of slangs term used by people. Spam reviews can be detected and removed from the list to improve the overall efficiency [12].

Eriksson-Backa, K., et al. (2016), “*Communicating diabetes and diets on Twitter-a semantic content analysis*”, The authors in this paper have discussed about the semantic content of tweets regarding diet and diabetes. The discussions about what kind of diet has been mentioned in relation to diabetes were carried out. Diabetes is the sixth largest cause of deaths in USA. People are sharing their opinions about their health on Twitter, Facebook and other social media platforms such as blogs. Etc. This data can be used to understand the sentiments among the public regarding diet and diabetes. Different communities on Twitter were used to generate data and it was concluded that several different types of diets such as Cuban diet, low-carb diet were mentioned in relation to diabetes [13].

Parveen, H., & Pandey, S., (2016), "*Sentiment Analysis on Twitter Data-Set Using Naïve Bayes Algorithm*", In this paper, the extraction of slant from a well-known blogging site Twitter has been given, where the client posts their perspectives and sentiment. The author has performed Sentiment Analysis on tweets, which help to give some expectation on business insight. In this paper, pre-preparing of information has been talked about to expel noise from the data. Opinion Analysis for movie data set has been implemented on Hadoop system and investigated with huge number of tweets. This sort of investigation encourages associations to improve their business efficiency. The examination of twitter information is done on different perspectives like Positive, Negative and Neutral assessments. It has additionally given the quick downloading way to deal with examination of patterns in Twitter information [14].

Adamov, A., & Adali, E., (2016), "*Opinion Mining and Sentiment Analysis for Contextual Online-Advertisement*", In this paper, the author has discussed about use of Natural Language Processing in online advertisements to determine sentiment polarity. There are two types of online advertisements, Sponsored search & Contextual display advertisements. This study has shown of Sentiment Analysis and use of NLP can help in determining the polarity of opinion in a particular contextual display advertisement. The author concluded that better results are obtained from Sentiment Analysis of contextual advertisement as compare to keyword based approach [15].

Zarate, M., et al. (2017), "*Sentiment Analysis on Tweets about Diabetes: An Aspect-Level Approach*", In this paper, the authors proposed an aspect-level approach for Sentiment Analysis on Diabetes. Practically a large portion of a million youngsters aged 14 and under living with type 1 diabetes.. Moreover, almost 400 million people have diabetes and around 300 million adults are estimated to have impaired glucose tolerance. The analysis was performed using N-Gram method and tweets were labeled as positive, negative or neutral. Preprocessing Module, Semantic annotation and Sentiment Classification were the three steps performed in Sentiment Analysis. The methodology followed gave results that were 81.93% accurate [16].

Shaw, G., & Karami, A. (2017), "*Computational Content Analysis of Negative Tweets for Obesity, Diet, Diabetes, and Exercise*", The authors proposed a framework for better analysis of unstructured health related data with regards to obesity, diet, diabetes and exercise. Almost 6 million tweets were collected over a period of one month and this data categorized as positive, negative or neutral. The authors used two text mining methods for this study. The first one was Sentiment Analysis and the second was Topic Modeling. It was concluded that diet was not directly related to diabetes, but the 'sub-topics of food' reveals a connection with diabetes. Also, people with less physical exercise had more chance being obese and diabetic as compared to others [17].

Cambria, E., et al. (2017), "*Sentiment Analysis Is a Big Suitcase*", In this paper the author has introduced the definition of Sentiment Analysis and Hadoop. He has also discussed Hadoop architecture as well as its framework. The opinion which is given directly and is either positive or negative is a direct opinion. If the opinion compares two objects, it is a Comparison opinion. Sentiment Analysis is performed at three different levels, which are Sentence level, Document level and Feature level. Hadoop runs on cloud computing services across clusters of nodes. Hadoop overcomes the hardware failure by keeping multiple copies of data. The real time twitter data is given as an input to the framework to analyze and provide sentiment polarity. The MapReduce framework helps in effective writing of applications and processing large sets of data. It helps in fault-tolerant processing of data and provides efficient results on huge data sets [18].

Khan I., et al., (May 2017), "*An Efficient Framework for Real-Time Tweet Classification*", Twitter gives a "trends" feature. In this paper, a framework is suggested that can dissect twitter information and arrange tweets on some particular subject to produce patterns. Tweets posted on twitter could be investigated for contemplating the conduct of individuals across regions. In this paper, a system is proposed and a calculation is given to group the crude tweets as "political" or "non-political". This calculation can be summed up for any space. In this paper, a system is proposed for examining Big Data taking twitter as the source. Investigations and results have likewise been talked about. The calculation given in this paper takes the pre-processed tweets as a contribution to the calculation and gave the outcomes with

respect to whether the tweet is "Political" or "Non-Political". In this paper, India is selected as topographical district for the political space. In spite of the fact that the picked area is just political, this structure is conventional and can be utilized for any space [19].

Prasad, A., et al. (2017), "*Sentiment Analysis for Sarcasm Detection on Streaming Short Text Data*", With the advent of social networking, the usage of abbreviations, slangs and sarcasm in messages is increasing. This can be misleading to understand the overall meaning of a particular opinion. This paper has compared different classifications algorithms for example Random Forest, Gradient Boosting and Decision Trees to detect sarcasm in tweets. Slangs or abbreviations such as "LOL" (Laughing Out Loud) and "TTYL" (Talk to you Later) are being used more frequently than ever. This paper suggests the usage of MOA (Massive Online Analysis) to collect real-time data and classify the tweets into positive and negative classes. Random forest classifier technique is used to train the model. The motive of this paper is to improve the existing sarcasm detection algorithms by using technique such as Emoji and Slang detection, and reverse analysis to achieve accuracy in detecting sarcastic tweets [20].

Dharwal, P., et al. (2017), "*Automatic Sarcasm Detection using Feature Selection*", The expression of humor or mockery using irony that seems positive is known as sarcasm. This paper studies the text in natural language to detect sarcasm. Differentiating between sarcastic and non-sarcastic tweets is important. Data on twitter can be categorized into positive (P), negative (N) and sarcastic (S). Feature engineering involves Tokenization i.e. de-cluttering of the words into tokens, Stemming i.e. reducing the repetition of words, studying n-grams such as unigram, bigram, and trigram and so on. SentiWordNet is an analyzer which takes each word and rates it as positive or negative. The motive of this paper is to improve upon the techniques for more accurate detection of sarcasm on twitter [21].

Yadav, P., & Pandya, D., (2017), "*SentiReview: Sentiment Analysis based on Text and Emoticons*", In this paper, the author has examined different elements that influence Sentiment Analysis. Emoticons play a significant role in analysis of sentiment. Various components of NLP such as Word Sense Disambiguation, POS (Parts of Speech) tagging, information instruction and Sentiment Analysis are useful to classify whether the data is positive, negative or neutral. Emoticons such as ☺ and ☹ are powerful components which can change the polarity to either positive or negative. Extensive research has been carried out to study the relationship between text and emoticons for polarity classification. The author has studied various issues such as sarcasm, slang, lexical variations that affect the sentimental analysis. Various techniques have been combined to form a hybrid technique that can help to achieve more accurate results [22].

Mohan, I., et al. (2017), "*A Survey on Sentiment Analysis on Social Network Data*", The word sentiment tells about the attitude of an individual towards a particular domain. This study has given a general idea about opinions & their sentiment polarity about a certain topic. The authors have used different techniques such as Naïve Bayes (NB) classifier, support vector machine algorithm. The author has discussed about classifier such as Aid vector system, Naïve Bayes and K-nn for calculation of accuracy of the sentiment of data. The paper summarized the different procedure that can be used for more accurate and efficient Sentiment Analysis [23].

Basha, M., & Rajput, S. (2017), "*Evaluating the impact of feature selection on overall performance of Sentiment Analysis*", The authors have discussed how Sentiment Analysis of reviews online is becoming important for organizations to increase their profitability. In this paper, the authors have used Stanford CoreNLP, Alias-i's Lingpipe, SentiWordNet and synthesize libraries from different sources for Sentiment Analysis. Information is categorized as subjective and objective, and k-length n-grams were used for performing Sentiment Analysis. Different approaches were compared to find more accurate results from analysis [24].

Gabarron, E., et al. (2018), "*Social media for health promotion in diabetes: study protocol for a participatory public health intervention design*", In this paper, the authors have discussed how health related data posted online can be used for promoting healthy and better lifestyle among people of Norway. The authors designed a Health Promotion Intervention (HPI) that would have a panel of

experts and people would participate in this program by sharing their opinion via an online questionnaire. People who were a part of online diabetes groups on social media were asked to share their opinions regarding their issues related to diabetes. The questionnaires were then distributed to experts for detailed analysis. SPSS package was used for qualitative analysis, while Norwegian tools such as Polyglot, Lexalytics were used for Sentiment Analysis [25].

Gabarron, E., et al. (2018), “*Diabetes on Twitter: A Sentiment Analysis*”, In this paper, the authors discussed about data posted by diabetes patients on social media and its impact on people in general. Twitter was used as the medium to extract data and a total of 67421 tweets were extracted using twitter API. The authors classified tweets as “T1D” and “T2D” for Type 1 Diabetes and Type 2 Diabetes respectively. SentiStrength was the tool used to perform Sentiment Analysis on the generated data. A scale from -5 to 0 was used for negative polarity, while a scale of 0 to 5 was used for positive polarity. The authors concluded that tweets with “T2D” were more negative as compared to tweets with “T1D”. People with Type 1 Diabetes were more positive about their problem rather than people with Type 2 Diabetes [26].

Chen, Y., & Zhang, Z., (2018) “*Research on text Sentiment Analysis based on CNNs and SVM*” The authors studied the limitations of emotion dictionary construction and extraction features in sentimental analysis. The authors have proposed a Convolutional Neural Networks (CNN) with SVM text Sentiment Analysis. CNN is the supervised learning algorithm which uses spatial relative relations to reduce the number of parameters to improve performance. SVM is a supervised machine learning model which is two-classification model. The advantages of both CNN and SVM have been studied in this paper and the authors have discussed about further improvements in the performance of text classification [27].

Contratres, F. et al., (2018), “*Sentiment Analysis of Social Network Data for Cold-Start Relief in Recommender Systems*” Cold-begin is the circumstance of a client whose no data is accessible to make any proposal. The information posted by client via web-based networking media can be utilized to lessen the cold-start issue. This paper proposed a suggestion procedure for Sentiment Analysis of information from Facebook and twitter that results in a calculation for cold-begin decrease. This trial utilizes the communication of clients who post their assessment out of the blue on an E-Commerce site. This paper examined that the information posted by client himself ought to be considered for cold-begin framework and an functional methodology for Sentiment Analysis techniques in the cold-start situations [28].

Hussein, D., (2018) “*A Survey on Sentiment Analysis Challenges*”, This paper studied different challenges that come up during Sentiment Analysis and surveyed these challenges. The large amount of data being generated online presents an opportunity to understand the opinion of people about a specific domain. The author has discussed a specific challenge i.e. domain dependence, which might hinder the Sentiment Analysis. The author has put light on the issue of improving accuracy to find the polarity of sentiments [29].

Yue, L. et al., (July 2018), “*A Survey of Sentiment Analysis in Social Media*”, This paper focused on three different perspectives such as task-oriented, granularity-oriented and methodology-oriented, for Sentiment Analysis. The paper has talked about around a two-dimensional structure of feelings. Feeling is a mental express that assumes a key job of working sparks. The creators looked at changed sorts of sentiments, for example, customary and near assessments, express and certain feelings, subjectivity and feelings. They likewise drew upon direct conclusion and aberrant supposition which can be utilized for better exactness in Sentiment Analysis. This paper investigated distinctive classifications of information and apparatuses that can be utilized in Sentiment Analysis and gave chance to advance extension in this field [30].

**Conclusion:** The techniques that can be used for Sentiment Analysis of data from various sources have been discussed in this report. Supervised Learning Techniques such as Naïve Bayes, Support Vector Machines, Neural Networks and Maximum Entropy; also Lexicon-based approaches such as Dictionary-based and Corpus-based approaches are frequently used for this purpose. Detection of sarcasm is

important in order to understand the sentiments in a clearer manner. The use of emoticons and other slangs words has increased on sites such as Twitter and Facebook. The methods that have been discussed in this paper can help to determine the polarity of sentiments. Parts-Of-Speech (POS) Tagging is important to understand different components of the data and this can help in better and accurate analysis of sentiments.

The methods for opinion mining that have been used till date can be used in the fields such as politics, higher education, E-commerce, movie reviews, patients suffering from various diseases like diabetes, cancer, high blood pressure etc. In this paper, we have discussed how Sentiment Analysis can be used to understand opinion of patients suffering from type-1 and type-2 diabetes and its related medical issues including medicine, treatment effectiveness and diet etc. The results obtained from Sentiment Analysis can be used by government for making health-related policies and by healthcare centers to provide better treatment to diabetic patients in future.

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## ARITHMETIC CONVOLUTION AND FINITE FOURIER SERIES

VICHIAN LAOHAKOSOL

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**Abstract:** A convolution involving a summation over the greatest common divisor of two integers, which extends the classical Dirichlet convolution, is investigated and basic properties are derived. Applying these results to a periodic function yields a Fourier series expansion, referred to as its finite Fourier series. Specializing a periodic function, a Fourier series of the greatest common divisor (gcd) function is obtained. Several recent results and applications related to the Fourier series of the gcd function are derived.

**Keywords:** Generalized Convolution, Finite Fourier Series, Greatest Common Divisor (gcd) Function.

**2010 Mathematics Subject Classification:** 11A05, 11A25.

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## SIMILARITY SOLUTIONS FOR IMPLoding SHOCKS IN A NON-IDEAL MAGNETOGASDYNAMICS.

DEEPIKA SINGH, RAJAN ARORA

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**Abstract:** In this paper, we have considered the problem of finding the entire class of similarity solutions using Lie group of transformations to the system of first order quasi-linear PDEs, which governs one-dimensional, unsteady flow of a cylindrically symmetric shock wave propagating through a non-ideal gas with infinite electrical conductivity under the influence of axial component of the magnetic field with isothermal flow condition. With the help of the arbitrary constants present in the expressions for the generators determined by the Lie group of transformations, two different cases of solutions are obtained, one with power law and other with exponential shock paths, respectively. We have investigated one particular case of the collapse of converging (imploding) cylindrically symmetric shock in detail. Numerical computations have been carried out to find out the similarity exponents and the flow patterns in the flow-field behind the shock, and numerical results have been compared with those obtained by Guderley's method.

The effects of the non-ideal parameter and magnetic field strength on the values of similarity exponents and the flow patterns have also been studied. All computations have been performed using the software package MATHEMATICA.

**Keywords:** Shock Waves, Magnetogasdynamics, Similarity Solutions, Lie Group of Transformations, Rankine-Hugoniot Conditions, Non-Ideal Gas.

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**DISTRIBUTION OF METEOROLOGICAL DATA IN  
CONCEPT BASED SEMANTIC FORMAT THROUGH  
THEMATIC ENVIRONMENTAL DISTRIBUTED DATA SERVER**

**LILLY FLORENCE M, SWAMYDOSS D**

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**Abstract:** Several satellite data receiving and distributing centers across the world support data storage, processing and retrieval based on satellite, sensor, product, latitude, longitude, data and time, etc. These systems address queries on satellite products that are mostly high level concepts. A more sophisticated retrieval system that supports ontological concepts, sub concepts and concept hierarchical queries delivers refined results that broaden the scientific horizon of the application domain. This paper deals about the meteorology data processing in thredds server, ontology management system for meteorology data.

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**PATH-INDEPENDENT OPTION PRICE CONVERGENCE TO  
PATH-DEPENDENT OPTION PRICES WITH THE COX, ROSS,  
AND RUBINSTEIN MODEL**

**DR. GUILLAUME LEDUC**

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**Abstract:** Barrier and lookback options have been the subject of numerous publications that describe, quantify, and improve the known slow and oscillatory convergence of the value of these options to their Black-Scholes limit, when they are evaluated with the Cox, Ross, and Rubinstein (CRR) tree method. However, we explicitly describe path independent European options whose value is precisely equal to the value of their path-dependent counterparts. Applying the tree method to these options, we obtain a convergence of order  $1/n$  to the barrier and lookback options, improving from a convergence of  $1/\sqrt{n}$  in the usual method. Moreover, we find an explicit error formula for this convergence, up to a term of order  $1/n^{3/2}$ , so that the corrected model actually converges at a speed of  $1/n^{3/2}$ .

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## ENHANCEMENT IN ELECTRICAL CONDUCTIVITY IN COPPER BASED COMPOSITE THERMOELECTRIC SYSTEM

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**Abstract:** The ever-increasing energy demands and the management of waste heat from power plants, factories and automobiles, etc. continue to be the significant apprehensions of this century. Thus, it has become vital to develop new, clean and renewable energy resources. Thermoelectrics is a technique by which one directly converts heat energy to electricity and vice-versa, without the requirement of steam-run turbines. In the present work, a secondary phase of  $\text{Cu}_2\text{Se}$  has been introduced into the matrix of  $\text{Cu}_2\text{SnSe}_3$ . The reason for choosing  $\text{Cu}_2\text{Se}$  is that it falls in the category of superionic conductors having two sub-lattices: sub-lattice of Se atoms facilitating the conduction of carriers and Cu sub-lattice with mobile Cu ions resulting in lower thermal conductivity

A series of *p*-type  $\text{Cu}_2\text{SnSe}_3/x\text{Cu}_2\text{Se}$  ( $x= 0, 5, 10, 15,$  and  $20$  wt. %) composites were fabricated by spark plasma sintering, and the electrical properties have been investigated in the temperature range  $10 - 400$  K. The crystal structure was evaluated by employing XRD analysis. Rietveld refinement was used to compute the amount of monoclinic and cubic phases in the composites, and the results revealed a decrease in the monoclinic phase with the increase in  $x$  wt. %. The measured thermoelectric properties of pristine as well as composites indicate that the introduction of  $\text{Cu}_2\text{Se}$  leads to an enhancement in electrical conductivity in  $\text{Cu}_2\text{SnSe}_3$ .

**Keywords:** Thermoelectrics, Spark Plasma Sintering, Composites, Electrical Conductivity.

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## INFLUENCE OF METAL SALT ON THE ELECTRICAL PROPERTIES OF PVA/CMC POLYMER ELECTROLYTE FILMS

NASREEN, ISMAYIL, SWATHI, SUPRIYA K SHETTY

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**Abstract:** The influence of Sodium Bromide on the electrical properties of Polyvinyl Alcohol and Carboxy methyl cellulose (PVA/CMC : 80/20) blend polymer electrolyte films have been investigated. The films were prepared by conventional solution casting method with distilled water as solvent and are subjected to UV-Visible, XRD, SEM, AC & DC conductivity studies. The results of these studies suggest that the molecular rearrangement takes place within the polymer due to the interaction of NaBr with PVA/CMC chains. This interaction results in the modification in the microstructure of the blend and hence variation in the optical energy band gap, Urbach energy and ionic conductivity of the polymer electrolyte. It is found that the degree of crystallinity of the PVA/CMC blend films decreases upon dopant concentration which reflects the molecular disorderness that are in consistent with the result of Urbach energy. Decrease in the degree of crystallinity provides ions to transport easily through the amorphous region of the polymer matrix via segmental motion. The variations of ionic conductivity upon dopant concentration is studied and the suitability of these blend biodegradable electrolyte films for solid state battery applications have been explored.

**Keywords:** Ionic Conductivity, Polymer Electrolytes, Polymer Microstructure, Segmental Motion.

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## TAILORING THE NONLINEAR OPTICAL FEATURES OF SPRAY COATED FLUORINE DOPED ZNO NANOSTRUCTURES VIA E-BEAM FOR FREQUENCY CONVERSION APPLICATIONS

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**Abstract:** Influence of high energy electron beam treatment on fluorine doped ZnO (FZO) nanostructures and its role in modifying nonlinear optical properties were studied. FZO nanostructures were grown using chemical spray pyrolysis technique and were treated by 8 MeV electron beam line at pre-determined dosages (5 kGy, 10 kGy, 15 kGy and 20 kGy). The glancing angle X-ray diffraction (GAXRD) study confirms that the deposited films exhibit a single phase with (002) plane orientation pointing towards the higher order structural stability and phase purity of the nanostructures in intense radiation environment. Compositional and chemical state analysis of FZO films were analyzed by x-ray photoelectron spectroscopy (XPS) which conveys that the percentage area ratio of O<sub>1s</sub> core level spectra which attributes to oxygen vacancy defects are reduced from 28.9 % to 13.7 % which in turn endorses the e-beam treatment resulting in suppressing the generation of oxygen related defects. The ambient temperature PL spectra show quenching of radiative defect centers upon electron beam irradiation which infers that non radiative recombination predominates the radiative recombination in the nanostructures upon e-beam treatment. Open aperture Z-scan analysis shows a magnitude of nonlinear absorption coefficient  $\beta_{\text{eff}}$  in the order of  $10^{-7}$  esu. Enhanced third harmonic generation signal (THG) shown by the films due to photoexcitation and relaxation process endorses the credibility of the grown films for application as UV light emitters

**Keywords:** FZO Nanostructures, Electron Beam Irradiation, Third Harmonic Generation.

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## GaAs/AlGaAs MULTI-BARRIER QW STRUCTURES FOR PHOTOVOLTAIC APPLICATIONS

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**Abstract:** In this report, we present our studies on multi-barrier  $\text{Al}_{0.3}\text{Ga}_{0.7}\text{As}/\text{GaAs}$  quantum well (QW) system to obtain a given subband position in a quantum well to be used in quantum well solar cells to enhance efficiency in conventional solar cells by extending the absorption edge<sup>1,2,3</sup>. The studied structure consists of 2 QW (II and III) with multiple thin barriers within ( $\text{Al}_{0.3}\text{Ga}_{0.7}\text{As}$ ) and a 25 nm QW (I) separated by wide barriers (30 nm) from each other. We have shown experimentally that any given subband position can be obtained in wide quantum wells by inserting the thin layers of the barrier material. From the temperature dependent PL and it is observed that the nature of emission from the QWs separated by multiple barriers changes a lot. Two peaks start to emerge at temperatures above 25 K corresponding to transitions within the II QW. We also correlate the PL data with PL excitation studies.

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## OPTICAL PROPERTIES OF MICROWAVE SYNTHESIZED SILVER DOPED ZnS ENCAPSULATED BY NaCMC

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**Abstract:** This communication reports synthesis of silver doped ZnS encapsulated by sodium carboxy methyl cellulose (NaCMC) and its characterization. The effect of efficient heating by microwaves were utilized to achieve faster reaction rates. The effect of dopant (silver) concentration on the photoluminescence behavior of the composite as a new approach for the preparation method was studied. Synthesis involves chemical co-precipitation method using zinc acetate and thioacetamide as ZnS precursors, silver nitrate as dopant salt, carboxy methyl cellulose as capping agent and water as solvent. The synthesized samples were characterized for their structural and optical properties. Substitutional doping of silver in to the ZnS lattice was indicated by the XRD studies. The presence of silver dopants was indicated by EDS analysis. The band gap energies obtained from UV - Vis spectroscopy for all samples were higher than that of bulk value indicating quantum confinement effect. Photoluminescence measurements indicated maximum intensity at certain optimum concentration of added silver dopant. The difficulty in substitutional doping of Ag in to ZnS faced in earlier works has been overcome in our work due to microwave heating.

**Keywords:** Microwaves, Doping, Silver, Cellulose.

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## PROPERTIES OF HETEROJUNCTION BASED ON CuO/ZnO BILAYER THIN FILMS GROWN BY DC MAGNETRON SPUTTERING

DHANANJAYA KEKUDA

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**Abstract:** Solar energy has been considered as one of the clean forms of energy. Though conventional silicon solar cells are leading the market, recently, there are many alternative materials found attractive in the solar photovoltaic research in order to replace the silicon. Among them, metal oxides are also in the competition to prove themselves as solar materials. Metal oxides have been considered in different roles in solar cell technologies for several years. In this article, an attempt is made to grow copper oxide and zinc Oxide thin films by dc magnetron sputtering. The structural phase evolution was studied through x-ray diffraction studies. The morphological studies were carried out through atomic force microscopy. The optical properties were studied through UV-VIS and photoluminescence spectroscopy. The optimized individual layers were utilized for the construction of p-n junction and their properties were evaluated in the present article. We have chosen the following electrodes, namely, copper (Cu), silver (Ag), Nickel (Ni) and Aluminium (Al) for the construction of the heterojunction and their performance is tested.

**Keywords:** Metal oxides, Copper oxide, Zinc Oxide, p-n junction

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## ADOMIAN DECOMPOSITION METHOD FOR SOLVING NONLINEAR PDEs – A REVIEW

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**Abstract:** Partial differential equations provide a quantitative description for several models in physical, biological, engineering and social sciences. Numerical methods were first put into use as an effective tool for the numerical solution of partial differential equations by John von Neumann in the mid-1940s. In this paper, we are discussing Adomian decomposition method for solving nonlinear partial differential equations arising in various applications of science and engineering.

**Keywords:** Nonlinear Partial Differential Equations, Adomian Decomposition Method, Numerical Techniques.

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**Introduction:** Partial differential equations provide a quantitative description for several models in physical, biological, engineering and social sciences. The description is furnished in terms of unknown functions of two or more independent variables, and the relation between partial derivatives with respect to those variables. If the relations between the unknown functions and their partial derivatives involved in the equation are nonlinear, then a partial differential equation is said to be nonlinear. Due to their significant role in science and engineering, partial differential equations are studied extensively by researchers, scientists and practitioners. They reflect a rich development of mathematical theories and analytical techniques for the numerical solutions of partial differential equations and illuminate the phenomena they govern.

In the past years, scientific computation has emerged as the most versatile tool to complement theory and experiments. Numerical methods for solving nonlinear partial differential equations are at the heart of many of these advanced scientific computations. Numerical computations have not only joined experiment and theory as one of the fundamental tools of investigation, but they have also change the kind of experiments performed and have expanded the scope of theory. In 1949, John von Neumann was envisioned the interplay between computation, theory, and experiments, who wrote a letter “the entire computing machine is merely one component of a greater whole, namely, of the unity formed by the computing machine, the mathematical problems that go with it, and the type of planning which is called by both”. Neumann, in the mid-1940s was first put the numerical solutions of nonlinear partial differential equations into practical problems. Nowadays, new discipline of numerical weather prediction was formed, for solving nonlinear partial differential equations that is simulations of nuclear explosions replaced ground experiments, numerical methods replaced wind tunnels in the design of new airplanes, etc.

Nonlinear partial differential equations can be found in wide variety of scientific and engineering. Many mathematical models can be expressed in terms of nonlinear partial differential equations. The most general partial differential equation can be written in the form:

$$F(u, u_x, u_t, u_{tt}, \dots, x, t) = 0 \quad (1)$$

with initial and boundary conditions

$$u(x, 0) = \varphi(x) \quad (2)$$

$$u(a, t) = f_1(t), \quad u(b, t) = f_2(t) \quad (3)$$

where  $x \in \Omega$ , where  $\Omega$  is the solution region. There are various significant methods for solving such type of equations such as Adomian decomposition method, finite difference method, finite element method, finite volume method, wavelet methods, spectral method etc. In this paper, we are presenting Adomian decomposition method for solving nonlinear differential equations.

For solving the applications of engineering and sciences, decomposition method has been developed in Adomian (1988). Modified Adomian decomposition method has been developed for solving system of nonlinear differential equation in Huifeng Gu & Zhi-bin Li (2007). A simple algorithm has been developed for calculating Adomian polynomials in Biazar & Shafiof (2007). A maple programming has been developed for computing Adomian polynomials in Biazar & Pourabd (2006). Solution of the system of ordinary differential equations with the help of Adomian decomposition method has been presented in Biazar et al. (2004). A numerical application of the decomposition method has been used for solving the combined KdV-MKdV equation in Kaya & Inan (2005). Adomian decomposition method has been used for solving differential-algebraic equations in Celik et al.(2006). For nonlinear operators, Adomian polynomials have been computed in Seng et al. (1996). In Javidi & Golbabai (2007), Adomian decomposition method has been developed for solving the parabolic equations. In Bellman et al.(1972), differential quadrature technique has been used for the solution of nonlinear partial differential equations. Other numerical techniques have been developed for solving mathematical models arising in some applications of sciences and engineering, these techniques have been discussed in Arnold (1990), Arnold et al. (2006), Babuska (1971), Berger & Olinger (1984), Bianchini & Bressan (2005), Binev et al. (2004), Brandt (1977), Caffarelli & Souganidis (2007), Chorin (1968), Chorin (1973), Dean & Glowinski (2007), Degond & Mas-Gallic (1991), Eymard (2001), Filbet (2006) and Francis (1961).

(a) **Adomian Decomposition Method:** The principle of Adomian decomposition method to the most general form of partial differential equations is of the form:

$$Lu + Ru + Nu = g \tag{4}$$

The linear terms decomposed into  $Lu + Ru$ , while the nonlinear terms are represented by  $Nu$ , where  $L$  is an easily invertible linear operator and  $R$  is the remaining part. By linear operator  $L$ , with  $L^{-1}(\cdot) = \int_0^t (\cdot) dt$ . Equation (4) can be written as

$$u = L^{-1}(g) - L^{-1}(Ru) - L^{-1}(Nu), \tag{5}$$

The decomposition method represents the solution of equation (5) as the following infinite series:

$$u = \sum_{n=0}^{\infty} u_n \tag{6}$$

The nonlinear operator  $Nu = \Psi(u)$  is decomposed as:

$$Nu = \sum_{n=0}^{\infty} A_n \tag{7}$$

where  $A_n$  are Adomian's polynomials and these are defined as

$$A_n = \frac{1}{n!} \frac{d^n}{d\lambda^n} [\Psi(\sum_{i=1}^n \lambda^i u_i)]_{\lambda=0} \quad n = 0, 1, 2, \dots$$

Substituting equations (6) and (7) into equation (5), we have

$$u = \sum_{n=0}^{\infty} u_n = u_0 - L^{-1} \left( R \left( \sum_{n=0}^{\infty} u_n \right) \right) - L^{-1} \left( \sum_{n=0}^{\infty} A_n \right)$$

Consequently, it can be written as:

$$\left. \begin{aligned} u_0 &= \phi + L^{-1}(g) \\ u_1 &= -L^{-1}(R(u_0)) - L^{-1}(A_0) \\ u_2 &= -L^{-1}(R(u_1)) - L^{-1}(A_1) \\ &\vdots \\ &\vdots \\ u_n &= -L^{-1}(R(u_{n-1})) - L^{-1}(A_{n-1}) \end{aligned} \right\}$$

where  $\phi$  is the initial condition, Therefore, all the terms of  $u$  are calculated and the general solution obtained according to Adomian decomposition method as

$$u = \sum_{n=0}^{\infty} u_n$$

In Seng et al. (1996), the convergent of this series has been proved. But, for some problems as discussed in Celik et al. (2006), this series cannot be determined and we use an approximation:

$$U_M = \sum_{n=0}^M u_n \text{ with } \lim_{M \rightarrow \infty} U_M = u.$$

**Numerical Examples:** Over the last twenty years, the Adomian decomposition approach has been applied to obtain formal solutions to a wide class of both deterministic and stochastic partial differential equations. The decomposition method yields rapidly convergent series solutions by using a few iterations for both linear and nonlinear deterministic and stochastic equations. The advantage of this method is that it provides a direct scheme for solving the problem, i.e., without the need for linearization, perturbation, massive computation and any transformation. In this section, we are presenting some numerical examples to show the accuracy of the proposed method.

**Example 1:** Consider the following hyperbolic non linear problem

$$\frac{\partial u}{\partial t} = u \frac{\partial u}{\partial x}, \quad 0 < x \leq 1, \quad 0 \leq t \leq 1$$

with the initial condition

$$u(x,0) = \frac{x}{10}, \quad 0 < x \leq 1.$$

The exact solution of this equation is  $u(x,t) = \frac{-x}{(t-10)}$

Now by using Adomian Decomposition Method, Adomian's polynomials can be derived as follows

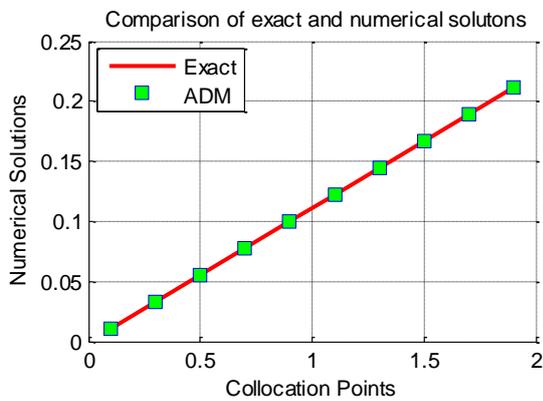
$$\left. \begin{aligned} A_0 &= u_0 \frac{\partial u_0}{\partial x} \\ A_1 &= u_1 \frac{\partial u_0}{\partial x} + u_0 \frac{\partial u_1}{\partial x} \\ A_2 &= u_2 \frac{\partial u_0}{\partial x} + u_1 \frac{\partial u_1}{\partial x} + u_0 \frac{\partial u_2}{\partial x} \\ &\vdots \\ &\vdots \end{aligned} \right\}$$

and so on

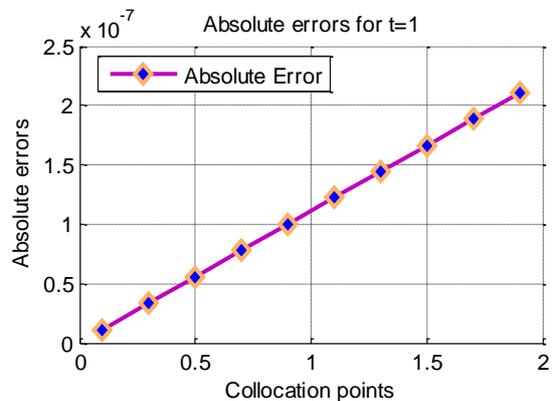
$$\left. \begin{aligned} u_0 &= \frac{x}{10} \\ u_1 &= \frac{x}{10} \left(\frac{t}{10}\right) \\ u_2 &= \frac{x}{10} \left(\frac{t}{10}\right)^2 \\ u_3 &= \frac{x}{10} \left(\frac{t}{10}\right)^3 \\ &\vdots \\ &\vdots \\ u_n &= \frac{x}{10} \left(\frac{t}{10}\right)^n \end{aligned} \right\}$$

Substituting these values in Eq.(6),we get

$$u(x,t)=\frac{x}{10} \left[ 1 + \frac{t}{10} + \left(\frac{t}{10}\right)^2 + \left(\frac{t}{10}\right)^3 + \dots + \left(\frac{t}{10}\right)^n + \dots \right]$$



**Figure 1:** Comparison of Numerical and Exact Solutions for t=1



**Figure 2:** Absolute Errors of Example 1 for t=1

Figure 1 shows the comparison of exact and Adomian decomposition solutions of Example 1 at t=1. Figure 2 shows the absolute errors of Example 1 at t=1 (Taking first six terms of Adomian decomposition solutions).

**Example 2:** Let us consider an another example of nonlinear equation as follows

$$\frac{\partial u}{\partial t} = x^2 - \frac{1}{4} \left(\frac{\partial u}{\partial x}\right)^2, \quad 0 < x \leq 1, \quad 0 \leq t \leq 1$$

with the initial condition

$$u(x,0) = 0, \quad 0 \leq x \leq 1.$$

This equation has exact solution of the form

$$u(x,t) = x^2 \tanh(t)$$

Now, by using Adomian Decomposition Method , Adomian’s polynomial can be derived as follows

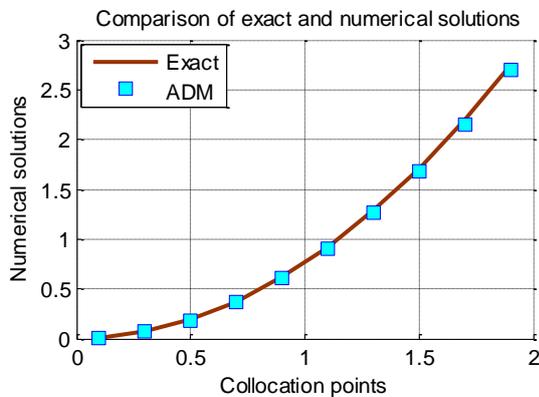
$$\left. \begin{aligned} A_0 &= \left(\frac{\partial u_0}{\partial x}\right)^2 \\ A_1 &= 2 \frac{\partial u_0}{\partial x} \frac{\partial u_1}{\partial x} \\ A_2 &= \left(\frac{\partial u_1}{\partial x}\right)^2 + 2 \frac{\partial u_0}{\partial x} \frac{\partial u_2}{\partial x} \\ &\vdots \\ &\vdots \end{aligned} \right\}$$

Also we have

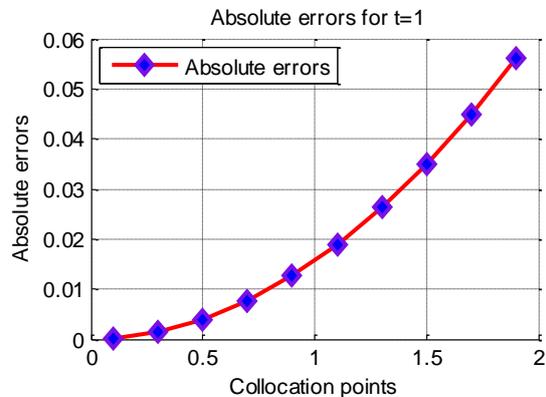
$$\left. \begin{aligned} u_0 &= x^2 t \\ u_1 &= -\frac{1}{3} x^2 t^3 \\ u_2 &= \frac{2}{15} x^2 t^5 \\ u_3 &= -\frac{17}{315} x^2 t^7 \\ &\vdots \\ &\vdots \end{aligned} \right\}$$

and so on. Substituting these values in Eq.(6), we have

$$u(x,t) = x^2 \left[ t - \frac{1}{3} t^3 + \frac{2}{15} t^5 - \frac{17}{315} t^7 + \dots \right]$$



**Figure 3:** Comparison of Exact and Numerical Solutions for t=1



**Figure 4:** Absolute Errors for t=1

Figure 3 shows the comparison of exact and Adomian decomposition solutions of Example 2 at t=1. Figure 4 shows the absolute errors of Example 2 at t=1 (Taking first four terms of Adomian decomposition solutions).

**Conclusion:** Adomian decomposition method is a powerful mathematical tool for solving nonlinear partial differential equations arising in many applications of sciences and engineering. We demonstrated that the decomposition procedure is quite efficient to determine the exact solutions. However, the method gives a simple powerful tool for obtaining the solutions without a need for large size of computations. It is also worth noting that the advantage of this method sometimes displays a fast convergence of the solutions. In addition, the numerical results which obtained by the is method indicate a high degree of accuracy.

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## REPETITIVE GROUP ACCEPTANCE SAMPLING PLAN FOR GENERALIZED INVERTED EXPONENTIAL DISTRIBUTION USING MEDIAN LIFE

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**Abstract:** In this paper, we propose a repetitive group acceptance sampling plan based on truncated life test when the lifetime follows a generalized inverted exponential distribution. For different values of the time termination ratio between prefixed experiment time, consumer's risk and producer's risk, the minimum average sample numbers and optimal parameters are calculated for the proposed sampling plan. The performance of the proposed plan is compared with the existing sampling plan and presented. A few tables are given and the outcomes are described by an example.

**1. Introduction:** Acceptance sampling plan plays a vital role in statistical quality control. It is utilized to take a decision about the batch/lot production, whether to accept or reject the lot. This decision is depends on an arbitrary sample chosen from the batch of finished products and then investigating the number of defective items involved in the sample. The batch is rejected if the number of defective items found in the sample are in excess of the predetermined acceptance number, if not the lot is accepted. Acceptance sampling plan is used to examine the product quality which depends on its life time which is supposed to be high. Hence, it is essential to terminate a life test by a prefixed time  $t_0$  and the count number of failures.

Several researchers established different acceptance sampling plans regarding truncated life tests for various quality parameters as mean, median, or different percentile. Single acceptance sampling plan for the mean using exponential distribution is proposed by Epstein [1]. Al-Omari [2] studied the transmuted generalized inverse Weibull distribution in acceptance sampling plans. In literature, group acceptance sampling plans have been discussed by Aslam et al. [3] for gamma distribution, Rao [4] for generalized exponential distribution and Aslam et al. [5] for Birnbaum-Saunders distribution. Balamurali and Jun [6] and Balamurali et al. [7] discussed the idea of repetitive group acceptance sampling (RAGS) plan for variables inspection. They discussed the advantages of the variables RAGS plan over the variables single sampling plan, variables double sampling plan, and attributes RAGS plan. Singh et al. [8] discussed acceptance sampling plan for the generalized inverted exponential distribution based on truncated life test in which they reveals that that the two-stage group require smaller sample size than the group acceptance sampling plan. Aslam et al. [9] proposed a repetitive group acceptance sampling plans for burr type XII percentiles in which they discussed the comparative study between repetitive group acceptance sampling plan with the ordinary group acceptance sampling plan (GASP).

The main object of this paper is to present repetitive group acceptance sampling plan that can be used for truncated life test of the finished products to get minimum average sample number (ASN) and then compare with the ordinary group acceptance sampling plan. In this paper, we establish the generalized inverted exponential distribution with some statistical properties in the section 2. Section 3, includes the proposed acceptance sampling plan for the truncated life tests for generalized inverted exponential distribution. Proposed plan is explained with the help of example in Section 4 and comparative analyses come in section 5. The conclusion is given in Section 6.

**2. Generalized Inverted Exponential Distribution (GIED):** A two-parameter generalized inverted exponential distribution has the probability density function (PDF) and cumulative distribution function (CDF) of the form

$$f(t; \lambda, \gamma) = \lambda \gamma t^{-2} e^{-\frac{\lambda}{t}} \left(1 - e^{-\frac{\lambda}{t}}\right)^{\gamma-1} ; t > 0, \lambda > 0, \gamma > 0, \quad (1)$$

$$F(t; \lambda, \gamma) = 1 - \left(1 - e^{-\frac{\lambda}{t}}\right)^{\gamma}. \quad (2)$$

where  $\gamma$  is a shape parameter and  $\lambda$  is scale parameter of the distribution. Abouammoh and Alshingiti (2009) introduced generalized inverted exponential distribution in literature as a generalization to the inverted exponential (IE) distribution. The mean  $\mu$  of GIED is given by:

$$\mu = \lambda \int_0^{\infty} x^{-2} (1 - e^{-x})^{\gamma} dx, \quad (3)$$

which exists for  $\gamma > 1$ . Note that the median life of GIE distribution is given by:

$$m_d = -\frac{\lambda}{\log(1-0.5^{1/\lambda})} \quad (4)$$

**3. Repetitive Group Acceptance Sampling (RGAS) Plan:** A single acceptance sampling plan is easy to implement but it involves the distribution of any investigated item in a single tester. Therefore, experimenter desires the number of testers equal to the sample size. Thus, this experiment needs more attempts, expenses and time to test the submitted batch. Jun et al. (2006) introduced an acceptance sampling plan which facilitate to install number of items in a single tester. This kind of acceptance sampling plan is called group acceptance sampling plan (GASP). Further, the repetitive type of GASP, which is called RGAS plan with the group size of  $r$ , can be defined as follows:

Step 1. Choose the number of groups  $g$  and allocate predefined  $r$  items to each group so that the sample size selected from a batch is  $n = r \times g$ . Then, put them on a life test experiment until a specified experiment time  $t_o$ .

Step 2. Accept the batch if the total number of failures,  $d$ , from all groups is less than or equal to  $c_1$ . Terminate the test and reject the batch as soon as  $d$  exceeds  $c_2$ , where  $c_2 \geq c_1$ .

Step 3. If  $c_1 < d \leq c_2$ , then go to step 1 and repeat the experiment.

The proposed RGAS plan is classified by three sampling plan parameters  $c_1$ ,  $c_2$  and  $g$ . Now the probability of acceptance for RGAS plan at the first sample is given by:-

$$P_a(p) = P(d \leq c_1 | p) = \sum_{k=0}^{c_1} \binom{rg}{k} p^k (1-p)^{rg-k} \quad (5)$$

and the probability of rejection at the first sample is given by:-

$$P_r(p) = P(d > c_2 | p) = 1 - \sum_{k=0}^{c_2} \binom{rg}{k} p^k (1-p)^{rg-k} \quad (6)$$

Hence, the lot acceptance sampling based on RGAS plan is:-

$$P_A(p) = \frac{P_a(p)}{P_a(p) + P_r(p)} ; 0 < p < 1. \quad (7)$$

Here  $p$  is the probability of test items fails before the termination time  $t_o$  for GIED using (4) and  $t_o = am_o$  is given by:-

$$p = 1 - \left[ 1 - (1 - 0.5^{1/\gamma})^{\frac{m_d}{am_o}} \right]^\gamma \quad (8)$$

Here  $p$  is independent of the scale parameter  $\lambda$  and dependent upon the median lifetime ratio  $\frac{m_d}{m_o}$ . The RGAS plan parameters  $g$ ,  $c_1$  and  $c_2$  can be calculated by solving the following two inequalities simultaneously:-

$$P_a(p_1 | \frac{m_d}{m_o} = r_1) \leq \beta \quad (9)$$

$$P_a(p_2 | \frac{m_d}{m_o} = r_2) \geq 1 - \alpha \quad (10)$$

where  $p_1$  is the probability of failure items before termination time  $t_o$  corresponding to consumer's risk ( $\beta$ ) when the quality level is  $r_1$  and  $p_2$  is the probability of failure items before termination time  $t_o$  corresponding to producer's risk ( $\alpha$ ) when the quality level is  $r_2$ . The ASN for the proposed RGAS plan is defined as follows:-

$$ASN(p) = \frac{n}{P_a(p) + P_r(p)} \quad (11)$$

Therefore, the design parameters for RGAS plan having minimum sample size will be obtained by solving the following optimization problem:-

$$\text{Minimize } ASN(p) = \frac{n}{P_a(p) + P_r(p)}$$

Subject to

$$P_a(p_1) \leq \beta,$$

$$P_a(p_2) \geq 1 - \alpha,$$

where  $n$  is an integer.

We are taking two values of the shape parameter ( $\gamma = 1, 2$ ) for the RGAS plan of GIED. We are to calculate the design parameters of proposed RGAS plan when  $a=0.5, 1.0$ , four levels of the consumer's risk ( $\beta$ ) taken as 0.25, 0.10, 0.05, 0.01 and producer's risk ( $\alpha$ ) taken as 0.05 for quality levels ( $r_2 = 1.5, 2.0, 2.5, 3.0$ ) which are satisfying the above optimization problem are explained by table 1, 2, 3 and 4. The

minimum ASN at quality level  $r_1$  are also presented in each table. In these tables, note that as the quality level  $r_2$  increases the design parameters and ASN decreases.

**Table 1:** Optimal Parameters and ASN, when  $\gamma=1$ ,  $r=5$ .

$\beta$	$r_2$	$r=5$							
		$a=0.5$				$a=1.0$			
		$C_1$	$C_2$	$g$	ASN	$C_1$	$C_2$	$g$	ASN
0.25	1.5	3	6	5	46.71	14	17	7	53.41
	2.0	0	2	2	18.84	7	8	4	22.73
	2.5	1	1	2	10.00	3	4	2	12.57
	3.0	1	1	2	10.00	0	2	1	9.41
0.10	1.5	4	8	7	61.76	14	20	8	83.74
	2.0	1	3	4	25.01	6	8	4	24.81
	2.5	0	1	2	12.31	2	4	2	14.75
	3.0	0	1	2	12.31	0	2	1	9.41
0.05	1.5	5	10	9	73.88	13	20	8	87.61
	2.0	1	3	4	25.02	3	7	3	28.98
	2.5	0	2	3	19.29	1	4	2	15.77
	3.0	0	1	3	16.07	1	3	2	11.92
0.01	1.5	8	14	14	87.71	8	20	7	224.08
	2.0	1	4	5	31.51	4	9	4	33.66
	2.5	0	2	4	21.93	2	6	3	21.42
	3.0	0	1	4	2043	2	4	3	15.88

**Table 2:** Optimal Parameters and ASN, when  $\gamma=1$ ,  $r=10$ .

$\beta$	$r_2$	$r=10$							
		$a=0.5$				$a=1.0$			
		$C_1$	$C_2$	$g$	ASN	$C_1$	$C_2$	$g$	ASN
0.25	1.5	4	7	3	51.40	11	15	3	56.81
	2.0	0	2	1	18.84	7	8	2	22.73
	2.5	1	1	1	10.00	3	4	1	12.57
	3.0	1	1	1	10.00	3	3	1	10.00
0.10	1.5	5	9	4	66.25	14	20	4	83.74
	2.0	1	3	2	25.02	6	8	2	24.81
	2.5	0	1	1	12.31	2	4	1	14.75
	3.0	0	1	1	12.31	2	3	1	11.32
0.05	1.5	8	12	6	75.98	13	20	4	87.61
	2.0	1	3	2	25.02	5	9	2	32.85
	2.5	1	2	2	21.43	1	4	1	15.77
	3.0	1	1	2	20.00	1	3	1	11.92
0.01	1.5	8	14	7	87.71	6	18	3	297.14
	2.0	0	4	2	33.99	4	9	2	33.66
	2.5	0	2	2	21.93	4	7	2	22.87
	3.0	0	1	2	20.43	0	4	1	16.02

**Table 3:** Optimal Parameters and ASN, when  $\Upsilon=2$ ,  $r=5$ .

$\beta$	$r_2$	$r=5$							
		$a=0.5$				$a=1.0$			
		$C_1$	$C_2$	$g$	ASN	$C_1$	$C_2$	$g$	ASN
0.25	1.5	1	3	5	38.02	7	9	4	27.80
	2.0	0	1	3	18.96	3	4	2	12.58
	2.5	0	1	3	18.96	0	2	1	9.41
	3.0	0	1	3	18.96	1	1	1	5.00
0.10	1.5	0	3	4	46.33	8	11	5	35.29
	2.0	0	1	3	18.96	2	4	2	14.76
	2.5	0	1	3	18.96	0	2	1	9.41
	3.0	0	1	3	18.96	0	1	1	5.92
0.05	1.5	3	5	10	57.90	9	13	6	41.18
	2.0	0	1	4	22.63	1	4	2	15.78
	2.5	0	1	4	22.63	1	3	2	11.92
	3.0	0	1	4	22.63	0	1	1	5.92
0.01	1.5	2	6	11	68.54	11	17	8	50.78
	2.0	0	2	6	33.89	2	5	3	17.59
	2.5	0	1	6	30.94	0	3	2	12.06
	3.0	0	1	6	30.94	0	2	2	10.56

**Table 4:** Optimal Parameters and ASN, when  $\Upsilon=2$ ,  $r=10$ .

$\beta$	$r_2$	$r=10$							
		$a=0.5$				$a=1.0$			
		$C_1$	$C_2$	$g$	ASN	$C_1$	$C_2$	$g$	ASN
0.25	1.5	4	4	4	40.00	7	9	2	22.80
	2.0	1	1	2	20.00	3	4	1	12.58
	2.5	1	1	2	20.00	3	3	1	10.00
	3.0	1	1	2	20.00	3	3	1	10.00
0.10	1.5	0	3	2	46.33	10	13	3	39.65
	2.0	0	1	2	22.63	2	4	1	14.76
	2.5	0	1	2	22.63	2	3	1	11.32
	3.0	0	1	2	22.63	2	2	1	10.00
0.05	1.5	3	5	5	57.90	9	13	3	41.18
	2.0	0	1	2	22.63	1	4	1	15.78
	2.5	0	1	2	22.63	1	3	1	11.92
	3.0	0	1	2	22.63	1	2	1	10.46
0.01	1.5	1	6	5	70.44	11	17	4	50.78
	2.0	0	2	3	33.89	4	6	2	21.09
	2.5	0	1	3	30.94	0	3	1	12.06
	3.0	0	1	3	30.94	0	2	1	10.56

**4. Example:** If an experimenter would like to check the quality of the submitted lot using group acceptance sampling plan and he has the facility to accommodate more than one product for inspection. Suppose that the lifetime of products follows GIED with shape parameter  $\gamma=1$ . Let the test termination time ratio be  $a = 0.5$  and specified average life  $m_0$  of product is 1000 hours for this experiment. We will distribute five products to each tester. Further suppose that an experimenter wants to run an experiment for 500 hours and is interested to know whether the median life is larger than the specified life. It is further known that consumer risk is 25% when true median life is 1000 hours and producer risk is 5% when true median life is 2000 hours. Then design parameters from table 1 are obtained as  $c_1 = 0, c_2 = 2$  and  $g = 2$  for the above given data set. This suggest that a random sample of size 18.84 units should be drawn and if no units fails than we accept the lot and if more than 2 units fail then we reject the lot. If the number of failed items are 1 or 2 then we repeat the experiment.

**5. Comparative Study of RGAS Plan and Group Acceptance Sampling Plan:** The comparison between ordinary group acceptance plan and the proposed RGAS plan for GIED with  $\gamma = 1$ , can be done based on respective ASNs which have been placed in table 5. From table 5, it is observed that the proposed RGAS plan has smaller ASN for almost all values of  $r_2$  and  $\beta$ . Hence, the proposed plan is more efficient and time saving in testing the lot quality.

**Table 5:** Comparison of ASN Required in Two Group Acceptance Sampling Plans for  $\gamma=1$ .

$\beta$	$r_2$	$r=5$				$r=10$			
		$a=0.5$		$a=1.0$		$a=0.5$		$a=1.0$	
		GASP	RGAS	GASP	RGAS	GASP	RGAS	GASP	RGAS
0.25	1.5	55	46.71	65	53.41	60	51.40	70	56.81
	2.0	20	18.84	25	22.73	20	18.84	30	22.73
	2.5	10	10.00	15	12.57	10	10.00	20	12.57
	3.0	10	10.00	10	9.41	10	10.00	10	10.00
0.10	1.5	95	61.76	100	83.74	100	66.25	100	83.74
	2.0	30	25.01	35	24.81	30	25.02	40	24.81
	2.5	20	12.31	20	14.75	20	12.31	20	14.75
	3.0	15	12.31	15	9.41	20	12.31	20	11.32

**6. Conclusion:** In this paper, we initially proposed a repetitive group acceptance sampling plan based on the truncated life test while the lifetime of the products follows generalized inverted exponential distribution. We measure the item quality from its median life. The ideal parameters are determined for the proposed acceptance sampling plan by fulfilling both producer's and consumer's risks. Comparative study between the RGAS plan and group acceptance sampling plan are presented about as far as their ASN and this comparison discloses that the RGAS plan gives less average sample number than single acceptance sampling plan.

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## OXIDE BASED THERMOLUMINESCENCE PHOSPHORS: A REVIEW

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**Abstract:** Thermoluminescence has wide variety of applications in diverse fields like personal dosimetry, environmental dosimetry, clinical, medical research etc. There are number of commercial thermoluminescence dosimeters in the form of borates, oxides, sulphates, phosphates etc available at international level and are well known by different names for their particular observed dose range. Still there is a need to explore more sensitive materials that show linearity of TL response in the large range, materials which are energy independent, thermally stable and have low fading. Several TLD oxide materials have been reviewed and described in the present paper.

**Keywords:** Thermoluminescence, Dosimetry, Radiation, Glasses, Phosphors.

**1. Introduction:** The measurement of radiation doses is one of the important areas of research due to the fact that radiation above a permissible dose is harmful to human kind. Thermoluminescence (TL) also known as thermally stimulated luminescence is a very useful technique to estimate the quantity of absorbed dose. It is also used efficiently to determine the concentration and nature of the luminescence centers present in materials [1,2]. Practically, TLD (thermoluminescence dosimeter) badges are used for personal, environment, space, health and many more radiation monitoring applications [3-6]. Today, there are a number of commercial TL dosimeters readily available for users as TLD badges and are mostly based on oxides, fluorides and sulphates. However, each of these dosimeters has their own strengths and shortcomings in certain areas such as in the low or high radiation zones. For this reason continuous efforts have been made by the research community worldwide to develop new materials and to improve dosimetric properties of already available materials as efficient TLD material in the form of tissue equivalence (low  $Z_{\text{eff}}$ ) as well as high  $Z_{\text{eff}}$  that can be used in different areas with low or high levels of radiations [7-10]. In the present paper the oxide based materials have been discussed.

**2. Oxide Based TL Materials:** Although the TL phenomenon was studied in large number of materials, only few materials have found practical applications and are commercially available. One of important phosphors from dosimetry application point of view are oxide based phosphors that are discussed as follows:

**2.1  $\text{CaSO}_4$ :** The first reporting of thermoluminescence in the natural and artificially prepared material was in  $\text{CaSO}_4$  material by Wiedemann and Schimdt in 1895 [11]. The phosphor  $\text{CaSO}_4:\text{Mn}$  was known from as early as 1897 [12,13]. Watntanabe et al [14,15] made the systematic study of this phosphor for applications in dosimetry. This phosphor is highly sensitive, however TL signal of this phosphor fades very rapidly (fading >20% within 10 hrs. after irradiation) and hence it is not useful for long term dose measurement.  $\text{CaSO}_4$  doped with  $\text{Sm}^{3+}$  synthesized by Krasanya [16] was about twice sensitive than  $\text{CaSO}_4:\text{Mn}$ . It has isolated glow peak at 200°C which is very sensitive to light. The success in  $\text{CaSO}_4$  host as a TL material came when it was doped with Tm and Dy impurities. Yamashita et al [17,18] prepared RE-doped  $\text{CaSO}_4$  phosphors by recrystallization route in which all 14 rare earths (REs) are used. Analytical-reagent-grade  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$  and reagent-grade activator material were mixed in a proper ratio and dissolved in sulfuric acid to form saturated solution of  $\text{CaSO}_4$ . The mixed solution was kept at about 300°C by heating so that crystalline samples appeared as the acid evaporated.

Yamashita et al. further reported that out of all the 14 rare earths (REs) used for preparation of RE-doped  $\text{CaSO}_4$  phosphors,  $\text{CaSO}_4:\text{Dy}$  and  $\text{CaSO}_4:\text{Tm}$  showed the highest sensitivity with essentially a single peak at about 220°C. These two phosphors showed very less only 1-2% fading per month. Dose response of  $\text{CaSO}_4:\text{Dy}$  was reported to be linear up to 3000 R and supralinear above this exposure level, whereas  $\text{CaSO}_4:\text{Tm}$  was linear up to 300 R and supralinear above this exposure level. Ayyangar et al. [19] reported that the TL sensitivities of  $\text{CaSO}_4:\text{Dy}$  and  $\text{CaSO}_4:\text{Tm}$  prepared by the method suggested by Yamashita et al., were about 38 and 32 times, respectively, than that of  $\text{LiF:TLD-100}$ . A broad study about  $\text{CaSO}_4$  phosphor is reported by Lakshmanan [20]. Attempts have also been made by some other

researchers to boost the TL sensitivity of  $\text{CaSO}_4:\text{Dy}$  by co doping it with P [21,22], Ag [23] Zn, Cd [24] and Na [25]. However, only partial success was gained by these workers.  $\text{CaSO}_4:\text{Dy}$  and  $\text{CaSO}_4:\text{Tm}$  phosphors have excellent dosimetric properties such as low dose measurement, integration over long period, less fading and no sensitivity to light. Apart from this, these phosphors are easy to prepare in large scale. D.O. Junot et. al. [26] reported thermoluminescent analysis of  $\text{CaSO}_4:(\text{Tb},\text{Eu})$ . Recently, P. Kumar [27] synthesize highly TL sensitive  $\text{CaSO}_4:(\text{Dy},\text{Mn})$  phosphor by recrystallization method. It was reported that TL sensitivity of  $\text{CaSO}_4:(\text{Dy},\text{Mn})$  is 2 and 1.2 times  $\text{CaSO}_4:\text{Dy}$  and  $\text{LiF}:\text{Mg,Cu,P}$  (TLD-700H) respectively.

**2.2  $\text{SrSO}_4$ :**  $\text{SrSO}_4$  is reported to be another host lattice for different RE dopants like Dy, Tb, Ce for TL emission [28,29]. The role of  $\text{Eu}^{3+}$  and  $\text{Eu}^{2+}$  in  $\text{SrSO}_4$  were studied by Zhang et al. and they reported multiple emissions with different emission temperatures for both valence states of Eu [30]. A. Patle et al. [31] reported highly sensitive Eu doped  $\text{SrSO}_4$  nanophosphors for TL and OSL applications whose sensitivity is 1.26 times than that of commercial  $\text{Al}_2\text{O}_3:\text{C}$  phosphor.

Thermoluminescence (TL) characteristics of  $\text{SrSO}_4:\text{Eu}$  nanostructured phosphor under gamma excitation has been studied and their suitability for environmental radiation dosimetry applications was discussed by S. Jayasudha et al.[32]. Author also reported that the fading behaviour of  $\text{SrSO}_4:\text{Eu}$  phosphor is better than that of the standard dosimeters TLD-200 ( $\text{CaF}_2:\text{Dy}$ ) and TLD-400 ( $\text{CaF}_2:\text{Mn}$ ). The phosphor shows 5% fading after the first two weeks and 15% after one month on the other hand TLD-200 and TLD-400 have thermal fading rates of 16% in 2 weeks and 15% in 3 weeks respectively. The high sensitivity, reusability, linearity over a wide dose range etc. of the  $\text{SrSO}_4:\text{Eu}^{2+}$  make it an excellent candidate for low level environmental radiation monitoring. However, there are only a few reports on the systematic studies of  $\text{SrSO}_4:\text{Eu}$  as a TL material.

**2.3  $\text{Al}_2\text{O}_3$ :** Aluminium oxide (alumina) is found in natural mineral form as ruby and sapphire. It may be synthetically produced as either  $\gamma$ - alumina or  $\alpha$ -alumina (also known as corundum). Several research groups have tried to synthesize  $\text{Al}_2\text{O}_3$  doped with different types of dopants, and tested their suitability in radiation dosimetry. The dosimetric properties of  $\alpha$ - $\text{Al}_2\text{O}_3:\text{C}$  were first described by Daniels [33].  $\alpha$ - $\text{Al}_2\text{O}_3:\text{C}$  one of the most sensitive dosimeter was developed at the Urals Polytechnical Institute, Russia in 1990 [34].The sensitivity of this phosphor was about 40-50 times better than  $\text{LiF}:\text{Mg,Ti}$  which makes it important candidate for long term low dose measurement in environmental monitoring but light induced fading is main difficulty of this material [35] which must be controlled while using as a dosimeter. Mehta and Sengupta [36,37] prepared  $\text{Al}_2\text{O}_3:\text{Si,Ti}$  phosphor and explained its TL properties in 1976. The main TL peak observed at 250°C. The minimum detectable dose of this phosphor is few  $\mu\text{Gy}$  and its TL sensitivity is 5 times that of  $\text{LiF}:\text{TLD-100}$ . A relatively low sensitive  $\text{Al}_2\text{O}_3:\text{Mg,Y}$  TL phosphor was introduced by Osvay and Biro [38]. The phosphor show an intense dosimetric peak at 280°C, with a low intensity shoulder at 190°C.  $\text{Al}_2\text{O}_3:\text{Na, Ti}$  (0.7, 4.0 mol%) was reported by G.Portal [39,40]. The TL sensitivity of this phosphor is comparable to  $\text{LiF}:\text{TLD-100}$ . The main TL peak observed at 265°C. This phosphor show dose range from  $5 \times 10^{-2}$  to 10 Gy and shows saturation at  $10^3$  Gy. In 1993 P. Pokorny and A. Ibarra [41] reported TL characteristic of  $\text{Al}_2\text{O}_3:\text{Cr, Ni}$  phosphor. This phosphor shows an intense dosimetric peak at 330°C and its TL sensitivity is 150 times higher than TLD-100.  $\alpha$ - $\text{Al}_2\text{O}_3:\text{C,Mg}$  is used as promising dosimeter for use in two-dimensional dose mapping and real-time optical fibre dosimetry [42]. In addition, the luminescence lifetimes, kinetic parameters and dosimetric features of  $\alpha$ - $\text{Al}_2\text{O}_3:\text{C,Mg}$  have studied using TL [43-45].

**2.4  $\text{BeO}$ :** Beryllium oxide ( $\text{BeO}$ ) is a material with a long history in TL dosimetry.  $\text{BeO}$  a tissue equivalent material due to its low effective atomic number ( $Z_{\text{eff}}=7.13$ ), which is very close to that of the biological tissue ( $Z_{\text{eff}}=7.42$ ) has always attracted attention for applications in solid state dosimetry. Moore [46] was the first to observe TL in this phosphor. The complete dosimetric characterization of  $\text{BeO}$  was carried out by Tochilin et al [47] and Scarpa [48]. The drawback of this material is that it is extremely toxic, if inhaled leading to a condition known as berylliosis and it is very sensitive to light also. Secondly, the most part of the TL emission is in UV region (200-300) which requires PM Tube with quartz window. Out of all the  $\text{BeO}$  ceramics manufactured, Crase and Gammage [49] identified  $\text{BeO}$  Thermalox™ 995 as the most suitable for TL dosimetry. Dose response curve of the main dosimetric

peak (220°C) of BeO (Thermalox™ 995) is linear-supralinear-sublinear. The linear region extends from approximately 10 mR up to 100 R where it becomes supralinear. Sensitivity of BeO is comparable to that of LiF:Mg,Ti [50]. Recently, M.D. Petrenko et al. [51] reported TL study of BeO.

**2.5 Gd<sub>2</sub>O<sub>3</sub>:** Recently, R.K. Tamrakar [52] studied thermoluminescence behaviour of cubic Gd<sub>2</sub>O<sub>3</sub>:Yb<sup>3+</sup> phosphors with different dopant Yb<sup>3+</sup> ion concentrations. It was noticed that the integrated area of the curve for UV exposure increases with increasing Yb<sup>3+</sup> concentrations upto 4 mol% and then the TL intensity decreases further with increase in Yb<sup>3+</sup> concentrations. This decrease in TL intensity is due to the concentrations quenching which destroys the trap levels. Author also suggested that the prepared phosphor can be useful as a dosimeter for the estimation of gamma dose over a wide range.

**2.6 Mg<sub>2</sub>SiO<sub>4</sub>:Tb:** In spite of very high sensitivity possessed by Mg<sub>2</sub>SiO<sub>4</sub>:Tb not much work done on this phosphor. The sensitivity of this phosphor is about 60-80 times than that of LiF TLD-100. Hashizume et al [53] first described the preparation of this phosphor. Subsequent study was focused on various TL properties such as response to UV radiation [54], energy response [55], γ-ray induced sensitization [56]. Lakshmanan and co-workers [57, 58] have done detailed characterization of Mg<sub>2</sub>SiO<sub>4</sub>:Tb TL phosphor powder. Very recently detailed dosimetric characteristics of this phosphor are described by Prokic and Yukihiro [59]. The phosphor was subsequently produced on commercial scale and marketed by Kasei Optonix Ltd., Japan. Toryu et al. [60] reported that the gamma radiation sensitivity as well as the gamma: UV response ratio increase with increasing preparation temperature. A problem with Mg<sub>2</sub>SiO<sub>4</sub>:Tb is that it is highly light sensitive. Also, it is very difficult to synthesize. So, continuous research is going on to improve the properties of this material.

**3. Conclusion:** Different TLD oxide based materials have been reviewed. It is concluded that the studies of TL dosimetry oxide materials basically focus on the development of more efficient phosphors than the existing ones. The search for the new TL materials should aim at the simple glow curve, high range of TL response linearity and very low fading. The work is in continuous process to increase the sensitivity of the already existing materials and developing new materials for their applications in radiation dosimetry.

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## MULTI-LAYER OPTIMIZATION ALGORITHM

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**Abstract:** The optimization of experimental results has repeatedly posed major challenges for scientist and engineers. In this work, a systematic Multi-Layer optimization (MLO) scheme is proposed in conjunction with Particle Swarm Optimization (PSO) algorithm to locate a global optimum that fits a cost function. The technique utilizes SP-Lines to form 3D patches surfaces from experimental data in multi-layer fashion and incorporates a multi-layer search using PSO. The novel technique is illustrated and verified over two layers of experimental data to show its effectiveness.

**Keywords:** Data Representation, Multi-Layer, Optimization, Surface Generation.

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**Introduction:** Currently in literature, the optimization of experimental results has constantly posed major challenges for scientist and engineers. In such multivariate problems, use of non-linear techniques like DoE (design of experiments) is used to explore the interaction effects of experiment variables. The DoE is considered the most effective and economical technique to evaluate the individual and combined effects of experiment variables on output responses [1].

Other multivariate optimizing techniques exists; such as the Response Surface Methodology (RSM), which is a collection of statistical and mathematical methods, is well known as a useful method to analyze engineering problems based on both modelling and optimizing the response surface that is influenced by experiment variables [2]. Neural Nets (NN) and Genetic Algorithms (GA) are used to solve multi-objective optimum problems [3]. More techniques are found that uses Knowledge-based Learning Extreme Method (KLEM) with Cuckoo Search (CS) to determine the optimum points [4].

Historically, polynomials were used due to their attractive mathematical characteristics. Through the advent of computers splines have gained high importance. They were first used as a replacement for polynomials in interpolation, then as a tool to construct smooth and flexible shapes in computer graphics.

The complexity of optimization strategies increases when dealing with experimental data. In this work, a novel multi-layer optimization strategy that maybe used to deal with experimental data is proposed. The techniques utilize the well-developed generated surfaces that are widely used for modeling in aerodynamically constrained shapes. Once the data is fitted by such surfaces and arranged in multi-layers then newly developed search techniques are used to hunt for optimum points based on a cost function.

The generation of data fitted surfaces is possible using many of the well-developed techniques. Representations for surfaces such as polynomial surface patches and tensor product cubic splines or interpolation methods such as bilinear interpolation are very popular. Approximation of surfaces using variational methods and regression splines is another option. Segmentation of point measurements into surface patches are used by many researchers. Finally, registration of surfaces with point measurements are another field area of such surface generating techniques [5].

**Multi-Layer Graphing:** Piecewise linear approximations of experimental data require many pieces to express reasonable, realistic and smooth surfaces. On the other hand, the set of experimental data individual surface points would take large amounts of storage. Fitting a single formula for a surface if possible would be nice; but most of the time is not possible. Hence, a collection of surfaces patches that utilizes piecewise simple formulas might work with reasonable amount of storage. The disadvantage would be how to specify and render such surfaces patches.

Fitting surfaces to data point is of interest of many industries. Commonly use of splines for the development of modeling in the aircraft and automobile industries is undisputable [6] [7] [8] [9].

Surfaces maybe captured and defined by Parametric or Implicit formulas. A parametric representation of the form:

$$S(x, y, z) = \langle f(u, v), g(u, v), h(u, v) \rangle \tag{1}$$

enable us to span the surface space using only two independent variables, which make it attractive for generating meshes and polygons but hard for morphing and intersections. On the other hand, Implicit formulas of the form:

$$S(x, y, z) = 0 \tag{2}$$

are excellent for morphing and intersections but cannot be used easily for iterative schemes to span the surface space. Systematic methods to generate known curved surfaces are possible with sweeping and rotation. But for more complex surfaces one may approximate desired surface spaces by patches. Parametric, Polynomial, Bilinear, Bézier, B-Spline patches maybe used to generate surface patches.

In this work, cubic Splines will be used to represent experimental data and create a mesh of the unknown surface space. Once the mesh is constructed the generated surface patches borders will be used to encapsulate using a surface polynomial. Hence, a surface patch border is fitted using a cubic Spline with known border location that will be used as a constraint. The following equations maybe generated for the surface patch at the designated locations.

$$z = a_3x^3 + a_2x^2 + a_1x + a_0, \quad y = y_0 \tag{3}$$

$$z = b_3x^3 + b_2x^2 + b_1x + b_0, \quad y = y_1 \tag{4}$$

$$z = c_3y^3 + c_2y^2 + c_1y + c_0, \quad x = x_0 \tag{5}$$

$$z = d_3y^3 + d_2y^2 + d_1y + d_0, \quad x = x_1 \tag{6}$$

$$z = e_{30}x^3 + e_{20}x^2 + e_{10}x + f_{30}y^3 + f_{20}y^2 + f_{10}y + e_{21}x^2y + e_{12}xy^2 + e_{11}xy + e_{00} \tag{7}$$

After substitutions and rearranging the resulted auxiliary equations one may produce the following matrix equation, which will serve to evaluate the unknown polynomial coefficients presented in equation (7). The hard constraints depicted in equations (3-6) in terms of the data points is needed to guarantee a closed ends of the produced meshed structure.

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 & y_0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 & y_0^2 & y_0 & 0 \\ 0 & 0 & 0 & y_0^3 & y_0^2 & y_0 & 0 & 0 & 0 & 1 \\ 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 & y_1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 & y_1^2 & y_1 & 0 \\ 0 & 0 & 0 & y_1^3 & y_1^2 & y_1 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & x_0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & x_0^2 & 0 & x_0 & 0 \\ x_0^3 & x_0^2 & x_0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & x_1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & x_1^2 & 0 & x_1 & 0 \\ x_1^3 & x_1^2 & x_1 & 0 & 0 & 0 & 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} e_{30} \\ e_{20} \\ e_{10} \\ f_{30} \\ f_{20} \\ f_{10} \\ e_{21} \\ e_{12} \\ e_{11} \\ e_{00} \end{bmatrix} = \begin{bmatrix} a_3 \\ a_2 \\ a_1 \\ a_0 \\ b_3 \\ b_2 \\ b_1 \\ b_0 \\ c_3 \\ c_2 \\ c_1 \\ c_0 \\ d_3 \\ d_2 \\ d_1 \\ d_0 \end{bmatrix}$$

or in a more compact form using matrix notation the following is adopted.

$$Aq = w \tag{8}$$

Where  $A \in \mathbb{R}^{n \times m}$ ,  $q \in \mathbb{R}^{m \times 1}$ ,  $w \in \mathbb{R}^{n \times 1}$  and  $n=16$  and  $m=10$ . One may use Moor Penrose generalized inverse [10] to solve for the unknown surface polynomial coefficients, which may be computed using Singular Value Decomposition (SVD). For the matrix  $A \in \mathbb{C}^{n \times m}$  with rank  $r$ , the SVD is

$$A = SVD^* \tag{9}$$

Where  $U \in \mathbb{C}^{n \times n}$  and  $V \in \mathbb{C}^{m \times m}$  are unitary matrices, and  $D \in \mathbb{C}^{n \times m}$  is a diagonal matrix of the singular values,  $s$ , of the  $A$  matrix. The singular values are the square roots of the eigen values of the square matrices  $A^*A$  or  $AA^*$ , which are the same values, and the number of singular values is equal to the rank of  $A$ .

$$D = \begin{bmatrix} S & 0 \\ 0 & 0 \end{bmatrix} \quad (10)$$

where  $S$  is the  $r \times r$  of singular matrices. Rows  $\{(n - r) \dots n\}$ , and columns  $\{(m - r) \dots m\}$ , of the  $D$  matrix are full of zeros.

$$A^+ = VD^+U^* \quad (11)$$

where  $A^+ \in \mathcal{R}^{m \times n}$  and  $D^+ = \begin{bmatrix} S^{-1} & 0 \\ 0 & 0 \end{bmatrix}^*$  and  $S^{-1} \in \mathcal{R}^{r \times r}$  matrix with  $s_i^{-1} = \frac{1}{s_i}$  along the diagonals [11].

Finally, the solution to the matrix equation (8)  $q = A^+w$  is unique if  $A^+A = I$  (i.e. from the uniqueness theorem).

From the previous derivations, the piece-wise defined patch surfaces could be attained. Hence, the overall surface constitutes the collection or the union of the patched surfaces that are represented by Equation (7).

$$\mathbb{Z} = \cup_1^n z_i \quad (12)$$

**Particle Swarm Optimization:** The particle swarm optimization (PSO) has been shown to be an effective optima searching technique for difficult multidimensional none-convex problems (Kennedy 1995). Recently, the PSO has been successfully applied to solve large scale optimization problems in a diversity of fields. Particle Swarm Optimization was shown that for certain problems it actually outperformed Genetic Algorithms (GA) (Eberhart 1998). It is considered a stochastic evolutionary computational technique with a minimal computational effort when compared with GA.

Kennedy and Eberhart have discovered the Particle Swarm Optimizer while they were trying to model the social behavior of artificial life, such as bird flocking, fish schooling, ...etc. (Kennedy 1995). A good metaphor of the Particle Swarm Optimization (PSO) algorithm is to imagine a swarm of bees in a field searching for flowers. The objective of the swarms is to find the location of the most flowers. Basically, each bee will conduct a random search and it will memorize the densest location of flowers it encountered.

Also, by assuming that all the individual bees may share the information about their best findings of locations, then each bee will be guided by its own personal discovery and by the best location reported by the others. Consequently, by altering the direction of their trajectory to fly somewhere between the two locations, the bees will explore the field by overflying locations of greatest concentration and eventually will be drawn to the densest flower location (Robinsons 2004).

The particles are moving and sweeping the solution space intelligently and it also summarizes the used pseudo-algorithm. Each particle in the swarm tracks its position by means of two vectors; one accelerates the particle in the direction of its own and another towards a global best for the whole swarm (best of the bests). The advancement of the particles in the solution space is controlled by a simple kinematic equation of the form:

$$p_i(t + 1) = p_i(t) + \Delta t v_i(t) \quad (13)$$

Where the  $\Delta t$  is the advancement in time (increments) and  $p_i$  is the current location of the particle (i.e. the solution). On the other hand, the particles' velocities are updated during the search with the following formula:

$$v_i(t + 1) = wv_i(t) + c_1rand() (p_{iBest}(t) - p_i(t)) + c_2rand() (p_{Global} - p_i(t)) \quad (14)$$

Where  $w$  is a scalar that generates some form of momentum for the particle taken from the previous iteration. The value that is used in this paper is 0.75, however, this value could be changed dynamically as well (in an adaptive fashion). The constants  $c_1$  and  $c_2$  represent the emphasis toward the particle's best or toward the global swarm's best weighted by random terms. Typical values for these weights are within the interval [0 4], but good reported values in the literature of the scalars are  $c_1 = c_2 = 2$ . The local best is the best value of the solution attained by the particles and the global best is the best value of the solution attained by the whole swarm. The stochastic behavior of the PSO algorithm may be realized through the given two random sequences:  $rand() \in [0,1]$ . Please note that

the PSO algorithm is structured in such way it will not get stuck into local optima.

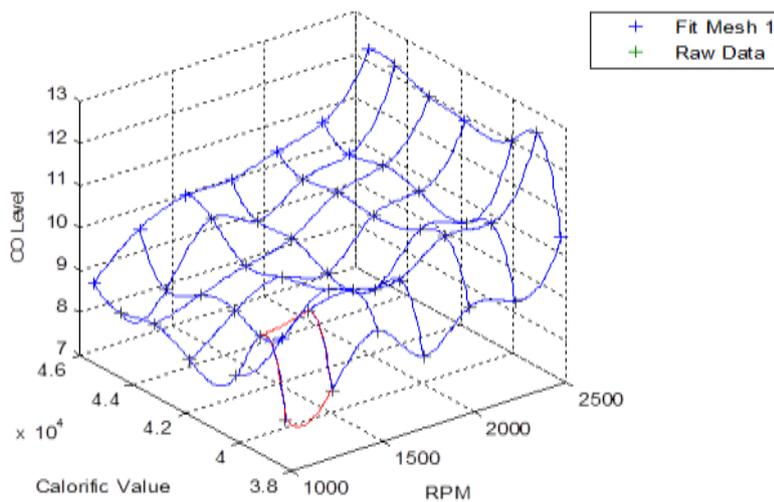
**Pseudo Algorithm**

- Step I:** Initialize position, velocity, local best, and global best of all the particle swarms
  - $p_i = rand() ; i = 1,2, \dots, n$
  - $v_i = rand() ; i = 1,2, \dots, n$
  - $p_{i\_Best} = p_i ; i = 1,2, \dots, n$
  - compute fitness function  $J_i$  for each  $p_{i\_Best}$  ;
  - $p_{Global} = p_{i\_Best}$  that corresponds to  $\min(J_i)$  ;
- Step II:** Repeat until fitness function of global position is acceptable or m iterations is reached
  - compute fitness  $J_i(p_i)$  ;
  - if  $J_i(p_i) < J_i(p_{i\_Best})$  then  $p_{i\_Best} = p_i$
  - $p_{Global} = p_{i\_Best}$  if  $\min(J_i(p_{i\_Best}))$
  - update particle velocity
  - $v_i = wv_i + c_1rand()(p_{i\_Best} - p_i) + c_2rand()(p_{Global} - p_i)$
  - update particle position  $p_i = p_i + \Delta tv_i$
  - loop step II
- Step III:** Optimal solution=the particles with best global fitness values

**Numerical Example:** To demonstrate the proposed technique let’s consider two sets of experimental data that requires the simultaneous optimization of using the following cost function.

$$\begin{aligned} \text{Min} \quad & J = \alpha CO + \beta HC \\ \text{Subject to} \quad & \text{Exp. Data} \end{aligned} \tag{15}$$

where  $\alpha$  and  $\beta$  are weights that maybe used to emphasize the importance of the CO or HC effects. Where it is of practical interest to study the performance of internal combustion engines using multi-component fuels. This application presents an experimental investigation into the effect of alcohol over Carbon Monoxide (CO) and Hydrocarbon (HC) emissions’ level. All the experiments were carried out under the same conditions (as much as possible) for uniformity and with variable speed conditions. Using experimental data and equations (3-7) one can construct a meshed patches of the two layers surfaces as depicted in Figures 1 and 2. While Figures 3 and 4 illustrates a high order single polynomial fitted surfaces using Matlab built-in functions. It is clear that the meshed patches have better representation of the experimental data.



**Figure 1:** Layer 1 Data Fitted Wire Mesh

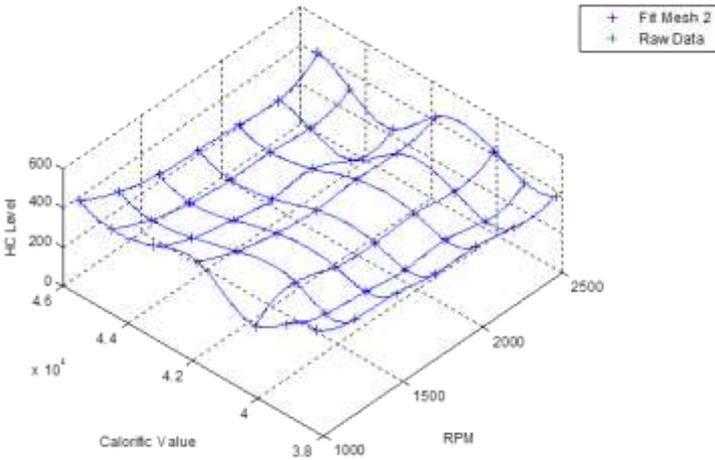


Figure 2: Layer 2 Data Fitted Wire Mesh

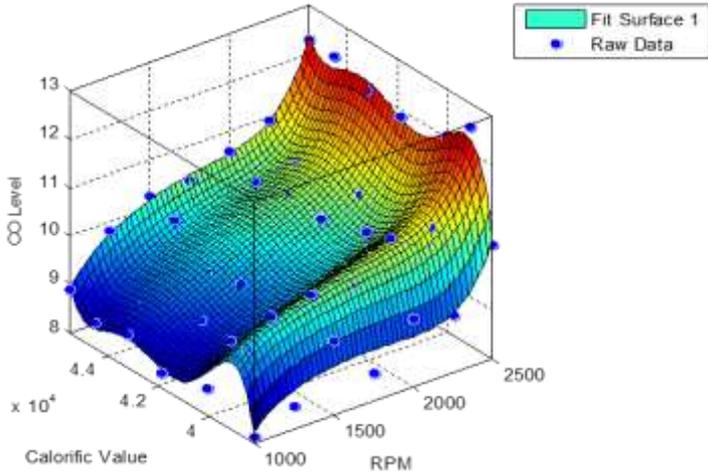


Figure 3: Layer 1 Data Fitted Surface

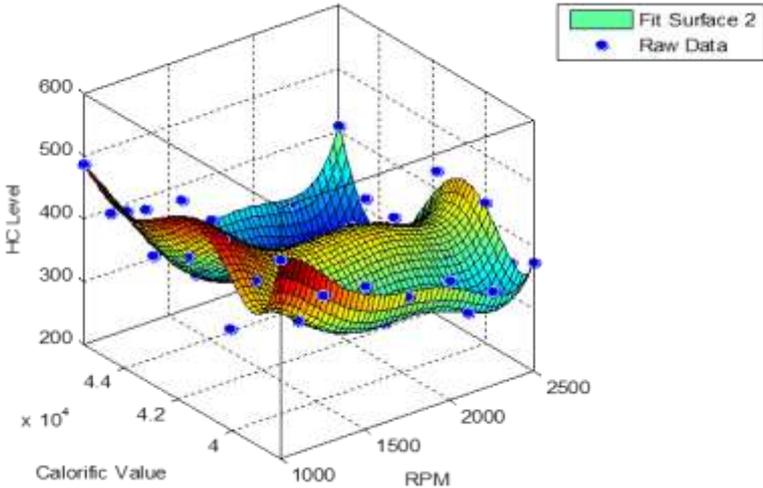


Figure 4: Layer 2 Data Fitted Surface

Once these patched surfaces are represented one can utilize the powerful search for optimum points using Particle Swarm Optimization (PSO) method. The PSO will search the two layers spaces simultaneously for the minimum levels of CO and HC that satisfies the cost function depicted by equation (15). The PSO search is restricted to the ranges of the RPM and the Calorific value parameters. The search reveals that the point  $\langle 1000, 41463 \rangle$  results in an optimized operation with a cost function value of  $\langle 33.1 \rangle$ . Finally, while searching normalized values of CO and HC must be used or the cost function weights must be selected carefully. In this example we have used  $\alpha=30$  and  $\beta=1$ .

Figure 5 shows the Particle Swarm Optimization iterative search within the two layers' surfaces spaces. A set of 100 Swarm Particles were used in the search. The speed of convergence is evident from the curve.

**Conclusions:** A technique that maybe used to optimize experimental gathered data is presented, which could be used in resolving major challenges for scientist and engineers in finding optimum points. A systematic construction of Multi-Layer optimization (MLO) scheme is derived and presented. Patched surfaces are used to capture the behavior of a collected experimental data. The overall surface is constructed from the patched pieces and a regional sets of formulas are identified, which will be used for iterative evaluations of a cost function.

Particle Swarm Optimization (PSO) algorithm was presented to locate a global optimum that fits a cost function within the constructed surfaces.

The novel technique was successfully applied over two sets of experimental data. SP-Lines were used to form 3D patches surfaces from the experimental data in multi-layer fashion and incorporated a multi-layer search using PSO. The proposed technique was illustrated and verified and showed its effectiveness. Finally, the proposed novel technique maybe used for complex data structures with a lot of layers.

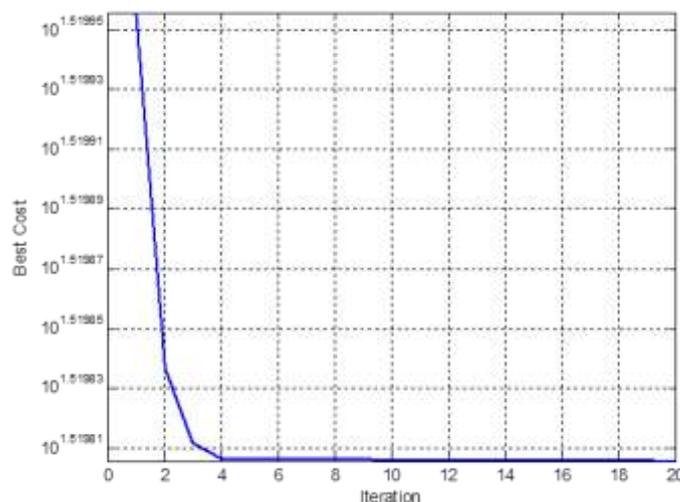


Figure 5: PSO Converging Iteration Curve

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Advances in  
Engineering, Technology  
& Chemical Sciences



## A LEXICON MODEL FOR SENTIMENT ANALYSIS

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**Abstract:** Sentiment analysis or opinion mining aims to use automated tools to detect subjective information such as opinions, attitudes, and feelings expressed in text. This paper pro-poses a novel probabilistic modelling framework based on Latent Dirichlet Allocation (LDA), called joint sentiment/topic model (JST), which detects sentiment and topic simultaneously from text. Unlike other machine learning approaches to sentiment classification which often require labelled corpora for classifier training, the proposed JST model is fully unsupervised. The model has been evaluated on the movie review dataset to classify the review sentiment polarity and minimum prior information has also been explored to further improve the sentiment classification accuracy. Preliminary experiments have shown promising results achieved by JST.

**Keywords:** Natural Language Processing, Semantic.

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**Introduction:** Sentiment analysis is a type of natural language processing for tracking the mood of the public about a particular product or topic. Analysis of sentiment[1], also known as opinion mining, involves building a system for collecting and examining opinions on the product in blog posts, comments, reviews or tweets. Sentiment analysis can be useful in several ways. In marketing, for example, it helps to judge the success of an ad campaign or the launch of a new product, determine which versions of a product or service are popular and even identify which demographics like or dislike specific features. Sentiment analysis has several challenges[2]. The first is an opinion word that can be considered negative in another situation in one situation. A second challenge is that people don't always express opinions in same way. Most traditional text processing relies on the fact that small differences between two pieces of text don't change the meaning very much. In Sentiment analysis, however, "the picture was great" is very different from "the picture was not great". People can be contradictory in their statements. Most reviews will have both positive and negative comments, which is somewhat manageable by analysing sentences one at a time. However, in the more informal medium like twitter or blogs, the more likely people are to combine different opinions in the same sentence which is easy for a human to understand [3, 6], but more difficult for a computer to parse. Sometimes even other people are having trouble understanding what somebody was thinking based on a short piece of text because it lacks context. For example, "That film was as good as its last film depends entirely on what the person expressing the opinion of the previous model thought.

This paper presents new experiments in automatically distinguishing prior and contextual polarity. Starting with a large stable of clues marked with prior polarity, we identify the contextual polarity of the phrases containing instances of those c. The first step classifies each phrase containing a clue as neutral or polar. The second step takes all phrases marked in step one as polar and disambiguates their contextual polarity (positive, negative, both, or neutral). With this approach, the system is able to automatically identify the contextual polarity for a large subset of sentiment expressions, achieving results that are significantly better than baseline [4]. In addition, we describe new manual annotations of contextual polarity and a successful inter-annotator agreement study [5].

**Related Work:** A more elaborate model is proposed by Strapparava and Valitutti[8, 9], who developed WordNet-Affect, an affective extension of WordNet. It describes direct affective synsets which denote emotions and indirect affective synsets which refer to emotion carriers. Direct affective synsets are classified into emotion, cognitive state, trait, behaviour, attitude and feeling. Indirect affective synsets are subdivided according to a specific appraisal model of emotions (OCC) that defines the effects of the emotion to the subjects (actor, actee and observer) semantically connected to it. For instance, if located in the past, the word victory can be used to express pride (related to the actor or winner) "and disappointment (related to the actor or" loser). If victory is a future event, hope is the emotion expressed. Their model is similar to ours, as both of us relate attitude to the event's participants. Their model, however, focuses on a rich description of various aspects and emotional implications for each

actor, whereas for each actor we infer a single positive or negative attitude. Their model seems to focus on the cognitive aspects of emotion whereas we aim to also model the linguistic aspects by including specifically the attitude of the speaker/writer in our model. Moreover, our description is not at the level of the synset but at the lexical unit level which enables us to differentiate gradations of the strength of emotions of the synonyms within the synsets. Moreover, it enables us to relate the attitudes directly to the syntactic-semantic patterns of the lexical unit. Frame net [18] is another important resource that is used in opinion mining and sentiment analysis [12]. Frame net (FN) is an online lexical resource for English that contains more than 11,600 lexical units. The aim is to classify words into categories (frames) which give for each lexical unit the range of semantic and syntactic combinatory possibilities. The semantic roles range from general ones such as Agent, Patient, and Theme to specific ones such as Communication Verbs Speaker, Message, and Address. FN includes frames such as Communication, Judgment, Opinion, Emotion Directed and Semantic roles such as Judge, Experiencer, Communicator that are highly relevant to the analysis of opinion mining and sentiment. However, subjectivity is not systematically and not (yet) exhaustively encoded in Framenet. For example, the verb gobble (eat hurriedly and noisily) belongs to the frame Ingestion (consumption of food, drink or smoke) and neither the frame nor the frame elements account for the negative connotation of gobble. Yet, we think that a resource like FN with rich and corpus based valency patterns is an ideal base/starting point for including subjectivity descriptions in frame structures that can then be used to recognize subjectivity relations in text. None of these theories, models or resources is specifically tailored for the subjectivity description of verbs. Studies which focus on verbs for sentiment analysis, usually refer to smaller subclasses like, for example, emotion verbs [15,16] or quotation verbs [3].

#### **Terminology:**

**Keyword Spotting:** Although the most naïve approach, keyword spotting's accessibility and economy make it popular. This approach classifies text by affect categories based on the presence of unambiguous affect words such as happy, sad, afraid, and bored. Keyword spotting is weak in two areas: it can't reliably recognize affect-negated words, and it relies on surface features. Although keyword spotting can correctly classify the sentence "today was a happy day" as being affectively positive, it is likely to assign the same classification to a sentence like "today wasn't a happy day at all."

**Lexical Affinity:** This approach not only detects obvious affect words [7], it also assigns arbitrary words a probable "affinity" to particular emotions. For example, lexical affinity might assign the word "accident" a 75-percent probability of indicating a negative effect, as in "car accident" or "hurt by accident."

**Statistical Methods:** This approach, which includes Bayesian inference and support vector machines, is popular for affect text classification. Researchers use statistical methods on projects such as Pang's movie review classifier and many others.

**Concept-Based Approaches:** These methods use Web ontologies or semantic networks to accomplish semantic text analysis. [25-27] This helps the system grasp the conceptual and affective information associated with natural language opinions. By relying on large semantic knowledge bases, such approaches step away from blindly using keywords and word co-occurrence counts, and instead rely on the implicit meaning/features associated with natural language concepts. Superior to purely syntactical techniques, concept-based approaches can detect subtly expressed sentiments. Concept-based approaches can analyze multi-word expressions that don't explicitly convey emotion, but are related to concepts that do.

**Methodology:** Corpus Collection: Using Twitter API we collected a corpus of text posts and formed a dataset of three classes: positive sentiments, negative sentiments, and a set of objective texts (no sentiments). To collect negative and positive sentiments, we followed the same procedure as in (Read, 2005; Go et al., 2009). We required Twitter for two types of emoticons: happy emoticons, sad emoticons. The two types of collected corpora will be used to train a classifier to recognize positive and negative sentiments. In order to collect a corpus of objective posts, we retrieved text messages from Twitter

accounts of popular newspapers and magazines, such as “New York Times”, “Washington Posts” etc. We queried accounts of 44 newspapers to collect a training set of objective texts.

**Training The Classifier:** The collected dataset is used to extract features that will be used to train our sentiment classifier. We used the presence of an n-gram as a binary feature, while for general information retrieval purposes; the frequency of a keyword’s occurrence is a more suitable feature, since the overall sentiment may not necessarily be indicated through the repeated use of keywords. Pang et al. have obtained better results by using a term presence rather than its frequency. We have experimented with unigrams, bigrams, and tri-grams. Pang et al. [10] reported that unigrams outperform bigrams when performing the sentiment classification of movie reviews, and obtained contrary results: bigrams and tri-grams worked better for the product-review polarity classification. We tried to determine the best settings for the micro blogging data. On one hand high-order n-grams, such as trigrams, should better capture patterns of sentiments expressions. On the other hand, unigrams should provide a good coverage of the data.

**Classifier:** We build a sentiment classifier using the multinomial Naive Bayes classifier. We also tried SVM and CRF however the Naive Bayes classifier yielded the best results. We train two Bayes classifiers, which use different features: presence of n-grams and part-of-speech distribution information. N-gram based classifier uses the presence of n-gram in the post as a binary feature. The classifier base on POS distribution estimates probability of POS-tags presence within different sets of texts and uses it to calculate posterior probability. Although, POS is dependent on then-grams, we make an assumption of conditional independence of n-gram features and POS information for the calculation simplicity.

We have tested our classifier on a set of real Twitter posts hand-annotated. We used the same evaluation set as in [11]. The characteristics of the dataset are presented in Table.

Sentiment	Number of samples
Positive	108
Negative	75
Neutral	33
Total	216

Table 3: The characteristics of the evaluation dataset

We compute accuracy (Manning and Schütze, 1999) of the classifier on the whole evaluation dataset, i.e.:

$$accuracy = \frac{N(\text{correct classifications})}{N(\text{all classifications})}$$

We measure the accuracy across the classifier’s decision (Adda et al., 1998):

$$decision = \frac{N(\text{retrieved documents})}{N(\text{all documents})}$$

**Conclusion:** Sentiment detection has a wide variety of applications in information systems, including classifying reviews, summarizing review and other real time applications. There are likely to be many other applications that is not discussed. It is found that sentiment classifiers are severely dependent on domains or topics. From the above work it is evident that neither classification model consistently outperforms the other, different types of features have distinct distributions. It is also found that different types of features and classification algorithms are combined in an efficient way in order to

overcome their individual drawbacks and benefit from each others merits, and finally enhance the sentiment classification performance. In future, more work is needed on further improving the performance measures. Sentiment analysis can be applied for new applications. Although the techniques and algorithms used for sentiment analysis are advancing fast, however, a lot of problems in this field of study remain unsolved. The main challenging aspects exist in use of other languages, dealing with negation expressions; produce a summary of opinions based on product features/attributes, complexity of sentence/ document, handling of implicit product features, etc. More future research could be dedicated to these challenges.

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## FALLING DETECTION WITH A SINGLE RGB CAMERA BASED-ON 2D POSE ESTIMATION (IN PROGRESS)

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SIRIPORN PANICHYAWAT

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**Abstract:** Falls can cause serious injuries in elderly people. Response time is crucial even right before falling to reduce a chance of death and serious injuries. This paper presents a non-invasive system for early detecting falls. Our approach uses only a commodity RGB camera. We estimate human-posed with CNN-based, then use the extracted pose to detect falls without any calibration. The result is promising. It can be used as additional awareness for smart home.

**Keywords:** Context-Aware Computing, Fall detection, RGB Camera, Smart Home

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**Introduction:** Because the growth of elderly population in the world, systems that associate with elderly healthcare are increasingly in demand [1]. A possible solution is to equip smartness to devices around us to work as monitoring and assisting tools for elderly people. Fall detection and assisting platforms are in the great interest because falls in elderly people are leading cause of injury at home [2]–[4]. It is also vital to help them as soon as possible. About half of those who do not get help after the accident are more likely to die within six months from bronchopneumonia, dehydration or hypothermia, although the person did not have physical injury [3]. In addition, it is in high risk that the person who have experience fallen once is 200% more likely to fall again [5]. The Kellogg international working group on the prevention of falls in the elderly defines a fall as "unintentionally coming to ground, or some lower level not as a consequence of sustaining a violent blow, loss of consciousness, sudden onset of paralysis as in stroke or an epileptic seizure"[6]. Despite many characteristics of falls, the one in common is the sudden reduction in the height of the head of a person and the person head close to the ground plane longer for a certain time [1], [2], [7]. As a result, in this study, we use these characteristics to train a computer to identify falling with a single unmodified RGB camera. In addition, we aim to detect as soon as a person is falling, not after s/he already lay on the ground.

Falling detection systems can be roughly categorized into two groups: wearable systems, and remote systems. *wearable systems* use accelerometers data stream to recognize abnormality in the signal. It can be simply set threshold for vertical position and velocity. If those features reach a certain points then it could consider a falls [8], [9]. More complex recognition systems use machine learning to classify falls based on unique fall patterns in the signals. Currently, fall detection with wearable sensors are quite accurate. If the situation where the system failed to detect falls, users can manually activate the device. The system can be automatically activated in case of no response within pre-set time limits. The downsides of this approach is that users need to wear the device at all time. Some users may experience discomfort or forget to wear them. In addition, it only works with a person who wear the device. Another limitation is such device require regularly charge, so it can be high maintainability burden to elderly people. *Remote fall detection systems*, on the other hands, make used of mounted devices such as web cameras, CCTV, or wireless receiver devices. This group of systems solve limitation that wearable systems have. Users do not require to wear the device; thus, it is less burdensome to them. Once the system is installed, it works with anyone in a camera viewing area. The drawbacks of this approach are less robustness comparing to wearable systems. Occlusion and lighting variation are still key factors to the robustness of the system. Moreover, the installation cost is high. Drawbacks of video-based system are privacy concern especially in private place such as inside a restroom and lower robustness of recognition system. Nonetheless, these limitations could be alleviated over time. The cost of installment is decreased over time because high-resolution cameras and CCTV are getting cheaper. Many homes have already installed such systems for home monitoring. In case of CCTV, it is most likely to be installed with some light source which is enough for most video-based algorithms. For privacy concern, the data can be internally extracted and analyzed inside a chip. The need of hardware capable of vision

processing are increasingly commonplace. Until then, a system implementer must enforce data security policy on to data stream such as processing data offline inside the unit, immediately blur face, encrypted data, and never send data to third-parties. In addition, the system could allow easy data access for users to manually manage. Nonetheless, video surveillance becomes more ubiquitous, and more cost-effective over time. One video stream can be more valuable when we discover more ways to use video stream data to do many useful things. Fall detection system can be one of the many features that uses this type of data stream. Considering all benefits, many of this limitation will be less and less concern in the nearly future. The remote systems are also suitable in public places, hospitals, robots, resident living, and smart homes.

This study, we present a video-based system. The key novelty of this system is to try to achieve human falling detection with a single unmodified RGB camera. Because the time of falling is crucial, we consider both velocity and position, to detect fall even before human reach the ground. By taking advantages of state-of-the-art deep learning-based 2D human pose estimation which is robust against lighting variation, occlusion, and camera angles [10], we could have a robust video-based fall detection system just a single camera.

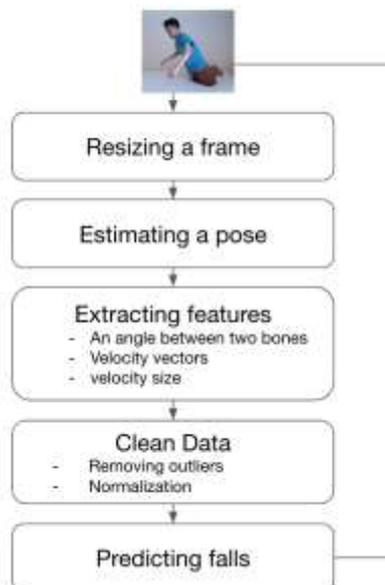
**Previous Works:** Many video-based systems use two common steps. First, the algorithm extracts a subject from background. Then, it uses various technique to identify whether the extracted subject is fallen. For instance, Lee and Mihailidis use video frames from a ceiling camera. They extract a human subject from background, and they vectorize silhouette of human shape determining whether the shape is like human fallen. Although this technique needs only single camera, it has some limitations. The camera must be mounted at ceiling, and inactivity area in a room, such as a bed, must be manually masked. Some occlusion is still a major limitation. Cucchiara and *et al.* proposed a solution for solving occlusion problem by using multiple cameras, assuming if the subject is occluded in one camera, it is not in another camera where is located in a different view. Williams, Ganesan, and Hanson propose multiple cameras system. The system has up to six cameras around a room to overcome occlusion [11]. They argued that using Support Vector Machine (SVM) is too expensive to identify human fall, so they used ratio of width and height of a bounding box around a human subject to determine a fallen person. Using width-height ratio becomes popular technique [12]–[14], although it has many drawback. First, using width-height ratio assumes that the human extraction algorithm works currently. A camera must locate at a side of a room, not at the location where CCTV usually mounted. Hazelhoff, Han, and H. N. de With used a gaussian multi-frame classifier on top of width-height ratio and head tracking data to train on 4,000 images. This technique can achieve more than 85% fall-detection rate [14]. Other approaches use head tracking aiming to overcome occlusion, both self-occlusion and occlusion through other objects [2], [15]. This assume that a head is less likely to be occluded compared to the rest of the body. Unfortunately, this system is not automatic system, since head area must be manually located and calibrated. For single camera approach, Belshaw and *et al.* uses an overhead single camera with high angle lens. The algorithm detects a moving object with optical flow assumed that it is a human. Then, the data is trained with three classifiers: support vector machine, neural network, and logistic regression. They found that neural network performs the best with a True Positive Rate of 92% and a False Positive Rate of 5%. Recently, Solbach and Tsotsos proposed video-based fallen detection using pose estimation. However, the system only detects when a subject is already fallen. The ability to distinguish a fallen or a sleeping person on the floor is unclear. Moreover, the system also required a stereo camera to make it works [16]. Our approach aims to use a single RGB camera by taking an advantage of deep learning-based 2D human pose estimation which is robust against occlusion, lighting variation, and camera orientation to determine a falling human.

**Approach:** We divide the process into three steps: preprocessing, processing, and model creation. The algorithm overview is shown in Figure 1: **Overview of the Approach**

The dataset consists of 20 videos of fall action in various angles front, sides, and back, and 20 videos of not falling such as walking, crouching in various angles. All videos are recorded in a room with well-lite condition for two seconds, 50FPS, and resolution of 1024 by 720. When a frame is acquired from a

camera, we scale the image resolution down to 320x244 pixels to reduce processing cost of the pose estimator, while it is still able to maintain reasonable accuracy. Then we pass all video frames to the pose estimator.

### Falling Detection Overview



**Figure 1:** Overview of the Approach



**Figure 5:** (Left) Not Falling Frame, (Right) Falling Frame

The current state-of-the-art of human pose estimator is based on deep learning. Two dominant human pose datasets are Microsoft COCO pose dataset and MPII Human Pose Dataset. COCO key points contain 250,000 persons labeled with 17 key points. Train and validation labeled key points are over 1.7 million points [17]. MPII Human Pose dataset contains 25,000 images, over 40,000 people with annotated body joints [18]. The human pose estimator in this paper is from [19]. The pre-trained model used in this paper is trained with COCO dataset using NVIDIA's CUDNN implemented with Tensorflow. Mobilenet Tensorflow predicting time is about 50 FPS for 360x244 video resolution on Nvidia GTX 1070 GPU, or about 10 FPS at 368x368 resolution in Jetson TX2 Embedded Board [20]. Then, we extract positions of all joints from the pose estimator for further processing.

**Extracting Features of Falling Detection:** Before training the model, we selected a three main features for detecting falls as follows:

1. an angle hip and neck key points
2. a velocity vector of the neck (key point 1 in Figure 2) related to previous frame
3. a velocity size of vector of the neck (key point 1 in Figure 2 ) related to previous frame

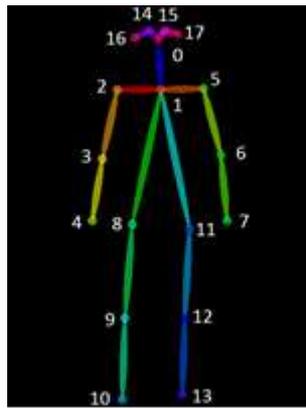


Figure 2: An Image of Pose Key Points [17]

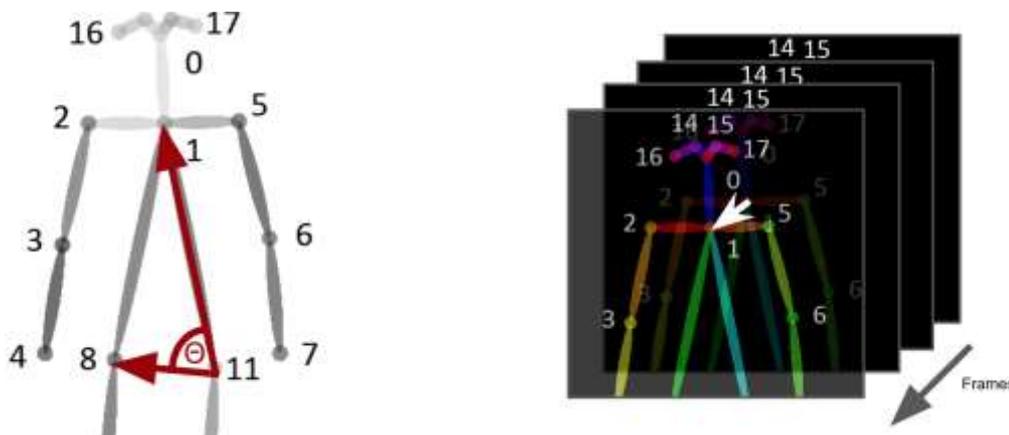
The reason we chose a neck as a point of reference is that it is the most stable part of the body. The part is more likely to be in a camera frame, and the pose estimation algorithm can recognize the point in most poses from various camera angles and some occlusion. Second, it is less likely to change on various activities involved hands and legs such as picking up objects. Furthermore, the neck position can change drastically when a person falling. This is important for detecting falls. In addition to a neck key point, hip points (key point 8 and 11 in Figure 2 ) are also great reference points, because of similar reasons. Therefore, we use them for calculating a velocity and angles. A velocity vector is calculated with the equation below:

$$\vec{v} = \frac{(x_c - x_p, y_c - y_p)}{t_f}$$

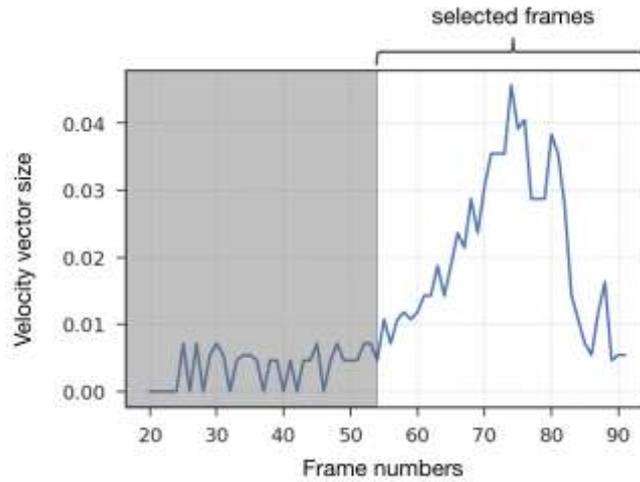
Where  $x_c$  stands for  $x$  of current frame, and  $x_p$  is  $x$  in previous frame. The same goes with  $y_c$  and  $y_p$ . Then they are divided by frame time  $t_f$ . Divided by frame time does also help to estimate the velocity when the pose estimator failed to recognize poses in some frames. The last feature is an angle between two hip and neck key points (**Error! Reference source not found.** left). It can be calculated by using two vectors  $v_{8,11}$  and  $u_{1,8}$  with the equation below:

$$\Theta = \arccos\left(\frac{\vec{u} \cdot \vec{v}}{\|\vec{u}\| \times \|\vec{v}\|}\right)$$

Then we remove noise and outliers by applying moving average with five-point window size. We only select frames around falling action (about 1-second video in **Error! Reference source not found.**) to machine learning models.



**Figure 3:** (Left) Hip and Neck Angle Vectors, (Right) Neck Key Points For Between Frame Velocity



**Figure 4:** Selected Frames Used For Training

**Training a model:** We extract features from previous section from our own dataset. We label falling and not falling to each frame manually approximately 2,000 data points for each label. Then, we shuffle the dataset and split it to 80 percent for a training set and another 20 percent as a test set. We train with decision tree binary classification; criterion is Gini with no cut-off tree depth. Minimal simple split is two and split the best value first.

**Table 1:** Fall Detection Model Performance

	precision	recall	f1-score
falling	0.91	0.86	0.88
not falling	0.94	0.96	0.95
average	0.93	0.93	0.93

The result shown in Table 1: Fall Detection Model Performance is promising. The precision and recall are balance (0.02 difference for not falling case, and 0.05 difference for falling case), and average accuracy is 93%.

**Table 2:** Fall Detection Model Accuracy Spat by Features

	$v_f$	$\ v_f\ $	angle	angle + $\ v_f\ $	angle + $v_f$	$v_f + \ v_f\ $	all three
accuracy	0.83	0.83	0.80	0.84	0.82	0.91	0.93

In Table 2,  $v_f$  represents a velocity vector between two frames.  $\|v_f\|$  represents size of  $v_f$ . angle represents an angle between a neck key point and hip key points. The result shows that a velocity vector (both raw vector and vector size) is important predictor. Furthermore, both raw vector and vector size must be included together. This is because a raw velocity vector can tell direction but does not tell intensity of a fall. On the other hand, vector size can signify the intensity, but it cannot identify direction. In addition, an angle between neck and hip key points is less a predictor compared to other two features; however, when considering the angle together with other two, the model can improve in performance, since it reduces fault negative (a user does fall but the model is failed to recognized it) which leads to improve recall from 76% to 86%.

**Discussion and Conclusion:** We have presented a single commodity camera fall detection based-on 2D pose estimator. The result shows that the neck key point velocity is a key feature to determine

falling. The angle between neck and hip key points is important to increase the model quality. Although the system performs promising results, there are many works that need to be done before implementing in real-world devices. First, 93% accuracy is still too low when considering that there is no manual activation by users if the model is mispredicted. The system needs to be trained and tested with various types of CCTV cameras with various lighting condition, occlusion, and camera angles. Lower sampling rate is still unclear on impacting predicting performance. This work is only the first step providing fast, robust, single camera solution for a falling detection system.

**Acknowledgment:** We would like to thank our volunteers: Nattapat Saenharn, Suchat Chancherngsilapakul, and Support Kraiwutthiwong, to provide falling videos, testing the system, and many supports for this study.

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## EFFECT OF RUBBERWOOD ASH ON PEAT SOIL

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**Abstract:** This work is a study of peat soil improvement using rubberwood ash in the southern border of Thailand (Narathiwat province) by collecting peat soil samples according to ASTM D1587 standard with thin wall tube sample for 3 holes, depth 1.5 meters from the original surface level. Studying physical properties such as water content, specific gravity, atterberg's limits and particle size analysis and standard compaction test for engineering properties. Improvement with rubberwood ash using unconfined compression test to unconfined compressive strength. It was found that peat soil mix with 35 wt.% rubberwood ash at 28 days for curing time was the highest compressive strength of 2.64 ksc. and as a basis for further improvement of peat soil.

**Keywords:** Peat Soil, Rubberwood Ash, Soil Improvement.

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## A PIC BASED STAND ALONE DATALOGGER AND IT'S PERFORMANCE EVALUATION

DR. A. GOSWAMI

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**Abstract:** Since the earliest years (1930–40s), computers were seldom dedicated to a particular task, but were far too large and expensive for most kinds of tasks performed by the cheapest embedded computers of today. Over time, however, the concept of programmable controllers evolved from traditional electromechanical sequencers, via solid state devices, to the use of computer technology. One of the first recognised modern embedded system (ES) was the Apollo Guidance Computer (AGC), developed by Charles Stark Draper at the Massachusetts Institute of Technology (MIT) Instrumentation Laboratory [1]. Since those early applications in the 1960s, ES have come down in price and there is a dramatic rise in processing power and functionality of such devices. The first microprocessor ( $\mu\text{P}$ ) (e.g. the Intel 4004) was designed for calculators and other small systems, but required many external memory and supporting chips. In 1978, National Engineering Manufacturers Association released a "standard" for programmable microcontroller ( $\mu\text{C}$ ), including almost all functionality of computer-based controllers, such as single board computers, numerical, and event-based controllers. This modern form of  $\mu\text{C}$  became the norm rather than the exception for almost all electronics devices by end of the decade. The integration of  $\mu\text{C}$  has further increased the popularity of ES based applications to any field, where traditionally a computer would not have been considered.

**Keywords:** Embedded, Microcontroller, Performance-Evaluation, Control, Quantile-Plot.

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## A REVIEW ON HYBRID TECHNIQUES USED FOR BRAIN TUMOR IMAGE CLASSIFICATION

ER.NEHA KAPILA, DR.GURMANIK KAUR

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**Abstract:** Brain tumor is the abnormal growth of brain cells inside the brain, and to determine the area occupied by tumor cell is a very complex task to be performed because of the compound structures in the brain. Magnetic resonance imaging (MRI) is very much helpful in the diagnosis of tumor cells as it is efficient in analysis of the soft tissue anatomy. Several stages are involved for detecting the brain tumor tissues namely: image preprocessing, segmentation, feature extraction and classification. This paper summarizes the study of various hybrid classification techniques of brain tumor from MRI images. The results obtained by using hybrid techniques are more accurate.

**Keywords:** MRI, Hybrid, Segmentation, Image Preprocessing, Feature Extraction.

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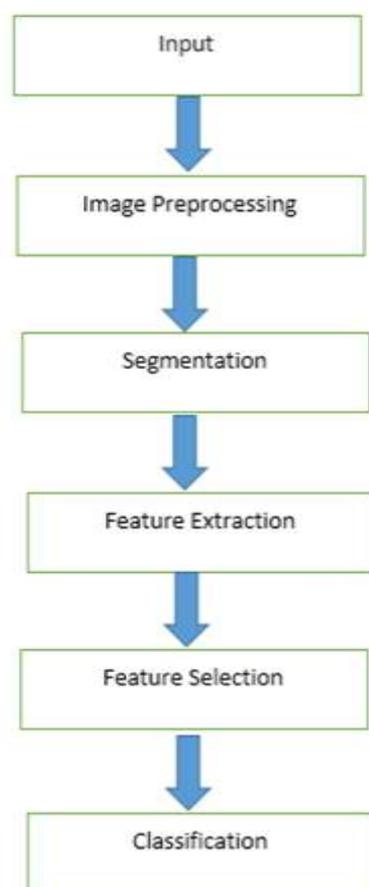
**I. Introduction:** The current time has extremely improved with the research and development of numerous techniques that are very much helpful in creation of the technological advancement in the medical field by slackening the diagnosis process with enhanced accuracy.

Brain tumor is gathering of cells that show unclear evolution in the brain. The tumors may be malignant or non-malignant. Precise diagnosis and former extrapolation of a tumor are critical tasks, and inadequate recognition of this leads to death.

Tumor/Cancer is mainly characterized by growth of abnormal cells beyond their usual boundaries that can then invade adjoining parts of the body and spread to other organs. It is the 2nd leading cause of death globally with 8.8 million cancer related deaths worldwide in 2015, annual no. of new cases is projected to rise from 14.1 million in 2012 to 21.6 million in 2030. It can affect almost any part of the body [24]. A brain tumor is a collection of abnormal cells in brain [12]. It is the one of the most hazardous diseases in the world that can affect the people including children. It may appear at different locations and can have various sizes and shapes. When benign or malignant tumors grow, they can cause the pressure inside skull to increase. This can cause brain damage and can be life threatening. Brain tumors are categorized as primary or secondary [1]. A primary brain tumor originates in brain and many primary brain tumors are benign. Some suspected causes of benign tumors include a painful wound at the tumor location, chronic inflammation, an unnoticed infection or diet. In adults, the most common types of brain tumors are gliomas and meningiomas [4]. A secondary brain tumor, also known as a metastatic brain tumor, occurs when cancer cells spread to brain from another organ, such as breast or lung. Secondary brain tumors are always malignant. Malignant tumors are formed from irregular cells that are highly unstable and travel via the blood stream, circulatory system, and lymphatic system the field of medical imaging gains its importance to increase in the need for automated and efficient diagnosis in a short period of time. Computer and Information Technology are very much useful in medical image processing, medical analysis and classification. The numerous types of medical imaging technologies based on noninvasive approach like; Ultrasound, MRI, Single-photon emission computed tomography (SPECT), computed tomography (CT) scan, (positron emission tomography) PET and X-ray are used. CT & PET are not generally used for creating images of brain cancer as it is used for other types of cancer. MRI is mainly used to diagnose brain tumor. It can be used to produce images of any part of the body and it provides an efficient and fast way for diagnosis of the brain tumor. More often Medical images are usually obtained by X-rays and MRI. The MRI image may contain both normal and abnormal image. MRI is essential tool in the clinical and surgical environment due to superior soft tissue differentiation, high spatial resolution, contrast and it does not use any harmful ionizing radiation which may affect patients [7], [13]. It is also an important diagnostic imaging technique for the early detection of brain tumor. MRI brain image plays an imperative role in assisting radiologists to access patients for diagnosis and treatment [1].

Computer aided diagnosis for automatic detection of brain tumors through MRI can provide highly accurate rebuilding of original image of tumor. The researchers require a methodical study of medical image processing which includes a various number of steps such as: image preprocessing, segmentation, feature extraction, feature selection and classification as shown in Fig 1. Each step involved in the process is equally important. In the first step i.e. image preprocessing the images are subjected to analysis and are processed for getting the clarity of the images. After the first step i.e. image preprocessing the images are classified or broken into various segments that is known as segmentation. The images are segmented for investigation of the tissues to get more clarity with the help of which the medical practitioner can carry on with his treatment in the exaggerated area or segment. The segmentation step is a tedious and mostly time consuming and it basically relies on variability of the operator. Therefore, it is necessary to develop an automatic approach that helps diminution in time utilization in this process. [2].Next step is the feature extraction i.e. each segment after the clustering process is examined with the help of proper algorithm and features are recognized i.e. tissues are studied to find out the tumor area weather it is a malignant or benign or neither of the above. All the data are then clubbed together and classified into groups. This process is termed as classification.

The main objective of this paper is to review recent articles on brain tumor detection using MRI analysis.



**Fig 1:** Block Diagram of MRI Image Classification

**II. Review of Literature:** Jothi G and Hannah Inbarani H [29] had proposed machine learning model for hybrid supervised feature selection algorithm, called TRSFFQR ( Tolerance Rough Set Firefly based Quick reduct) and applied it for classification of MRI brain images. Different categories of features were extracted from the segmented MRI images i.e. shape, intensity and texture based features. The authors used hybridization of two techniques; Tolerance Rough Set (TRS) and Firefly Algorithm (FA) to select the imperative features of brain tumor. Performance of the proposed algorithm was compared with the

Artificial Bee Colony (ABC), Cuckoo Search Algorithm (CSA), Supervised Tolerance Rough Set n- PSO based Relative Reduct (STRSPSO-RR) and Supervised Tolerance Rough Set n- PSO based Quick Reduct (STRSPSO-QR). It had been observed that the proposed technique was effective and improved with reference to the previous supervised feature selection algorithm.

Aparna .M. Nichet and S.A. Ladhake [10], have used data mining methods for classification of MRI images using modified hybrid technique based on Fuzzy C- means (FCM) and SVM classifiers. The first stage in the algorithm was noise reduction using median filtering (FCM). Fuzzy C-means was used for segmentation of images to detect the suspicious region and GLCM (gray level co-occurrence matrix) feature was extracted from the brain image. They have applied support vector machine (SVM) technique to classify the brain MRI images. The authors had proved that the hybrid methodology combining FCM and SVM for classification gave accurate result for identifying the brain tumor. The obtained values for accuracy, sensitivity, specificity were 100% respectively.

Jayachandran and R. Dhanasekaran [19], have proposed a hybrid algorithm for recognition brain tumor in Magnetic Resonance pictures utilizing measurable highlights and Fuzzy Support Vector Machine (FSVM) classifier. In the first stage anisotropic filter was applied for noise reduction and to make the image suitable for extracting features. In the second stage the texture features related to MRI images are obtained. In the third stage, the features of magnetic resonance images are reduced using principles component analysis to the most essential features. At the last stage, the Supervisor classifier based FSVM was used to classify subjects as normal and abnormal brain MR images. Classification accuracy 95.80% had been obtained by the proposed algorithm

Yudong Zhang and Zheng chao Dong, [39] have proposed a hybrid technique for MRI brain image classification. A neural network (NN) based method was used to classify the given MR brain image as normal or abnormal. The method first employed wavelet transform to extract features from images and further applied the technique of principle component analysis to reduce the dimensions of features .The reduced features were then applied to a back propagation (BP) NN, further conjugate gradient (SCG) was adopted to find the optimal weights of the NN. The classification accuracy was found to be 100% and the computation time per image was 0.0451s.

Sanjeev Kumar and Chetna Dabas [38], proposed brain tumor from MR Images using discrete wavelet transform (DWT) for extraction of features, Genetic algorithm for diminishing the number of features and SVM) for brain tumor classification. Parameters used for analyzing the images were given as: entropy, smoothness, root mean square error (RMS), kurtosis and correlation. The results showed that hybrid approach offered better performance by improving accuracy and minimizing the RMS error. The linear accuracy varies from 80% to 90%.

El-sayed A El-dahshan and Abdel- Badeeh M. Salem [37], had proposed a hybrid technique for the classification of the magnetic resonance human brain images. The proposed hybrid technique used three stages, namely, feature extraction, dimensionality reduction, and classification. In the first stage, the authors had obtained the features related with MRI images using discrete wavelet transformation (DWT). In the second stage, the features of magnetic resonance images (MRI) were reduced using principle component analysis (PCA) to the more essential features. In the classification stage, feed forward back propagation artificial neural network (FP- ANN) and k-nearest neighbor (k-NN) classifiers were developed. The classification rate obtained was 95.6% and 98.6% by the FP-ANN and K-NN approach respectively.

El-Sayed Ahmed El-Dahshan and Tamer Hosny [39], have proposed a hybrid technique for the classification of the magnetic resonance images (MRI). The proposed hybrid technique consisted of three stages, namely, feature extraction, dimensionality reduction, and classification. In the first stage, they obtained the features related to MRI images using DWT. In the second stage the features of magnetic resonance images have been reduced using PCA to identify the more essential features. In the classification stage, two classifiers were developed. The first classifier was a feed - forward back

propagation artificial neural network (FP-ANN) and the second classifier was K- nearest neighbor (K-NN). A classification rate of 97% and 98% had been obtained by FP-ANN and K-NN, respectively.

P. Rajendran and M. Madheswaran [36], had proposed hybrid medical image classification using association rule mining with decision tree algorithm. In pre-processing they used two techniques median filter and morphological operation for reducing noise and blurring. In edge detection, the segmentation process used was canny edge detection technique; it was also called Gaussian function that segmented the given image into number of objects and stored in the transactional database. Furthermore decision tree classifier used for classification had given an accuracy of 95% and sensitivity of 97%.

Parveen and Amritpal Singh [34] had proposed a new hybrid technique based on support vector machine (SVM) and the fuzzy c-means for brain tumor classification. In this algorithm image was enhanced with the help of contrast improvement and mid-range stretch. Double thresholding and the morphological operations were used for the skull stripping. The Fuzzy c-means (FCM) clustering was used for the segmentation of image to detect suspicious region in the brain MRI image. Grey level run length matrix (GLRLM) was used for the extraction of the features from the brain MRI image, after which the SVM method was used to classify brain MRI images. Performance was measured on the basis of accuracy, sensitivity & specificity. For linear kernel function accuracy achieved was 91.66%, sensitivity was 83.33% and specificity was 100%.

**III. Conclusion:** The technological advancement in the field of image processing has resulted improvement in diagnostic accuracy. In future hybrid methods can be produced that may provide very good results in enhancing, detecting & segmenting the brain tumor from MR images.

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## INTELLIGENT VISION EXTRACTION: A REVIEW

DAVINDER SINGH, MARTINA, NAVPREET KAUR

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**Abstract:** In 1995 everyone in tech wanted a slice of the dot-com boom, but today, fields like artificial intelligence (AI), machine learning (ML) and big data drive the tech venture capital (VC) of the world to dig into their pockets. Computer vision is at the intersection of all these data-driven innovations. While uses for computer vision are well-known within the tech world, the term is still virtually unknown to the general public, even though many of them are already benefiting from it.

**1. Introduction:** Humans use their eyes and their brains to see and visually sense the world around them [8]. PC vision is the science that plans to give a comparable, if worse, ability to a machine or PC. As human, we perceive the three-dimensional structure of the world around us with apparent ease [3]. Think of how vivid the three-dimensional percept is when you look at a vase of flowers sitting on the table next to you. You can tell the shape and translucency of every petal through the unpretentious examples of light and shading that play over its surface and easily portion each blossom from the foundation of the scene (Figure 1).



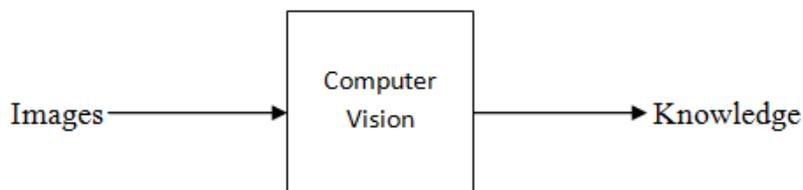
**Figure 3:** Image Visualization

Figure 4: The human visual system has no problem interpreting the subtle variations in translucency and shading in this photograph and correctly segmenting the object from its background.

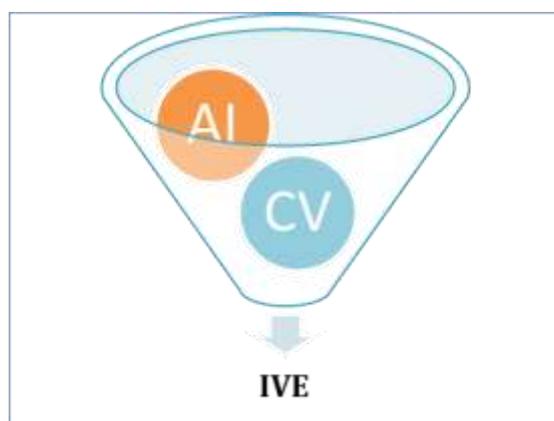
Computer vision is concerned with the automatic extraction, analysis and understanding of useful information from a single image or a sequence of images. It involves the development of a theoretical and algorithmic basis to achieve automatic visual understanding [1]. It is closely connected with man-made brainpower, as the PC must decipher what it sees, and afterward perform suitable investigation or act as needs be.

As a logical control, PC vision is worried about the hypothesis and innovation for building counterfeit frameworks that acquire data from pictures or multi-dimensional information. Different parts which once in a while are depicted as having a place with man-made brainpower and which are utilized in connection to PC vision is design acknowledgment and learning techniques[6]. This technique has been used successfully to detect or to characterize abnormalities on digital images.

## 2. Role of AI in Computer Vision



One of the most powerful and compelling types of AI is computer vision (CV) which you've almost surely experienced in any number of ways without even knowing it. Artificial Intelligent (AI) can gather new facts, link scattered but conceptually associated data and gives higher-level algorithms essential for managing complicated systems [9]. *It can be used for exploring information placed on SW through ontology that clearly determine and define what agents necessitate to know to execute a task. The combination of two innovative technologies is called Intelligent Visual Extraction (IVE).*



**Figure 2:** Intelligent Visual Extraction (IVE)

Artificial intelligence PC vision and picture acknowledgment is intended to accomplish a particular objective by speaking with people by perceiving environment. Where PC vision gives it the feeling of prospects, picture acknowledgment helps in understanding the physical universe around us. Another essential piece of AI is Visual perception and examination. It comprehends to discover outwardly accurate and comparative matches to a picture from a database of pictures. Artificial intelligence is immaculate in reproducing the most regular method for giving flawless visual indexed lists. AI can not only name the person but can also perceive their information. Thus AI detects the information in person such as age and genre from a given static files.

**3. Applications of Computer Vision:** With the rapid growth of technology the computer vision plays an important role in every field'.

**3.1 Image Motion Capture:** A comprehensive survey of computer vision-based human motion capture literature from the past two decades is presented [5]. The focus is on a general overview based on taxonomy of system functionalities, broken down into four processes: initialization, tracking, poses estimation and recognition until recently the computer graphics field has been mostly interested in visual realism<sub>3</sub> and personalized human models, while the motion capture community has been more interested in spatial accuracy of the human models. We expect that the commercial interest in both fields will accelerate the development in human modeling and make the two fields approach and benefit from each other. The applications of human motion capture are numerous and it is expected that we

will see a continuous growth in the resources devoted to this topic and hence that interesting new results in spite of everything will appear in the not too distant future.

**3.2 Retail Security:** Amazon recently opened to the public the Amazon Go store where shoppers need not wait in line at the checkout counter to pay for their purchases. Located in Seattle, Washington, the Go store is fitted with cameras specialized in computer vision. It initially only allowed Amazon employee shoppers, but later welcome to public beginning in early 2019s [5]. The innovation that keeps running behind the Go store is gotten Just Walk Out. As appeared in this one-minute video, customers initiate the IOS or Android cell phone application before entering the entryways of the store.

**Image Reorganization:** The advances and capabilities of image recognition that are now possible thanks to deep learning neural networks and cheaper and faster computing power have changed the game, but these brilliant algorithms are nothing unless they have access to reams and reams of picture data to train on [10]. From medical images to faces to hugs, the vast majority of pictures that could be used for training data is proprietary and in the hands of two behemoths: Google and Facebook. Considering the amount of sharing and uploading that's taking place on those companies' consumer platforms, this trend shows no signs of slowing down.

**3.3 VR and AR Need Computer Vision:** Some believe virtual reality (VR) and augmented reality (AR) are over-hyped at the moment and that computer vision efforts being put into these technologies are a waste of energy [2]. However, most people I've spoken with believe both VR and AR are here for the long term and that, in order to advance, they will need high-quality computer vision capabilities (such as using image recognition to improve "interactive" forms of VR).

**3.4 Automotive Applications:** PC Vision could have a genuine effect in the car business by adding imperative wellbeing highlights to our vehicles. On the off chance that a vehicle could recognize threat, it could stop before a mishap occurs and spare endless lives and property. It is as of now being utilized in driver help frameworks to recognize basic items, for example, street paths, traffic signs, and street limits. All autopilots incorporate these capacities, yet are just usable in dull conditions, with little variety, for example, thruway traffic. Even in the event that you don't purchase a self-driving vehicle, on the off chance that you care about security, while assessing a vehicle, these are a portion of the highlights you should put on your obligatory rundown.

#### 4. Computer Vision System

**4.1 StopLift:** In retail security specific to groceries, Massachusetts-based StopLift claims to have developed a computer-vision system that could reduce theft and other losses at store chains. The company's product, called StopLift, is a system that detects checkout errors or cashiers who avoid scanning, also called "sweethearting." Sweethearting is the cashier's act of fake scanning a product at the checkout in collusion with a customer who could be a friend, family or fellow employee<sup>2</sup>.

**4.2 Waymo:** One company that claims to make driving safer is Waymo. Formerly known as the Google self-driving car project, Waymo is working to improve transportation for people, building on self-driving car and sensor technology developed in Google Labs<sup>3</sup>.

**4.3 Slantrange:** Slantrange claims to offer computer vision-equipped drones that are connected to what the company calls an "intelligence system" consisting of sensors, processors, storage devices, networks, an artificial intelligence analytics software and other user interfaces to measure and monitor the condition of crops. At 120 meters above ground level, the camera has a resolution of 4.8 cm/pixel. However, its website notes that flying lower provides better resolution [7].

**4.4 Mitek Systems:** Mitek Systems offers image recognition applications that use machine learning to classify, extract data, and authenticate documents such as passports, ID cards, driver's licenses, and checks.

**4.5 Gauss Surgical:** Gauss Surgical has developed blood monitoring solutions that are described to estimate in real-time blood loss during medical situations. This solution, the website reports, maximizes transfusions and recognizes hemorrhage better than the human eye [11].

**5. Conclusion:** PC vision applications have risen in more ventures, albeit some have embraced the innovation quicker than others. Whatever PC vision innovation exists keeps on depending on the human component, to screen, break down, decipher, control, choose and make a move.

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## AN EFFICIENT ROUTING PROTOCOL FOR SHORTEST PATH SELECTION IN MOBILE ADHOC NETWORKS

GURJEET SINGH, PROF (DR.)VIJAY DHIR

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**Abstract:** Mobile Adhoc Network (MANET) helps us in setting up a network of mobile nodes like laptop, smart phones, tablet etc. without the need of any infrastructure. We can develop a temporary network in the battle field, forest, hilly area, meeting rooms, disaster area etc. The nodes in this network can move freely and change their position and thus the topology of the network at any time. Nodes are battery operated and resource constrained. MANET uses wireless media for data communication. In this paper we proposed an efficient routing protocol for shortest path selection in mobile adhoc networks and that is simulated with other protocols on the basis of throughput, packet loss and end to end delay.

**Keywords:** Routing Protocols, NS-2, MANET.

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**1. Introduction:** The wireless network is a network setup which uses radio frequency signals for communication among nodes of network [3]. It can be a Wi-Fi network, a wireless LAN, a Mobile Ad hoc network (MANET) or a Vehicular Ad hoc network (VANET). Nowadays the wireless ad hoc networks are getting popular for setting up network in laboratories, meeting rooms, hostel building etc. as they are easy to setup and no cabling or pres existing infrastructure is involved[2]. The battery operated nodes like laptop, tablet, smart phone etc. can be both an end system as well as a router in such network.

**2. Routing in MANET:** Routing is one of very important basic operations of any network[3]. Routing is a process of searching a path for a packet on which it travels to reach from its source to destination. Routing techniques are designed based on the architecture and characteristics of the network [8]. Mobile adhoc network are wireless network with all or some mobile nodes. MANET doesn't have any wireless router or access point. Each node acts as a router to send or receive data packets to or from the other nodes. In a MANET, the node uses multihop routing for communication. The following unique characteristics of the mobile adhoc network make routing very challenging:

- 1. Asymmetric links:** In MANET, the radio signals are used as a communication media. Two nodes can communicate with each other through radio signal. The wireless link between two nodes is not always bidirectional. Meaning, if a node A sends data to node B, it is not always necessary that node B can also send data to node A. This is due to the moving nature of the mobile nodes that breaks the communication link in-between. Due to such link routing will be very difficult [2].
- 2. Low bandwidth:** The wireless channels use for MANET is low bandwidth channels. They are also shared by all nodes. The routing should be designed in such a way that it will add minimum routing overhead and spare more bandwidth for data transmission [2].
- 3. Resource constrained nodes:** The nodes in MANET are battery operated. To ensure long life of the node, Routing protocol should be energy efficient.
- 4. Dynamically changing topology:** It is a major problem while designing routing protocols for MANET. As the network topology constantly changing with time it is very difficult to update routing table or link information frequently without introducing network traffic or computing overhead.
- 5. Interference:** Due to usage of wireless media, one transmission may affect or interfere other transmission in the same radio range. The nodes within same radio range can overhear the communication of each other. This should be taken care while designing routing protocols for security reasons [8].

The all routing protocols designed for MANET are mainly classified into two broad categories: proactive routing protocols, and reactive routing protocol (shown in following figure 1.1)

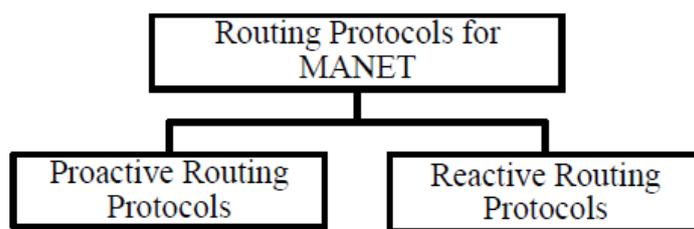


Figure 1.1: MANET Routing Protocols

**2.1 Proactive Routing Protocols:** It is a table driven routing protocol. Proactive routing protocols maintain precise information about routes in routing table on each node. It tries to evaluate all existing routes in a network and continuously update the routing table accordingly. Each node maintains up to date information towards all destinations and periodically broadcast this information to the entire network [9]. In this type of protocol when source node has data to send to any destination, route to that destination already found in its routing table and can immediately be used. This makes data transmission fast. For maintaining up-to-date routing information on each node introduce a huge overhead in the network. Some of the most popular proactive routing protocols are DSDV and OLSR [10].

**2.1.1 Destination Sequence Distance Vector (DSDV):** It is a table driven routing scheme. The contribution of this algorithm is to solve count to infinity problem. Each entry in the routing table has a unique sequence number. If a link is being used then the corresponding sequence number is even, otherwise corresponding sequence number is odd[11]. The sequence number is generated by destination node and sent to all with a next update message. Route information is distributed among nodes of the network by sending the whole route table periodically by each node and update information more frequently. Each node maintains a route table storing route towards all the nodes of the network. The entries in the route table are destination node, next hop node, total hops for that destination, sequence number, and install time. The example of the DSDV routing table is shown in figure 1.2.

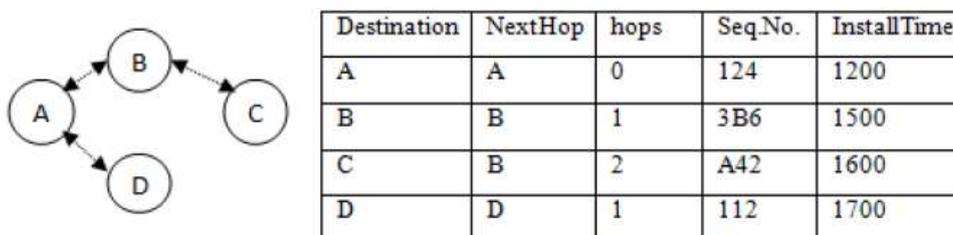


Figure 1.2: Example of DSDV Routing Table

**2.1.2 Optimized Link State Routing (OLSR):** This protocol is based on link state routing algorithm [12]. It is also a table driven algorithm just like DSDV [13]. To maintain changes in network topology, periodically messages are exchanged among nodes of the network. OLSR is an optimal way of implementing link state routing. To optimize link state routing, OLSR reduces size of announcement messages/control packets and number of transmission used for flooding the message in whole network [12]. OLSR uses a multi point selector to identify multi point relay (MPRs) nodes who flood the message to all nodes of the network. It is not necessary to broadcast messages to all the nodes. Instead, the node multicast messages to MPRs. The MPRs are the nodes in network selected in such a way that they are connected with all nodes of the network [13]. Thus MPRs used to control number of transmission of link update messages when flooding. We can use this protocol with a large number of nodes in MANET. The limitation of this protocol is, they assumes that the link between nodes are bi directional which is not always true with wireless media (radio frequency signals). Also, sometimes the removal of redundant flooding becomes problematic when it is used with a network with large packet drop rate.

**2.2 Reactive Routing Protocols:** Reactive protocols search for a route when needed. They are not maintaining route information on each and every node of the network. The search for a route is initiated by flooding a route request packet in the network when needed. They don't have the overhead of maintaining the global routing table [13]. They quickly react to topology changes of the network due to movement of the nodes. Though there are advantages of reactive routing, they are having some limitation also. They introduce network traffic due to flooding mechanism. The route finding process takes more time compared to proactive routing. Some of the most popular examples of reactive routing protocols are DSR and AODV.

**2.2.1 Dynamic Source Routing (DSR):** It computes and maintains the route when needed. In this scheme the sender node will initiate the route searching process, when it has data to send to any destination. As a result of this search, sender obtain a complete sequence of nodes travelling through which packet can reach to the destination. This node sequence is stored in a packet header and used by each node forwarding a data packet to the next node until the destination node is reached [13]. There are two stages of DSR: route discovery and route maintenance. A source node starts route discovery by broadcasting route request packet which is received by all the nodes available in its radio range. The destination node receives this packet and send route reply packet to source node with list of sequences of nodes from source to destination. While route is in use the source node monitors the link status of the whole route. This is called route maintenance. If any link break found during the monitoring, route discovery process started to discover the new route. In DSR, the route is a part of the packet, so there is no problem of loops.

**2.2.2 Adhoc On demand Distance Vector (AODV):** In this routing scheme, the route from source node to destination node is discovered only on demand. AODV uses the concept of distance vector routing protocol [13]. It solves count to infinity problem using sequence number with each update message. Actually AODV uses features of both DSDV and DSR routing protocols. It uses on demand route discovery and route maintenance processes from DSR and hop by hop routing and sequence number from DSDV. In this routing each node maintains a route table which stores entries for all active routes toward destinations through neighbours and two counters: broadcast ID and sequence number. When a node wants to send data to any destination, it will search for a valid route toward the destination node in its route table. If route found, node will use that route for sending data packets. Otherwise the node initiates a route discovery process by incrementing its broadcast id and broadcast route request packet (RREQ) to its neighbours. RREQ has source address, source sequence number (broadcast id), destination address, destination sequence number and hop count fields. The broadcast id and source address uniquely identifies the RREQ. On receiving an RREQ, the neighbour nodes check for valid route toward the destination nodes mentioned in the RREQ in their routing tables. If any neighbour node has a valid route to the destination node, it creates RREP packet and sends it back to the source node on the same path from where the RREQ comes. If no valid route available at any neighbour, they further broadcast RREQ to their neighbours. While RREQ travels from one node to other nodes, each node sets up a reverse path towards source node by recording address of node from where RREQ comes. This way of keeping track of the path is called reverse path setup.

**2.2.3 Wireless Routing Protocol (WRP):** The Wireless Routing Protocol (WRP) is a proactive unicast routing protocol for MANETs. WRP uses an enhanced version of the distance-vector routing protocol, which uses the Bellman-Ford algorithm to calculate paths. Because of the mobile nature of the nodes within the MANET, the protocol introduces mechanisms which reduce route loops and ensure reliable message exchanges. The wireless routing protocol (WRP), similar to DSDV, inherits the properties of the distributed Bellman-Ford algorithm. To solve the count-to-infinity problem and to enable faster convergence, it employs a unique method of maintaining information regarding the shortest path to every destination node and the penultimate hop node on the path to every destination node in the network. Since WRP, like DSDV, maintains an up-to-date view of the network, every node has a readily available route to every destination node in the network. It differs from DSDV in table maintenance and in the update procedures. While DSDV maintains only one topology table, WRP uses a set of tables to

maintain more accurate information. The tables that are maintained by a node are the following: distance table (DT), routing table (RT), link cost table (LCT), and a message retransmission list (MRL).

### 3. Literature Review:

**DSDV [1]** Destination Sequence Distance Vector proposed that the proactive routing approach is based on Bellman Ford routing [2] algorithm with some extension. In DSDV the packets are transmitted between the nodes of the network by using routing tables which are stored at each node of the network. Each routing table at each of the nodes lists all available destinations and the number of hops to each nodes. The main contribution of the algorithm was to solve the routing loop problem. Each entry in the routing table contains a sequence number, the sequence numbers are generally even if a link is present, else an odd number is used. The number is generated by the destination.

**WRP [2]** Wireless Routing Protocol proposed that this is proactive routing approach belongs to path finding algorithm [2] defined shortest path algorithm that calculates the path using information regarding the length and second to last hop of the shortest path to each destination. WRP reduces the number of overhead cases in which a temporary routing loop can exist. For the purpose of routing each node maintains four things 1. A distance table 2. Routing table 3. A link cost table 4. Message retransmission list

**OLSR [3]** Optimized Link State Routing is point to point routing protocol. This protocol is based on traditional link state algorithm. The OLSR will minimize the size of each control message and it also introduces the number of rebroadcasting nodes during each topology update, each node in the network select a set of neighboring nodes for the retransmission of its packets.

**AODV [4]** Adhoc On Demand Distance Vector Routing is an extension of DSDV. It is an proactive routing protocol. AODV protocol reduces the number of broadcasts by generating routes based on demand that is neither the case for DSDV protocol which is a proactive routing protocol. In AODV Protocol when sender wants to send any packets or information to its destination in first it broadcasts a route request packets. This process passes through the intermediate nodes until the packets reach destinations.

**DSR [5]** Dynamic Source Routing is a reactive protocol based on the source route approach. This protocol is based on the link state algorithm in which source first starts the route discovers on demand basis. The sender examines the route from source to destination and the sender adds the address of intermediate nodes to the route record in the packets. It is similar to AODV in that it forms a route on demand when a transmitting node request one.

**4. Proposed Algorithm:** The extended Global On-Demand Routing (xGOR) is a clever hybrid routing protocol for the MANET. To simplify simulations in GOR, it assumes

1. All nodes are homogeneous;
2. The transmission range of each node is  $k$ ; and
3. Each node has an ID and a pair of positive  $x$  and  $y$  coordinates to represent its location in the network.

#### **Algorithm xGOR Protocol:**

**Inputs:** The ID and  $(x, y)$  coordinates of each node.

**Outputs:** Destination nodes receive data packets from sources nodes.

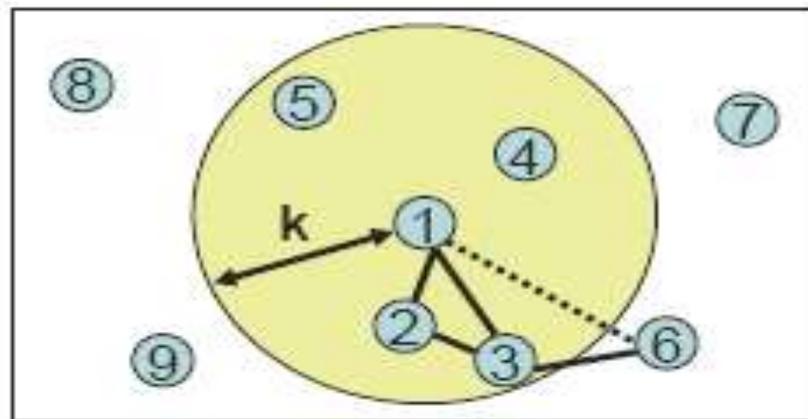
#### **Begin:**

1. Select a center or near-center node in the initial network as the root node (RN).
2. The RN runs the Double-Flooding Algorithm (DFA) to create the location table (LT), sorts the LT by IDs in ascending order, and broadcasts the LT to each node in the network.
3. Each node uses the LT to generate its own distance table (DT) concurrently. Then, each node marks any distance that is longer than the transmission range  $k$  in the DT as " $\infty$ " (infinity).

4. Each node calls the Dijkstra's Algorithm to generate the one-to-all shortest-path table (SPT) concurrently (see Figure below).
5. If a new node joined to the network, an existing node moved out of the transmission range of its any neighbor nodes, or an existing node left from the network, then it calls the Node-Reorganization Algorithm (NRA) to ask other nodes to update (or mark as "new" nodes if any) their own LT for these changes consequently.
6. If any node wants to send packets via or to the above joined or moved nodes, it has to (1) use the updated LT in Step 5 to update its DT (or mark the " $\infty$ " distances if any); (2) run the Dijkstra's algorithm again to update its SPT; (3) reset all nodes in the LT to "old" nodes; and (4) follows the paths in the new SPT to send packets to its destination nodes.
7. If network topology changed again, repeat steps 5 and 6 until the whole network dismissed.

**End** of xGOR Protocol.

Figure 1.3 below shows some shortest paths within the transmission range  $k$  for node 1. In this figure, the shortest path between nodes 1 and 6 is (1, 3, 6) not (1, 6) because node 6 locates outside the circular transmission range  $k$  of node 1. Note we have marked all " $\infty$ " distances in steps 3 and 6 respectively in the main algorithm (Algorithm xGOR Protocol).



**Figure 1.3:** Shortest Paths in A MANET

This algorithm proposed an extended hybrid global on-demand routing (called xGOR) protocol for mobile ad hoc networks. This protocol does not update the routing tables immediately if any node changed its status in the network, such as movement, addition or deletion. Instead, it only handles a node whose move changed the MANET topology or whose move distance is greater than the transmission range  $k$ . This critical strategy prevents other nodes from updating the routing tables frequently and hence reducing unnecessary computation and node-reorganization overheads dramatically. The xGOR protocol not only keeps the advantages of proactive and reactive protocols, but also improves the sub-optimal routing overhead and memory consuming problems in local hybrid protocols. Because this protocol retains high throughput, packet delivery rate and low end-to-end delay.

## 5. Results:

**5.1 End to End Delay:** Time elapsed between the generation of a packet at a source and the reception of that packet by a group member. Delay is the amount of time that it takes for a packet to be transmitted from one point in network to another point in a network. It refers to the time taken for a packet to be transmitted across a network from source to destination[12]. End-To-End delay was monitor at each multicast listener. The delay for AODV was relatively more than the rest of the protocols. AODV protocol also created a shared tree but the delay was much higher. The reason is the processing time at the RP. The delay has a fairly constant value for all the four protocols. Second highest delay is produced by WRP. All the three Remaining Protocols shows almost constant delay after one second which is not

the case in AODV. They delay is highest in last time interval as the distance is also highest to move from source to destination (farthest receiver).

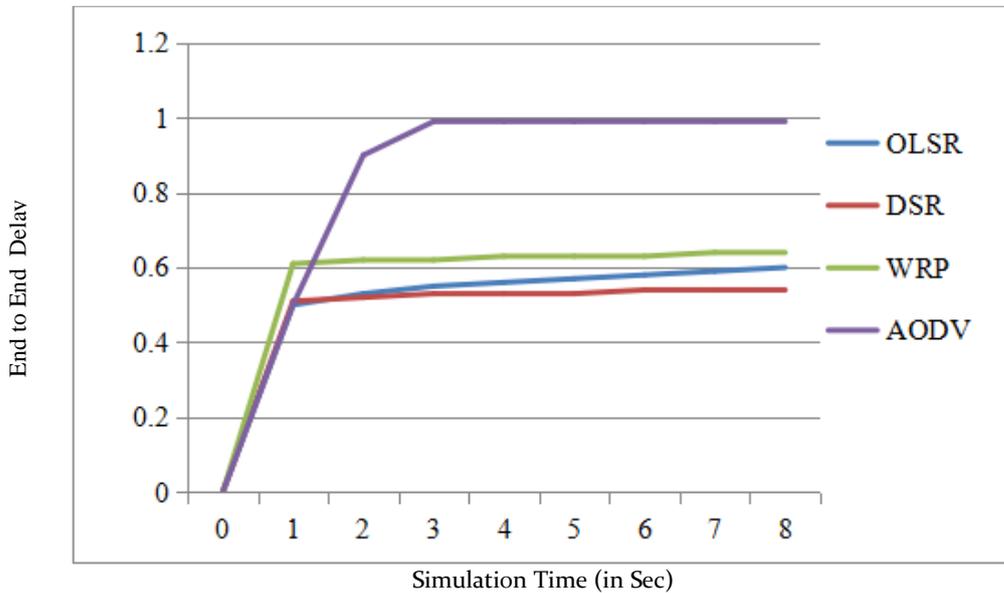


Figure 1.4: End To End Delay (Infra. Based)

End to End delay for different Protocols according to varying topology is shown in table 1.1. For real time application or critical applications end to end delay should be less. Lesser the end to end delay better will be the performance.

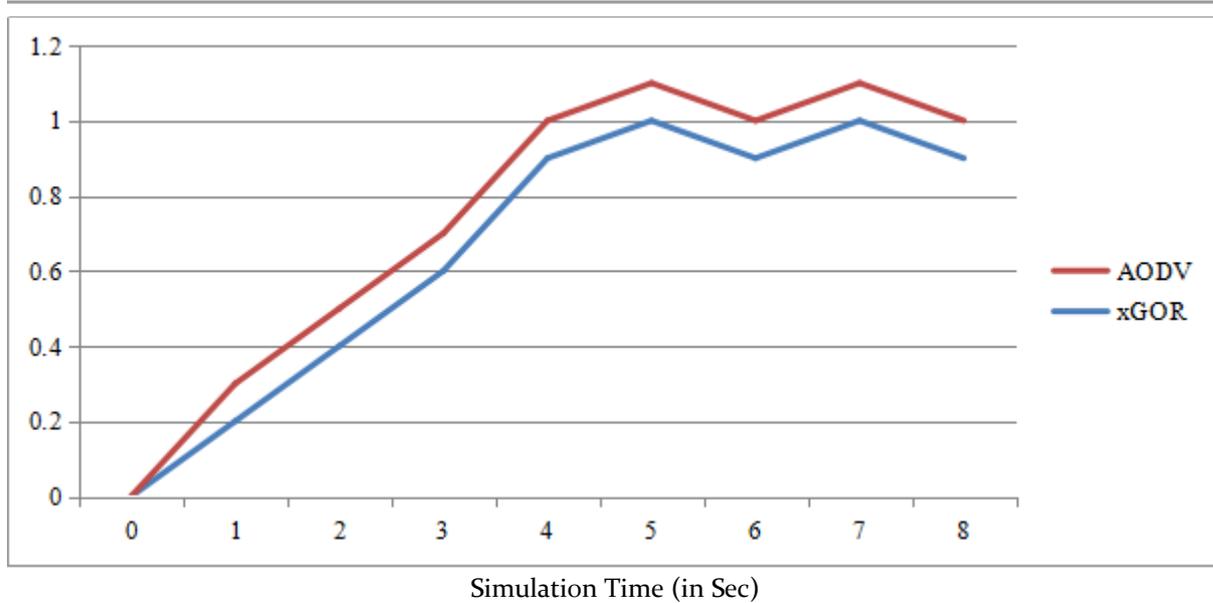
End to End delay for all Multicast routing protocols is shown in the graph

corresponding to the simulation time. End to End delay bears large variation in the graph, somewhere it is more and somewhere it is less. DSR is better than OLSR when compared according to end to end delay metric. And among OLSR, WRP, DSR and AODV, DSR provides less end to end delay.

Table 1.1: End To End Delay (Infra. Based)

No. of Group Members	Four	Eight	Sixteen	Thirty Two
OLSR	$10346964 \times 10^{-9}$	$10436984 \times 10^{-9}$	$10434949 \times 10^{-9}$	$10445958 \times 10^{-9}$
WRP	$10424771 \times 10^{-9}$	$10436727 \times 10^{-9}$	$10425853 \times 10^{-9}$	$10435789 \times 10^{-9}$
DSR	$10426456 \times 10^{-9}$	$10427867 \times 10^{-9}$	$10428769 \times 10^{-9}$	$10446770 \times 10^{-9}$
AODV	$11217 \times 10^{-6}$	$11237 \times 10^{-6}$	$11237 \times 10^{-6}$	$11217 \times 10^{-6}$

In ad-hoc networks End to End to End delay is as following.



**Figure 1.5:** End To End Delay (Infra. Less)

xGOR has less End to End Delay. xGOR and MAODV are both receiver-oriented protocols. However, xGOR is a mesh-based protocol and provides multiple routes from senders to receivers. MAODV, on the other hand, is a tree based protocol and provides only a single route between senders and receivers.

**Table 1.2:** End To End Delay (Infra. Less)

No. of Group Members	Four	Eight	Sixteen	Thirty Two
MAODV	$9734380 \times 10^{-9}$	$9796479 \times 10^{-9}$	$1 \times 10^{-6}$	$2133430 \times 10^{-6}$
xGOR	$1 \times 10^{-16}$	$1 \times 10^{-16}$	$1 \times 10^{-16}$	$1 \times 10^{-16}$

Based on the results shown in Figure 1.5, higher End-to-end delay values imply that routing protocol is not fully efficient and causes congestion in the network. As against the MAODV, xGOR exhibits lesser values of End-to-end delay.

End-2-End delay = time (in seconds) when packet was received by OTHER NODE - time (in seconds) when packet was sent by CURRENT NODE (for calculations)

**5.2 Throughput:** Throughput is a generic term used to describe the capacity of the system to transfer data. Throughput is nothing but the bandwidth of the transmission channel. Throughput is the rate at which network sends or receives data[13]. Throughput is much harder to define and measure because there are numerous ways through which throughput can be calculated:

- The packet or byte rate across the network.
- The packet or byte rate of a specific application flow.
- The packet or byte rate of host to host aggregated flows, or
- The packet or byte rate of network to network aggregated flows.

We have calculated throughput using following formula:

Throughput = Packets received / Packets forwarded

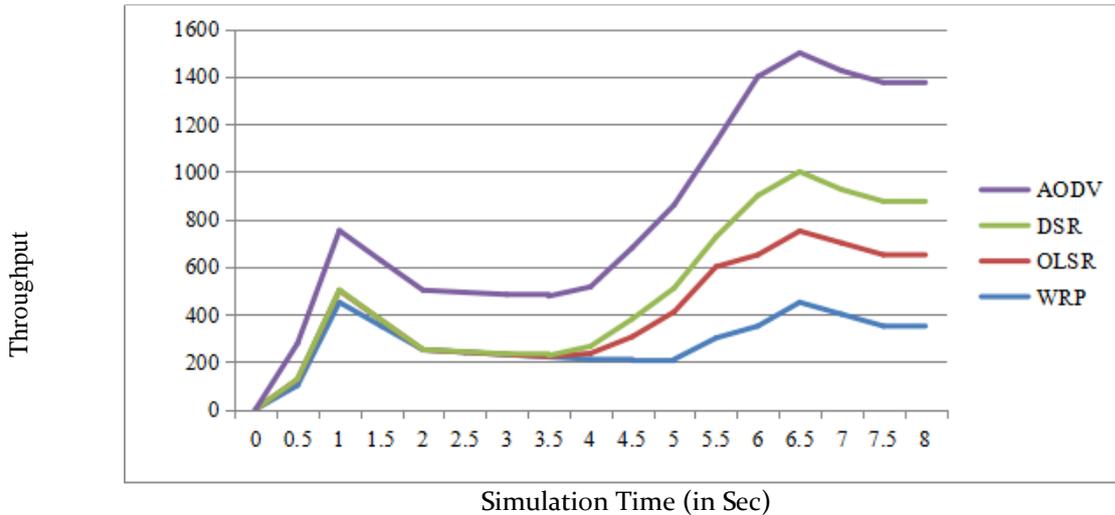


Figure 1.6: Throughput (Infra. Based)

Table 1.3: Forwarded Packets (Infra. Based)

No. of Group Members	Four	Eight	Sixteen	Thirty Two
OLSR	2626	13249	23003	54333
WRP	2608	13129	43822	43587
DSR	3473	13231	34397	64351
AODV	3225	14302	35444	62339

Throughput of AODV is higher than all protocols while DSR does not achieved the expected throughput, same is the case for OLSR but it performs good as compared to DSR. Both sparse mode protocols performs very well as compared to both compared to dense mode protocols .The basic reason behind this is initial flooding by OLSR and DSR . That’s why the packets meant for actual receivers are too less as compared to sent packets. In ad-hoc networks extended Global On Demand Routing Protocol (xGOR) outperforms as compared to MAODV because it relies on very good technique of announcements. The chances of failure are less, because it can choose its leader dynamically without the interference of Network designer[14]. So there is no single point failure like problems.

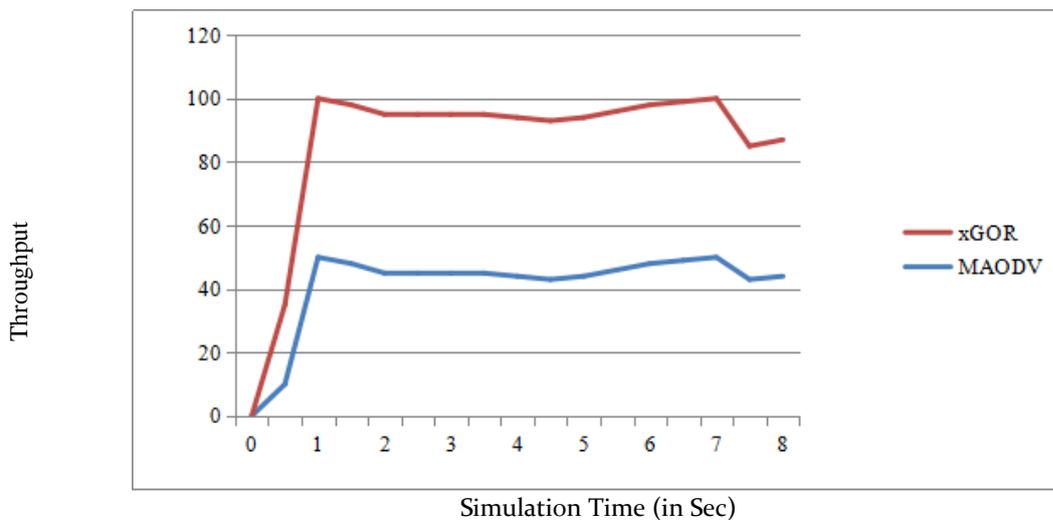


Figure 1.6: Throughput (Infra. Less)

Figure 1.6, shows the Throughput analysis. For increasing number of nodes the throughput of xGOR is higher than the MAODV.

**Table 1.4:** Throughput (Infra. Less)

No. of Group Members	Four	Eight	Sixteen	Thirty Two
MAODV	32	40	47	51
xGOR	94	98	101	103

Based on the simulation results shown in Fig. 1.6, the packet delivery fraction of xGOR is higher than MAODV for varying number of nodes.

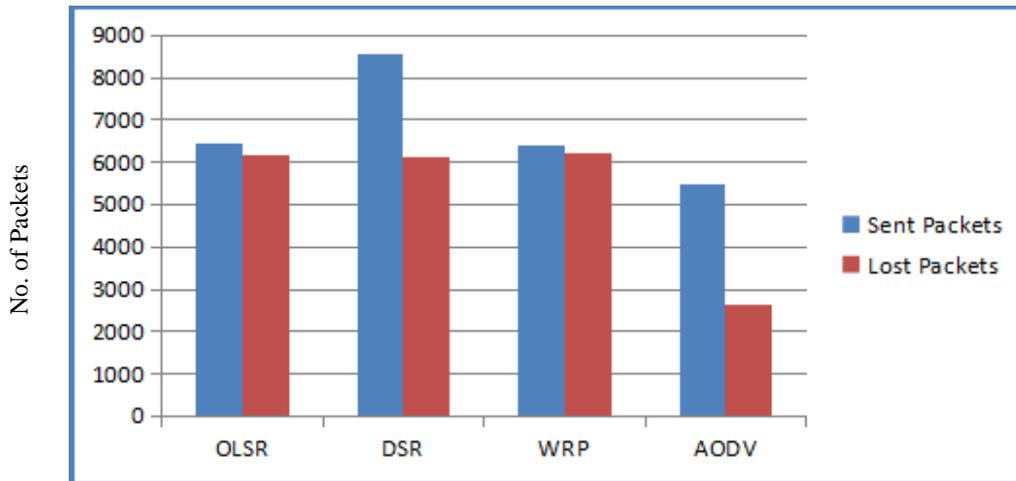
**5.3 Packet Loss**

Packet loss is where network traffic fails to reach its destination in a timely manner[15].

Packet Lost = amount of packets received - amount of packets forwarded

There are three causes of packet loss in the network

- A break in Physical link that prevents the transmission of a packet
- A packet that is corrupted by a noise and is detected by a checksum failure at downstream node and Network congestion that leads to buffer overflow.



**Figure 1.7:** Packet Loss (Infra. Based)

The no. of packets that are lost during simulations and can be computed by subtracting the no. of received packets from forwarded packets. The no. of Packets lost by CBT are much less as compared to all another protocols.

**Table 1.5:** Packet Loss (Infra. Based)

No. of Group Members	Four	Eight	Sixteen	Thirty Two
OLSR	5237(5362)	6187(6234)	6322(6445)	6171(7634)
WRP	5347(5432)	6284(6154)	6311(6232)	6213(6254)
DSR	5233(5643)	6138(6165)	6137(8515)	6123(3463)
AODV	3312(5453)	4237(6132)	2665(5454)	4143(6211)

In case of ad-hoc only 10 percent as compared to infrastructure based are forwarded.



**Figure 1.8:** Packet Loss (Infra. Less)

The no of packets loss by xGOR is one fourth of the packets loss by MAODV protocol.

**Table 1.6:** Packet Loss (Infra. Less)

No. of Group Members	Four	Eight	Sixteen	Thirty Two
MAODV	30(200)	80(320)	100(325)	111(330)
xGOR	10(200)	17(250)	20(380)	25(400)

**6. Conclusion:** When Multicast routing protocols are compared on the basis of End to End delay then all protocol shows very different results then DSR give better performance that is less delay, while AODV has maximum delay so it best to choose DSR. Multicast routing protocols performance differed when compared in terms of performance metrics. The experimental results suggest that configuration parameters do indeed play a role in how well the various multicast routing protocols perform. A network designer should be aware of this fact and should choose an appropriate Routing Protocol. In general, in various situations OLSR and DSR performed similarly to one another in a specific traffic pattern context. AODV give Best performance as compared to all while WRP is also giving better results as Compared to both Dense mode Protocols.

Understandably, none of the protocols behave as a 'best-case' protocol for all scenarios in infrastructure based environments. As multicasting is used in various applications, different in their requirements, a protocol suited best for one application will be totally out of place with another. But still on the basis of three parameters AODV performs better. extended Global On Demand Routing Protocol (xGOR) incurs far less overhead as compared to MAODV. It has higher packet delivery fraction and throughput. The lesser values of End-to-end delay imply a better performance than other protocol. So, extended Global On Demand Routing Protocol (xGOR) has been selected best from infrastructure less protocols for efficient routing for selection of shortest path in mobile adhoc networks.

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## AN APPROACH FOR DETECTION OF DENTAL CARIES USING SWARM OPTIMIZATION BASED CLUSTERING TECHNIQUE

JAPNEET KAUR, PROF. (DR.) JATINDER SINGH BAL, JAGDEEP KAUR

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**Abstract:** Swarm Optimization techniques and Clustering techniques have wide applications in Bio-Medical datasets. The major disadvantage of Clustering techniques is its inability to search wider area under consideration. Swarm optimization has ability to remember its previous best position and also has tendency to search wider area which provides with more accurate results. Hybrid of these two techniques is reflected in this paper.

**Keywords:** Particle Swarm Optimization, Gustafson Kessel, Clustering, Swarm Optimization, Modality.

---

**1. Introduction:** Image segmentation [1] or clustering is division of an image into homogenous regions. Many images are analyzed and patterns are recognized using this feature. It helps to find the area of interest in any image. A large number of techniques have been applied on images and are also used clinically. These techniques are applicable to a particular organ or pathology [1]. In medical imaging, these different imaging techniques are called modalities.



**Figure 1:** Modality of Dental Structure

Knowledge of structural morphology is provided by anatomical modalities. Actual metabolism of primary organs or tissues is represented by functional-modalities. Practically all types of the images are now collected digitally and are used in communication-system (PACS).

Computational models of dental image analysis must address several problems such as Enhancement, Segmentation[4], and Feature extraction of images. Dental images[11] must be represented in a way that best exploit the available teeth information to distinguish teeth from other tissues in dental x-ray images. The image segmentation problem is one of the most difficult tasks in image processing and it plays an important role in the most subsequent image analysis, especially in pattern recognition and image matching. Clustering may involve supervised or unsupervised learning. Where a teacher is involved or there is some one to guide through is supervised and where none is available to guide the system it is unsupervised clustering. Clusters are basically grouping of homogenous particles together. The quality of the clustering result depends on both the similarity measure used by the method and its implementation. The few of the unsupervised Clustering algorithms include K-means, K-medoids, Gustafson Kessel, Fuzzy c-means. In the proposed work we have used Gustafson Kessel clustering. The major disadvantage of clustering technique is that it gets stuck up in local region and do not consider wider area for searching. This is the reason to go for Swarm Optimization techniques in combination with Clustering techniques.

**2. Particle Swarm Optimization (PSO) [17]:** Particle Swarm Optimization is evolutionary algorithm based on swarms and it has been introduced by Kennedy. PSO shares many features with other

evolutionary algorithms. The system is initialized with number of populations. Then searching for optima is done [2]. Unlike Genetic Algorithm, Particle Swarm Optimization has no operators like mutation, fitness etc. Each particle in Particle Swarm Optimization works in coordination with next particle to provide with the best possible solution in the group. Each particle while moving in the search space has its own coordinate and velocity with which it is moves.

The PSO algorithm can be represented as below;

```
Create initial particles.
```

```
Evaluate the objective function of each particle.
```

```
Choose new velocities
```

```
Update each particle location.
```

```
Iterate until a solution is reached.
```

**3. Training and Testing Using PSO Based Gustafson Kessel:** The process of PSO GK clustering [17] algorithm can be described as follows:

```
For training process; Load GK features;
```

```
Initialize neural for training;
```

```
net.trainparam.epochs=50; Save neuralGK;
```

```
Training Done;
```

```
For testing process; Read image= test image; Upload test sample;
```

```
Get no. of clusters;
```

```
Consider parameters for clustering; Get array for objective function; Calculate cluster centers; Calculate fuzzy covariance matrix; Find distance matrix;
```

```
Optimize distance using PSO; Get objective function;
```

```
Do data mining; Load neuralGK;
```

```
Features= test features; Stop;
```

#### 4. Results of Simulation:

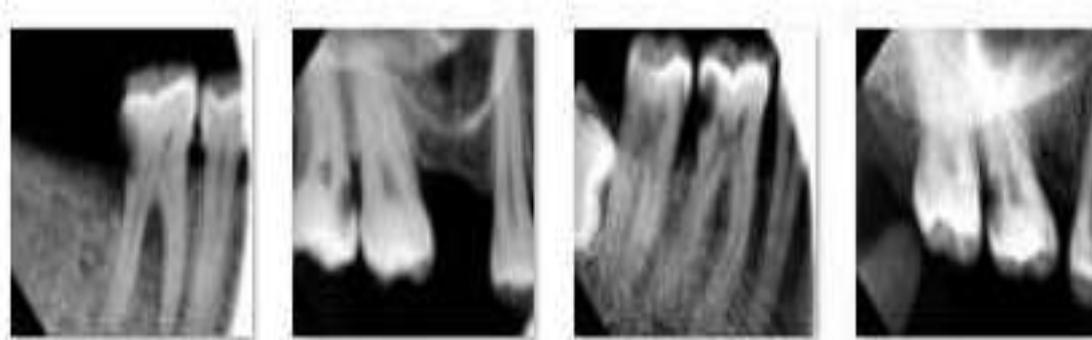


Figure 2: Database used in PSO based Gustafson Kessel

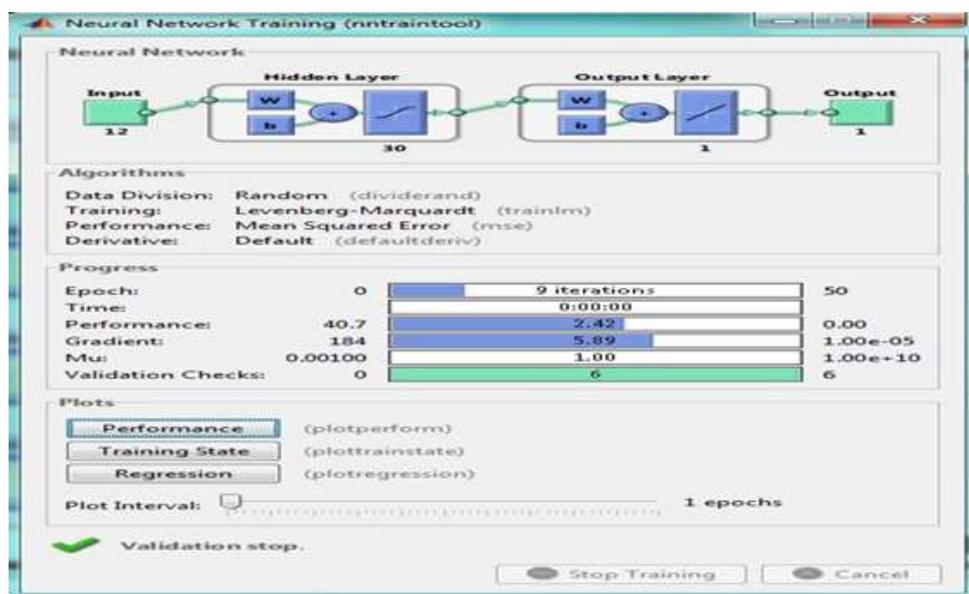


Figure 3: Training for Gustafson Kessel Technique

The above figure shows the training of GK technique using neural network. In above training tool 12 hidden layers has been chosen with 50 epochs and 6 validation checks



Figure 4: Segmented Image

The segmented image is shown above on any of the image which is used for testing after applying segmentation. From the figure it has been seen that obtained results are more accurate and perceptually more visible.



**Figure 5:** PSO Based Gustafson Kessel Results

By using GK algorithm, the above figure shows the segmentation results w.r.t various dental images. The values given by the above algorithm are: Dentin= 83.8, Dentin-Dentin= 84.5, Dentin-Dentine-Pulpal= 81.3, Dentin-Pulpal = 84.7, Pulpal = 78.8, Pulpal-Dentin = 80.9, Pulpal-Pulpal = 82.5, Pulpal-Pulpal – Pulpal = 83.9 AND Pulpal-Pulpal-Dentin = 82.4. The GK based segmentation basically worked on the threshold value and optimal threshold value is chosen for segmentation of images.

**Table 1:** Processing Time

Algorithms	Time (sec)
PSO based GK	56

**Conclusion:** This work proposes a methodology that incorporates hybrid of Swarm Optimization technique, Particle Swarm Optimization and Unsupervised clustering technique, Gustafson Kessel for dental image segmentation. The use of the Particle Swarm Optimization technique was found to be good in producing total image division by covering global area for searching. So, this paper has made an attempt to compute results using hybrid of PSO and Gustafson Kessel clustering. From result simulations, it has been seen that GK based segmentation accuracy = 89 % and high time consumption 60 sec.

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## COMPETITIVE ANALYSIS OF ENERGY AWARE VM MIGRATION ALGORITHMS IN CLOUD COMPUTING

NAVNEET SINGH, DR. VIJAY DHIR

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**Abstract:** The concept of Cloud Computing was first propounded by John McCathy way back in 1961, wherein he envisaged the idea of computer time sharing technology. Efficient utilization of computing resources to reduce energy consumption in cloud computing is also a crucial issue because it decides the operational cost. Energy consumption of Cloud Computing has been a major concern of many researchers, and one of the reasons for huge energy consumption of Clouds lies in the inefficient utilization of computing resources. In this paper we perform Competitive Analysis of existing Energy Aware VM Migration Algorithms in Cloud Computing. The aim of this paper is to provide a comprehensive and comparative understanding of existing literature and aid researchers by providing an insight for potential future enhancements.

**Keywords:** Cloud Computing, VM Migration, Genetic algorithm, VM Placement Algorithms, Virtual Machine.

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**1. Introduction:** Cloud computing has revolutionized the Information and Communication Technology (ICT) industry by enabling on-demand provisioning of elastic computing resources on a pay-as-you-go basis. Cloud computing is very much beneficial for small to medium organization. SME (Small to medium enterprise) can save on up-front cost by outsourcing its computational needs to cloud provider and consequently costs of maintenance and upgrades. Second option is to build private cloud within organization to boost effective resource management and resource provisioning.

Today large-scale data center contains thousands of computer nodes. These data center consumes huge amount of electric power and CO<sub>2</sub> (carbon dioxide) emission to environment. Given the increasing focus on reducing energy use, ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) recently created Standard 90.4-2016, "Energy Standard for Data Centers" [1].

**1.2 Need of Study:** Gartner Says Global IT Spending to Reach \$3.7 Trillion in 2018 [2]. Latest technologies like cloud computing, blockchain and or electric autonomous vehicles or IoT, big data, DAPP,5G putting more and more pressure on grids in data center that results in increased energy consumption [3].

The only drawback with cloud computing is that it is a notorious power guzzlers and call for a stringent 'energy efficiency' regime [4]. Currently it is estimated that servers consume 0.5% of the world's total electricity usage. Server energy demand doubles every 4-6 years. With their enormous appetite for energy, today's data centers emit as much carbon dioxide as all of Argentina; Data center emissions are expected to quadruple by 2020 [5].

Between 2000 and 2007, the total power consumption of data centers worldwide went from 70 billion to 330 billion kWh; it's projected to grow to more than 1,000 billion kWh by 2020. In 2003, the power density of a single rack of servers was between 250 W and 1.5 kW. In 2014, it had reached almost 10 kW and is projected to reach up to 30 kW by 2020. Apart from low ROI, energy consumption has a significant impact on carbon dioxide (CO<sub>2</sub>) emissions, which are estimated to be 2% of global emissions [6].

"In the actual scenario, with an average Power Usage Efficiency (PUE) of 1.8, worldwide data center energy consumption will reach 507.9 TWh by 2020", explains Mattin Grao Txapartegy, Technology & Market Analyst at Yole.



Figure 1: Worldwide Data Center Facilities [7]

**1.3 Energy facts about Data Center:** Currently it is estimated that servers consume 0.5% of the world’s total electricity usage. Server energy demand doubles every 4-6 years. With their enormous appetite for energy, today’s data centers emit as much carbon dioxide as all of Argentina. Data center emissions are expected to quadruple by 2020. The average data center consumes as much energy as 25,000 households. Between 2000 and 2007, the total power consumption of datacenters worldwide went from 70 billion to 330 billion kWh; it’s projected to grow to more than 1,000 billion kWh by 2020. In 2003, the power density of a single rack of servers was between 250 W and 1.5Kw.

Table 1: Worldwide IT Spending Forecast (Billions of U.S. Dollars) Source: Gartner (January 2018) [8]

	2017	2017	2018	2018	2019 Spending	2019 Growth (%)
	Spending	Growth (%)	Spending	Growth (%)		
Data Center Systems	178	4.4	179	0.6	179	-0.2
Enterprise Software	355	8.9	389	9.5	421	8.4
Devices	667	5.7	704	5.6	710	0.9
IT Services	933	4.3	985	5.5	1,030	4.6
Communications Services	1,393	1.3	1,427	2.4	1,443	1.1
Overall IT	3,527	3.8	3,683	4.5	3,784	2.7

In 2014, it had reached almost 10 kW and is projected to reach up to 30 kW by 2020. It is reported that the energy consumed in data centers is about 1.5% of the global electricity in 2010, and the percentage will be doubled by 2020 if the current trends continue [9].

One of the ways to address the energy inefficiency is to leverage the capabilities of the virtualization technology [10]. An idle server can consume a lot of energy but storage and networking equipment while doing nothing consumes a very little energy. A sitting idle consumes 70% of energy & producing heat; Cost of running a server in a public sector data center is 14000 euro in Europe it includes the energy, maintenance, licensing cost etc. Utilization of server in vast majority of data center ranges from 15% to 25% in which they do useful work rest is waste [3].

**2. Problems of High Power and Energy Consumption in Cloud Computing:** To understand the problem of high power consumption, it is necessary to understand the terminology. An electric current is the flow of electric charge. Electric current is measured in amperes. Power or energy can be defined as work performed by system. Power is defined as rate at which computer system executes the work. Energy is defined as amount of work executed in a period of time. Power/energy is measured in watts or Killo watt-hour.

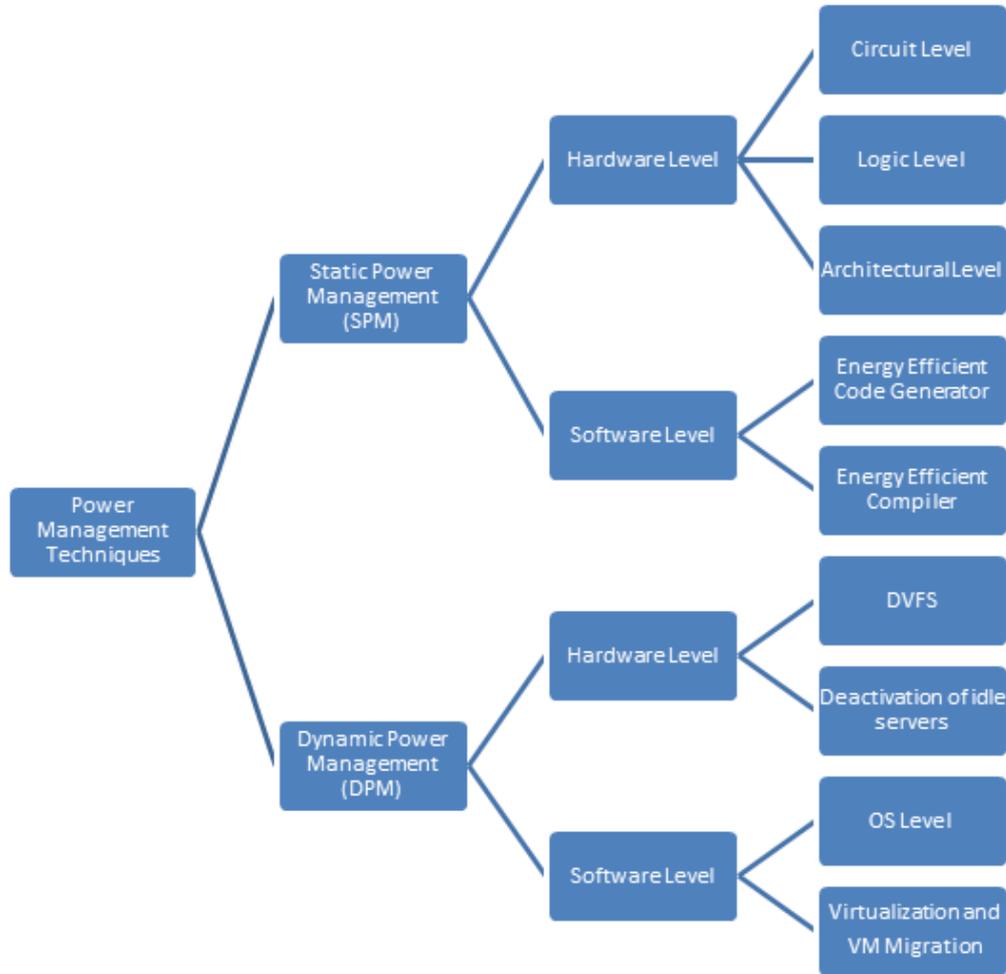
Power = work executed /unit time.

Energy = power \* unit time.

It is necessary to understand difference between power consumption and energy consumption. Power consumption can be diminished by decreasing cpu performance but in this case an application may take more time to complete its execution using same amount of energy. Electricity cost/bills can be reduced through diminishing energy consumption. Technique such as DPM (Dynamic Power Management) or SPM (Static Power Management) can be used to reduce energy consumption. DPM uses real-time resource usage statics & VM workloads to improve on energy consumption. SPM suggest use of modern highly energy efficient H/W components such as cpu, disk storage & network devices etc.

**2.1 Static & Dynamic Power Consumption:** Complementary metal-oxide-semiconductor (CMOS) circuits consumed major part of static & dynamic power. Static power also known as leakage power can be defined as leakage of currents in active circuits, power wasted because of leakage depends on type of transistors & technology used in computer system. Any reduction in static power consumption requires improvement in hardware level computer system design; therefore, it is not within the scope of this thesis. DPC (Dynamic Power Consumption) depends upon circuit activity & usage, clock rate & input-output activity. DPC is generated by short circuit currents & switched capacitance. SPC (Static Power Consumption) accounts for 10 to 15% of total DPC & there is no way to reduce this without compromising the performance. A very popular DPM technique called DVFS (Dynamic voltage & frequency scaling. In DVFS is performed by adjusting supply voltage & clock frequency as per need. The central idea is to reduce CPU performance when it is underutilized by adjusting the voltage and frequency of the CPU. This way we can achieve reduction in DPC. DVFS is supported by all kind of modern servers.

**2.2 The State of Art in Energy Efficient Computing System:** Power management techniques can be broadly classified into static & dynamic techniques. Static Power Management (SPM) techniques consist of all the methods and improvements that are used during designing & manufacturing of the circuit, architecture or system to improve the performance of computer system. It is can be achieved by making improvement in hardware level design of transistors, gates and circuits. In this chapter I shall discuss Dynamic Power Management (DPM) techniques & illustrates how system adapts to changing resource requirements. DPM techniques can be applied at hardware or software level.



**Figure 2:** A High-Level Taxonomy of Power and Energy Management

Hardware DPM can be divided into two categories as Dynamic Performance Scaling (DPS) and DCD (Dynamic Component Deactivation), e.g. DVFS. DCD can be further classified as Partial or Complete DCD that can be applied during period of inactivity. Software DPM uses an interface to apply power management techniques to hardware.

**3. Competitive Analysis of Energy Aware VM Migration Algorithms in Cloud Computing:**

Scheme( Ref.)	Description	Performance Improvement
VRDI (WEN et al.[11])	Virtual resource dynamic integration (VRDI) method is based on the live migration technology of VM, which can reduce the energy consumption of a data center by integrating the virtual resources.	i) The VRDI method can save about 45% of energy when the resource utilization of PM is less than 50%. (ii)SLA violation of the VRDI method is lower than that of the BMH and ACS-VMC methods. (iii) the number of VMs to be migrated in the VRDI method is larger than the BMH and ACS-VMC methods.
ECR (WANG et al. [12])	New task model that describes the QoS requirements of tasks with the minimum frequency. Used energy consumption ratio	i) OECR (energy-aware method Optimal Energy Consumption Ratio) can save more than 15%

	(ECR) to evaluate the efficiency of different frequencies under which to execute a take.	energy as compared to FFD algorithm.
Self-organized criticality Approach (Laredo et al. [13])	Self-organized criticality approach for dynamically load-balancing computational workloads. This approach is able to converge towards near-optimal trade-offs where the energetic efficiency and the QoS are maximized.	Minimizes the energy consumption (i.e., number of active resources through time) and maximizing the QoS (i.e., the average waiting time of tasks in the system
Dynamic overbooking strategy (Son et al. [14])	By using dynamic overbooking strategy, they proposed dynamic overbooking algorithms (ConnCons +MostCorr and ConnDist+LeastCorr).	Performs better as compared to baseline algorithms NoOver and ConnNone) in terms of energy consumption and SLA violation.
NSGA-II (ZHENG et al. [15])	Non-dominated sorting genetic algorithm (NSGA-II) and a local selection strategy based on fuzzy is used to generate a Hybrid Energy-Aware Resource Allocation Approach in Cloud Manufacturing Environment	Minimizes the energy consumption as compared to base line algorithm.
Multiagent (MA)-based VM allocation approach (Wang et al. [16])	MA works by first dispatching a cooperative agent to each PM to assist the PM in managing VM resources efficiently.	Compared with traditional centralized bin packing-based BFD approach, MA performs better in terms of energy & migration cost.

**4. Performance Evaluation Approaches:** In this section, we will discuss some cloud efficiency matrices and simulation toolkits that have been used for VM migration performance evaluation The green grid [17] has suggested some matrices that allow us to calculate energy consumption of data center. This section explains cloud efficiency matrices & methods that are used worldwide:

(a) Power Usage Effectiveness (PUE)

PUE was purposed by Green Grid (a non-profit organization of IT professionals) in 2007. PUE is accepted as industry standard for reporting the energy efficiency of data center.

The PUE is defined as follows:

$$PUE = \frac{\text{Total Facility Energy}}{\text{IT Equipment Energy}}$$

IT equipment energy means the energy consumed by all the IT equipment (e.g. compute, storage & network equipment) and supplement equipment (e.g. KVM switches monitors & laptops).

Total facility energy means energy consumed by all IT equipment plus energy consumed by supporting system such as Cooling system components such as cooling towers & computer room air conditioning units (CRACs).Power delivery components such as UPS systems, power distribution units (PDUs), generators & energy lost in conversions AC to DC. Data center Lighting, energy consumed by lighting equipments in a data center. Higher PUE value means that most of data center energy is consumed in cooling measure instead of computing. A perfect PUE of a data center can be 1.0, which is impossible to archive. In reality most of sites have PUE ranges from 1.5 to 2.5 if they follow all green grid guidelines. The higher the PUE value is the lower the efficiency of the facility as more “overhead” energy is consumed for powering the electrical load [18]. For example Google data centers have claimed that their data centers have achieved Quarterly PUE 1.10 & Trailing twelve-month (TTM) PUE 1.11 fleet-wide in 2018. (Source Google data center)

(b) Partial PUE (pPUE) enables a data center administrator to focus on energy efficiency of a particular potion of data center.

$$\text{Partial PUE (pPUE)} = \frac{\text{total energy inside a boundary}}{\text{the IT equipment energy inside the boundary}}$$

(c) Data Center Infrastructure Efficiency (DCiE)

DCiE is reciprocal of PUE. It is defined as follows:

$DCiE = 1/PUE = IT\ Equipment\ Energy / Total\ Facility\ Energy * 100$

PUE and DCiE are really the same metric, but PUE has been widely accepted by major vendors because it is inherently simple & easy to implement.

(d) Data Center Productivity (DCP)

DCP is a natural evolution from PUE and DCiE. DCP is defined as follows:

Data center Productivity = Useful Work/Total Facility Power

DCP is much more difficult to determine. What a data center’s “useful work” constitutes is still an open issue so it is difficult to calculate.

(e) Data Center Energy Productivity (DCEP)

Data center energy productivity is a sophisticated metric. It is defined as follows:

$DCEP = Useful\ Work\ Produced / Total\ Data\ Center\ Energy\ Consumed\ over\ time$

As compared to PUE, DCEP takes a more holistic approach.

(e) Corporate Average Data center Efficiency (CADE)

Uptime Institute (an American professional services organization focused on improving the performance, efficiency, and reliability of business critical infrastructure through innovation, collaboration, and independent certifications, New York, US) and McKinsey’s (McKinsey & Company is a worldwide management consulting firm, US) introduced Corporate Average Data center Efficiency (CADE) standard.

It is defined as follows

$CADE = Facility\ Efficiency * IT\ Asset\ Efficiency$

$Facility\ Efficiency = Facility\ Energy\ Efficiency\ Percentage * Facility\ Utilization\ Percentage$

$IT\ Asset\ Efficiency = IT\ Utilization\ Percentage * IT\ Energy\ Efficiency\ Percentage$

But neither CADE nor Data Center Productivity caught on the way the PUE standard has taken hold. Because of its inherent simplicity of PUE.

(f) JouleX’s Performance per Watt (PPW)

JouleX (a software company in Atlanta, USA that specializes in monitoring and control of the power consumption of computers and associated devices attached to networks) introduced Performance per Watt (PPW) metric. This approach uses a relative performance indicator (PI) for each individual asset. This indicator is calculated by the types of hardware and capabilities learned from an asset inventory of that device.

It defined as follows:

$PPW = (PI * Average\ Device\ Utilization / Watts) * 100$

The PPW metric calculates the actual energy efficiency of every device in the data center and how it is used. Lower value of PPW indicates that device is wasting power. Higher value of PPW indicates device is at maximum utilization.

**4.1 Cloud Simulators:** Cloud simulation tools allows users to test their services in repeatable and controlled environment free of cost, it helps users to fine tune their applications before deploying on real clouds.

**Table 2:** Summary of Cloud Simulation Software

Simulator	Available	Programming Language	Energy Model	Description
CloudSim	Open Source	Java	Yes	Modular & extensible open-source simulator, simulate behaviour of large data center
CloudAnalyst	Open Source	Java	Yes	Support evaluation of social networks tools according to geographic distribution of users and data centers.
GreenCloud	Open Source	C++,Otel	Yes	Packet-level simulator for energy-aware cloud

				computing with a focus on cloud communication.
MDCsim	Commercial	Java/C++	Rough	Discrete event simulator
iCanCloud	Open Source	C++	No	Designed to predict the trade-offs between cost and performance of a given set of applications that runs on cloud
NetworkCloudSim	Open Source	Java	Yes	Supports communication between application elements and various network elements.
EMUSIM	Open Source	Java	Yes	Provides both the capabilities of an emulator as well as simulator of a cloud environment.

**5. Conclusion and Future Directions:** Multi tenancy, concurrency and distribution are main feature of any cloud computing architecture. This paper covers different Vm Migration Algorithms for energy reduction in cloud computing (Heuristic ,Meta-heuristic& Hybrid algorithms) along with other novel techniques. The main plus point of heuristic algorithms is that they give satisfactory solution to a problem in limited time cost frame. Heuristic algorithms are easier to implement in comparison to meta-heuristic algorithms. In Hybrid algorithms, heuristic algorithms are used to provide initial VM placement and meta-heuristic algorithms provides optimum placement of VMs during migration. This algorithm increases the implementation complexity but reduces time and cost space. Depending upon the kind of problem, you can use one or other.

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## COMPARATIVE STUDY ON THE EFFECTS OF CONVENTIONAL HEAT TREATMENT AND DEEP CRYOGENIC TREATMENT ON DIFFERENT TYPES OF STEELS

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**Abstract:** Heat treatment is in practice since bronze age. In present study hardening process for selected steels was performed by heating metals at 800 °C for 20 minutes and quenched in brine. After quenching process Deep cryogenic treatment was executed using 3 /min cooling/heating and quenched at -185 for 10 hours cycle. Followed by tempering at 250 °C and 350 °C to analyze the effect of tempering temperature. The impact strength, tensile strength, hardness and wear resistance are taken as performance measures. The results revealed that each treatment process changes the properties significantly. The hardening increases the hardness, wear and brittleness on the other hand tempering improves the toughness and elongation of steels. Cryogenic treatment produces an improvement in hardness, wear resistance and tensile strength. It also educe

**Keywords:** Heat Treatment, Cryogenics, Tempering, Quenching of Metals.

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**1. Introduction:** Heat treatment of metals is one of the ancient techniques used to improve/modify the properties of metals. Heat treatment can induce different properties depending upon the type of metal to be treated and treatment used. In present study a systematic approach has been undertaken to study the effects of heat treatment, deep cryogenic treatment and effects of tempering temperature on mechanical properties of boron steels AISI 30MnCrB5, AISI 27MnCrB-5, AISI 1080. The hardness of material, impact strength, tensile strength, wear resistance are taken as the performance measurement variables. The results indicate that conventional heat treatment improves the hardness of base metal by but cryogenic treatment improves the hardness further. Cryogenic treatment also has a positive impact on tensile strength, wear resistance of metal. Tempering on the other hand reduce the hardness of material by small amount but increases the ultimate tensile strength simultaneously.

In agricultural industry to reduce the time required for field preparation an new equipment rotavator has been designed. This machine cultivates land, mesh the crop residue and dress the fields at the same time. There is a serious problem associated with rotavator is high blade wear rate. Wear of blade is a function of type of land (silica content/ gravel content in soil). There is a rigorous work has been performed in the field of design and surface modification of base metal. Effect of alloying element i.e. carbon, molybdenum, vanadium, boron etc is also evaluated. The results shows that higher percentage of carbon in steel can produce higher value of hardness but by addition of small amount of boron can produce better hardness value in steels having lower carbon content[a.k. bhagat][saeed]. Therefore Boron steels are one of the most favorable steel for manufacturing of rotavator blade as it possess a good combination of strength, wear resistance and hardness. Following procedure is used to produce the rotavator blade by manufacturers blank cutting, end cutting, heating, edge making, bending, quenching, tempering. For excellent product quality hardening phase is a key function.

Hardness of final product is a function of heating time, temperature and quenching medium. Different quenching mediums produce different properties in metal, oil quench provide a uniform cooling and slow cooling give lower hardness. Water on the other hand gives higher hardness but increase chance of cracking and increases the corrosion of surface. Brine gives highest cooling rate, this type of cooling is suitable for low carbon steels [vivek tiwari.] tempering process is followed by hardening process to make the material tough and remove the stress produced during hardening. Tempering temperature has high impact on the hardness of material as hardness first hikes with increase in tempering temperature and falls drastically with further increase in temperature.[s.a thakur]

To further improve the hardness of material various techniques has been adopted by the researchers. Hard facing, metal spraying, sintering etc. hard facing of tungsten carbide and aluminum oxide give high wear resistance thus higher product life (more than 40 times) [salokhe] the problem associated

with hard facing is that as soon as the hard coating is gone the wear of base metal wear out very quickly. So to improve the hardness and wear resistance of base metal sub zero treatment is employed. This treatment reduces the coefficient of friction and improves the wear resistance of material[ks mahesh]. The improvement in hardness and wear resistance is due to complete transformation of austenite to marten site and precipitation of fine carbides[joseph][hauhuai lieu].

**2. Experimentation:** The material considered for the study was obtained in the form of (1000x80x8) mm flat strip. The composition of the raw material was analyzed using optical emission spectroscopy (OES) to ensure the type of material.

Content %	MATERIAL 1	MATERIAL 2	MATERIAL 3
	30MnCrB-5	AISI 1080	27MnCrB-5
C	0.295	0.759	0.25
Si	0.281	0.273	0.226
Mn	1.15	0.977	1.29
Cr	0.252	0.059	0.272
Ni	0.161	0.031	0.146
B	0.0024	0	0.0065
V	0.008	0.004	0.012
Fe	97.69	97.73	97.41

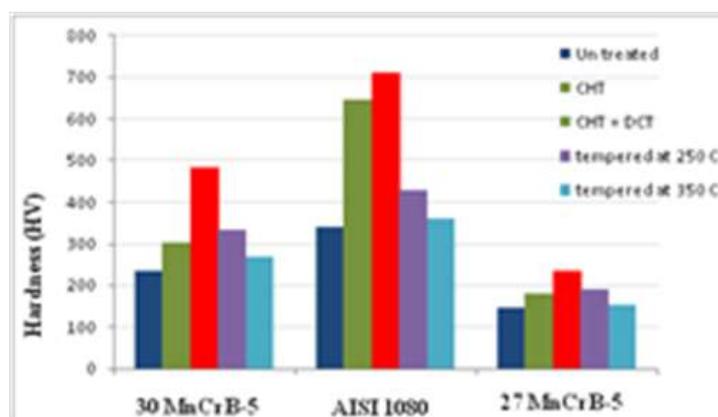
Specimens are prepared according to ASTM standards for various tests. Conventional heat treatment then performed using; Austenizing Temperature 800 °C, Austenizing Time 20 min and quenching medium used is Brine having 10 % NaOH. Deep Cryogenic Treatment then performed using Cryogenic Treatment Chamber using liquid nitrogen. Cryogenic cycle was consisted of cooling and heating rate of 3 degree per minute, soaking temperature -185 and soaking time of 10 hour.

The tempering process was performed after cryogenic treatment at tempering temperature of 250°C and 350 °C with soaking time of one hour. This is done to examine the effect of tempering temperature on the properties of materials under study.

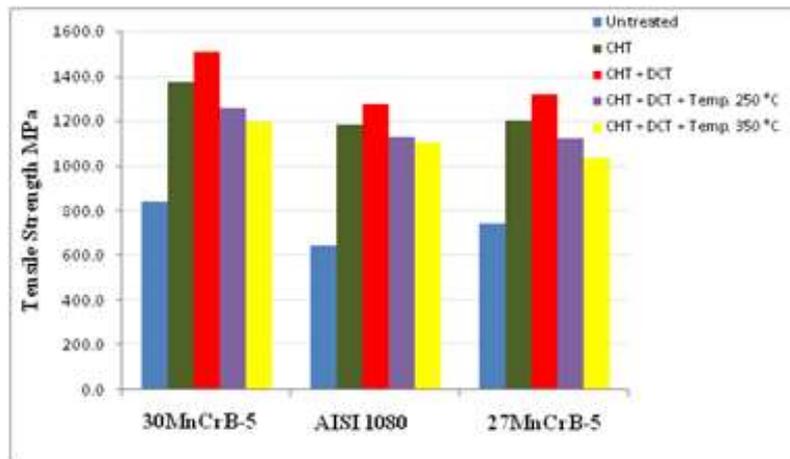
To assess the changes occurred after various treatments, micro-hardness test performed using micro Vickers hardness tester. Tensile test performed using Olsen tensile tester and impact test performed using izod/ Charpy impact test machine. The abrasion wear test was conducted according to ASTM G-65 standard. Machine consists of a rotating rubber wheel whose speed is controllable through an automatic controller. Silica sand was taken as abrasive for wear test. Load on the specimen, speed of machine and time is kept constant.

### 3. Results and Discussion

**3.1 Impact on Hardness:** The variation in hardness is observed in all material after each treatments e.g. CHT, DCT and tempering after CHT as shown in fig.1

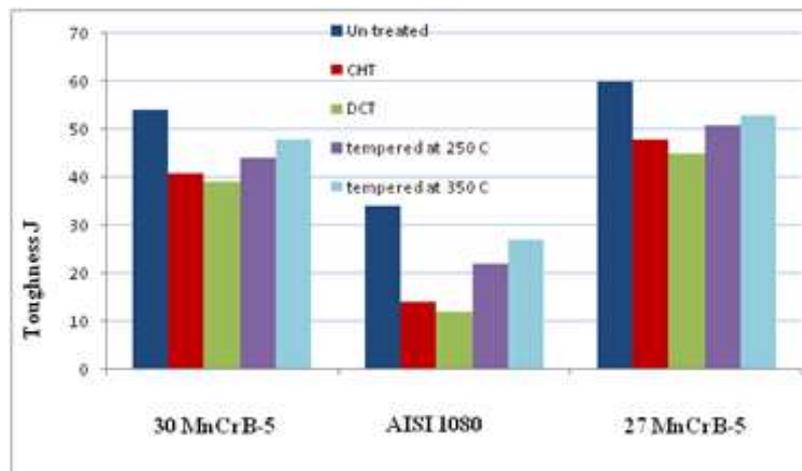


Results show that deep cryogenically treated samples Exhibit maximum hardness. It helps in the transformation of retained austenite to martensite and fine precipitation of carbides to reduce residual stresses [BenselyA,Prabhakaran].

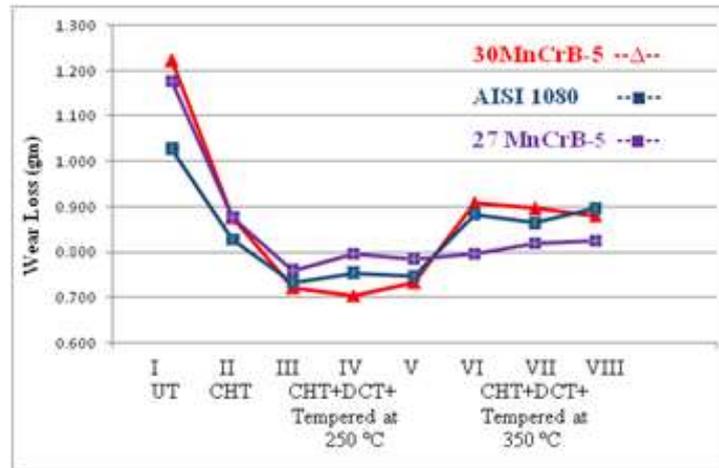


3.2 *Tensile Strength Variation:* Conventional heat treatment improves the tensile strength by 63.9%, 83.7% and 61.7% as compared to untreated one for 30 MnCrB-5, AISI 1080, 27MnCrB-5 steels respectively. On the other hand the cryogenic treatment improves the tensile strength over conventional heat treatment by 9.89%, 7.75%, 9.91% for 30 MnCrB-5, AISI 1080, 27MnCrB-5 steels respectively.

3.3 *Effect on Impact Strength:* The observed values of results of Charpy Impact test are recorded for as received, heat treated deep cryogenically treated and tempered samples. The results show there is a little loss in toughness value after cryogenics treatment. Impact strength starts recovering after tempering process and increases with increase in tempering temperature.



3.4 *Wear Behavior:* Abrasion wear test is performed on all specimens such as conventionally heat treated(CHT) and cryogenic treated(DCT) and tempered at different temperatures. The detailed observations of abrasion wear test of CHT and DCT samples using silica sand is recorded as shown in shows the wear behavior of all materials. At constant load of 2 kg and speed of 200 rpm of rotating wheel.



#### 4. Conclusion:

1. Hardness increase by 60.63%, 89.70% and 21.91% as compared to untreated one for 30 MnCrB-5, AISI 1080, 27MnCrB-5 steels respectively. On the contrary deep cryogenic treatment improves the hardness of material by 59.93%, 12.21% and 31.46% as compared to conventionally heat treated one for 30MnCrB-5, AISI 1080, 27MnCrB-5 steels respectively.
2. As the hardness of the material increases there is a drop in impact strength of the material. This may be due to conversion of ferrite and retained austenite into martensite which is a very hard but brittle structure. There is reduction in toughness of metal after both conventional and deep cryogenic treated sample. Toughness after conventional heat treatment is decreased by 24.07%, 58.82% and 20% as compared untreated metal as compared to untreated samples. There is a further decreases in toughness by 4.8%, 14.28% and 6.25% as compared to conventionally heat treated samples after deep cryogenic treatment
3. Tensile strength increased by 63.88%, 83.69% and 61.72% after conventional heat treatment process as compared to untreated 30MnCrB-5, AISI 1080, 27MnCrB-5 steels respectively. The deep cryogenic treatment further increases the tensile strength by 9.89%, 7.77% and 9.91% over conventional heat treatment process. There is a considerable decrease in strength of all materials used for present study after tempering of metal. This decrement increases with increase in tempering temperature
4. Deep cryogenic treatment shows a better wear resistance as compared to conventional heat treatment process. The wear is reduced by 28.31%, 19.45% and 25.51% after conventional heat treatment over untreated samples. The deep cryogenic treatment further decreases the wear of metal by 17.73%, 9.82% and 10.27% as compared to conventionally treated samples for 30MnCrB-5, AISI 1080, 27MnCrB-5 steels respectively. The test shows that there is little increase in wear of material as we increase the tempering temperature

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Recent Trends in  
Agriculture, Environment  
& Bio Sciences



## CROSS RESISTANCE IS CAUSE FOR MULTI-DRUG RESISTANT AMONG SOIL FLORA

DR. A. MURUGAN

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**Abstract:** Multi-drugs resistant among pathogenic bacteria are menaced in the recent past. Bacteria exposing to xenobiotics at sub-lethal concentration develop resistance through nonspecific hydrolysis of antibiotics. Soil isolates *Bacillus cereus* showed resistance against chloramphenicol, monochrotophos, ampicillin, cefotaxime, streptomycin and tetracycline. Multi-drug resistant properties of this particular strain have been confined to the plasmid was verified using plasmid curing by exposing to 2% sodium dodecyl sulfate and were able to resume multi-drug resistance properties once the plasmid was transformed back to bacteria. Further the plasmid DNA was sequenced on MiSeq using 2x300 bp chemistry to generate approximately 1 GB of data. The Draft assemblies of short Illumina sequence reads (2X300 Mi-Seq library) was analyzed 4200 tape station system. The presence of hydrolases and hypothetical proteins suggest that the plasmid is capable of degrading antibiotics and thus responsible for multi-drug resistance.

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**PHYSICO-CHEMICAL ANALYSIS OF SELECTED GROUNDWATER SAMPLES  
FROM SIKANDRA RAO TOWN AND ITS ADJOINING VILLAGES  
(HATHRAS DISTRICT) UTTAR PRADESH, INDIA**

**HARIT PRIYADARSHI, SARV PRIYA, SHABBER HABIB ALVI, SAJAL KUMAR SISODIYA**

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**Abstract:** Water is an essential component for the existence of life on the planet earth. It is a tasteless, odourless, and nearly colorless liquid. In some way or the other, it also full fills the need of minerals in our body up to a certain limit. But the anthropogenic activities leads to the imbalance of these minerals in water resulting in degradation of its quality. Today, it is a known fact that the groundwater quality is degrading day by day which is a serious matter of concern, as poor quality water pose threats to health and hygiene of living beings. Good quality of water is of utmost importance for survival of man and animals. The present study aimed at assessing the status of the groundwater in Sikandra Rao and its adjoining villages. In the light of aforesaid facts, it becomes necessary to assess the current groundwater quality in study area on the ground of various parameters such as temperature, pH (6.5-8.5), Turbidity (0.85 NTU-3.00 NTU), Electrical Conductivity (206  $\mu$ S/m -931  $\mu$ S/m ), Chloride (12 mg/l-52 mg/l), Total Hardness (102 mg/l -314 mg/l), Total Alkalinity (84 mg/l-370 mg/l), Total Dissolved Solid (103 mg/l-464 mg/l) , Nitrate (0 mg/l -4.43 mg/l), Sulphate (26 mg/l-66 mg/l), Iron (0.02-0.07 mg/l) and Fluoride (0.08 mg/l-1.17 mg/l). The values of these parameters are found to be within the acceptable limits, below the acceptable limits as well as partially in the range, as prescribed by Bureau of India Standard (BIS) -10500-2012. Thus, the study reveals the need for proper and timely evaluation of groundwater quality and simultaneously highlights the urgency of the necessary steps to be taken for the preservations and up-gradation of water quality. Hence the drinking water quality in the study area is not scaled as per the standard values of the concern parameters and showing alarming levels of pollutants. Therefore it needs some degree of treatment before utilizing it for any consumption purpose.

**Keywords:** Sikandra Rao, BIS, Physico-Chemical Parameters, Health Effects, Groundwater.

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## DEVELOPMENT OF MICROBIAL CONSORTIUM FOR THE TREATMENT OF DAIRY EFFLUENT FROM NASHIK REGION

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**Abstract:** One of the major food industries in India is dairy industry. This industry needs to use a large amount of water for processing and produces a huge amount of effluent with high biological oxygen demand (B.O.D.). Disposal of the effluent in water bodies can cause serious pollution. It is one of the most polluting food industry.

For treatment of effluent, expensive methods are employed which, small scale dairies are not able to afford. Hence, development and use of facultatively anaerobic microbial consortium will reduce the cost of treatment and small scale dairies would be able to afford it.

For consortium development, 30 indigenous yeasts and 25 indigenous bacteria have been isolated from the effluent itself using Deman Rogosa and Sharpe medium suitable for lactic acid bacteria and Sabroud's agar for yeasts. Their cultural and morphological characteristics are studied.

The best indigenous bacterium and yeast was selected by considering maximum growth in a sterile medium with 2% effluent, indicated by optical density at 540nm in visible spectrophotometer (Systronics model). Two exogenous bacteria were selected using previous reference. They are *E.coli* and *Bacillus* spp. Their identity has been confirmed using automated 'VITEC' system.

A consortium was prepared by mixing equal volumes of 24 hours old broth cultures of these all organisms which were subjected to centrifugation at 3000 rpm for 10 minutes, washed with sterile saline twice to avoid incorporation of organic matter. Sterile dairy effluent was inoculated at 5% concentration with this consortium and incubated for 6 and 10 days at room temperature.

Analysis of effluent before and after treatment with the consortium has been carried out using the parameters recommended in Environment protection act 1986.

There is up to 67% reduction in Biological oxygen demand, 69% reduction in chemical oxygen demand, 87% in total solids, 87% in total suspended solids and 20% in oil and fats. These results are definitely encouraging.

Antibiotic sensitivity test of one of the opportunistic pathogenic bacterium, *E.coli* has been carried out. It is sensitive to all common antibiotics.

**Keywords:** Analysis as per Environment Protection Act 1986, Dairy Effluent, Facultative Anaerobic Inexpensive Treatment, Microbial Consortium.

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## BIOREMEDIATION OF DISTILLERY SPENT WASH (MELANOIDIN)-A NOBLE APPROACH

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**Abstract:** Melanoidin from distillery spent wash are natural condensation products of sugar and amino acids produced by non-enzymatic Maillard amino-carbonyl reaction taking place between the amino and carbonyl groups in organic substances. From environmental aspects melanoidins are very important due to their structural complexity, dark colour and offensive odor, which pose serious threat to soil and aquatic ecosystem. This causes the problem, like reduction of sunlight penetration, decreased photosynthetic activity and dissolved oxygen concentration whereas on land, it causes reduction in soil alkalinity and inhibition of seed germination. Bioremediation is an ecofriendly technology for treating chemical spills and hazardous waste. It is considered highly desirable to exploit the biodegradation potential of soil microorganisms from polluted sites. Application of microorganisms like, *Aspergillus niger*, *Leuconostocs sps*, *Bacillus sps*, *Staphylococcus aureus* and *Pseudomonas aeruginosa* will be the cost effective biotechnology for treatment of water polluted by spent wash containing melanoidin. Experimental studies revealed that the individual organisms and their mixed consortia degraded the 75 to 80% concentrated spent wash, after the optimization of various physicochemical parameters the mixed consortia exhibited enhanced activity as compared to the individual cultures alone. The treated effluents were characterized by COD reduction, HPLC analysis.

**Keywords:** Melanoidin, *Aspergillus niger*, *Leuconostocs sps*, Consortia, Distillery Spent Wash, HPLC.

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**Introduction:** Distillery spent wash is the residual liquid generated during alcohol production. It has been observed that a typical cane molasses based distillery generates 15 L of spent wash effluent per liter of ethanol produced. Around 212 distillery units in India generate more than 30 billion liters of spent wash annually [7]. The most important characteristic of spent wash is it is strongly acidic, dark brown colored hydrophilic viscous liquid waste with strong objectionable odour. Dark brown color of spent wash is mainly because of the presence of polymeric melanoidin pigments formed by the non enzymatic amino carbonyl reaction means Millard reaction [31]. Melanoidins are recalcitrant due to presence of caramel. Antioxidant natures of the pigments make them toxic to many microorganisms, including those present in waste water treatment processes. Agricultural land loses their fertility due to disposal of the spent wash directly into river. It also harms the aquatic system as its colored pigments reduce photosynthetic activity and depletes the dissolved oxygen in the water bodies. Spent wash polluted water has high biological oxygen demands, chemical oxygen demands, low pH, obnoxious smell. To reduce the dark color, acidic pH, High BOD, high COD it is considered highly desirable to exploit the biodegradation potential of soil microorganisms from polluted sites. Microorganisms from the contaminated site. As such polluted soils can facilitate selection of biodegradative capability in microorganisms and may act as reservoir of selective communities capable of degrading pollutants.

### **Materials and Methods:**

**Materials: Sample Collection:** Distillery effluent was collected from different Distillery division of Odisha. The contaminated soil was collected from the site nearby the distillery unit. The soil was collected by scraping the top layer of soil and subsurface soil and packed in an air tight sterile PP bags.

**Isolation of Organism by Enrichment Technique:** As described by Kumar et.al, 1998 and some research. Microorganism screening was done by enrichment the tubes showing decolorisation were subsequently sub cultured four times and isolation of microbial culture was carried out on minimal salt glucose medium by spread plate technique. The pure culture of different microbial isolates S1-S5 were maintained on minimal salt glucose agar medium containing 5% spent wash [7].

**Standard Melanoidin Preparation:** Standard melanoidin which is dark brown colored was prepared in laboratory by heating 1M glucose with 0.5M of glycine at 90°C and pH-5.5 for 6 hr using hot air oven [39]. The absorption maxima for standard melanoidin were measured at 450nm by double beam

Spectrophotometer (Shimadzu) and a standard dose curve was prepared. For heating at 90°C Hot air oven was used. Striking feature was that the absorption maxima of spent wash measured was also at 450nm. Hence the further degradation studies were performed at 450nm.

**Degradation Studies:** For mixed consortia loopful of pure culture of each isolate *Pseudomonas aeruginosa*, *Aspergillus niger*, *Streptococcus sps*, *Bacillus sps* and *Staphylococcus, aurius* from minimal salt spent wash agar media plate was transferred in 100 ml minimal medium with 60% and spent wash in 500 ml flask and incubated at room temperature to study the degradation ability. After 10 hr interval, 5ml aliquot was withdrawn for assaying degradation. Non inoculated minimal salt medium and minimal medium with 60% and spent wash were used as a blank and control respectively [7]. Isolates showing excellent results were selected for further study. Same procedure was followed for *Aspergillus niger* and *Pseudomonas aeruginosa*.

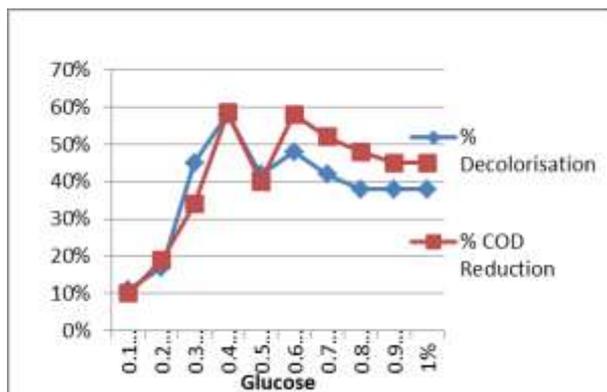
**COD and BOD Measurement:** Chemical and Biological oxygen demand of the samples before and after the treatment were determined using potassium dichromate and Winkler's method respectively [31].

**Biochemical and Morphological Studies of the Isolates:** Biochemical and microbial characterization of the isolates was done according to standard protocols [14]. Species identification was supported by VITEK 2 System at Bac-test laboratory Nasik.

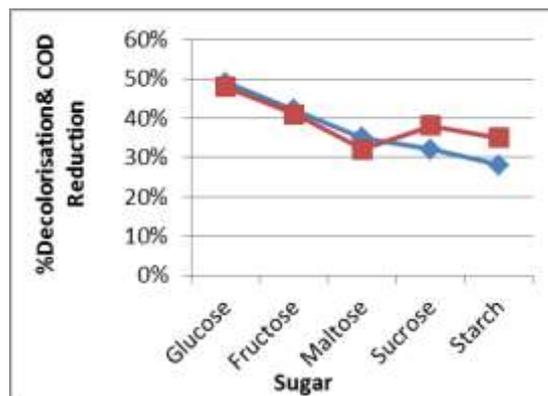
**Optimization of Physicochemical Parameters:** Various parameters were optimized to achieve better degradation and COD removal activity by mixed consortia. In previous studies the same was performed for *Staphylococcus, aurius*, *Aspergillus niger*, *Pseudomonas aeruginosa*. To study the effect of externally added carbon source on degradation activity and COD reduction activity 1g% each of glucose, fructose, maltose, sucrose and starch was added separately in minimal salt medium containing 60% spent wash [7]. Optimum glucose concentration required for color removal and COD reduction by the isolate was determined by taking glucose concentrations in the range of 0.1-1.0%. To study the effect of various nitrogen sources, ammonium chloride, ammonium sulphate, peptone, yeast extract and casein hydrolysate were added in the minimal medium at 0.4 g% concentration. Effect of pH on the degradation activity was determined by using the spent wash medium adjusted to pH values within the range of 4 to 9. Optimum temperature required for decolorisation was determined by incubating the isolate in the culture medium at different temperatures within the range of 25 to 45 °C. Different concentrations of spent wash such as 20, 40, 60, and 80% supplemented in the mineral medium as optimized above, were inoculated with the isolate and maximum spent wash concentration utilized by mixed consortia for decolorisation. Different concentrations of spent wash such as 20, 40, 60, and 80% supplemented in the mineral medium as optimized above, were inoculated with the isolate and maximum spent wash concentration utilized by mixed consortia for decolorisation and degradation was studied.

**HPLC Analysis:** HPLC Analysis was carried out and about 25 µl of sample was injected to the HPLC unit, mobile phase was acetonitrile: water in the proportion of 44:55ml (v/v) +1.0 ml glacial acetic acid +0.5g of sodium acetate 3H<sub>2</sub>O, pH of the system was 5.2. Flow rate of the system was 0.8ml/min changes in the peak length were the clue for the degradation of melanoidin in spent wash.

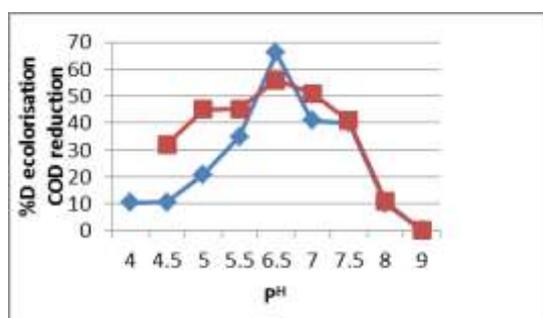
**Biodegradation Studies:** Decolorisation was followed by spectrophotometric measurements at 450nm, which is  $\lambda_{max}$  of melanoidin and spent wash. The effect of various sugars as externally added carbon source in the spent wash medium on decolorisation and COD reduction activity was studied. Decolorisation was found to be more in presence of all carbon sources used with respect to control, and was found to be maximum in the presence of glucose.



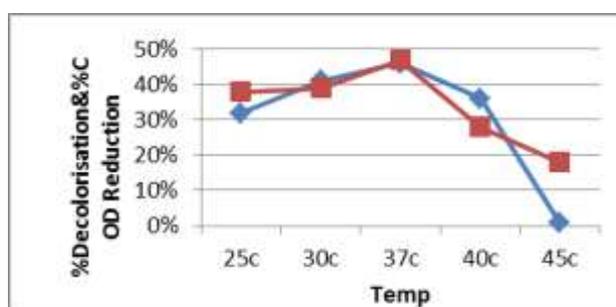
**Fig 1:** Effect of Different Concentration of Glucose on % Degradation and COD Removal



**Fig 2:** Effect of Different Types of Sugars on % Degradation and COD Removal



**Fig 3:** Optimum pH range for decolorisation and COD removal



**Fig 4:** Optimum temperature for decolorisation and removal

**Table 1:** Percent Reduction in Color and COD of Treated Spent Wash under Optimum Performance.

Time (hr)	% Decolorisation	%COD Reduction
24	25	28
48	38	41
72	58	59

Whether or not melanoidin is the main component responsible for color in the spent wash was confirmed by HPLC analysis.

**Table 2:** HPLC Profile of Melanoidin Degradation Study

Sample	Retention time	Area	Height	Concentration
A(Before treatment)	2.423	1180608	50575	100.0000
B(48Hr treatment)	2.435	1084859	46092	100.0000
C(72 Hr)	2.699	895421	45650	87.3203

After spectrophotometric observations further analysis of degraded spent wash was performed by HPLC. Various peaks of degraded spent wash using mixed consortia were compared to the peaks of standard melanoidin as good results were obtained by mixed consortia. The observed changes in peaks of IR spectra analysis with respect to control indicate the conversion of complex compound in to simple forms. An important structural feature of melanoidin is the presence of conjugated C=C and C=N bonds which imparts color these polymers. The above four bacterial and one fungal strain employed during the present research work might have brought about the cleavage of ethylinic C=C and Azomethine C=N

linkages. This conjugation may be broken down due to enzymatic oxidation. This is very significant from the toxicological implications of discharging spent wash effluent in the water bodies.

**Optimisation of Physicochemical Parameters:** Glucose in 0.4% concentration as carbon source was found to be optimum for decolorizing activity and above 0.58% glucose there was decreasing in decolorizing activity. This effect might be due to the acidic conditions produced in the medium after incubation by all organisms, inhibiting to the microbial growth. There was no effect of externally added organic and inorganic nitrogen on decolorisation efficiency. Nitrogen from the spent wash might be sufficient for the growth of the mixed consortia from the data it is clear that the mixed consortia were utilizing nitrogen from spent wash contents. Maximum decolorisation and COD reduction was found within the pH range of 6-6.5 the preferred range for the growth of the mixed consortia. Temperature range of 37°C was found to be suitable for activity of the isolate (Fig 4). The medium composition was optimized as (g/l, glucose-4; KH<sub>2</sub>PO<sub>4</sub>-0.2; MgSO<sub>4</sub>- 0.009; pH-6.5, and temperature of 37°C. Under the optimum conditions mixed consortia were able to decolorize the spent wash by 59% and COD reduction by 57% after 72hr of incubation for 80% spent wash.

Percent reduction in color and COD of treated spent wash under optimum performance conditions are shown in Fig.1 to Fig.4.

**Results and Discussion:** As the melanoidin content molasses spent wash is highly recalcitrant waste product. Treatments of Distillery spent wash [18] by physical and chemical methods are found mainly unsuitable on industrial scale [34]. It is now realized that microbial treatment provides safer, more efficient and less expensive alternative to physico-chemical methods for decolorisation, degradation as well as mineralization of spent wash.

Degradation of melanoidins was also confirmed by spectrophotometric analysis as decrease in optical density of melanoidin at its λ<sub>max</sub>; appearance of new peak in the spectra with respect to control was the clue for suggesting effective degradation. Physicochemical analysis of the spent wash effluent before and after treatment with the mixed consortia is presented in the table.

**Table 3:** Physicochemical Analysis of the Spent Wash Effluent Before and After Microbial Treatment

Sr No	Parameters	Before treatment	After treatment
1	Color	Dark Brown	Light Brown
2	Odor	Strong pungent	Mild
3	PH	4-4.3	6.5
4	BOD(mg/L)	60,540	34,350
5	COD(mg/L)	95680	43500
6	Total sugar(mg/L)	12,3000-90,000	700-1300
7	Total dissolved solids	7800	1600
8	Iron(mg/L)	124	80
9	Magnesium(mg/L)	2550	240
10	Sulphates (mg/L)	980	770
11	Free chlorides(mg/L)	7000	650
12	Phosphorus(mg/L)	4850	400
13	Oil and Grease(mg/L)	174	170

Appreciable reduction in case of most of the parameters were observed, especially color, BOD, COD, etc. This is very significant from the toxicological implications for discharging spent wash effluent in the water bodies.

Several researchers have investigated the role of microbial community in the degradation of melanoidins in the spent wash. *Bacillus* and *Xanthomonas* in immobilized form are reported to degrade the color causing material in the spent wash [12]. Most of the bacterial strains like *Pseudomonas*, *Acetobactor*,

*Aeromonas* sp. are reported to be capable of degrading some of the recalcitrant compounds in the an aerobically digested distillery spent wash. In a two stage bioreactor using *Pseudomonas putida* and *Aeromonas* sp. has achieved color and COD reduction by 60 and 44.4% respectively [12]. The fungus *Corriolus hirstus*. The fungus *Corriolus hirstus*, exhibited ability to decolorize melanoidin by 74% in GPY medium [19]. White rot fungi *Phanerochaete chrysosporium*, decolorised MSW (6.25% v/v) supplemented with glucose 9.25g/L) by 85% after 10 days of incubation. *Lactobacillus hilgardi* is reported to decolorize melanoidin solution 28%. In all of these cases 0.4-3% sugar either glucose or sucrose with essential nutrients were added and decolorisation required 7-10 days also the spent wash concentration was less. *Pseudomonas aeruginosa* used in this work was capable of giving 55% & 57% reduction in color and COD respectively with 80% spent wash within 72hr with externally added glucose 0.5%. The indigenous isolate *Aspergillus niger* used in this work was capable of giving 58% & 57% reduction in color and COD, respectively with 60% and 80% spent wash. Within 72hr with externally added dextrose 0.4%.

While mixed consortia was capable to give 59% decolorisation and 57% COD removal for 80% spent wash with externally added glucose 0.4%. Use of mixed consortia for decolorisation of 90% and 100% spent wash in progress. Better decolorisation was observed with 20%, 40% and spent wash using the above strains like *Pseudomonas aeruginosa*, *Aspergillus niger*, *Streptococcus sps*, *Bacilli sps* and by mixed consortia.

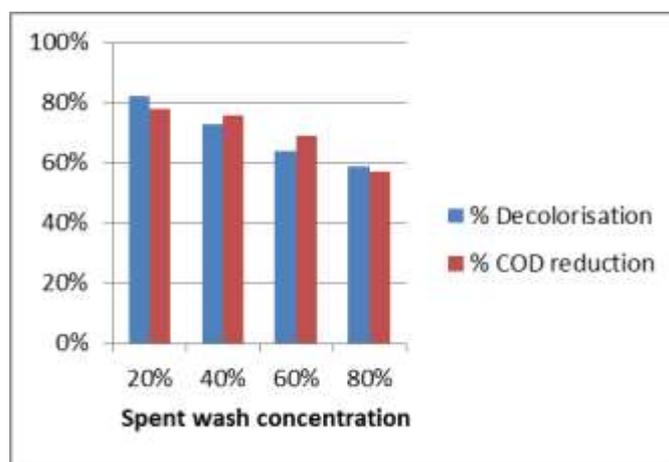


Fig. 5 Optimization of Spent Wash Concentration for Degradation by Mixed Consortia

Addition of readily available external carbon source was found to be necessary for metabolism of microbes in the spent wash medium. Although spent wash contains huge amounts of sugar but its easily metabolisable carbon content is almost negligible [18]. Growth pattern of the isolate with respect to color removal indicated that within first 24 hr growth was initiated but without any decolorisation, but after 24 hr gradual increase in growth with decolorisation was observed up to 72 hr.

This effect can be explained as during initial phase organism utilizes easily metabolisable carbon source added to the medium and later on begins to degrade spent wash components for carbon source [18]. When both decolorisation and COD reduction were monitored as a function of time, the results showed that with the increasing decolorisation activity there was notable COD reduction and it was profound between 24-72 hr.

The probable mechanism of decolorisation and COD reduction might be through enzymatic degradation as sugar oxidase, and manganese dependant peroxidase have been reported for microbial degradation of melanoidins [38]

**Conclusion:** Mixed consortia were found to be more efficient in decolorization of 60% spent wash along with melanoidin degradation in comparison to earlier reports. As the highly concentrated spent wash is decolorized by the above strains and mixed consortia this approach can be further exploited to develop a cost effective, eco-friendly biotechnology package for the treatment of concentrated distillery spent wash.

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## THE IMPACT OF DIFFERENT TYPES OF FILTERS ON THE QUALITY OF DRINKING WATER

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**Abstract:** Water filters are commonly used in most house in the State of Kuwait. The main use of filtered water is often for drinking and cooking activities. Reasons for using household filtration system vary between the consumers' concerns about the quality of municipal water supply delivered to houses (tap water), or a desire to get highly purified potable water and therefore –from their point of view- a safer one. Another image for the lack of confidence in tap water is the high consumption of bottled water. Filters used in houses are different in terms of techniques, sizes and prices. The aim of this study was to evaluate both the performance of major water filters available in Kuwaiti market and the quality improvement by house water filters. A station in Kuwait university was built and a total of eight types of water filters were installed and tested for 10 months. In addition, water samples were collected from residential houses in Kuwait. The results showed that the ceramic and carbon filter had a lower cost, higher efficiency of electrical conductivity (4.9%), as well as higher efficiency of reducing total coliforms, turbidity (94%), TSS (100%), and nitrate and nitrite concentration (38%) . On the other hand, carbon wrapped filter and ceramic filter may not be effective in improving the quality of water in Kuwait. The carbon wrapped filter for example, has the lowest efficiency in reducing TDS (6.6%), turbidity (75%), total coliforms (33%) and metals concentration compared with other types of filters. Therefore, it is not recommended to use these two types of filters in Kuwait. However, the residential water filters should be maintained, monitored and cleaned periodically to achieve better efficiency in all governorates in Kuwait especially the ancient one such as Al-Jahra governorate.

**Keywords:** Drinking Water Quality, Water Filters, Filter Efficiency, Physio-Chemical Properties.

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## IRON DEFICIENCY ANEMIA CASES IN DIFFERENT REGIONS OF PUNJAB (INDIA)

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**Abstract:** Iron deficiency anemia (IDA) is one of the most widespread nutritional deficiency and accounts for almost onehalf of anemia cases. It is prevalent in many countries of the developing world and accounts to five per cent (women) and two per cent (men). In most cases, this deficiency disorder may be diagnosed through full blood analysis (complete blood count) and high levels of serum ferritin. IDA may occur due to the physiological demands in growing children, adolescents and pregnant women may also lead to IDA. However, the underlying cause should be sought in case of all patients. To exclude a source of gastrointestinal bleeding medical procedure like gastroscopy/colonoscopy is utilized to evaluate the level of iron deficiency in patients without a clear physiological explanation. Inevitably, the accurate management of this disorder improves the quality of life, improves the symptoms of iron deficiency, and lessens the requirement for blood transfusion. The treatment options include oral iron supplement and intravenous iron therapy. However, this mode of treatment is not tolerable by some patients while it is insufficient in a certain subset of patients. Therefore, intravenous iron supplementation is considered undesirable approach and there is not much clarity on the safety concerns associated with this approach in case of very high doses or in the presence of very high ferritin levels. In addition, red cell transfusion is not recommended for IDA unless there is a need for immediate action. The objective of the review is to provide a critical summary and an update of the diagnosis and treatment options of IDA.

**Keywords:** Iron Deficiency Anemia, Gastrointestinal, Insufficient Iron Intake, Hemoglobin.

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**Introduction:** Anemia is a condition in which the total **hemoglobin** (Hb) level or number of red blood cells (RBCs) gets decreased. The World Health Organisation (WHO) defines anemia as Hb < 130 g/L in men older than 15 years, 110 g/L in pregnant women, and < 120 g/L in non-pregnant women older than age 15 years [1]. **Table 1** shows the definition of anemia as defined by the World Health Organization (WHO). Iron deficiency anemia (IDA) is a certain anemic condition arising due to the inadequate iron to form normal RBCs [2]. IDA is usually caused by insufficient iron intake, chronic blood loss, and increased iron demand. The prevalence of IDA varies across the world [3]. Recognizing the original etiology and the relevant diagnostic and therapeutic issues are primary keys in the management and assessment of this disorder.

Iron is an important dietary mineral associated with many body functions like oxygen transport in the blood. Iron deficiency anemia is characterized by incomplete hemoglobin synthesis that results in microcytic and hypochromic red blood cells. Due to inadequate hemoglobin, the ability of blood to deliver oxygen to the other body cells and tissues is reduced [4],[5], [6], [7].

Iron deficiency is defined as an imbalance of iron intake, absorption and iron loss. The iron deficiency is the first cause of anemia. Pallor, **fatigue** and dyspnea are the most common symptoms of anemia. Anemia is classically associated with microcytosis and hypochromia in biological exams. Iron deficiency, inflammatory aetiologies, thalassemia and sideroblastic anemia are the origins of microcytic anemia [8].

Hemoglobin is an allosteric protein with primary function of binding and transporting of oxygen in the blood to tissues in order to meet metabolic demands. Synthesis of Hb involves a series of complex steps occurring in the erythrocytes, with production continuing through the early phases of the development and maturation of red blood cells. The coordinated production of heme, the group that mediates reversible oxygenation, and globin, which is responsible for protection of the heme group during transport, is required during synthesis.

**Iron Metabolism:** Iron is an essential element required for the maintenance of **physicochemical** processes. It is very much necessary to maintain its balance for proper physiologic

functioning in the body. As the overabundance of iron can have extreme adverse effects like liver swelling and damage, in the same manner it is always advisable to avoid iron deficiency (ID) or iron overload [9]. The body absorbs 1 to 2 mg of dietary iron a day, which is balanced through body processes i.e., menstruation, sloughed intestinal mucosal cells, and other blood losses [10]. Dietary iron comprises heme iron (animal sources) and non-heme iron (vegetable and cereal sources). Heme iron bound to Hb and myoglobin is responsible for delivering oxygen to the tissues. Pancreatic enzymes digest heme to release it from the globin molecule in the intestinal lumen. This is followed by the absorption of heme iron into the enterocytes as metalloporphyrin takes place and it is further degraded by heme oxygenase-1 leading to the release of non-heme iron. Subsequently, iron is exported by the only iron exporter ferroportin, present on the basolateral aspect of the enterocyte [11]. On the other hand, non-heme iron is less well absorbed. It is absorbed by intestinal luminal cells through a specific transporter and released into the circulation wherein the binding of transferrin occurs. Transferrin receptors on erythroblasts accept iron-transferrin complexes, which undergo the process of **endocytosis** leading to the incorporation of iron into Hb.

Iron absorption is maintained by increased erythropoiesis and iron deficiency, and down-regulated in iron repletion and **inflammation**. This dynamic process of iron absorption is mediated by hepcidin, which regulates the inflow of iron and blocks iron release from enterocytes and macrophages [12]. Iron stores in the body are regulated through the process of iron absorption. Non-heme iron is absorbed in the ferrous form (Fe<sup>+2</sup>). Reduction of ferric iron (Fe<sup>+3</sup>) by dietary ascorbic acid, stomach acidity, and luminal reductase improves the iron absorption. Non-heme iron is repressed by simultaneous consumption of tannins (in tea), phytic acid (in cereal and legumes), and calcium. Simultaneous consumption of ascorbic acid and heme iron sources also improves the process of absorption [13],[14], [15].

Prevention and control is typically achieved through iron fortification of food staples like flour, rice, and pasta, and/or through administration of iron supplements most often in iron pill or, more recently sprinkle form. Although iron supplements are widely available and fortified foods constitute a major component of the diet in the developed world, access is limited in the developing world and cost is often prohibitive.

**Materials and Methods:** The students were grouped as per their age and weight and were studied by using Sahli's Method. It was as follows:

After ensuring the hemoglobin pipette and tube are dry, N/10 HCl was added into the tube upto mark 2g%. EDTA was mixed and the pipette was filled with 0.02ml blood. Make sure that no air bubbles enter into the pipette. If it enters, discard and pipette again. Wipe the external surface of the pipette to remove any excess blood. The blood was added into the tube containing HCl the blood was mixed with the acid thoroughly. The stand was undisturbed for 10min. The hemoglobinometer tube was placed in the comparator and added distilled water to the solution drop by drop. Stirred with the glass rod till it's color matches with that of the comparator glass. While matching the color, the glass rod must be removed from the solution and held vertically in the tube. The reading of the lower meniscus of the solution was noted as the result and the hemoglobin content as g%.

**Results and Discussion (Table 1-3)**

Normal Hemoglobin values

Adult Male- 14- 18 gm /dl

Adult Female-12 -16 gm/dl

**Table 1:** Hoshiarpur (Group 1)

Sr. No.	1	2	3	4	5	6	7	8	9	10
Age	17	18	17	18	19	19	20	19	17	18
Weight	47	50	46	51	47	51	52	44	49	50
Values gm/dl	9	10	9	10	10	11	11	10	10	11

**Table 2:** Jalandhar (Group 2)

Sr. No.	1	2	3	4	5	6	7	8	9	10
Age	17	18	17	18	19	19	20	19	17	18
Weight	47	50	46	51	47	51	52	44	49	50
Values gm/dl	9	10	9	10	10	11	11	10	10	11

**Table 3:** Amritsar (Group 3)

Sr. No.	1	2	3	4	5	6	7	8	9	10
Age	17	18	17	18	19	19	20	19	17	18
Weight	47	50	46	51	47	51	52	44	49	50
Values gm/dl	9	10	9	10	10	11	11	10	10	11

**Conclusion:** The diagnosis of anemia is confirmed by the findings of low iron stores and hemoglobin level below normal. In cases of IDA, oral iron treatment should be initiated for the replenishment of iron stores. Intravenous therapy may also be used in patients who cannot tolerate or absorb oral iron formulations. The symptoms may be tiredness, weakness leg syndrome, Mental fatigue, Low self esteem, Lack of concentration, light headedness and weak memory.

The causes may be: Less intake of dietary iron, Blood loss from the body like in case of parasitic infections, Excessive Blood in case of menses irregularities.

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## RECENT MORPHOLOGICAL AND TAXONOMIC APPROACH TOWARDS THE CLASSIFICATION OF MYXOZOA UNDER PHYLUM CNIDARIA: A REVIEW

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**Abstract:** Myxozoan parasites are multicellular species which occur as pseudocysts within (histozoic) or between tissues (coelozoic) of vertebrate host. The outside of these pseudocysts or plasmodia is composed of a pinocytotic membrane across which nutrients can pass. The pseudocysts are in the form of minute, white to pale yellow pustules on the affected parts of the body and can be seen with naked eye. Recently, many works have been done many researches for identifying whether they make a place in Phylum Cnidaria or not as earlier it was not so clear. For this, researchers done both molecular and proteomics studies. Myxozoans have evolved to infect virtually all fish tissues and exhibit a degree of host and tissue specificity and these represent around 18% of cnidarian species diversity. The present paper is a review on the current classification and approach towards the Cnidarian status of myxozoans.

**Keywords:** Myxozoa, Phylogeny, Taxonomy, Gene markers, India.

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**Introduction:** Myxozoans were once considered to be protists based on the size of the spores. It had been proposed over the years that these parasites were metazoans due to their multicellular development. As their distinct nature became clear through 18S ribosomal (rDNA) sequencing, they were reallocated in the metazoa. Detailed microscopic and molecular analysis by [1] convinced the researchers once and for all. Myxozoans are endoparasitic cnidarians belonging to Phylum Cnidaria and unranked subphylum Myxozoa under new scheme of classification by [2]. The described nominal species are classified into 64 genera and 17 families. The phylum Cnidaria is composed of two classes: the class Malacosporea [3] with three described species, and the class Myxosporea Bütschli (1881) with the overwhelming majority of myxozoan species. Members of the class Myxosporea form vegetative stages i.e coelozoic in the body or organ cavities and histozoic in the tissues and two types of myxospores (myxospores and actinospores). The current classification of myxosporeans is based on the morphology of myxospores since their vegetative stages usually do not possess sufficient features for the classification. Important characters are the size and shape of the myxospore, the polar capsules, position of the polar capsules to a plane of the suture and their location in the myxospore, number of shell valves, presence of the surface ridges, projections and envelopes of myxospore and character of sporoplasm etc. Besides the myxospore characteristics, information about the vegetative stages, development of the myxospore, the host species, host environment and final site of infection in the host are important for proper determination of the parasite or description of a new species [4], [5]. The main criterion for myxozoan classification is myxospore morphology, however molecular markers reveal unexpected myxosporean relationships and show discrepancies between myxospore based classification and phylogenies based on gene sequences. Phylogenetic studies carried out by [6] using 18S and 28S rDNA and resolved the phylogeny of two novel myxosporeans, *M. atkinsoni* and *H. latiusii* infecting gills of cyprinid carps of wetlands in Punjab. The obtained phylogenetic tree showed the paraphyletic nature of *Henneguya* and *Myxobolus* genera showing close similarity between them. They concluded that the two novel myxosporeans have the tendency to cluster according to order or family of host, tissue and geographical location.

**Life Cycle:** The myxosporean life cycle includes the alternation of two hosts. The myxospore phase takes place in the vertebrate whereas the stages of the actinospore phase undergo their development in the invertebrate. The typical vertebrate host is the teleost fish, but several myxosporean species have been found in the cartilaginous fishes [7]. Other hosts from the water environment are amphibians, reptiles and ducks [8], [9]. Presently, molecular classification has become another approach in taxonomic and phylogenetic studies in myxozoans. The focus of these studies has been on comparative analysis of small subunit (SSU) ribosomal DNA (rDNA) sequence. [10] were first to use sequence analysis to study the phylogenetics of the Myxozoa. Since then, these sequences of myxozoans have been employed by several investigators to address systematics and life-cycle questions. An outgrowth of these studies has been the

development of sensitive PCR tests based on rDNA sequences, which are routine diagnostic tools in fish health laboratories.

**Economical Importance of Myxozoa:** Myxozoans provide fundamental insights into the evolution of early diverging metazoans, where simple diploblastic organism have evolved to become endoparasites. Certain myxozoans cause emerging diseases that are linked with environmental change which impact wild and cultured populations of economically important fishes. Myxozoan infection can also result in substantial economic loss to aquaculture and fishes, impacting the health of fish in farms and hatcheries and reducing the marketability of fish. The extensive geographic sampling of economically significant myxozoans have demonstrated intraspecific genetic variation, strains linked with geographic localities, species complexes, and their impact on the host. Some of the diseases caused by them are gill haemorrhagic disease by *Thelohanellus bifurcata* [11], [12] and [13].

**Cnidarian Status:** Recently, many works have been done many researches for identifying whether they make a place in Phylum Cnidaria or not as earlier it was not so clear. For this, researchers done both molecular and proteomics studies. Genome sequencing confirms that myxozoans, a diverse group of microscopic parasites that infect invertebrate and vertebrate hosts, are actually are "highly reduced" cnidarians- the phylum that includes jellyfish, corals and sea anemones. They're microscopic, only a few cells measuring 10 to 20 microns. Some people originally thought they were single-celled organisms. But when their DNA was sequenced, researchers started to surmise they were animals- just really weird ones". Myxozoans don't have a mouth or a gut. They have just a few cells. But then they have this complex structure that looks just like stinging cell of cnidarian.

[14] concluded that myxozoa is a sister to medusozoa within Cnidaria by studying its phylogenomic analyses. They also studied the cnidarians-specific minicollagen genes and detected 11 of the 19 proto mesodermal genes in *T. kituae* genome. [15] yielded a significant understanding in evolutionary pattern of myxozones from free living cnidarians by investigating the genomic and transcriptomic analysis. [16] hypothesized that polar capsules of myxozoans and nematocyst of free-living cnidarians were homologous organelles having different functions and targets. They illustrated that the evolutionary adaptation of cnidarian nematocyst into polar capsule could be a part of an organismal shift from free living to parasitic mode of life. Their data showed that the basic function such as protein content and osmotic machinery needed for eversing the polar tubule retained, but they lost toxins and tubule injection capabilities.

[17] identified and characterize 7 more cnidarians specific gene in myxozoans. During evolution they lost most of the cnidarian's characteristics, except for the polar capsules thus this structure is only prominent structure that unites all members of the Phylum Cnidaria.

**Conclusion:** It is clear that traditional, morphology-based taxonomic methods are inadequate to resolve interrelationships of the Myxozoa in light of apparent plasticity of myxozoan morphology. However, reliance upon a single gene to reconstruct phylogeny can itself be misleading (Nichols, 2001). More gene markers could aid in the phylogeny of these parasites. Sequences of more than one gene are available for less than 1% of known myxozoan species. Hence, genomic data can be used to develop conserved, orthologous markers in order to better test and resolve myxozoan interrelationships.

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## CONTRASTIVE RHETORICAL ANALYSIS ON THE GRAMMATICAL STRUCTURES OF NEWS HEADLINES IN THAI ENGLISH AND BRITISH ENGLISH NEWSPAPERS

ROMMEL V. TABULA

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**Abstract:** Previous researches showed links between grammatical structures of text and socio-cultural backgrounds of writers. This study investigated the rhetorical patterns of news headlines in Thai English and British English newspapers. Specifically, it probed the grammatical structures frequently utilized by news writers; the contrastive rhetorical analysis of cohesive conjunctions employed in news headlines; and the cultural practices reflected in headline writing. Through descriptive research design, the researchers analyzed 40 news headlines obtained from the online edition of four leading newspapers from Thailand and the United Kingdom published daily from September 25 – October 6, 2017. Frequency counts and percentages were applied in determining the patterns. Results showed that S-V-O pattern emerged as the commonly employed grammatical structure in simple sentential news headlines of both countries. Multiple sentential news headlines were found in British newspapers while they were absent in Thai newspapers. Apparently, S-V pattern in long headlines was frequently used by British writers. Noun phrases in non-sentential news headlines existed in the two linguistic communities. British newspapers used temporal and adversative cohesive conjunctions which are non-existent in Thai newspapers. The resemblance of headlines' grammatical structure in both nationalities reflected their cultural similarities; but the presence of multiple sentential headlines contrasted them. Thus, Thai English and British English news headlines manifest parallelism but have distinctness in some aspects.

**Keywords:** Linguistics, Contrastive Rhetorical Analysis, Grammatical Structures, News Headlines, Thai English and British English Newspapers,

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## A FEMINIST READING OF MARIAMA BA'S *SO LONG A LETTER*

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**Abstract:** This article examines the depiction of female-male relations in Mariama Ba's *So Long a Letter*. The text is an epistolary narrative that explores the experiences of Ramatoulaye, the main protagonist. Ba depicts patriarchy and tradition as central to the myriad challenges confronting African women in the text. Polygamy is depicted as a system that privileges men and negatively impacts women. However, it is crucial to observe that some women in the text support and benefit from polygamy. Modou's mother, for example, typifies this as she encourages her son to marry a second wife in compliance to 'tradition' as she will gain more respect from society. This is done however at the expense of Ramatoulaye who is frustrated with the idea of Modou marrying a second wife and deserting her and their children. Thus, Ba depicts polygamy as a system that marginalizes and at worst denies or ignores women's rights and freedom. However, it is important to note that women are not always victims of the system of polygamy as Ba gives Ramatoulaye the power and authority to speak about her situation as a woman. Ramatoulaye seriously contests this system in her quest for freedom and fulfilment as a woman and a mother as she narrates in her letter to her friend Assaitou that polygamy is a system that stifles a woman's desires and aspirations. Thus, Ba, through the portrayal of Ramatoulaye, seems to suggest that a woman's happiness as well as respect and freedom can be found outside the confines of polygamy. Ramatoulaye only realizes her freedom and economic independence after her husband leaves her for a second wife. This freedom and independence is concretised by the death of her husband as it is a metaphor for the collapse of polygamy in the text.

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## GRADING MORE EFFECTIVELY: USING ONLINE ASSESSMENT IN EAP UNIVERSITY COMPOSITION COURSES.

CHRIS HORGER

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**Abstract:** Traditional writing assessment involved long hours of hand writing comments on student essays. These comments were intended to guide students to improve their writing. However, since many instructors wrote in cursive, there were frequently issues of legibility, and sometimes students couldn't understand the written feedback. Plus, instructors found that much of what they wrote was repetitive, making the act of assessment long and tedious.

With the advent of on-line assessment, all written feedback appears as printed text, and students are more likely to read and understand their teacher's comments. Furthermore, teachers have the added advantage of using rubrics, which clearly state the criteria used for assessment. What's more, teachers can use desktop notes to record the most commonly written comments, and instead of re-typing and reiterating them endlessly as feedback on student essays, they can make use of copy and paste functions to improve efficiency and reduce grading time.

This presentation will discuss many of the advantages of migrating to Blackboard for improved efficiency in writing assessment.

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## SELF-EFFICACY AND ACADEMIC ADJUSTMENT AMONG FRESHMEN COLLEGE STUDENTS

KENY PEK, BAGUS DEWA BARUNATA, MUH. HUSNUL NURHADI,  
AHMAD ZAIN FAHMI, NUR WIDIASMARA

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**Abstract:** Students who are graduated from senior high school, they will enter the college. Transition from high school to college requires academic adjustment among freshmen students in order to adjust especially in term of learning. Self-Efficacy beliefs provide the foundation for human motivation and personal accomplishment. We hypothesized that Self-Efficacy is important to succeed freshmen college students to adjust their Academic Adjustment. This study aimed to determine the relationship between Self-Efficacy and Academic Adjustment among freshmen college students. This study used a quantitative approach with correlational. This study also used Level of Academic Self-Efficacy Scale (Sachitra & Bandara, 2017) for measure Self-Efficacy. Level of Academic Self-Efficacy scale include 19 items. For measure level of Academic Adjustment we used Academic Adjustment Scale (AAS) (Anderson, Guan, & Koc (2016). Academic Adjustment Scale (AAS) include 7 items. This study involved 189 freshmen college students as a participant consist of 75 males and 114 females freshmen college students. The data analysis showed that correlation value  $r = 0.434$  with  $p = 0.00$ ,  $P < 0.05$ . The result showed that self-efficacy has a positive correlation with academic adjustment among freshmen college students. Self-Efficacy has significantly correlated with Academic Adjustment among freshmen college students. The results were consistent with the study hypothesis, showed that when freshmen college students has a strong level of Self-Efficacy he surely had a strong level of Academic Adjustment and if freshmen college students has a weak level of Self-Efficacy surely had a weak level of Academic Adjustment. The result will be discussed in this study.

**Keywords:** Self-Efficacy, Academic Adjustment, Freshmen College Students.

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## TRANSNATIONAL SPACE AND SENSIBILITY IN HAMID'S *EXIT WEST* (2017)

DR. RATIKA KAUSHIK

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**Abstract:** Diaspora as an old notion is constituted out of migration experiences. It centres upon the dichotomies of 'Home'/ 'Homeland', belonging/ exile where the displaced live through journeys of displacement with a sense of loss and nostalgia. Migration has become an unsettling reality of contemporary times. Our world is experiencing bouts of migration people on record and debates rage around that who is worthy enough to open doors for, challenges are also observed with new possibilities. Mohsin Hamid's most recent novel, *Exit West* (2017), focuses on the concept of belonging in relation to place and space in a politically unstable global landscape. This paper attempts to have an understanding of the 'new transnational space and sensibility' while exploring Mohsin Hamid's novel *Exit West*. The novel features human migration, transformations, nativism, and immigrant threats and envisions the world as a transnational space with porous borders. My paper will analyse the temporal and spatial oscillations situates the individual struggle of two protagonists, Saeed and Nadia's migration within the broader geopolitical and economic context of the world-system.

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## WOMEN'S WRITINGS AND SOCIAL CHANGE

SUDHI RAJIV

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**Abstract:** Feminism and feminist thinking have played a major role in drawing our attention to issues of 'otherness' and 'difference'. Feminism provided tools of powerful critical intervention to break down universal paradigms of patriarchal hegemony.

The literary works by women writers provide insights into and an understanding of society through the eyes of women. My attempt in the paper is to explore the role literature as a tool for intervention in the social fabric. The woman writer re-writes her story from the perspective of women and defines her identity in the larger cultural context. She moves through the stages in the growth of her consciousness - emergence, growth and crystallization - and is thereby able to create a space for herself relating across human differences as equal. In Morrison's *Beloved* the characters look for a world where "you could love anything which you chose . . . That is freedom". Such perceptions are made by literary writings of women who articulate "unspeakable thoughts, unspoken". Within this framework, I may cite illustrations from selected texts.

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## THE MAZE OF MYSTICISM IN SRI AUROBINDO.

DR. DINESH KUMAR SHARMA, ASHWANI KUMARI

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**Abstract:** In the firmament of Indian thoughts and literature, Sri Aurobindo was a profound yogi, a mystic and an aesthete shining brightly and spreading his peculiar light. His yogic experiences were firmly rooted in the Upanishads and the age old Indian aesthetic tradition. As a man of multi faceted literary personality, he holds his place chiefly as an Indo-Anglican poet of a very high stature yet there is much more to him than meets the eye. He is regarded as one of the greatest poets of Indian writing in English. The aim of this paper is to examine briefly the maze of mysticism with which Sri Aurobindo's works are studded. Aurobindo's mystical inspiration is visible everywhere in his poetry. Sri Aurobindo's poetic output is enormous. The span of his creative activity covers a period of over sixty years, and his poetic output runs to over three thousand pages. He tried his hands at a number of poetic forms, and almost always with great success. He has to his credit lyrics, sonnets, narrative poems, epics, poetic plays, besides numerous translations and adaptations. For the convenience of study, his poetic career can be divided into three stages: The early stage, the middle stage and the last stage. This division is only to study his poetic career in a more lucid manner, for many of his poems composed in the earliest stage were printed at a much later date, and the trends and features of a later stage can also be noticed even in the early stage. His methodology is reminiscent of traditional approach, which is primarily that of introspection, where the way to truth is based upon knowledge which is gained from intense, prolonged to various form of empirical investigations of the mystic elements.

**Keywords:** Eternal Insights, Illumined Soul, , Mysticism, Yogi, Mystical Poetry, Symbolism.

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**Introduction:** Mystery has always shrouded the term "Mysticism" because it is too complex and complicated to be defined with any single definition and to be understood by a common man. It denotes an intuitive approach to Reality and thus is in direct contrast to rationality. Generally our approach to Reality is through Reason or Intellect and Intuition which are the two main approaches.- the former being favored by the age of science because of its absolute reliance on the rational faculty of Man for exploring the Ultimate reality where as the latter is regarded as the reliable and the infallible guide to man on his way towards Truth by the saints and the visionary poets in the East and the West . Sri Aurobindo believes that Reason, with its limited range and power cannot give us an insight into the divine reality. He contends that, "The reason cannot arrive at any final truth because it can neither get to the root of things nor embrace the totality of their secrets; it deals with the finite, the separate, the limited aggregate and has no measure for the all and the infinite." [1]

Aurobindo's Mysticism has been defined as the direct experience or the efforts for experiencing ecstasy intuition and the vision of the soul, self and nature. He includes the sense of union of the self or soul accompanied by melancholy, solitude, renunciation, meditation and inner contemplation. The faith in a divine principle or soul in which both the humanity and the cosmos participate, is directly related to mysticism. It manifests itself into human consciousness of eternal insights. According to Peter Moore, the term "mysticism" is "problematic but indispensable." It is a generic term which joins together into one concept separate practices and ideas which developed separately. [2]

Sri Aurobindo had some very profound mystical and spiritual experiences, which he himself has described in some of his short poems. These are exceptional poems, which have a multiple significance of being autobiographical records, mystical poetry and poetic description of spiritual experiences. Sri Aurobindo was much more than a poetic genius. He is known as Yogi par-excellence and a mystic. Therefore, his poetry often tends to be mystical and metaphysical. His short poems are quite revealing and striking as they are suffused with his mystical visions.

Mysticism is a religious belief. It is based on the fact that **union or communion with a deity, or divine being is possible**. Mysticism allows us to go beyond the physical to experience enlightenment — let's just say we will recognize it when it happens. Mysticism, generally speaking, is **of two types**,

**higher and lower.** We are here, of course, concerned with the former. Mysticism is not an abnormal phenomenon, nor an outcome of reflexes and baffled desires but rather an expression of normal human impulses. It is rather, a quest of **the Unknown**, a direct apprehension of **the Real** through immediate experience and Inner contact.

We can easily differentiate mysticism from spiritualism. Mysticism "seeks union with God alone." It shifts its interest **"from objects to their cause, from creation to the creator.** While spiritualism is the evocations and the séances and having dialogue with the souls of dead persons. Intense and deep feeling is the keyword for mysticism and this 'feeling' aspect is a paramount fact. Almost all great writers on mysticism have accepted 'feeling' as the true essence of mystical truth, as distinguished from reason, intellect, speculation, logic, gnosis, learning, education, and so on. This uncanny, mysterious, unknown 'feeling' is what leads to the highest state of consciousness or the ecstasy and opens up new spiritual vistas of experience and esoteric phenomena.

This 'feeling' or we may better call it, 'intuitive feeling', in the innermost heart of man, is something positive, something ingrained in the mind.

To sum up we may say that Mysticism reconciles the opposition between idealism and pragmatism, between transcendentalism and naturalism and makes the sense of the unity of all things as realized in the self, the basis of all vision and effort. It is basically synthetic, not analytic, discursive or theoretical. Poems such as **Revelation, Transformation, The Blue Bird, Rose For God, Invitation** etc are only to name a few which are suffused with mysticism.

The poem "**Revelation**" is a mystic experience of the poet (some understanding with universal vision). He feels as if the presence of God, Vision of God leaps behind the rocks and passes him like a blow of wind. By the time he tries to guess what it would be, it vanishes. He feels it like a bright light which is visible to his mortal eyes. It is like a frightened rose glows with a sudden beauty. He feels as if someone is passing him with a footstep like the wind. When he hurries to take a glance at it, but there remains nothing. He feels it is just a veil of maya (illusion). He that it is to make the man understand the heavenly vision:

**"Someone leaping from the rocks  
Past me ran with wind-blown locks  
Like a startled bright surmise  
Visible to mortal eyes,"-**

Like-wise mystic transformation has been beautifully captured in the poem the poet shows the process of controlling the various thought waves of mind through mystic consciousness of surrendering everything including the pleasures of sense for the sake of attaining the world of emptiness or the unheard melody. It shows how it is very tedious for a body to be changed from its state of flesh and bone into the eternal state of supreme bliss where there is joy and rapture of the highest degree. My breath runs in a subtle rhythmic stream;

**It fill of my members with a might divine  
I have drunk the infinite like a giant's wine  
Time is my drama or my pageant dream  
Now one my illumined calls joy's. (Transformation)**

This transforming of the body into the supreme world of unknown raptures is presented in metaphysical mystic conscious way. The seeker of the eternal truth gets the upper hand of five senses leading to his denial of being a mere a "vassal of flesh" but more than that because he is not a slave of nature and bounded with any nature's law or rule. Even he is not under control of his senses. Therefore at the very beginning of the second stanza, the poet says, "I am no more a vassal of flesh" as he is conquered all the things which bound the humans.

This transformation enable the poet to state that he is not only belong to this world but to the whole

universe as his "soul widens to measureless sight" and his body becomes "god's happy living tool" and his spirit is like a vast sun which is eternal emerging deathless light.

Sri Aurobindo is rightly acknowledged as a philosopher par excellence, a poet par excellence because his poems reflect the mystical elements elevating us to the level of the super mind ultimately. According to Sri Aurobindo poetry is the highest form of art that can carry us forward on the long high road to timelessness. A tough concept to explain as Mysticism is, yet he remained a life-long seeker of the divine truth and deeply experienced it as well. Mystics are those who get visions at the acme of spiritual revelation. He says that man should transcend the conscious level and realize the super conscious level through the medium of yoga. This can be attained by internal surrender or total dedication to the super mind of God. This is why one can easily enjoy the divine glimpses of mysticism in his works both small and great.

One more poem that has the rather enviable ability to transcend worlds Sri Aurobindo's "The Blue Bird" In the Indian cultural context birds enjoy a rather exalted place. They are considered as representatives and vehicles for the Gods. The eagle or Garuda for Lord Vishnu, the crow for Saturn and many more. This simple acceptance of the power and position, bestowed upon it by God, is apparent in the very first stanza of the poem:

**"I am the bird of God in His blue Divinely high and clear  
I sing the notes of the sweet and the true For the gods and the seraph's ear."**

As a descriptive poem "The Blue Bird" is replete with images both literal and abstract. Sometimes both may appear in the same line as in the case. It is easy to visualize a bird spread its wings and fly but it is difficult to visualize anything beyond time and space. Sri Aurobindo's Blue Bird is a mystic who has witnessed all. His freedom is born of true knowledge, "Nothing is hid from my burning heart" and consequently he has a mind that is "shoeless and still". The integrality of the spiritual experience and aspiration of the poet can be seen here. In "The Blue Bird", Aurobindo says.

**"I rise like a fire from the mortal earth Into a griefless sky  
And drop in the suffering soil of his birth Fire seeds of ecstasy".**

What the poet means is the ascent of consciousness towards the Divine and a returning descent of the higher consciousness into the lower physical consciousness. The integral participation of all the different parts of the nature in the realization has to be noted. There is reference to the mind, heart, will and the senses. [3]

Equally elegant element of mysticism run in the poem "A God's Labor". It is Indian in its theme. It brings out to an extent the secret path that yogis tread. In the poem "I" refers to the poet narrator and "you" refers to God. The poet describes the world as a mirage highlighting the materialistic aspects of life which can be an impediment for the spiritual life. Hence, the elements of purgation in the mystic journey can be noticed here as the poet magnificently describes his mystical and mysterious journey. He also reveals that it is only through hard efforts on the earth one can aspire for the liberation

**"I saw that a false hood was planted deep At the very root of things."**

**Conclusion:** Aiming at bridging the present and the future, Sri Aurobindo's poetry tries to combine the link between the self-divided "Present Life" and the "Divine Life" through a divine touch of mysticism. Being a prophet of life divine' Sri Aurobindo has tried to unmask the very divine spirit in a man. His works are the best examples of it. He is in the affinity with the Vedic spiritual values that are preserved in the form of the great and holy Indian tradition. In Aurobindo's own words: "What Vedic poets meant by the mantra was an inspired and revealed seeing and visioned thinking, attended by a realization, to use the ponderous but necessary modern world, of some in the most truth of God and self and man and nature and cosmos and life and thing and thought and experience and deed. It was a thinking that came on the wings of a great soul rhythm." [4] The true origin of mysticism lies in the soul and the true enjoyer of it is, none other than the soul. Sri Aurobindo concludes that mystical element begins in

eternity as well as ends in eternity. The four major stages of mysticism, i.e., purgation, illumination, dark night of the soul and the union can be found out in one or the other works of Sri Aurobindo and in his life events also these mystical elements can be seen. These mystical elements can be found in Sri Aurobindo's works and life events sometimes separately and sometimes collectively also. Mysticism lends real mystic element in the poetry of Sri Aurobindo putting on the highest pedestal of spirituality.

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## UNDERSTANDING FEMINISM AND ITS DIFFERENT WAVES

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**Abstract:** The present paper **Understanding Feminism and its different waves** is an attempt to understand the actual concept of feminism which is one of the most important social movements of the past two centuries and certainly the social movement which has brought about the most enduring and progressive transformation of human society on a global scale. It is customary to divide the history of feminism into a First, Second, and Third Wave, with each period signalling a different era in the struggle to attain equality between the sexes. Today feminism means many different things to different people, but at its core, if one goes back to its origins in the late 18<sup>th</sup> century, it is primarily a social movement for the emancipation of women. That movement was slow to start, and it wasn't until the late 1880s that the term 'feminism' actually appeared. Before then, the more usual term was 'women's rights'. The first advocates for women's rights were for the most part lonely voices pleading against obvious and manifest iniquities in society's treatment of women.

**Keywords:** Feminism, Feminine, Female, Emancipation, Harassment.

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**A Brief History: The Four Waves of Feminism:** Broadly, feminism refers to a range of political movements, ideologies, and social movements that share a common goal: to define, establish, and achieve political, economic, personal, and social equality of sexes.[1][2] This includes seeking to establish educational and professional opportunities for women that are equal to those for men.

Feminist movements have campaigned and continue to campaign for women's rights, including the right to vote, to hold public office, to work, to earn fair wages or equal pay, to own property, to receive education, to enter contracts, to have equal rights within marriage, and to have maternity leave. Feminists have also worked to ensure access to legal abortions and social integration, and to protect women and girls from rape, sexual harassment, and domestic violence.[3] Changes in dress and acceptable physical activity have often been part of feminist movements.[4]

Some scholars consider feminist campaigns to be a main force behind major historical societal changes for women's rights, particularly in the West, where they are near-universally credited with achieving women's suffrage, gender neutrality in English, reproductive rights for women (including access to contraceptives and abortion), and the right to enter into contracts and own property.[5] Although feminist advocacy is, and has been, mainly focused on women's rights, some feminists, including bell hooks, argue for the inclusion of men's liberation within its aims because they believe that men are also harmed by traditional gender roles[6] Feminist theory, which emerged from feminist movements, aims to understand the nature of gender inequality by examining women's social roles and lived experience; it has developed theories in a variety of disciplines in order to respond to issues concerning gender.[7]

Numerous feminist movements and ideologies have developed over the years and represent different viewpoints and aims. Some forms of feminism have been criticized for taking into account only white, middle class, and college-educated perspectives. This criticism led to the creation of ethnically specific or multicultural forms of feminism, including black feminism and intersectional feminism.[8]

While the roots of feminism are buried in ancient Greece, most recognize the movement by the three waves of feminism.

However, empowered by the constant connectivity of the internet and the strength of the #MeToo movement, a new wave of feminists are speaking out in record numbers against discrimination. **A new era for feminism has begun, full of passion, social-influencing power, and demanding change.**

**The first wave (1830's – early 1900's): Women's fight for equal contract and property rights**

At the beginning of the 19th century in the UK and US, the agency of women was restricted on two different fronts: legal autonomy and the right to vote. In most countries women were considered property of their fathers or husbands. They were generally unable to enter into contracts or own land, and were legally seen in much the same way children are today.

Also, at the time, voting was largely by household, with only householders able to cast a vote. Hence, although there were comparatively few *direct* prohibitions on women voting, the restrictions on women owning property kept most of them disenfranchised. Later in the 19th century, when property qualifications for voting were eliminated, women became explicitly excluded from the franchise.

Because there were no other waves at the time, first wave feminism did not describe itself as such. In fact, the term feminism was not coined until decades after first wave feminism ended. Second wave feminists retroactively dubbed the suffragettes first wave feminism to clarify their continuity with but divergence from that earlier movement.

Hence, the feminists of the first wave set out to extend to women the assertion of Thomas Rainsborough during the Putney Debates: "I think it's clear, that every man that is to live under a government ought first by his own consent to put himself under that government." [9]

First-wave feminists often joined other social movements, including abolitionism, the temperance movement (the Woman's Christian Temperance Union, for example, was headed for many years by a feminist, Frances Willard), the labor movement, and the anti-war movement in regards to World War I.

Some famous feminists from this era are Mary Wollstonecraft, Lucretia Mott, Elizabeth Cady Stanton, Susan B. Anthony, Sojourner Truth, Alice Paul, Emmeline Pankhurst, Margaret Sanger, and Emma Goldman.

**The Second Wave (1960's-1980's): Broadening the Debate:** Coming off the heels of World War II, the second wave of feminism focused on the workplace, sexuality, family and reproductive rights. During a time when the United States was already trying to restructure itself, it was perceived that women had met their equality goals with the exception of the failure of the ratification of the Equal Rights Amendment (which has still yet to be passed).

This time is often dismissed as offensive, outdated and obsessed with middle class white women's problems. Conversely, many women during the second wave were initially part of the Black Civil Rights Movement, Anti Vietnam Movement, Chicano Rights Movement, Asian-American Civil Rights Movement, Gay and Lesbian Movement and many other groups fighting for equality. Many of the women supporters of the aforementioned groups felt their voices were not being heard and felt that in order to gain respect in co-ed organizations they first needed to address gender equality concerns. Women cared so much about these civil issues that they wanted to strengthen their voices by first fighting for gender equality to ensure they would be heard.

**The Third Wave (1990's – early 2000's): The "Micropolitics" of Gender Equality:** Unlike the former movements, the term 'feminist' becomes less critically received by the female population due to the varying feminist outlooks. There are the ego-cultural feminists, the radicals, the liberal/reforms, the electoral, academic, ecofeminists... the list goes on.

The main issues were prefaced by the work done by the previous waves of women. The fight continued to vanquish the disparities in male and female pay and the reproductive rights of women. Work continues to end violence against women in our nation as well as abroad. This wave was about acceptance and a true understanding of the term 'feminism'.

It should be noted that tremendous progress has been made since the first wave, but there is still much to be done. Due to the range of feminist issues today, it is much harder to put a label on what a feminist looks like

**Feminism** in true sense refers to any ideology that seeks equality in rights for women, usually through improving their status. Feminism is rooted in ending men's historical power over women. While modern feminist thought is largely rooted in the Western intellectual tradition, the ideology is gaining currency throughout the whole world. In many cases, the feminist goal of equality for women has helped push movements around the world to change the entire way private society is viewed, and in some cases even helped topple authoritarian governments.[10] One of the greatest vindications of feminism is the power women in Liberia showed when, with some assistance from the international community, they ended the civil war and subsequently replaced the chaotic, unabashedly corrupt, and genocidal dictatorship with a reasonably functional democracy.

Feminism can be studied from the perspectives of the actual movements for equality or from the writings of observer, commentator and participant addressing the underlying issues of why women have not been and are not seen as equal.

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## THE ANXIETY OF IDENTITY AND DESPAIR IN GAYTRI SPIVAK'S CAN THE SUBALTERN SPEAK

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**Abstract:** The present paper *Can the Subaltern Speak* by Gayatri Chakravorty Spivak is an attempt to present women and their all times striving for autonomous existence in patriarchal society, it is about a tale of torment and misery in male dominated society that how women is silenced and oppressed which is itself the question mark to the idea of liberty and justice. The purpose of this paper is to probe the issues like women's freedom, her effort of carving an identity of her own in the sphere of patriarchy, women is treated as useful commodity in the market, voraciously devoured by public and the other issue is the traffic in women. Women's suppression is rooted in the very basis of Indian society in traditions, in religious doctrine and practices, within the education and within the families.

**Keywords:** The Subaltern, Patriarchal Society, Misery, Justice.

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**Gayatri Chakravorty Spivak** is an Indian scholar, literary theorist, and feminist critic.[1] She is a University Professor at the Columbia University and a founding member of the establishment's Institute for Comparative Literature and Society.[2]

Considered one of the most influential postcolonial intellectuals, Spivak is best known for her essay *Can the Subaltern Speak?* and for her translation of and introduction to Jacques Derrida's *De la grammatologie*. [3] She also translated such works of Mahasweta Devi as *Imaginary Maps* and *Breast Stories* into English and with separate critical appreciation on the texts and Devi's life and writing style in general

Traditionally Indian literature viewed women as role bound possessions whose sacrifices preserved the sanctity and well-being of the family. They are confined purely to the domestic set-up daughter, wife and mother, largely ignored as a human being, denied of her individual distinctive visibility. Indian women writers established their literary offspring and striving to bring an identity for women, by highlighting various untouched and unnoticed facets of life. A woman's attempt to self discovery leads to interrogate that she has not been only born as a woman but she becomes one as she is hardly a product of socio- cultural environment in the making of which she has any part. Spivak speaks in her essay it is impossible to recover the voice of subaltern oppressed subject and this she highlighted through natives are divided by differences of gender and class, caste and other hierarchies and she used deconstruction to examine how truth is constructed.

In "*Can the Subaltern Speak?*" Spivak discusses the lack of an account of the Satipractice, leading her to reflect on whether the subaltern can even speak.[4] Spivak writes about the process, the focus on the Eurocentric Subject as they disavow the problem of representation; and by invoking the Subject of Europe, these intellectuals constitute the subaltern Other of Europe as anonymous and mute.

There is juxtaposition of many voices that we trace in Spivak's essay **Can The Subaltern Speak (1988)** we catch the very torture of feminine sensibility within the constructed walls of patriarchal society, and silence towards the protest of woman grievances which is all time unheeded prospect and their struggle for self- determination already points towards women's conscious action to change the situation though there is no mention of any action taken by men to help women's though there is no mention of any action taken by men to help woman's struggle for emancipation.

Victimised women in a patriarchal system, who stands along with her family despite of all their torture, seek security and men respectability. At the same time woman is regarded as basically submissive, her role to be the respectable of male sexual drives for the subsequent production of the species. They could never think that there can be a different world outside the four walls of their house. The writer focuses primarily on the psychological exploration of inner mind of the depressed women by virtue of their

feminine sensibility and psychological insight and brings to light their issues, which are the outcome of Indian women's psychological and emotional imbalances in a male dominated society.]

Spivak wonders how can the third world subject be studied without cooperation with the colonial project. Spivak points to the fact that research is in a way always colonial, in defining the "other", the "over there" subject as the object of study and as something that knowledge should be extracted from and brought back "here". Basically we're talking about white men speaking to white men about collared men/women. When Spivak examines the validity of the western representation of the other, she proposes that the discursive institutions which regulate writing about the other are shut off to postcolonial or feminist scrutiny.

This limitation, Spivak holds, is due to the fact that critical thinking about the "other" tends to articulate its relation to the other with the hegemonic vocabulary. This is similar to feminist writers which abide by the patriarchic rules for academic writing.

In Spivak's essay we come across the anxiety of identity and despair which are the features of the modernism in literature. Women poets write with an intention of breaking the century's old silence and crossing the patriarchal threshold, today's feminism must be viewed as a rapidly developing major critical ideology or system of ideas in its own right. The concept incorporates a broad spectrum of ideas and possesses an international scope. But the male dominated society and its anti-woman ideology is the root cause of women's backwardness and their suffering and victimization, this brings into the focus her soul and psyche, for she expects the human attitude from the male. As a matter of fact, she is aware of the fact that every woman needs the freedom, equality and sex. But she is certain, that is quite impossible from hostile men. Accordingly she is willing to trap the new system against the backdrop of traditional concept of Indian womanhood.

Although the term 'subaltern' conventionally denotes an inferior military rank, it is more generally used as 'a name for the general attribute of subordination in South Asian society', often expressed in terms of gender and caste.[5] In this way, both 'brown women' and low castes are subaltern, social subordinates. Sati, meaning 'good wife', signals a duty: the duty of a wife to her husband and religion. Indian women, with some exceptions such as Daisy in *The Painter of Signs*, seem unavoidably housebound. In his opening pages, Narayan describes the women at the lawyer's house as hidden away: 'several women emerged from various corners of the house' [6]. Similarly, Sohini in *Untouchable*, although not housebound, makes the fire, collects water and cooks. Just as the woman is unable to escape the expectations of her gender, so too is the untouchable unable to escape his caste, it being acquired at birth and non changeable. Apparently unable, then, to save themselves, it seems at first glance that the white man can rescue the subaltern.

The Hindu tradition of sati, or widow-burning, to which Spivak refers began to represent a fault line in British presence in India. The sati woman therefore represents an ideological battleground for the dispute between Eastern and Western colonial discourse. As Lata Mani states, '[British] fear of the consequences of prohibiting sati was tied to their analysis of sati as a religious practice and to their view of religion as a fundamental and structuring principle of Indian society.[7] By prohibiting the 'religious practice' of sati in 1829, the British were thus rendering illegal what seemed to them an integral part of Hindu society and identity, redefining ritual not merely as superstition, but as crime. It is chiefly for this reason that the widows in the sati texts, all of which are written from a Western perspective, are portrayed as a victims of an inhumane, religious, offence, as will be discussed. Mani goes on to suggest that there is a discrepancy in the very representations of sati: 'within the discourse on sati, women are represented in two mutually exclusive ways: as heroines able to withstand the raging blaze of the funeral pyre or else as pathetic victims coerced against their will into the flames'[8] Emma Roberts presents her sati widows as the latter of these categories in her poem, 'The Rajah's Obsequies'. She labels the widow, 'A helpless slave to lordly man's controul [...] compelled by brutal force' to perform the rite of sati[9]

'Can the subaltern speak?' is a rhetorical question asked by Spivak to state the impediments of the subalterns, to discuss the problem of widow sacrifice in great details and she reiterates her standpoint that subaltern cannot speak and the condition of the women is even more complicated. It is not so much that subaltern women did not speak, but rather that others did not know how to listen, how to enter into a transaction between speaker and listener.

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## A STUDY OF COFESSIONAL POETS: ROBERT LOWELL, SYLVIA PLATH, ANNE SEXTON AND W. D. SNODGRASS AND KAMALA DAS.

FAYAZ AHMAD GANAIE, DR. DINESH KUMAR SHARMA.

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**Abstract:** Focused on the “I.” confessional poetry deals with transgressive subjects, subjects “polite society” would rather sweep under the rug. It is raw, fearless, emotive, and unflinching. M.L. Rosenthal was the first person to coin the term “confessional poetry” in a review of Robert Lowell’s *Life Studies*. And thus a movement was born. In the galaxy of confessional poets the names like Robert Lowell, W.D. Snodgrass, Sylvia Plath, and Anne Sexton are at the fore front- the four poets most often cited as “confessional.” However, it was, and still is, a controversial title. The form is often criticized for being self-indulgent. Even Snodgrass, arguably the first confessional poet, dislikes the term “**intensely**.” Lavinia Greenlaw writes in this regard that no one wants to be called a confessional poet as it suggests all you do is blurt your feelings but to work explicitly with the self requires extraordinary judgment, detachment and control. These poets aren’t simply wailing into the void. They are still working within the constraints of poetry. Imagine a doctor describing a wound, brutal but precise. The present research paper is an attempt at how these poets enjoy the same title of being confessional poets yet they differ in their contents and style.

**Keywords:** Confession, Patriarchy, Feminism, Self-Assertion, Identity, Womanhood.

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**Introduction:** With the publication of Robert Lowell’s *Life Studies* in 1959, the term “confessional” began to be used to refer to poetry that drew from and described the poet’s own experiences, often including some type of psychological breakdown or mental health treatment as well as familial conflict rendered in a dramatic manner. This was a major departure from the high modernism of the first half of the twentieth century. The term “confessional” refers to the content of the poems rather than the techniques used by confessional poets, they themselves argued that they were just as artistically and technically conscious as their modernist predecessors but more direct and accessible in their subject matter. This departure from the detachment of modernism created controversy, and confessional poetry was not widely accepted as a legitimate art form at the time of its origin. More traditional poets and critics considered it to be solipsistic, even narcissistic, and its subject matter, such as bodily functions and taboos, inappropriate. Over the years, however, confessional poetry has become recognized as a type of art that illustrates the idea of the personal becoming political, offering insight into psychological upheaval and family drama as well as what writer William Faulkner described as “the human heart in conflict with itself.” The technical proficiency recognized in the work of modernist poets has also been noted in that of confessional poets, particularly in the tension that is created through the use of traditional form and nontraditional subject matter. Four poets in particular are known for this skill and for being pioneers in the confessional mode: Robert Lowell, W. D. Snodgrass, Sylvia Plath, and Anne Sexton.

**Robert Lowell:** From the late 1950’s to 1960’s, poems were more likely to be autobiographical and personal, majorly addressing poets’ personal feelings about a lot of shameful and negative matters, known as the confessional style. Meanwhile, poetic themes were more special, such as abortion, suicide, alcoholism, etc. There were several prominent confessional poets, Theodore Roethke, Robert Lowell, Anne Sexton, Sylvia Plath and W.D. Snodgrass. All of the confessional poets stayed out of the standards for socially accepted topics.

Among them, Robert Lowell is the most successful poet, not only leading the new ways in autobiography but also representing the sensibility in American poetry. For instance, Lowell’s *Life Studies* made a significant breakthrough to a new style in poetry realm which M.L Rosenthal called “confessional”. Moreover, “Skunk Hour”, the final poem in *Life Studies*, is one of the most famous poems that shows what confessional poetry is like.

In the Skunk Hour, “the confessional mirroring of public and private is expressed formally in the poem's symmetrical division into four stanzas about the social environment and four about the poet's “dark night” of voyeurism and incipient madness.” The poem begins with the speaker reflecting on a coastal town in Maine and later describes a wealthy woman who seems to own a lot of money, but is alone “in her dotage”. Moreover, he depicts many things that are going wrong with the place. Through saying, “we’ve lost our summer millionaire” and “a cobbler’s bench and awl”, Lowell is illustrating a pretty sad scene for the whole place. In the next four stanzas, the attention is shifted to the poet himself. He remembers the drive he took through the town was gloomy and he admits to being depressed and feeling crazy. The emotional effects and mental illustrations he has are expressed deeper and deeper as the poem progresses. I feel like the poet is very frustrated of the emptiness and futility of the American civilization and of what he sees around his society. Nevertheless, the poem moves from the frustration to the individual revitalization when he sees the mother skunk and its kittens rummaging the garbage for the leftover in order for survival.

Through the poem Skunk Hour, we can see the confessional poetry is basically writing memoirs about overcoming traumatic experiences and mental illnesses. In essence, Robert Lowell is the leading figure of confessional poetry, later followed by poets like Anne Sexton, Sylvia Plath, and so on.

**W. D. Snodgrass:** Snodgrass's first collection of poetry, *Heart's Needle* (1959) won the Pulitzer Prize in poetry, and it is considered to signal the beginning of the Confessional mode of poetry, and it would influence such poets as Sylvia Plath, Ted Hughes, and his teachers Lowell and John Berryman. A plethora of poems of his were soon published, with many that won awards. Snodgrass was considered one of the central figures of the Confessional mode, even though he disliked the term and did not regard his work as such. “Like other confessional poets, Snodgrass is at pains to reveal the repressed, violent feelings that often lurk beneath the seemingly placid surface of everyday life,” David McDuff observes in *Stand*. The style was imitated and, in some cases, surpassed by other poets. This fact leads *Yale Review's* Laurence Lieberman to comment that a later book, *After Experience* (1967), reveals “an artist trapped in a style which ... has reached a dead end,” because other poets had taken the Confessional mode in a different direction than Snodgrass's own. However, later works by Snodgrass show him widening his vision to apply the lessons of self-examination to the problems of 20th-century Western culture. His poems also present, beyond the direct-statement and sentimentality common to confessional poetry, an inclusiveness of detail and variety of technique aimed to impact the reader's subconscious as well as conscious mind. Although Lowell, Plath, and Sexton surpassed him in fame, Snodgrass was the one who started it all. The combination of the traditional and the confessional in Snodgrass's writing prompted Thomas Lask of the *New York Times* to write, “In *Heart's Needle* ... Snodgrass spoke in a distinctive voice. It is one of the few books that successfully bridged the directness of contemporary free verse with the demands of the academy.” Peter Porter echoes this opinion when he writes in *London Magazine*: “Snodgrass is a virtuoso, not just of versification but of his feelings. *Heart's Needle*” explores a father's struggle to remain a father to his daughter who, though separated from him by her parents' divorce, maintains regular visits over a two-and-a-half year period. The child is almost three years old at the beginning. In the poem, W. D. Snodgrass suggests that the daughter's presence as well as her absence is a needle in the heart, since both intensify his sense of loss. In a sequence of ten poems, the father speaks to his daughter as she develops into a petulant, asthmatic child whom he must scold. At the same time, her curiosity and independence bring him as much pleasure as pain. In the end, he cannot imagine his world without her.

**Sylvia Plath:** One of the pioneers of the confessional form was **Sylvia Plath**, Plath lived a short, difficult life before committing suicide at age 30. Her life was filled with tragedy, like her father dying when she was eight. She also faced a crippling struggle with depression that may have been a part of bipolar disorder. Her poetry is credited with defining and popularizing confessional poetry. She was one of the first American poets to put her personal miseries on the page.

As one of the most prominent American poetesses she has given a fresh impetus to a particular kind of poetry known as confessional poetry. A confessional poem is one in which the poet truthfully admits his

or her past, frustrations, desires, experiences, motives, failures, triumph and all those things which require courage to acknowledge. Sylvia Plath, the modern American poetess, is most commonly designated as a confessional poetess. A. Alvarez regards confessional poetry as the product of our age, the age of war, psycho-analysis and urban distress. "Plath's great achievement was her ability to transform the experience into art without losing its nightmarish immediacy" (Critical Survey of Poetry). This quotation sums up Plath's style of poetry which was to use her own experiences to create her art without coating the bad parts with any kind of sugary gloss. Such is Confessional Poetry, a subgenre of poetry that draws upon the autobiographical experiences of the poet. Plath's poetry and her novel *Bell Jar* are excellent examples of this style of poetry. In the novel **The Bell Jar** Plath has remarked about her painful life. She says that her physical energy depleted by illness, anxiety and overwork. She was finally unable to cope with problems and decided to put an end to her life on February 11, 1963. She was found dead with her head in the gas oven. Even though Plath's father died when she was eight, her fear of and revulsion for his deeds are vivid and jarring in the poem "Daddy." In this poem, Plath makes references to her father as a "devil," a "black man" and "bastard." This pain comes from his association with the Nazi party and the conflict she feels because of the Jewish heritage she has from her mother's family. Her pain after her divorce from Ted Hughes is evident in the poems' intense imagery. The obsession with death can be observed in an intensified form in the poetry of confessional poets. It was not merely a possibility that many a confessional poets like Anne Sexton, John Berryman and Sylvia Plath committed suicide. Anne Sexton refers to herself and her friend Sylvia Plath as both of them believed that life is transitory and temporal. Sexton notes rightly that: "We talked of death with burnt up intensity, both of us drawn to it like moths to an electric light-bulb" .[1]

**Anne Sexton:** Anne Sexton has been described as the "High Priestess" and "Mother" of confessional poetry and as "the most persistent and daring of the confessionalists". It has been said that "no poet was more consistently and uniformly confessional than Anne Sexton...."[2]

An American poet known for her highly personal, confessional verse Anne Sexton won the Pulitzer Prize for poetry in 1967 for her book **Live or Die**. Her poetry details her long battle with depression, suicidal tendencies, and intimate details from her private life, including relationships with her husband and children, whom it was later revealed she physically and sexually assaulted.

Sexton is seen as the modern model of the confessional poet due to the intimate and emotional content of her poetry. Sexton often wrote and disclosed her struggles with mental illness through her work. Anne Sexton has also included important yet overlooked topics that touched on the overall experience for a woman. Maxine Kumin described Sexton's work: "She wrote openly about menstruation, abortion, masturbation, incest, adultery, and drug addiction at a time when the proprieties embraced none of these as proper topics for poetry".[3]

Many a writer has said they write to save their lives. And many a writer has died by suicide. In few cases has the connection been so direct as in that of the poet Anne Sexton. Encouraged in 1957 by her therapist to write poetry to stave off her suicidal ideation, she eventually joined a group of mid-century "confessional" poets based in Boston—including Robert Lowell and Sylvia Plath—whose personal pathos, family pain, and severe bouts of depression provided much of the material for their work. Despite Sexton's tremendous career success at what began, more-or-less, as a hobby, she became overwhelmed by her illness and committed suicide in 1974.

**Kamala Das:** A confessional poet she is, her poems are compared with Robert Lowell, Sexton, and Sylvia Plath etc. Although a confessional poet that Kamala Das is- can make use of any subject for his treatment, he mostly confines himself to the region of his own experience. By so doing he becomes very frank and honest, close and intimate, in his details. That's why 'confessional' poetry sounds so appealing and so convincing.

Confessional mode of writing is a meld or hybrid mode of poetry which means objective, analytical or even clinical observation of incidents from one's own life. Confessional poems are intensely personal

and highly subjective. There is no 'persona' in the poems. 'I' in the poems is the poet and nobody else. The themes are nakedly embarrassing and focus too exclusively upon the pain, anguish and ugliness of life at the expense of its pleasure and beauty. Confessional poets did not follow any tradition nor respected any conventions. The 'confessional' poet does not accepting restrictions on subject matter, usually personal, writing as freely about anything within his private experience taking the help of an open language for an uninhibited expression of his emotions, and by 'open language' is meant free verse or blank verse etc may form the theme. It does not suggest, however, that the 'confessional' poets are wild in their emotional outbursts. Personal failure as well as mental illness becomes the favorite theme.

In the light of the above specifications about 'confessional' poetry and poets, it would be not wrong to hierarchies Kamala Dads as a 'confessional' poet in the true sense of the term. She is the most prominent confessional Indian English poet of our time. In the confessional poets, the subjective element has become the chief characteristic of their poetry, and Kamala Dads is no exception. Her poetry has a strong note of subjectivism. B. K Dads says that "Like Sylvia Plath, Kamala Dad's interests In the various places is very much personal and subjective.

Most of her poems In the collections *Summer In Calcutta*, *The Descendants* and *The Old Playhouse* and other poems are confessional in tone. She writes in the mode and pattern of several 'new' American poets like Robert Lowell, Anne Sexton, Sylvia Plath, W. D Snodgrass, John Ferryman and Theodore Rotten. She has chosen poetry as her genre to express her intense feeling, as it gives her a lot of scope. She started writing her life story to distract her mind and to recover herself from illness.

She would like to disclose all her secret thoughts and feelings. She shares everything with her readers, good and bad, about her life with all the secrets that should not be openly expressed in her society. She chooses to confess everything by writing rather than going to a priest. She has to create a place for herself in a public world, in her home and even in her own bedroom. Kamala Dad's shocking confession about the theme of love has startled equally the critics and the laymen. Some of her confessions about various love episodes have shocked the readers.

Stranger as it may seem because such kind of poetry is coming from a traditional Indian woman who is mostly considered to be shy, silent and introvert yet her search for independence in sex and other subjects is exceptional in the tradition of Indian writing in English whether written by women or men. Her confessional poetry is an attempt to end the war between passion and reason, flesh and spirit, body and soul. Although occasionally seen as an attention-grabber in her early years, she is now seen as one of the most formative influences on Indian English poetry. In 2009, *The Times* called her "the mother of modern English Indian poetry".[4]

**Conclusion:** Confessional poetry is the poetry of the personal or "I." This style of writing emerged in the late 1950s and early 1960s and is associated with poets such as Robert Lowell, Sylvia Plath, Anne Sexton, and W.D. Snodgrass. Lowell's book *Life Studies* was a highly personal account of his life and familial ties, and had a significant impact on American poetry. Plath and Sexton were both students of Lowell and noted that his work influenced their own writing. The confessional poetry of the mid-twentieth century dealt with subject matter that previously had not been openly discussed in American poetry. Private experiences with and feelings about death, trauma, depression and relationships were addressed in this type of poetry, often in an autobiographical manner. The confessional poets were not merely recording their emotions on paper; craft and construction were extremely important to their work. While their treatment of the poetic self may have been groundbreaking and shocking to some readers, these poets maintained a high level of craftsmanship through their careful attention to and use of prosody. The confessional poets were not merely recording their emotions on paper; craft and construction were extremely important to their work. While their treatment of the poetic self may have been groundbreaking and shocking to some readers, these poets maintained a high level of craftsmanship through their careful attention to and use of prosody.

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## MARRIAGE INCOMPATIBILITY LEADING TO DISCORD AND DESPAIR- IN THE NOVELS OF ANITA DESAI

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**Abstract:** Considered to be one of the most renowned novelists in the firmament of Indian English literature, Anita Desai stands peerless and unparalleled by the sheer power of pen. What makes her apart from other contemporary women writers in Indian writing in English is her perception and her unique style. The present research paper aims at studying the factors that create the discord, despair and disharmony in marriage which is otherwise considered to be a pious and lifelong bond of two souls. Bringing to light the shallowness of marriage in India, Anita Desai has quite poignantly depicted how women are always at the receiving end and their life is reduced to misery and wretchedness. The life of her protagonists in her novels bears a beautiful witness to this fact. Female protagonist of her novels feels thus alienated, isolated, separated and detached in this modern world. Anita Desai has beautifully presented the dichotomy of Marriage how marriage is a period of companionship, support and sexual fulfillment for men and a sacrificing factor, commitment, self- destruction, security and dependence for women. Women always have been associated with the words mental stress, trauma, and devotion, adjustable and deplore. Most of the novels of Anita Desai showcase this predicament of her female protagonists The novels such as *Cry, the Peacock, Where Shall We Go This Summer, Voices in the City and Fire on the Mountain* speak volumes.

**Keywords:** Married Life, Discord, Despair, Marriage, Rationality, Self-Destruction, Alienated.

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**Introduction:** With regards to female problems in Indian social life, Anita Desai has something different to say. In other words her approach is different. She does not think that marriage is as farce as most of the human relationships generally are. Life is not all bed of thorns because some of her heroines do enjoy a blissful, happy conjugal life, but on the whole this idea seems erroneous. In most of the male-dominated families the concept of marriage as a union of two different minds has not been realized. Women's individual identity has not been openly realized in Indian social life. This casual attitude is the cause of her suffering and miserable life. As marriage is a union of two different minds and there is bound to be adjustments or mal-adjustments. The woman is expected to adjust with the changing family ways and surroundings. In a marriage, adjustment for the woman only means deleting her individuality, herself, her conscience. It affects her entire psyche and behavior which destroys her sensibility and her very self. Marital discord recurs as the theme of the novels of Anita Desai. Her novels, with a touch of feminist concern, portray the failed marriage relationship which often leads to alienation and loneliness of the characters. Marriage is a social institution and also a partnership between husband and wife. It is the social recognition of the relation between man and woman. Economic relationship, mutual understanding and love are the foundation of the institution of marriage. The institution of marriage plays an important role in the building of the structure of society. 'Love is an itching of the heart that cannot be scratched.' There is a great deal of truth in this definition because it is love on which human existence rests. Love is the basic need of human life and without it human existence becomes dry and mechanical. Love before marriage is totally different from love after marriage because before marriage, there is only love but after marriage, duties, responsibilities, ego all become the parts of human life and love is changed into anger, irritation, hatred etc; sex is also not less important in life. Love, sex and marriage are contemporary to each other and without sex married life is not supposed to be happy. Thus marriage is a social recognition of sex between two persons. But this fact needs to be understood in its entirety

Anita Desai's her first novel, *Cry, The Peacock* lays bare several dimensions of feminism particularly the problem of male female dichotomy, inadequacy of martial love relationship and dissatisfaction. How women are being treated and considered inferior in a male dominated society forms the crux of this novel. Maya is the daughter of a rich advocate in Lucknow. Being alone in the family, her mother being dead and brother having gone to America to carve his own independent destiny, she gets the most of her father's affection and attention and in her moments of affliction exclaims to herself: "No one, no one

else, loves me as my father does". The excessive love Maya gets from her father makes her have a lopsided view of life. She feels the world to be a toy made especially for her, painted in her favorite colors and set moving according to her tunes. The excessive love Maya got from her father makes her have a one-sided view of life as she was never exposed to the reality or harshness of world and this leads to tragic trajectory in life. But the main focus here is that of the relations between man and women and how they get affected when not treated properly, which results in the many disorders of life as the communication gap, confusion and misunderstanding. The novel clearly shows that the woman needs proper attention, love and care. They should be given full satisfaction in every sphere of life. Infact, if you want to make your life beautiful and colorful then, give women the same status and dignity in your life. Maya and Gautam stand poles apart in their attitude towards life and this leads to the tragic end in their life. Sudhakar T. Sali in his book "Anita Desai's Female Protagonists" writes that the incompatibility of character stands revealed- Gautam who touches without feeling and Maya who feels even without touching.[1]

The novel **Voices in the City** brings forth her usual theme of feminine sensibility and distorted husband-wife relationship. The tortures feminine psyche is laid before us in all its vividness. Through apt symbolism, the novelist has rendered the pathetic plight of the heroine that touches our heart. The mental turmoil and spiritual predicament of the heroine are a source of a great interest and a contemporary relevance.

Monisha, the female protagonist of the novel, an educated woman undergoes trauma in the hands of her husband. Monisha comes to live in the ancestral house of Jiban. It is a joint family, welcomes Monisha in a traditional manner. Jiban's is a four-storey house where uncles, aunts, nephews, nieces, cousins and in-laws around her. Being a daughter-in-law in a joint family, she has more responsibilities, but not given much importance. Her desire is to read books when she gets leisure time. She owns a library which consists of classical books. Unfortunately she has no time to read books because she has to do all the household works in the time. She is deeply agonized when her family members are ridiculed Monisha for having such classical books. She gets time to spend her time with her husband only in the evening. Jiban is man who wants Monisha to be friendlier with his family members. He does not care about Monisha. He is indifferent towards his wife. The communication gap between Monisha and Jiban causes her mental pain. Living in a conservative joint family, Monisha is not allowed to communicate with her husband freely. Jiban too fails to spare time with Monisha and fulfill her desires. All these pettiness, the trivialities of a mean existence overwhelm her. She is aware that most women survive, pretending to forget, pretending to believe in these trivialities, in this meanness of stifling existence. For her, the choice is "between death and mean existence" She has no alternative but to stay in the joint family, nor has she the ability to attain detachment. Dr.Jasbir Jain observes:

"But the detachment she achieves,  
Like the detachment of Nirode, is not born  
Out of experience, but out of fear and Attachment" [2]

The story reflects a vivid picture of India's Social transition-a Phase in which the older elements are not altogether dead, and the emergent only not fully evolved. Dr.R.S. Sharma, an outstanding critic on Anita Desai Remarks that" with all its strong sense of place and locale, the novel operates primarily on a symbolic level. But it has a vast canvas of events, Characters and tangled relationships that add to the narrative appeal" [3]

Her novel, **Where Shall We Go This Summer** not only showcases the social realities, but also explores the hidden niches of human consciousness and meditates upon the existential question of women and their quest for identity in a complex patriarchal world. It is a story of a middle-aged, over-sensitive woman, Sita who is trapped in familial relationships and finds herself lonely in her own family. She suffers from identity crisis, but towards the end of the novel discovers her real self and solves the question of her existence. The novels of Anita Desai are mainly women oriented. Her heroines are presented as victims in the male dominated Indian families. She has depicted both submissive and powerful women, and also those who have the ability to change and cope with situations. She tries to

explore the psyche of Indian women emphasizing their solitude and alienation. Those characters who have doubts about their existence and identities go through transformation and find solutions to their problems towards the end of the novel. Desai's entire fiction traces the changing image of women in the face of existential dilemmas. These female protagonists assert their right to exist not as shadows of their male counterparts but as independent human beings with a will of their own. [4]

The novel **Fire on the Mountain** is no different. The theme of the lack of communication and understanding in marital life has been beautifully dwelt upon here. The novel records the story of Nanda Kaul, the Vice-Chancellor's wife who has chosen the house of top of a mountain in Carignano in the village of Kasauli, as her shelter away from the disturbances of family and society. Life with the Vice-Chancellor had long ordeal with only the duties and responsibilities of her position without any love attached to it. She is disillusioned with her selfish, infidel husband, who "treated her simply as some useful object". She played the gracious hostess all the time for her husband, who "wanted her always in silk, at the head of the long rosewood table in the dining-room, entertaining his guests". In the words of Gopal N.R., "She is so busy raising the family and discharging the duties of mother, housewife and hostess that in the evening of her life she is happy in her seclusion even though it is partly voluntary and partly circumstantial." Mrs. Desai probes deep into the problematic life of Nanda Kaul, who, besides being the wife of a Vice-Chancellor and leading a luxurious life, is satiated by it. "Outwardly Kauls were an ideal couple to university community but from inside it was all empty, the whole social role and socializing was a mere sham". Her life with her husband was "lacking in composition and harmony". [5] The psychological seclusion of the lady is echoed by the landscape of the mountain - rocky and barren and thus proving the validity of the title.

**Conclusion:** With the arrival of Anita Desai was witnessed an innovative era of psychological issues of women giving a new phase to the world of novel writing in English. Through her novels she has projects the pain and sufferings of women in a male dominating and conservative society. The women characters of Desai undergo a mental destruction and suffer from failures and frustrations. The reason for their mental destruction is their hypersensitive nature and careless husbands. Their restricted surroundings and inattentive spouses force the women to take actions mutely and violently. This results in incompatible life between husband and wife. Not confining herself mostly to the portrayal of outward reality, Anita Desai goes to explore the inner reality, or to her own words, not the one-tenth visible section of iceberg that one sees above the surface of the ocean but the remaining nine-tenths of it that it is below the surface. She prefers to delve deeper and deeper in a character or scene, rather than going round about it. For Mrs. Desai, literature is neither a means of escaping reality, nor a vehicle for parading her political, social religious and moral ideas, but an exploration and an inquiry.

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## THE DIVERSITY OF THEMES IN THE NOVELS OF JANE AUSTEN

KULDEEP SINGH, DR. DINESH KUMAR SHARMA.

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**Abstract:** The present paper is an attempt to present how a network of numerous themes pervades the novels of Jane Austen. A theme is the general message or statement about a subject that all the elements of a story or a poem work together to develop. Without a unifying theme, a story contains only arbitrary events and characters. Theme functions as the understated but essential ingredient to make a story or poem meaningful. In order to acquire better understanding of any given piece of literature, one must take into account the background of its author; for the splendour of the words and imagery mirror that of the mind and hand behind it and this bring before the reader a number of themes her novels are interspersed with. If there is one striking common theme in Jane Austen's novels, it would be marriage. Romance is central in most of her written works, such as in *Sense and Sensibility*, *Pride and Prejudice*, *Emma*, and *Persuasion*, to name a few. The pursuit for true love was often depicted to have passed through a series of turmoil and rejection, of heartbreak and anguish; but the perpetrators of love stood victorious in the end. However, it is rather ironic that although matrimony pervaded in her novels, it never came to be in her personal life. Despite all those, there was no account of her bitterness in living a single life. Her romance with writing blossomed, and it was an affair that produced outstanding results, with the publication of numerous novels.

**Keywords:** Love, Marriage, Romance, Society, Morality, Gender, Religion.

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**Introduction:** Living in rural England in the eighteenth and nineteenth centuries, Jane Austen had a very quiet life. She was pretty far removed from the strife and turmoil that existed during her lifetime. She never went to college. She never married and never had children. She never travelled outside of England. However, the idea that Austen had no life is simply a misnomer. If her novels were any indication of her world, Austen had a very rich life. Given that her novels are still being read and discussed today, they are many universal themes applicable to today. There are heights and depths in human nature Miss Austen has never scaled nor fathomed, there are worlds of passionate existence into which she has never set foot; but although this is obvious to every reader, it is equally obvious that she has risked no failures by attempting to delineate that which she has not seen. Her circle may be restricted, but it is complete. Her world is a perfect orb, and vital. Life, as it presents itself to an English gentlewoman peacefully yet actively engaged in her quiet village, is mirrored in her works with a purity and fidelity that must endow them with interest for all time.

**Education and Reading:** Austen's plots are fundamentally about education; her heroines undergo a "process through which they come to see clearly themselves and their conduct" and thereby "become better people".<sup>[1]</sup> For example, in *Pride and Prejudice*, Elizabeth goes through a process of error, recognition of error, remorse, and determination to do better. She realizes that she was mistaken about both Wickham and Darcy. In examining her mental processes, it dawns on her that she has never been objective about Darcy. She understands that, apart from her stubbornly maintained feelings of antipathy, she has no objective reason to dislike or reject him.

She grew absolutely ashamed of herself.—Of neither Darcy nor Wickham could she think, without feeling that she had been blind, partial, prejudiced, absurd. 'How despicably have I acted!' she cried.—'I, who have prided myself on my discernment! ... Pleased with the preference of one, and offended by the neglect of the other, on the very beginning of our acquaintance, I have courted prepossession and ignorance, and driven reason away, where either was concerned. Till this moment, I never knew myself.'<sup>[2]</sup>

Austen's narratives move towards these moments of self-realization, which are the most dramatic and memorable in her novels.<sup>[3]</sup> Austen is also attempting to educate readers, particularly their emotions.<sup>[3]</sup> For example, in *Sense and Sensibility* and the later novels she focuses on eliciting judgment and sympathy.<sup>[4]</sup> Throughout Austen's novels, reading is associated with intellectual and moral

development. Not all reading practices result in "improvement," however. Those characters who read superficially to accumulate knowledge for the purpose of displaying their grasp of culture (such as Mary Bennet in *Pride and Prejudice*), or of flaunting their social status, do not benefit from this moral growth. The ideal reader is represented in Elizabeth, who revises her opinion of Darcy by rereading his letter and keeping herself open to reinterpretations of it.[5]

**Morality:** Morality, characterized by manners, duty to society and religious seriousness, is a central theme of Austen's works. Drawing on the Johnsonian tradition, Austen uses words such as "duty" and "manners" consistently throughout her fiction as signifiers of her ethical system. Manners for Austen are not just etiquette, but also a moral code. According to one important interpretation, Austen can be considered a "conservative Christian moralist"<sup>1</sup> whose view of society was "ultimately founded in religious principle". However, Austen's works are unique among her contemporaries in containing few, if any, references to the Bible. Instead, she often refers to works by moral poets such as William Cowper. Yet other critics have pointed out that *Mansfield Park* can be seen as a challenge to the conservative novels of the 1790s because the character who most closely adheres to the values of piety, filial obedience and modesty, Fanny, is the one most harmed by the failures of conservative ideology. Austen feared that economic considerations would overcome moral considerations in human conduct; her most amoral characters—Wickham, Mary Crawford, Mr. Elliot—are the most economically motivated. Moral improvement in her works is not only for the characters but also for the readers. Her novels are intended to "instruct and to refine the emotions along with the perceptions and the moral sense".

**The Element of Religion:** Critics and commentators have long agreed that Austen was "a conscientious and believing churchwoman." [6] References in her remaining letters suggest to Oliver MacDonagh that Austen was an orthodox Anglican, that she conceived of the Anglican church (in patriotic terms) as national in character, and that she was pleased with "the increasing religiosity and advance in public morality" in England during her lifetime.[7] In 1939 Canon Harold Anson argued that "Austen's novels are religious not because they contain religious controversy or 'a strong ecclesiastical motif' ... but because they show 'the underlying principles upon which men live their lives and by which they judge the characters of others'." According to Gary Kelly, "this has become the dominant view of those critics who find Austen to be a religious novelist.[8] Austen's style was heavily influenced by the language of the King James Version of the Bible and, especially, by the *Book of Common Prayer*, both of which Austen heard spoken every week all of her life as a part of Anglican services.[9] According to Isabel Grundy, "the almost prehistorical authors of the Old Testament have bequeathed her their rapidity and spareness of narrative, the New Testament writers their remarkable ability to enter the common mind and to conjure an illusion of verisimilitude by means of a single detail ... her taste for brief declarative sentences is something she shares with the gospels." [10] However, while Austen's style was heavily influenced by these works, she seems to have decided not to refer in her work directly to the Bible or other sacred works. Doody points out that "she is singular among novelists of her age in her refusal to admit references to the Bible, or to biblical characters, scenes or stories." [11]

**The Theme of Gender:** Since the rise of feminist literary criticism in the 1970s, the question of to what extent Austen was a feminist writer has been at the forefront of Austen criticism. Scholars have identified two major strains of 18th-century feminism: "Tory feminism" and "Enlightenment feminism". Austen has been associated with both. Tory feminism, which includes such writers as Mary Astell and Dorothy Wordsworth, is a tradition of thought which recognized that "women were treated as an inferior class in a man's world". Writers in this tradition urged women to counter this discrimination through moral and spiritual self-cultivation and charitable service to the family and community. Butler has argued that Austen belongs to the Tory feminist tradition because of her stylistic and thematic affinity to the writings of Maria Edgeworth. Moreover, Austen's "heroines' subordinate role in the family ... their dutifulness, meditateness, self-abnegation, and self-control" are characteristics shared by the heroines of conservative authors such as Jane West and Mary Brunton.

Enlightenment feminism, which includes such writers as Catharine Macaulay and Mary Wollstonecraft, is a tradition of thought that claims that "women share the same moral nature as men, ought to share

the same moral status, and exercise the same responsibility for their conduct". Margaret Kirkham has argued that Austen is part of this tradition because, for one, her "heroines do not adore or worship their husbands, though they respect and love them. They are not, especially in the later novels, allowed to get married at all until the heroes have provided convincing evidence of appreciating their qualities of mind, and of accepting their power of rational judgement, as well as their good hearts."

**Economic Position of Women:** Austen's novels explore the precarious economic position of women of the late-18th and early-19th centuries. As Gilbert and Gubar explain, "Austen examines the female powerlessness that underlies monetary pressure to marry, the injustice of inheritance laws, the ignorance of women denied formal education, the psychological vulnerability of the heiress or widow, the exploited dependency of the spinster, the boredom of the lady provided with no vocation". In exploring these issues, she continued the tradition of Burney's novels, particularly *Cecilia* (1782) and *Camilla* (1796). Worldly marriage is the theme of Austen's unfinished novel, *The Watsons*, which portrays a female economy in which the odds for marriage heavily favour those young women whose fathers can and will pay a dowry. Physical attractiveness and "accomplishments" are helpful but insufficient in the absence of adequate funds for a marriage settlement. After Mr. Watson dies, the family does not have sufficient money for the dowries or support of the four daughters. As historian Oliver MacDonagh writes, "matrimony was their only hope of escape from current penury and future ruin or near-ruin. Dowerless, they were pursuing it with varying degrees of ruthlessness."

**Individual and Society:** Throughout Austen's work there is a tension between the claims of society and the claims of the individual.[12] There are two major scholarly traditions in this area. Some critics, such as Reginald Ferrar, D. W. Harding and Marvin Mudrick, have argued that Austen's style is detached; her work is ironically distanced and subtly subverts the prevailing values of her society.[13] Her novels, partly through their use of free indirect speech, are part of the development of individualism and individual consciousness, represented in the history of the novel through works by authors such as Samuel Richardson, whose "fascination with inner life" influenced Austen.[14]

In her influential book *Desire and Domestic Fiction* (1987), Nancy Armstrong argued that the modern individual self is a construct of late-18th and early-19th-century domestic fiction. According to Armstrong, "written representations of the self allowed the modern individual to become an economic and psychological reality".[15] Perhaps her most important point is that subjectivity is constituted through language, specifically the printed word.[16] In the section of her book devoted to Austen, Armstrong compares and contrasts *Emma* with Richardson's *Pamela* and contends that the novel demonstrates the power of language to construct and deconstruct communities and selves. As Wiltshire has observed, "middle class" British society in Austen's time placed a premium on outward decorum, manners and the limitation of emotional distress to "private" life. In Austen's novels, the reader is aware that a character is suffering psychological stress or disturbance, but the other characters are aware only of physical symptoms and complaints. The body becomes a place of social tension in these novels. For example, Mrs. Bennet continually refers to her "poor nerves", a bodily affliction which it was appropriate to discuss. Her obvious emotional frustrations were not an appropriate topic, as the notion of the private, individualized self developed.

**Conclusion:** Acknowledged to be one of the great English novelists, Jane Austen's novels have remained continuously in print and thus ever ingrained in the memories of the reader from her day to the present. Contemporary reviewers find a lot to be praised in them because Austen generally explores the same issues or questions, though she explores them from different perspectives, under different situations, and with varied consequences. However, this does not mean that the endings are necessarily different; being comic novels, they all end with at least one marriage. Every work of literature contains a stated or implied general message about life and the world. These truth statements about how the world works, or at least how the narrator has observed it to function, are usually debatable, but they're not necessarily revelations: If they were, they might not resonate with readers. Without at least one seemingly truthful theme, a work of literature falls short and there is a God's plenty of wonderful themes in her works.

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1. Devlin, 1.
2. Qtd in Butler, 208.
3. Butler, 176; Devlin, 3-4; Litz, 132-143.
4. Fergus, 39.
5. Richardson, 402; Armstrong, 138.
6. MacDonagh, 4; Kelley, 152; Butler, 162, citing Richard Whately, one of Austen's earliest reviewers; Collins, 181-184; Wheeler, "Religion", *Jane Austen in Context*, 406, 409-410.
7. MacDonagh, 6-7; Kelly, 152; Butler, 162-164
8. Kelly, 155.
9. Doody, "Reading", 348; Grundy, 195-196; also Jenkyns, 3-4 and Wheeler, 406.
10. Grundy, 196.
11. Doody, "Reading", 348).
12. 117-118; see also Duckworth, 37-38.
13. Harding, 166-168; Mudrick, 1; Duckworth, 5-9.
14. Wiltshire, 21-22; Stabler, 44-45; see also Butler, 189-190.
15. Armstrong, 8.
16. Armstrong, 25.

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## JOURNEY FROM SELF-NEGATION TO SELF-AFFIRMATION: A STUDY OF SELECT NOVELS OF ANITA DESAI AND GITHA HARIHARAN

RAFIA MIR, DR. DINESH KUMAR SHARMA

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**Abstract:** The post-war stage in Indian English writing is one of a kind in its upsurge of a luminary of women authors whose sway in contemporary Indian culture is somewhat dumbfounding with their uniqueness. The developing presence of the lady authors in the anecdotal world proves noteworthy with focused cognizance on the changing patterns of relationships in women in the domestic forefront, all the more explicitly concerning men. The Post-modern women and their writings endeavor to extend women's voice to break the quietness endeavoring to stand up to the man centric qualities. A group of novelists like Shashi Deshpande, Ruth Pravar Jhabvala, Nayantara Sahgal, Bharati Mukherjee, Anita Desai, Kamala Markandaya, Attia Hasan etc., have anticipated women as the focal figure in their works. Anita Desai's main concern is human relationship which is given her impeccable craftsmanship. In the time of sixties Indian English Novel obtained a private tone and investigation of inner life got focus on account of various Indian women writers led by Anita Desai. As delicate and sensitive author, Desai has employed her pen to extend the sufferings of the sensitive ladies who are regularly spooky by a longing to set up independence inside the circle of family relationship and social commitment. The heritage of Anita Desai was passed on to various Indian lady authors who rose in the times of the nineties viz. Githa Hariharan, Manju Kapur, Shashi Deshpande, Namita Gokhale, Sunetra Gupta, Arundhati Roy, Jhumpa Lahiri, Kiran Desai, Anita Nair and others. Githa Hariharan among them holds her uncommon appeal and is similar to Shashi Deshpande as far as her differed accomplishment. This paper will study different aspect of self realization in Githa Hariharan's *The Thousand Faces of the Night* and Anita Desai's *Where Shall We Go This Summer?*

**Keywords:** Self-Negation, Self-Affirmation, Self-Realization, Gender Discrimination, Individuality, Consciousness, Tradition, Patriarchal.

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**Introduction:** As Shakespeare as portrayed woman in *Hamlet*: 'Frailty, thy name is woman!' (Hamlet.i.ii.146). Similarly Nietzsche portrays, "woman is the diversion of the hero" (Beauvoir 244). In opposite to them D.H Lawrence explains woman is neither a diversion nor a prey; 'she is not an object confronting a subject, but a pole necessary for the existence of pole of the opposite sigh" (Beauvoir 245).

Shashi Deshpande, Ruth Pravar Jhabvala, Nayantara Sahgal, Bharati Mukherjee, Anita Desai, Kamala Markandaya, Attia Hasan etc., have anticipated woman as the focal figure in their works. Anita Desai's main concern is human relationship which is presented with her exquisite craftsmanship. As a sensitive writer, Desai has used her pen to extend the sufferings of the sensitive women who are frequently spooky by a longing to set up independence inside the circle of family relationship and social commitment. Her review gives us a look at the women's reality with all complexities and peculiarities and the unexplored female mind of the baffled housewives. The existential problems of her individual characters discover projection through the inconsistent incompatible wedlock. *Where Shall We Go This Summer?*, published in the year 1975, shows the pressure between family members just as the topic of forlornness, separation, and estrangement or alienation of the protagonist Sita. *Where Shall We Go This Summer?* that appeared twelve years after *Cry, the Peacock* is in many ways a repetition of Desai's first novel in the treatment of the theme. The suggestive note of estrangement, idealism and escapism that legitimizes the core theme of the novel is suitably represented by the title of the novel. The throb of man centric oppression isn't so prominent in this novel. In any case, Sita needs to battle in modifying with her better half, who is a beholder of male controlled society and demonstrates a pestering feeling of uneasiness the members of the household. In spite of the fact that Sita later moves to a smaller flat with Raman, however she also encounters the harshness and suffocative bluntness of life living in the traditional overlap of a family where her rights and benefits are denied by and large. Though the conventional spouses capitulate to man centric oppression, Sita stands unparallel to them in picking her own individual view and taking life's choices at her will. Her choice not to bring forth the fifth kid is her very own demonstration choice, without the spouse's endorsement. She is totally shattered by her

pregnancy. The developing pressure between the couple drives Sita to settle on her choice neither to give birth to an offspring nor to experience abortion, yet to keep it undelivered dreading the brutality of her general surroundings. Sita absolutely disappointed in the suffocative world with her significant other and the lowly city life of Bombay resigns to the island Manori by getting away from the obligation of life. Sita considers her visit to Manori as a pilgrimage, "to beg for the miracle of keeping her baby unborn." (*WSWGS?* 56) Men in the male centric culture are ascribed with positive qualities and decency while woman as negative and more fragile sex. Man's relationship with women is most often an object and she is essential to man which Beauvoir stated as "it is in seeking to be made through her that man hopes to attain self-realization." (Beauvoir 173) The way of life that has made the mythical characters like Sita and Gandhari has denied the situation to woman aside from the customary picture of a daughter, spouse, and mother-in-law. The mythical Sita of the *Ramayana* and Desai's Sita are two projections of perfect womanhood and gentility. In spite of the fact that Sita in *Where Shall We Go This Summer?* bears the normal legendary name of Sita, yet by and by, she neglects to keep up the moral qualities which the legendary Sita of *Mahabharata* conveyed. The outcast in the legendary Sita was contingent and even in her outcast she had held her character celebrating the picture of Hindu lady in the midst of the considerable number of hardships. Desai's Sita is a transversal of legendary Sita. The outcast of Desai's Sita is willful to imagine quality as she continued looking for autonomy throughout everyday life. Her choice to resign to the otherworldly island Manori is only a demonstration of getting away from the fatigue and viciousness of the material world by pulling back from every one of her duties. The contention in the novel is caught between the spouse's catastrophe regarding life, is there any point to it. In a confounded state, Sita can't begin her voyage from the past and in the meantime, she needs to hold the present. Sita subsequently encountering the persistent issues in married life achieve self-satisfaction by a feeling of acknowledgment. She finds a response to the inquiry *Where Shall We Go This Summer?* to return to her better half and submit to the requests of existence with better obligations. The epic finishes strong, however it tosses sufficient light on Desai's part of pessimism. Desai holds that life regardless of all chances, dullness, weariness and obligations ought to be proceeded and lived. This she has adequately passed on through the nonsensical Sita, a mother of four kids who denied of affection and fellowship from her significant other departures the dull and repetitive life and at last concedes that life must go on with all its business. Whatever the deplorability of life be that immerses Sita, she displays more useful development than Maya and Monisha the early courageous women of Desai. Sita transcends them in her ability for a superior and positive acknowledgment of life. Thus lies Anita Desai's ability in propelling the situation of an Indian woman by injecting a soul of awareness in the foundation of independence. Getting away from her day by day errands of life, indicating little worry towards her significant husband and children, Sita represents modern lady with an awakened sensibility conscious of questioning self-identity which has been denied to her as a woman. In Sita, Desai has prevailing with regards to depicting an advanced lady with a stirred reasonableness aware of addressing self-identity which has been denied to her as a lady. Marriage and family life is strengthened as a social foundation where the bliss and connection among a couple are estimated. husband wife incoherencies and the ensuing estrangement and confinement appear to be inescapable when the couple neglects to develop a relationship based on evident feeling, mutual co-operation and understanding, and correspondence. It is seen that most relations detonate as the males in Desai's books are administered without anyone else's input glorification and ego-inflation. Males in Desai's books are rationalistic and practical in viewpoint though the females are sensitive, dreamy and passionate. Desai, the author argues for matrimonial collaboration and mutual understanding as the premise of conjugal balance. Conjugal bliss lies in shedding all egos, shortcomings, and edifices with a feeling of compromise and equality among husband and wife. Raman and Sita too attempted to even consider uniting and alter and to carry on with a superior life agreeably. Desai, the author represents a change. Desai advances a stage in the depiction of conventional spouses and made an elevated feminine sensibility in Sita. *Where Shall We Go This Summer?* reveals Desai's stance as, "she does not advocate gyno-centric struggle, leading to woman's liberation in Western feminist terms." (Piciucco 143). Sita in *Where Shall We Go This Summer?* does not fit in with the demonstration of implosion in her failure to adapt to the world. Desai has implanted in her females the spirit which looks for freedom, move from servitude to freedom with a feeling of resignation from self-nullification to self-affirmation. In spite of the fact that Sita needs handy learning yet she doesn't fit in with her trading off nature however at last, she understands the truth of life. Desai's

ladies have begun to develop as hesitant creatures and it is through Sita that Desai has demonstrated the demonstration of resisting the male prevalent standards.

Githa Hariharan is among such ever-essential dynamic novelist who has solidly communicated the perplexing relationship of culture and its art. She is a dynamic author who rejects her ties from the society as well as through her works at the same time uncover the smothered emotions and sufferings of females in male controlled society and in the meantime endeavor to commend feminine selfhood and opportunity. Actually, Githa Hariharan shot into distinction with her absolute first novel which won for her Commonwealth prize for the best introduction fiction by an Eurasian writer. Her first novel *The Thousand Faces of Night* recounts the tale of three ladies having a place with three generation to be specific, Devi, Sita and Mayamma. The focal character is, obviously, Devi who faces issues as a result of her modern education and upbringing and needs to come back to her bereaved mother deserting her American companion Dan. In Indian she falls prey to the weight of age old conventions and orders. She is compelled to wed Mahesh yet the marriage denies her of her character and desires. Correspondence gap among Mahesh and Devi gags her voice and rationality. Later she chooses to flee with Gopal just to render retribution from Mahesh. Rama Kundu remarks: It is less for love than to show her rage of rejection of a demeaning marriage that had crushed dignity, individual aspiration and mocked her emotional imaginative refinement. (120) There also she is not able to recognize her identity and individuality. She attempts to build up a contact with her real self and for this she goes through relations. She makes a move to accomplish harmony of power of self realization in this patriarchal society. Her mother Sita and the maid Mayamma are also fellow sufferers. Sita is loaded with the job of a perfect womanhood. In her journey to be a perfect lady she smothers her longing and dream of turning into a veena player. Despite the fact that she is troubled by the man centric culture still she is a lady of clear perspectives and is firm in her choice. The character of Mayamma uncovered the helplessness of customarily stifled and uneducated woman. She is the objective of the customary society and languishes over a significant extensive stretch of time. Sita knows that her marriage is without passionate love. Still she is set up to successfully secure her marriage. Very deftly and without making any scene, she nips off her husband's advances towards youthful Annapurna, her distant orphaned cousin, who comes to remain with them. "—Amma, wise and jealous, a bitch guarding her own, saw it first ... she crushed it ruthlessly." (TFN 77) She also is reborn through her daughter's experiences throughout everyday life and she recovers her lost self by coming back to her music, to her Veena. At the point when Devi flees with Gopal thinking that her life currently will be better to that with Mahesh, Sita is stunned. She imagines that her decency, her name, has gone to hounds. She spends her anger, her acrid harshness on the over-pruned plants, the cook and the chauffeur. However she realizes that Devi would in the end return to her since bafflement with her lover will undoubtedly come in very soon. Restoration of her long lost relationship with her discarded Veena is a noteworthy advance towards Sita's inward recuperating. It would free her from simply playing assigned roles. The intriguing call of Veena that Devi hears on return, recommends reestablishment of another, positive association with self and the daughter, and the restoration of life itself. In the event that he turns into an effective business official, it is chiefly in light of the fact that she mercilessly pounds his passion for folklore. Along these lines her calculative moves take her relentlessly to progress. Sita thinks about the life of a ideal lady as dirty and unwanted yet incidentally, she prevails with regards to being a perfect spouse with a hounded determination and tireless self-restraint, driving her husband more like a conductor than as accompanist. In spite of the fact that Sita's survival is definitely more effective than Mayamma's, the endeavors it has thrown, the torment it has caused, anyway inconspicuous, has been similarly as profound. A symbolic correlative is found in the manner in which she prepares the jasmine creeper to develop horizontally, filling its predefined spaces on the backings provided, without enabling it to become upward as it is its temperament. Sita gives off an impression of being more grounded than Devi and Mayamma. She doesn't squander her time on memories of the past. She comprehends what she needs and works for that with determination. In any case, Devi realizes that even ladies like Sita who accomplish their objective of wifhood and parenthood with a resolute dedication to it, must have a lot of agonizing sacrifices. Sita needs to surrender her first love, Veena, and dreams of virtuoso and distinction, and cuts herself off from the connection. Rama Nair while discussing the Prelude of the present novel writes: "Realism and fantasy interplay in the narrative to focus on the emerging self. It is a self that endures suffering, but it is a suffering that leads to self-understanding and an inward strength to break loose

from past thoughts and experiences that are negative.” (174) Infact, the novel displays the real life characters the issue of gender exploitation faced by them. Hariharan in *'The Thousand Faces of Night'* exhibits the travails of females who want for affection and compassion yet are, incomprehensibly enough, victims of their own gender.

**Conclusion:** Like the character Sita numerous ladies are narcissistic, least mother like. As a mother she is a disappointment. The parent sibling connection among Sita and her kids is unacceptable. Hence *Where Shall We Go This Summer?* offers a positive answer for the present-day existentialist dilemma of inconsistent mal-adjustment and resultant distance. The island emblematically extends the very psycho of Sita and is additionally representative of that archtypal urges which rouse us to look for a unique identity of our own. In Sita, there is an impermanent blockage of cognizance, yet she demonstrates consistent art of dynamism for constructiveness. There is not at all breakdown of power. It encourages her self-direction. She discloses to Menaka that if she had the ability to paint or sing she would have nursed it to full development. Creativity would have lent meaning to her life: “if only I could paint, or sing, or play the Sitar well, really well, I should have grown into a sensible woman I should have known how to channel my thoughts and feelings, how to put them to use. I should have given my life some shape them some meaning.” (TFN 117). At last, Sita’s conduct is the outcome from an all out disregard and lack of concern. Here the story fixates on Sita’s disregard, languor, her insane wish to keep her fifth kid inside the belly and her search for existence. Here she emerges from an inquiry that to what extent Sita wish to keep her fifth kid in her womb? .Is it an absurd idea? Finally it acknowledges her husband’s and comes back to Bombay. Desai formed Sita’s mental disturbance cleared in the climax.

Actually, Githa Hariharan is post-colonial lady thinking about the issue of individual and national identity in the meantime. The definite investigation of her work uncovers the changing social, enthusiastic and ideological set up in our nation. Her Fiction familiarizes with a comprehension of females issue and dilemmas. Githa Hariharan with her scholarly measures, and sharp perception of life and has granted a mental profundity to her female characters. She has anticipated a profound perspective on female mind, internal goal and their unconventional reactions to man centric culture. Githa Hariharan influences us to acknowledge subordinate and second rate position of ladies in family and society. The need of great importance is to present on lady the legitimate, equivalent, free status that would go about as a driving force to her improvement as an individual and a social being. Finally, the ladies characters of Hariharan are aware of individuality and battle for liberated women identity, along patterns of opposition, survival, inventive decisions and solidarity, prompting unforeseen biographies.

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## SAINTS AND SINNERS - IRIS MURDOCH'S DELINEATION OF HUMAN CHARACTERS

RACHNA TULI, DR. DINESH KUMAR SHARMA

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**Abstract:** Born on 15<sup>th</sup> July, 1919 in Dublin, Iris Murdoch has been applauded as one of the great Post Second War English novelists. An author of universal acclaim, she has enjoyed a productive literary career and won international prizes including the Booker Prize for *The Sea, the Sea*(1978)[1], James Tait Black Memorial Prize for *The Black Prince*(1973)[2] and the Whit bred for *The Sacred and The Profane Love Machine*(1974)[3]. Murdoch is profoundly concerned with the Post-Christian 'God is dead' syndrome. In the literary scene of that era, there was a pronounced distrust of the Bloomsbury aesthetics. She also made a deliberate attempt to 'discard the heritage'[4] of modernism.

**Keywords:** Post-Christian 'God is Dead' Syndrome, Modernism, Bloomsbury Aesthetics.

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**Introduction:** A novelist completely committed to the aesthetics of impersonality on the one hand and moral burden of art on the other, she chooses to highlight the ethical and moral problems the twentieth century man is facing. The theme of 'Saints and Sinners' gets prominent attention in her works as she is concerned with the ideas of good and evil manifested in the demeanour of human beings. 'Sin and sainthood' remains important pre-occupation with her. The present review is a modest attempt to study the growth of characters in relation to the theme of saints and sinners. It also tries to throw light on some previous works which attempt to evaluate Murdoch as moral philosopher and thus emphasizes her prominent themes.

Because of her training as a philosopher, Murdoch realised the limitations of human achievements in terms of moral amelioration. Her novels display her belief that man has lost stabilising concepts and moral referents. Religion is no longer relevant. God is non-existent. Murdoch believes that modern man has abjured God and has himself become God.

**Murdoch's world is a world of** sexually perverse and morbid characters. However, these fornicators, womanizers, homosexuals, sadists and masochists aspire for some kind of an anchor to sustain through the chaos of life. These characters despite their moral flaws are intellectually much advanced. They have the capacity to identify the muddle they are in. They yearn for self-knowledge and awareness but the way is blocked by self-imposed fantasies. The constant struggle between good and evil forms the matrix of many of her novels.

The drama of her spiritual strivers is enacted against the acute consciousness of sin. An attempt has been made in this review to probe into the psyche of sinners and saints and co-relate the patterns of their behaviour with Murdoch's own views on this significant aspect which consistently and repeatedly surface in her novels.

The critical works on Murdoch available so far has studied Murdoch as a philosophical and religious writer. However, the significant area of her fictional world view in terms of her treatment of saints and sinners has remained comparatively unexplored. The present review has thus a pedagogic justification. The full length critical studies on Iris Murdoch and critical articles appearing from time to time in various journals have analysed Murdoch's fiction in light of her philosophy

Broackes find 'moral realism'[5] and 'moral disagreement'[6] essential part of Murdoch's 'academic' moral philosophy.

In his book, *Iris Murdoch, Philosopher*(2012), Justin Broackes states, "Murdoch combined a form of moral realism or 'naturalism' allowing the world cases of such properties as humility or generosity ;an anti-scientism; a rejection of Humean moral psychology ,...special attention to the virtues ; and emphasis on the metaphor of moral perception or 'seeing' moral facts.[7]

In Iris Murdoch and Morality(2010) there is an essay by Peter J. Conradi 'Laughing at Something Tragic'. Here the author states, "The aspects of human life that she wished to illuminate are either improbable or in some literary and generic sense 'beyond' probability" [8].

Bran Nicol says, "What is distinctive about Murdoch's theory of the novel is that it is also a theory of ethics....As she argues elsewhere in 'On God and Good', the chief enemy of excellence in morality (and also in art) is personal fantasy – the tissue of self-aggrandizing and consoling wishes and dreams which prevents one from seeing what is their outside one".(2006)[9]

Martha C Nussbaum (2001) was convinced that Conradi missed Murdoch's large philosophical importance and gave much importance to Philippa Foot and John McDowell as a moral philosopher who provided a different and riskier type of writing. [10]

"Murdoch connects sadomasochism with moral nihilism, and hence goodness with a gentleness that is free of sadism' [11].She further says,

"The novels, too, often associate neatness with egoism, vile filth with virtue"[12].

"Her novels reflect the battles and development of both novel writing and social attitudes to moral issues of the decades since the Second World War, which makes her as much a writer of our time as her broader moral concerns make her work timeless." says Milada Frankova(1993)[13]

Elizabeth Dipple in *Work for the Spirit*(1982) tries to read Murdoch's novels from religious point of view. [14]

Peter J Conradi in his book, *Iris Murdoch: The Saint and The Artist*(1986) reveals Murdoch's concern for form-an artist's pursuit, and formlessness-a saint's characteristic. [15]

All these critics throw light on multi-dimensional aspects of Murdoch's writings. But the delineation of saints and sinners have not been given prominence comprehensively.

A close study of Murdoch's works reveal the turmoil and anguish of these God-forsaken characters, groping in darkness and trying to catch the luminous spark at the end of the tunnel. Some fail miserably, some succeed partially and some cultivate qualities of transcendence. The play of their lives reveals Murdoch's own stance very clearly. Her novels such as *The Bell*(1958)[16] ,*A Fairly Honourable Defeat*(1970)[17] and *Nuns and Soldiers*(1980)[18] afford a perceptive study of sinners and saints as these operate in modern society of spiritual and moral vacuity.

In the light of the concept of saints and sinners as propounded in Old Testament and the New Testament, Murdoch's bizarre world seems to be inhabited by sinners only. Ego-centric, power-hungry, sexually perverse- these characters seem to have severed links both with God and community. Even children in Murdoch's universe are 'demon –children', capable of destroying the serenity of the social set up.

*The Time of the Angels*(1966)[19] depicts the breakdown of Christianity. The bishop appears only once in the novel when he discusses Caryl with Marcus and Norah Shadox Brown. Caryl is Nietzschean character who preaches from the pulpit that God is dead. His remarks reveal the religious crisis prevailing in the society. According to him, Marcus is going to give a new concept of theology which has 'jettisoned the old Trinitarian symbols.'[20]

In *The Bell* (1958), she reveals that in a world where good has become indefinable concept and God a non-entity, the quest for spiritual life becomes difficult to attain. After passing through various traumas of life. Michael Meade – the protagonist of the novel-feels that thinking of God was 'an intrusion and absurdity.'[21] He bitterly realizes the grimness of his thoughts. "There is a God, but I do not believe in

Him.”[22] Yet he continues his quest for a way of life which will enable him to rise above the petty and mundane ordinariness of life.

In *A Fairly Honourable Defeat*, she very poignantly pictures the moral and spiritual sterility of the present day life. In Rupert’s failure, she proves that no theology, no doctrine can save men from the doom. The power has to come from within. In presenting Julius King’s drama, Murdoch proves that human beings behave so unpredictably. Evil operates in many ways. And in Tallis, Murdoch presents a character who has the moral energy to fight the evil.

In *Nuns and Soldiers* (1980) Murdoch once again puts Christianity under question. Murdoch categorically rejects God, religion and theological dogmas as they are irrelevant in pursuit of any spiritual quest. The reality of experience alone matters. The quest for goodness has nothing to do with the existence of God. Anne Cavidge’s journey from the world to the convent, then back to the world, leads her to spiritual despair.

Murdoch feels that a man is compelled to commit sin as he is inextricably bound and surrounded by the problem of ego. Her evil characters are the slaves of their perverted psyches. Much of human conduct is affected by the mechanical energy which is egocentric in its nature. In the moral life, the main rival seems to be the fat eventless ego.

Reflecting on this Platonic axiom embedded in Murdoch’s thoughts, David J. Gordon opines that Murdoch feels: “...the mind in its relentless egoism habitually mistakes false images of the Good (“eiodola”) for good itself, so that even the most spiritually advanced human beings, the aspiring saints, cannot escape the dense net of illusion”[23]

Created by personal desire, Murdoch’s fiction often enacts the drama of the lives of characters who blinded by ego, illusion and fantasy commit acts which align them to sin. These benighted beings try to seek consolation either through the imagined inflation of self or through fiction of theological nature. Even its loving is more often an assertion of the self. People are liable to practice evil as they are incapable of loving people in true sense.

Thus what strikes a Murdoch reader is her attempt to find a new idiom of morality for the neurotic beings of the modern world. Murdoch herself says:

The outward mythology changes, the inward truth remains the same [24]

Truth remains the same. The acts that were sinful when Christianity was alive are sinful today also, but Christianity refused to accommodate the spiritual doubts, perplexities and ambiguities. Murdoch takes pains to reinvent religion and reinterpret morality in the wake of the fragmentation of the modern structure of life. She expresses the need for a comprehensible value system based on love, freedom and imagination which can bring goodness in the characters of human beings. Love in Murdoch’s terminology is the recognition of the volcanic otherness of others. So in Murdochian thought, love does not mean enslavement of one consciousness by another. She constantly stresses:

“We need to return from the self-centered concept of sincerity to the other centered concept of truth”.[25]

In fact, in Murdoch’s world, good men are always judged by the virtue of their realization of the limits of their freedom:

“Freedom is knowing and understanding and respecting things quite other than ourselves”.[26]

For her, love is to be associated with contemplation and apprehension of others and freedom is related to moral actions.

Both love and freedom build up structure of values which can become the basis of attaining goodness. Both freedom and love aim at the crucifixion of selfish desires and taking people to the heights where their self is reduced to nothing and the find joy in performing duty towards others, i.e. respecting

'otherness of others'. She feels that as fantasy is an enemy both of understanding and imagination, those who strive for sainthood must liberate their soul from fantasy.

Thus negating rigid theological concept of morality, Murdoch provides us a moral system based on love, freedom and imagination which can save people from committing sins

But this does not mean that Murdoch is expounding any rigid doctrine to substitute the old theology with any new kind of theological system. Rather she believes that no clear cut demarcation can be made between a saint and a sinner. In fact she realizes the co-habitation of virtues and vices in human personality which makes her classification of saints and sinners more opaque.

No doubt, in Murdoch's fiction, the questers are sinful characters. These characters suffer from an acute consciousness of guilt because of their sinful deeds. Michael Meade in *The Bell*, Anne Cavidge in *Nuns and Soldiers* tread the difficult path haunted by their sinful past. But their capacity to recognize their devil is their strength. And epiphany comes only when they have the capacity to relate to others not as their own extension but as distinct beings 'other than themselves'. No in between solution is possible. Any attempt to find an easy substitute to this rigorous task miserably fails. As in the case of Rupert Foster in *A Fairly Honourable Defeat*.

Murdoch's insistence on sin perhaps remains the same.-sodomy, adultery and infidelity-all are sinful acts but sinners are not condemned for ever. Her insistence for an inclusive, comprehensive and flexible moral system is aimed at accommodating these aberrations. In Adam's fall lies the fall of humanity. Through love and imagination, every sinner can hope to tread the path of sainthood. It is not the canonized order of saints but the order of mankind where the reality of human heart is the most sacred and precious possession. That is why sinners are not condemned for ever. Michael, Catherine, Dora, The Count, Anne, Daisy- all are shown treading the path chosen by those who have aspired for something other than their own self. Such characters are mocked and chided as Tallis is chided in *A Fairly Honourable Defeat*. But even Christ was mocked.

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## THE ELEMENT OF MYSTIC SYMBOLISM IN SRI AUROBINDO GHOSH AND WILLIAM BLAKE

SWAPANDEEP KAUR, DR. DINESH KUMAR SHARMA

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**Abstract:** Sri Aurobindo and William Blake both of them are the examples of the finest poets of their respective eras. Both were born and brought up in entirely different cultures, and they had different beliefs. Aurobindo and Blake had visions and spiritual experiences, which expressed by them mostly in similar styles, but sometimes in a different way. Aurobindo and Blake strongly confident in their respective exotic experiences, and felt that there were some spirits who dictate and guide them in their day to day chores life. Sri Aurobindo as well as William Blake, both brought out their respective opinions and beliefs for the upliftment and creation of the new individuals presumably herewith transformation and transcendence of a spiritual superhuman. It is not difficult for readers to realize the greatness of these luminaries - Aurobindo from the East and Blake from the West, who think alike. Sri Aurobindo and William Blake discovered the infinite in whole with their strong spiritual intentions. Their methods were a bit different from each other but both had one vision. Here in this paper the presence of symbolic element will be discussed in a comparative way.

**Keywords:** Exotic, Mystic, Symbolic, Spiritual, Vision.

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**Introduction:** Aurobindo and Blake had strong notion that God has appeared in His creations like in humans as well as in nonhumans. Universal self is present here and this world is a universal family. As per opinion of both, if one is able to purify oneself from all the evils then he is capable enough to see the Infinity. The Infinity, all glory would appear to us. The light of Mysticism is something that is felt after a lot of practice or experiences and nobody is never able to pass it on. Mystical experience is a mode which separates the human from the Divine by transcendence or elevation. It also shows the path of possibility to reach God-head.

Sri Aurobindo was recognized as a Maharishi, a Mahayogi, and to explain anything about him is a tough task for anybody. And try to illustrate anything written by him is like to show a candle to the sun. There are a lot of variations in the poetry of Sri Aurobindo. The manifestations of Sri Aurobindo's feelings and passions can be portrayed in his early poetry. As Aurobindo took to yoga, the yogic experiences were expressed in poetry by him. Although it is difficult to differentiate the philosophy of Sri Aurobindo from his poetry yet Sri Aurobindo's poetry has been universally accepted for its symbolic overtones. A poet-critic K.D Sethna reviewed, "The ecstasy of insight which is the acme of metrical utterance and lays bare the very heart and meaning of the world in one shade or another can hardly be reached if a poet has not in his early life brooded with intent joy and devotion on rhythms and figures.... And who can deny either music or imaginative subtlety to Sri Aurobindo when in his Songs to Myrtilla, written largely in his late teens under the influence of a close contact with the Greek Muse, he gives us piece after finely-wrought piece of natural magic?" [1]

The traits of symbolism can be easily traced in the poems of Sri Aurobindo other than 'Savitri'. These poems include the major and minor poems of Sri Aurobindo. "Revelation", "Transformation", "Trance of Waiting", "Rose of God", "The Tiger and the Deer", "Thought the Paraclete", "A Dream of Surreal Science", "Ilion", "Songs to Myrtilla", "Urvastie", and "Love and Death". "Revelation" as the title suggests is a poem of spiritual supramental vision. It is a fine example of Sri Aurobindo's mystical poetry written during his early days. In a state of spiritual supramental vision, the poet saw someone "leaping from the rocks" and having "Wind- blown locks". The poem has been marked as "a lovely mystical lyric of great transparency". [2]

The poem has symbolic mystical tone. It is full of rapture and brevity. The word 'rose' and 'wind' in the following lines are symbols of concrete images that signify the abstract Divine vision dawned on the poet: "Just a cheek of frightened rose , That with sudden beauty glows Just a footstep like the wind , And hurried glance behind, And then nothing," [3]

The “Songs of Myrtilla” are poems that may be traced to the early period of verse writing of Sri Aurobindo. These poems are a medley of yoga and poetry. The poems written between 1890 and 1893 are full of art and craft of poetry. There in, however, “very good verse and seldom good poetry”<sup>78</sup> in these poems. It is the verse that identifies itself with the effervescent youth of the poet when he mediated far less than saw and heard. These poems are the passionate outpourings. Eclecticism permeates this early verse and even the names of the poems are flowers which are symbolic of love and beauty and the allusions are exotic, but a generous allowance should be made for this alien note in Sri Aurobindo’s early poetry, as he lived in England during the most impressionable period of his life from 1879 to 1893.

Blake is a well-known established Pre-Romantic poet and likewise, modern India has seen well known great writer Sri Aurobindo. Both of them talk about the destiny of man. Both of them were one of the finest poets’ of their respective times. William Blake wrote a number of books of poetry, prose, legends, myths, and mysticism. Likewise, the Vedas, Upanishads, Yoga, and mysticism were studied by Sri Aurobindo. He wrote the great genre of books like *The Life Divine* and *Savitri*. Both Sri Aurobindo and William Blake established a marvellous status in the world of literature. They were mainly ranked first of the mystics in literature. It seems that they recalled the great mystics of literature as John Donne, William Wordsworth, Yeats, Emerson, Goethe and Dante to us.

William Blake’s poetry was born in his late twenties. The art and visionary poetry of William Blake was not successful to find sympathetic spectators in his lifetime. This is the reason that Blake was forced to look for patrons and depended on them until his demise. William Blake was an artist of words and pictures. He was recognized as one of the prominent poets of the Romantic period. The theme of Revolution was another common theme, and the poetry often contained indications about machines replacing an agricultural lifestyle. William Blake was also a man of multiple traits like Sri Aurobindo, he was a poet, painter, engraver and visionary, whose writing covered a variety of poetry which ranging from the songs of children to that of the introspection of souls and redemption of the man. Hence, the vision of Blake was prophetic. It seems that Blake had great grip on mystic understanding. Blake and his contemporaries believe in Transcendentalism as well as in the idea of the existence of God in all living things. Blake was known as poet-prophet, and it is believed that his use of symbols and spiritual language may be considered as part of Blake's prophecy.

Mysticism is one of the kinds of Supra religious experiences. Mysticism is dealt with the past of the spirit of man. Blake is regarded as a great symbolic poet of his time, but his work got praise after his demise. His poetry is rich in symbolic overtones and in allusions. In Blake's poetry each and every word has symbolic meaning. The most striking feature of Blake's poetry is, his use of symbols. His symbols covered a wide range of meanings. In Blake's poetry the symbols which have a significant place are lamb, tiger, rose, children, stars, garden, forest, looms and net. A symbol is an object and it symbolizes something else like dove symbolizes peace. Likewise, in Blake's poetry, the tiger is a symbol of creative energy. If symbols carried with them hints of mystery and wonder, it means it is in the category of good symbolism. Symbolism captivated the mind of us with its mysterious manner, addressed which it is addressed. William Blake was unconcerned with the construction of grammatically correct sentences, but he was aware and capable to convey his experiences with his poetic and prosaic medium. According to William Blake, he portrays all things in his poems that which were dictated to him by spirits.

The opinion of Andrew Sanders is that “The complex mythology and the heretical perversity of much of Blake's thought often run counter to an easy appreciation, let alone an understanding, of his work as a whole. This, however, is far from true of the lyrics describing contrary states of feeling and seeing, published as the Songs of Innocence and linked with the Songs of Experience. The songs of both books are interrelated, not simply as reflecting oppositions, but as a series of shifting perceptions. The 'two contrary states of the human soul' of the work's subtitle form a kind of dialectic which suggests not only a falling away from Edenic innocence to experience, but also the possibility of progress towards a Christ-inspired 'higher' innocence and a future regain of paradise. Despite their hymn-like simplicity and their nursery-rhyme rhythms, the poems in both books assume ramifications from their contexts and their interrelationships.”<sup>[4]</sup>

Blake's use of symbolism is unique and cinematic, which established him as a highly symbolic poet. It portrays the existential and pulsating picture of dynamic life before us. What makes Blake different is that he was not personate after any symbol but his own. Like Sri Aurobindo, Blake's presentation of symbols is notably distinct from the French symbolists. The symbols of Blake was not inflexible. We see the archetypal symbolism in Blake's poetry. As we can conclude that as a poet, William Blake, the main trait in his poetry is his use of symbolism. It is greatly shown in his renowned work, *The Songs of Innocence and Experience*. Syamala Kallury in her book 'Symbolism in the poetry of Sri Aurobindo' states that "Of mysticism in symbolic poetry, Sri Aurobindo is of the opinion that a poem can undoubtedly be symbolic and mystic at the same time. It is when the thing is seen as spiritually lived and has an independent, vivid reality of its own which exceeds any conceptual significance that it may have on the surface that it is mystic." [5]

**Conclusion:** Sri Aurobindo and William Blake both shared some common similarities as we know both of them were renowned writers as well as mystics. They also appeared as rebels and as critics of the existing life during their lifespan. It is a tough task to understand these two legends Sri Aurobindo and William Blake. The way they present their perspectives with the use of various symbols is quite complexive. As per Kanwar Dinesh Singh, "The poetry of Aurobindo Ghosh (1872-1950) contains several Indian myths, legends, traditions, customs, rituals, mores, and spiritual moorings. The recurring motifs are love, sorrow, death, and liberty. There are romantic imagination and solemn contemplation. He employs Miltonic diction and grand style in his narrative verse pieces like *Urvashi*, *Love and Death* and *Baji Prabhu*. His epic *Savitri* (published posthumously in 1951) is his magnum opus comprising 23,813 lines in forty- nine cantos in twelve volumes." [6]

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## A CRITICAL DISCOURSE ON DALIT LITERATURE AND LITERARY THEORY

SAMIR KUMAR BHARDWAJ, DR. DINESH KUMAR SHARMA

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**Abstract:** Abstract: Dalit literature in India over the past many decades has emerged as a separate and important category of literature in many Indian languages. It has provided a new voice and identity to the communities that have experienced discrimination, exploitation and marginalization due to hierarchical caste system. Dalit literature has also made a forceful case for human dignity and social equality. In the light of the growing importance of the study of Dalit literature, this paper attempts to explore the origin, concept and contributions of Dalit literature in India and brings out its significance and key features.

**Keywords:** Dalit Literature, Rebellion, Aesthetics, Amenities, Shudras, Discourse, Marginalized.

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**Introduction:** Dalit writing is a post-Independence literary phenomenon. The emergence of Dalit literature has a great historical significance. The causes and effects leading to the age-old existence of oppression and despair of the lives of marginalized class of nation's vast population are also observed in many other parts of the world. Arjun Dangle has defined Dalit literature as: "Dalit literature is one which acquaints people with the caste system and untouchability in India... It matures with a sociological point of view and is related to the principles of negativity, rebellion and loyalty to science , thus finally ending as revolutionary ."

Most of the marginalized groups all over the world have a similar system of oppression but the titles are different as per the class and class divide. In India it was under the pretext of the Cast and in the western World it was under the name of the Race. Inequality was the main source of this marginality which led to insecurity, injustice and exploitation. Marginalized sections were always on the periphery and distanced from the power centers. In this research work the main objective is to draw similarities between the politics of Caste and Race in Indian Dalits and the American Blacks.

Dalits were always on the marginalized 'other' side of the Indian society. So when they started voicing after centuries of silence, about themselves, we have the literature depicting assertion of human rights, self-pride, revolt against social injustice, chronicles of personal and collective suffering, and hopes and aspirations for a new society devoid of discrimination. Dalit Literature is literature about Dalits that are about Dalits. Dalit (Oppressed or broken) is not a new word. It was used in the 1930s as a Hindi and Marathi translation of 'depressed classes', a term the British used for what are now called the Scheduled Castes. In 1970s the 'Dalit Panthers exploited politically, economically and in the name of religion. So Dalit is not a caste. It is a symbol of change and revolution. The Primary motive of Dalit literature is the liberation of dalits, the struggle against casteist tradition has a long history. Some of the important writers whose writings will find a place are: Mahasweta Devi, Namdeo Dhasal, Daya Pawar, Arjun Dangle, Sachi Rautray, Rabi Singh, Basudev Sunani, Bama, Abhimani, Poomani, Imayam, 2 Marku, Mangal Rathod, Neerave Patel, Perumal Murugan, Palamalai, Sudhakar, D. Gopi and others. Sharankumar Limbale has stated, "Dalit literature is precisely that literature which artistically portrays the sorrows, tribulations, slavery, degradation, ridicule and poverty endured by Dalits. This literature is but a lofty image of grief." This trend started in 1873 when Jyotirao Phule, a Marathi Dalit (then known as an Untouchable), published his book Gulamgiri (Slavery) and dedicated the treatise to the then Negroes in America as a 'token of admiration for their sublime disinterestedness and self sacrificing devotion in the cause of Negro Slavery'.

According to the hymn in India, Brahmin were born from the mouth of Brahma, Kshatriyas were born from his shoulder, Vaishyas from his thighs, while the Shudras were born from his feet. Therefore, the Brahmin are considered as most superior, while the Shudras are at the lowest position in hierarchy. Shudras were considered to be the untouchables and were named as "Dalit" by Mahatma Jyotiba Phule. The term Dalit became the new identity of the oppressed and depressed social class in India. Dalit Literature can be considered as the literary compositions that are based on the caste system in India and

explains the oppression and pain experienced by Dalits and therefore by considering this fact into consideration it would not be wrong to state that, in spite of having history of Dalit literature which can be traced back to centuries, dalit literature was not given its due place in the field of literary production in India, which is also influenced by caste nuances.

Caste system has been very significant problem in the Indian history. Due to the significant belief in the religious scripture, Dalits were considered to be the lowest caste and untouchables and mainly the inferior class of the society. They were denied their basic rights and were only assigned to inferior activities in the economic system, such as doing leather work, cleaning streets, removing the carcasses of dead animal and most of all were not allowed to get education. The civilized Hindu society segregated and prohibited such people from social activities and mainstream traditions.

Due to the caste system, Dalits were denied education and basic amenities and their history was mainly oral. Due to the restriction of education, Dalits do not have a written history. It was Dr. Bheem Rao Ambedkar stressed on the literary assertion to explain the world regarding the struggle of Dalits against caste system. Therefore, Dalit literature developed as a movement of the Dalits, who started writing powerful stories regarding their experience. Therefore, the poems, stories, biographies, novels, autobiographies, which were written by Dalit writers took the form of a new body of literature, which was called as "Dalit Literature".

Dalit Literature is mainly considered as the Post-Independence literary phenomenon. The emergence of Dalit literature is mainly associated with the causes and effect of the very long struggle and oppression. Dalit Literature can be defined as "*one which acquaints people with the caste system and untouchability in India... It matures with a sociological point of view and is related to the principles of negativity, rebellion and loyalty to science, thus finally ending as revolutionary*". The Dalit literature firstly evolved in Marathi language and was developed as the form of social awareness. Some of the early authors of Dalit literature from Maharashtra are "*Anna Bhau Sathé, Shankarrao Kharat, Baburao Bagul, Namdeo Dhasal, Raja Dhale, Daya Pawar, Waman Nimbalkar, Arjun Dangale, Yogiraj Waghmare*".

Therefore, this new body of literature, took the form of the movement and the revolution that displayed the unseen reality of India, which was brutal inhuman and Maharashtra was at the forefront of this revolution, as most of the early Dalit writers, who were responsible for shaping the theoretical discourse of literature were from Maharashtra. When the Dalit Literature firstly appeared, it was rejected as the form of literature, because of the lack of theory in literature. Therefore, the Dalit authors focused on theorising the literature and developing a Dalit literary theory. Baburao Bagul's work, *Dalit Sahityache Krantivigyan* (that could be translated as 'Revolutionary Science of Dalit Literature') was the first and most significant attempt made by the author to develop the Dalit literary theory.

According to the study of Jalote (n.d.) Dalit literary theory have the similarity with the subaltern literatures of Africa American literature. This theory can also be considered as indigenous and deeply rooted in the history, culture and politics of Dalits. Therefore, the theory gave a significant direction to Dalit Literature. Dalit literary theory was further broadened by Sharankumar Limbale through his autobiographical book, "*Akkarmashi*". The development of the literary theory is associated with the development of the literary objects in literature. Limbale's theoretical formulation is mainly based on the ignorance of Brahminical agency, which also resulted in gaining the attention of the world-wide scholars. Dalit writers started writing about their identity, humanity and reclaiming their personhood. The Dalit writers started exploring the various genres and also the work of Limbal in his various books displayed a theoretical approach to explain the position, history and political status of Dalits. He also took reference from the Marxist, Black and Russian literature in order to illustrate the trajectories of Dalit experience.

The main theoretical aspects of the Dalit literature include, explanation of suffering, displaying rejection and rebellion, developing social commitment, denying God and soul, focusing on self-realization, advocating independence, equality and rights and opposing Brahminism and varna system. The Dalit

literary theories are based on the various ideologies which also based on self-image and self-esteem. The literary theory developed through the political consciousness of the Dalits and also worked as the functional catalyst. The literary theory of the Dalit Literature is about shaping the identity of Dalits. Therefore, the question of identity is central to Dalit literature and Dalit literary theory, which enforces the dignified human life and equality and based their visionary transformation of the society towards forming the egalitarian social system.

In addition to built an identity, Dalit literature is also based on making an effort to gain international attention and to highlight the caste-based discrimination in international forums. Therefore, the development of the Dalit literary theory can be considered to be based on Racism and classicism that had been used by the authors to explain the oppression and traumatic condition of the African-Americans. Such examples have been used by the Dalit writers, which had resulted in ceasing the consideration towards Dalit as human beings. Therefore, it can also be said that Dalit literary theory has made the Dalit literature to be inevitable till the existence of discrimination and exploitation in the society. Therefore, some authors have also stated that Dalit literature has commenced as the literature associated with protest that focuses to incorporate a human race and to promote aesthetic justice. Dalit literature is not monotype, but theory literary theory it has evolved to promote secular values of liberty, equality, individuality and fraternity.

Dalit writers have used the Dalit literary criticism as the theoretical tool. Dalit 'Chetna' or Dalit consciousness, which has also become the emerging theory of the Dalit aesthetics. Therefore, the theory is based on the consciousness that has also worked as a revolutionary mentality connected with the oppression and struggle of Dalits. Dalit consciousness is unique, separate and different from the consciousness of other writers and this is the reason that Dalit literature is demarcated as unique because of this consciousness. Limbale has also stated that Dalit consciousness or Dalit Chetna is the most essential attribute of Dalit literature. One major aspect of Dalit Chetna is the inclusion of the Buddha's rational with this consciousness, which rejects the concept of God and soul and thus, rejects the hypocrisy created by Hindu culture and laws. This theory also promotes the development of caste-less and class-less society and displays the rejection of superiority, supremacy and feudalism.

While focussing on evolution and development of Dalit Literature and Dalit literary theory it can be concluded that Dalit literature has developed from the experience and struggle of the Dalits and Dalit writers; and scholars have focused on developing Dalit Consciousness. Dalit consciousness is also called as Dalit Chetna that enforces the consciousness of Dalit writers towards equality, equal treatment, and rejecting discrimination and inequality based on caste or class. The emergence and development of Dalit literature has been very significant for getting the attention of world towards the assertion of human dignity and justice.

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## THE THEME OF INSTITUTION OF MARRIAGE IN SHASHI DESHPANDE

SAIMA RASHID KAKROO, DR. DINESH KUMAR SHARMA.

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**Abstract:** Indian writing in English has been profoundly applauded far and wide for its curiosity, radical new ways to deal with the craft of narrating and revising of dialect. While the modern age keeps on delivering abstract masterworks with composing ability, guaranteeing that the source of creative power in the nation has not run desiccated. Women authors in India are at the forefront with their concrete doubt strides, coordinating the pace of the world. Shashi Deshpande in her full sprout is spreading her very own individual aromas that has amiably affected the modern society to a great level. This research paper is focused on the selected novels of Shashi Deshpande dealing with the complexities of man-woman relationship especially in the context of marriage and thus putting a question mark on the very institution of marriage in India. The following novels of Shashi Deshpande namely **That Dark Holds No Terrors**(1980), **Roots And Shadows** (1983),**That Long Silence** (1989),**The Binding Vine** (2002),**A Matter Of Time** (2001) have been taken up here for study wherein what happens to men and women in and after marriage, what they have been, what they have become and what is in store for them etc have been beautifully and boldly brought forth. The changes in status of men and women after marriage and the changing nature of marital relationships are presented in these five novels. Focusing on the marital relation she seeks to expose the tradition by which a woman is trained to play her subservient role in the family. and women towards creating a mature and balanced gender relationship. She has certainly given a fresh ardor and excitement to literary studies through feminist consciousness. Literatures in gynocentric texts across the world are raising the question of identity of the most marginalized and stifled creature called woman in the phallogocentric social setup. A reasonable new perception of women in literature and works by women writers has unveiled some of the prejudices at work in traditional approaches to literature hitherto dominated by a masculine perspective.

**Keywords:** Gynocentric, Marginalized, Stifled, Self-Identity, Confines, Complexities, Feminist Consciousness, Trauma, Expose, Subservient.

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**Introduction:** The theme of marriage holds a great fascination for Shashi Deshpande. The theme of marital discord in Shashi Deshpande's novels reveals her consummate craftsmanship. Shashi Deshpande sincerely broods over the fate and future of modern women particularly in male-chauvinistic society and her annihilation at the altar of marriage. The novelist, however, does not challenge the futility of marriage as an institution but discloses the inner psyche of the characters through their relations. Shashi Deshpande's female protagonists are generally caught in a web of painful circumstances, their struggle and the outcome of which is usually the basis of novel. Marital Discord, a lack of understanding between man and woman. Shashi Deshpande deals with the treatment of domestic relationship, especially disturbed man-woman relationships and the resultant alienation in middle class Indian family. The main reason behind this is temperamental incompatibility, which is further aggravated by loneliness, lack of communication, escapism, isolation and also quest for identity. Almost all the novels of Shashi Deshpande focus on the problems of marital disharmony-the conflict and discord in husband-wife relationship. Here it would be in the fitness of the things to quote the words of Zig Zigar "Many marriages would be better if the husband and the wife clearly understood that they are on the same side".[1]

Being one of the most accomplished and proficient women writers in India, Shashi Deshpande holds a unique place by virtue of her sheer power writing. Shashi Deshpande has a penchant for writing whose major themes are inclined towards human feelings and emotions wherein marriage holds the centre stage. Her primary concern is the women's struggles in the Indian society. Her protagonists include the middle class and married working women. And being well educated, they very well understand the social inequality prevailing in the Indian patriarchal society. According to Kenneth W. Phifer the institution of marriage was begun that a woman might learn how to love and, in loving, no joy; that a man and a woman might learn how to share pain and loneliness and in, sharing, know strength; that a man and woman might learn how to give and, in giving know communion. The institution of marriage

was begun that a man and woman might through their joy, their strength, and their communion become creators of life itself. Marriage is a high and holy state to be held in honor among all men and women. Similarly, G.B.Shaw describes marriage as an institution that brings two people together. He said that marriage should be based on intense, profound love and a couple should maintain their ardor until death does them part. As per the concept of Hindu marriage “the concept of Hindu marriage was a social duty towards the family and the community, and there was little idea of individual interest. The social background provided by the authoritarian family afforded no scope for the recognition of any personal factor, individual interest and aspirations, in the relation between husband and wife” (Kapadia, 1958, p.169). [2]

But today perhaps the things have changed and no longer hold the same notion about marriage which has more or less become a commodity and the spirit of togetherness has simply bud sadly gone out of the window. In this research paper some of her novels will be taken up to discuss the message Shashi Deshpande intends to convey about the Institution of Marriage in general and Indian society in particular.

**That Long Silence:** The recipient of the most prestigious Sahitya Akademi award, the novel “That Long Silence” powerfully depicts how in most of the cases, marriage culminates in a travesty of faith man and women seek in each other, leading to suffering and the conflict between traditional limitations and modern aspirations. How one is restricted in married life has been poignantly captured in this novel. The novel critically comments on the age-old the institution of marriage in the modern context. The author has portrayed the explicit gender discrimination in a man-woman relationship leading to female psychic frustrations and the silence rooted in the complicated web of relationships between a man and a woman. Set in a typical Indian background, That Long Silence dwells on a heart-rending tale of the protagonist Jaya- an educated middle class girl, who finds herself restricted in her married life.

She is presented in relation to tradition and the different relationships she enters into, with a family. She has depicted the experience of Jaya in different roles-as a dutiful wife (of Mohan), as an affectionate mother (of Rahul and Rati) or even as a professional writer (who has given up on genuine writings). She is shattered and feels subjugated with her marriage and life yet she remains silent because a girl is always trained to be silent since her young years in an Indian social set up. The silence between Jaya and her husband further deteriorates the situation. “I had learnt it at last no questions, no retorts, only silence” .These words of Jaya reveal the oppressive, debilitating life situation of a house wife, who journeys from ignorance to knowledge, through suffering. Towards the end of the novel, she realizes that she should break the silence and try to achieve her identity as an individual through self-realization and self-assertion. Through this simple story of Jaya, Deshpande has raised many issues related to matrimony, and questioned the concepts of love and marriage. This is what S.P. Swain means when he says: “A sensitive and realistic dramatization of the married life of Jaya and her husband Mohan, it [That Long Silence] portrays an inquisitive critical appraisal to which the institution of marriage has been subjected to in recent years.”[3]

**The Binding Wine:** The novel 'The Binding Wine' questions the role of the chauvinistic husband in a male dominated society. It deals with the personal tragedy of the protagonist Urmil and focuses attention on victims like Kalpana and Mira. Shashi Deshpande ' presents the feminist streak to her narrative which revolves around the life of Urmil and the three women she meets in the purview of different time, situations and strata in the society. One among the major themes that are woven in the novel is institution of marriage.

In the lives of Mira, Urmil's mother-in-law, Vanna, her friend and sister-in-law, Urmil herself, Sulu and Sakuntal, Shashi Deshpande brings across to her readers that marriage is a torture for all of them. While Mira, under her husband's dominance suffers endlessly, Sulu's husband rapes her own niece and agonizes her to the limit that she commits suicide. Sakuntal, all her married life faced neglect, torture and crises which left her alone to struggle with her children while her husband married another woman. Similarly, marriage turned Urmil from a confident girl to a fearing woman who feared whether her

husband would come back from the sea or he would be drowned in the sea like his friends, she fears whether her husband likes to come back to her. He is not there to console her when her daughter dies and she doesn't know how to cope with the loss. Sakuntai's daughter Kalpana is raped by her own uncle and lay unconscious in hospital for months. It's heart-rending to to see the reaction of her own mother who tries to keep it a secret and blames her own daughter for her ways. She is worried if she is labeled as 'raped' who will marry her and what would happen of her sister. On the other hand, the rapist is free and without any guilt. Even the police officer thinks that exposing it won't do any good to anyone. Shashi Deshpande also brings to the fore that rape is not only physical torture, it is mental agony also and it can happen in marriage also. Her mother-in-law Mira's poems reveal that how she became a victim of it and how much she dislikes her husband for being so callous.

It is when Urmila struggles with her own griefs then she finds that she can come over her own sorrow by connecting with others who confront even greater sorrows. It is then, that she realizes the incongruities of women's predicament in this patriarch world and that in resolving them lies her own solutions.

**A Matter of Time:** A society in transition with the portrayal of the institution of marriage forms the crux of the novel, *A Matter of Time*. A comprehensive picture of the Indian women belonging to different generations, different educational and economic levels emerge on the large canvas of the novel. The themes of the quest for a female identity the complexities of man-woman relationships especially in the context of marriage, the trauma of a disturbed adolescence, the attempt to break traditional moulds in which women are trapped, sexual discrimination, the rejection of the dependency syndrome and introspection have been successfully dealt with in *A Matter of Time* by Shashi Deshpande. A penetrative study of the novel reveals that it raises many issues pertaining to marriage. This analysis of the institution of marriage in the novel provides useful insights into Deshpande's art and fiction. Here the theme of marriage is explored in its different forms and complexities along with the changes which are coming in this institution with the changing socio-cultural milieu.

The story comprises four generations of women of a middle class family. Deshpande's perspective of marriage is elaborated through these four different generations : Manorama, an uneducated woman representing the first generation; Kalyani, the grandmother, who is not really educated; Sumi who is educated but has not worked outside home; Aru, Charu and Seema, who all aspire for independence and careers. All co-exist in a family that is modern but with certain old values. All of them have their own mindsets and values about marriage.

On the whole, the minute analysis the institution of marriage in its different dimensions in the novel lends loveliness to the story. She has shown different types of marriages in the novel –love marriage as in the case of Sumi and arranged marriage as in the case of Kalyani. She has shown that a wife's individual self is given no importance in patriarchal society and self-effacement is her normal way of life. But in this novel, Manorama, Kalyani, Sumi and Aru emerge ultimately as strong women who claim and achieve independence. They learn to live harmoniously in society neglecting neither the family relations nor the modern aspirations for autonomous self.

**Conclusion:** Obviously enough, the protagonists of Shashi Deshpande enter into marriage with the hope that the marriage would provide them respect security and status in the society, unfortunately, they get disappointed and subsequently disillusioned. But at the end of each novel, Shashi Deshpande makes her protagonists ready to face the reality. Her women neither seek divorce nor commit suicide in spite of their trauma and plight of their married life. So Saru who is tired of her husband's ego centered behavior hopes for reconciliation and compromise to bring harmony in her marriage. To quote, Dave Meurer "A great marriage is not when the 'perfect couple' comes together. It is when an imperfect couple learns to enjoy their differences." [4]

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## MULK RAJ ANAND: A WRITER OF SOCIAL ISSUES AND CHILD PSYCHOLOGY

AMANPREET KAUR, DR. DINESH KUMAR SHARMA

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**Abstract:** Greatly notable for his depiction of the lives of the poorer castes in traditional Indian society Mulk Raj Anand carved a rock-solid niche for himself in the firmament of Indian English Literature. His novels such as *Coolie* and *Untouchable* set an entire generation of educated Indians thinking about India's social evils that were perpetuated in the name of religion and tradition. Through his writings he revealed that in addition to the foreign colonialism of Britain there existed layers of colonialism within Indian society. This internal colonialism stood in the way of India's transition to a modern civil society. Most of the novels of Mulk Raj Anand deal with the social issues in pre-independent India. Unlike the other Indian Social novelists, Anand dealt with the theme of lowest strata of Indian Society – the untouchables., M. R. Anand's special quality is that he had the first hand experience of all that he wrote. Anand elevates the level of discourse to a moral essay on humanism where art is concerned with the truth of the human condition. The present article focuses on the practice of the untouchability popular in pre-independent India. Social Realism in his novels has been presented quite realistically and artistically through the treatment of untouchability, oppression of downtrodden, fair sex, religious orthodox, meaningless rituals and inhuman ill-treatment of marginalized people, pseudo-communism and denial of education to untouchables and girls .

**Keywords:** Untouchables, Marginalized, Downtrodden, Oppression, Ill-Practices, Humanism.

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**Introduction:** Chiefly admired for his novels and short stories, which have acquired the status of being classic works of modern Indian English literature, noted for their perceptive insight into the lives of the oppressed and their analysis of impoverishment, exploitation and misfortune, [1] Mulk Raj Anand was a prominent Indian writer in English. He was a socially committed novelist, who was born in Peshawar in 1905. His father was a coppersmith and his mother come from peasant family. His literary career was launched by family tragedy. He had a good deal of literature on his behalf. He has written more than a dozen novels and about seventy short stories and essays also. His attitude and views as a novelist had many influences. His social condition, his parents, his education, and the books he read and the people he met all have a share in making Anand a novelist. Anand was aware about the sufferings, poverty, hunger and humiliations of Indian people. That's why it became Anand's aim as a novelist to focus attention on the sufferings and problems of the outcaste. No one in India had yet dealt with these subjects because of there crude realities. Thus Anand writes on what may be called "Epics of sufferings and humiliations". He has also made Indian novel a novel of socialism and realism. He has introduced new type of characters. He is primarily a social realist who revolts against man-made anti-human establishments. He evinces keen interest in the eradication of social evils and his novels are nothing but artistic attempts to arouse the slumbering conscience of the people to actuate them to remove these evils. He is also notable for being among the first writers to incorporate Punjabi and Hindustani idioms into English [2] and was a recipient of the civilian honour of the Padma Bhushan.

The novel **Untouchable** needs no introduction for an Indian reader because its background is well known to him. The very title is a telltale. This first main novel, **Untouchable** mirroring the inhuman and heartless attitude of the merciless caste Hindus was a chilling expose of the day-to-day life of a member of India's untouchable caste. It is the story of a single day in the life of Bakha, a toilet-cleaner, who accidentally bumps into a member of a higher caste. It is an attempt to project the humiliation and agony faced by a subaltern in the Indian society which is divided into the graded inequality and hierarchical anarchy; where the tall claims of "Vasudhaiva Kutumbakam" have proved to be merely a utopian dream. Anand has railed upon this centuries-old, and deeply-rooted inhuman practice which has denied a subaltern, 'Dalit' a right to be a fellow human being, a 'touchable.' The novel is a remarkable piece of art for the convicting photographic fidelity of the pictures drawn, cumulative ferocity and force of detail, and an uncanny accuracy of facts. Anand, through his subaltern hero, makes an attempt to subvert the conventional hierarchical order and challenges the phallogocentric ideology since it perpetrated marginalization of subaltern. He has given the subaltern Bakha a voice, an identity

and a speech which is denied to him by the upper communities in the caste-ridden society. His main concern is to 'dismantle' the social order based on Manu's ethics and laws.

Seeking to stress the evils of untouchability by focusing attention on the miserable plight, suffering, poverty and degradation of a large section of Indian Society, this sociological novel has its own charm and beauty. Bakha as an untouchable seeks his freedom in the infallibility of caste discrimination, with its hypocrisy, cruelty, deceit and inhumanity. He stands passive and bewildered at the immensity of horror hoping for a change. Bakha, thus, is a symbolic figure, a universal figure, who stands for a large segment of Indian Society which had been doomed to suffering since times immemorial.

Having a very penetrative insight into child psychology Anand presents Bakha is a young boy of eighteen who has not surrendered to his fate like his father Lakha. He is a child of twentieth century and is given to modern way of dressing. "From a Tommy he has secured a pair of old breeches and from a sepoy a pair of old boots; he would, if he could, like to look like the white foreigner and so be in the 'fashun,'" He dreams of a good life but as soon as morning dawns his job of toilette-cleaning starts. Three rows of latrines to clean single handed, and several times too; to bring cleanliness in the place of filth and possible disease; such is Bakha's daily toil which he turns into a dexterous art.

In all the incidents that took place in the novel **Untouchable** including—Temple Incident, Bazar Incident, Hockey Match Incident, Well Incident—the hero has to suffer due to the curse of untouchability, so vehemently criticized by M.K. Gandhi. The water problem among the untouchables is depicted through the 'Well Incident.' They were not allowed to touch even the brook or pond, as they would contaminate the stream. They had to wait hours beside the well and had to request the upper castes to pour water in their pitchers. They weren't allowed to 'touch anything that touchables touched'. This is the cruelest irony of life that even for water, the basic necessity of human existence, the sweepers have to depend on the mercy of the caste Hindus.

In his another novel **The Road**, Anand deals with the same problem but with a difference, as it is a novel of today where untouchability legally forbidden. The main character of this novel Bhikhu bears many similarities to the character Bakha in Anand's earlier novel *Untouchable*. [3]

The novel however, shows that the untouchables or 'Dalits' are still subordinated and live as subalterns. On a symbolical reading, the novel is a crusade against the inequality and inhumanity practised against a subaltern untouchable—the triumph of good over evil. In this novel, as in **Untouchable**, casteism is practiced and condemned because it disgraces human dignity. The story revolves round the subaltern Bhikhu, the leader of the untouchables of a village, condemned to build a link road. The road, instead of becoming a way to enlightenment is converted into a place of human degradation. Being a symbolic protest against the concept of Karma and Fatalism it represents a period of transition where the old order of the Hindu beliefs in untouchability will change yielding place to a new vision of human unity and cooperation. This novel looks to the time gap needed for the change in human mind for the vision of the coming together of the Dalits and the caste Hindus.

A new social dynamism through work based on human cooperation is what Anand has in his vision. The depressed classes are caught in the cobweb of poverty and social degradation. They can secure social status and gain economic freedom only through the gospel of work. Anand is interested in a collective social action and he thinks that the salvation of human beings lies through work. It is in this respect that the novelist raises the question of the future of the depressed classes. He feels that their social life must be actively involved in an ongoing program of work. The impact of industrialization is felt in the construction of work.

He feels that dung and latrine cleaning bring indignity to men like Bakha. The only way to remove this dishonor is to introduce a scientific device whereby the life of the untouchable will undergo a sea change. The indignity comes from the work they do. Anand's solution is that the introduction of flush system changes the character of work. Anand adds another point and he says that gaining of economic

freedom will modernize their life and make them respectable human beings. The degeneration in social life is considered to be the result of a conservative religion.

Always known for his realism and his portrayal of the Indian society, Mulk Raj Anand's novel **Coolie** like his other novels has been praised mostly by the scholars and students alike making it a highly celebrated novel. **Coolie** tells the story of Munoo, a boy who has to begin his life with misery and end on the same note, and if I may say, even more in misery! Other than the story which is commonly deemed as a novel, **Coolie** by Mulk Raj Anand tells many other things and speaks in abundance about the class difference which was there in the Indian society before our independence. **Coolie** still reigns as the masterpiece by any Indian novelist being the first among those Indian novelists writing in English who established the Indian ground in English literature, On the way to featuring the journey of Munoo as a boy who suffers, the novelist has, in fact, written about all those children who are there to be shamed, haunted, bullied and ultimately thrashed out to the bin box of our minds which don't care about the social values.

*The novel* is a devastating account of the poverty and exploitation faced, not just by Munoo, but thousands like him. Anand shows how the racial and class hierarchies imposed by British colonialism have intersected, or overlaid, the existing caste system to make life impossible for "coolies". Munoo has no real control over his life; over the work he does or where he lives or how he is treated. As he moves from one place to another in search of a job or a home, he moves from one tragedy to another. In his travels and through the various people he meets and is employed by, he is exposed to the multiplicity of life in India which is made vivid by Anand's prose. If the novel's portrait of Munoo's life raises difficult questions about Indian society, Munoo's death raises the question of whether there can be any future for a "coolie" if nothing changes.

Like much of his other work, this novel is concerned with the consequences of British Rule in India and with the rigid caste system that structured Indian society. "Coolie" is a term for an unskilled laborer, though it can also be used as a pejorative. Anand's novel tells the story of Munoo an orphan from the Kangra Hills in Bilaspur lives with his aunt and uncle; however, early in the novel they reveal they can no longer support Munoo and insist that he get a job. This is the beginning of a journey that will take Munoo to Bombay and beyond, but it also marks the end of his childhood.

With his Uncle, Munoo travels to a nearby town where he finds a job as a servant to a bank clerk, Babu Nathoo Ram. Munoo is mistreated by his master's wife but he admires his master's younger brother, Prem Chand, who is a doctor. Babu Nathoo Ram himself is something of a caricature; a typical example of a Middle Class Anglophile who has internalized the values of the colonizer and firmly believes in the supremacy of white people. A great fuss is made when the aptly named Mr. English visits the bank where Babu Nathoo Ram works, but Anand uses this episode to undercut the apparent superiority of the English. When Prem Chand enquires about the best place in Britain to further his medical training, it is revealed that Mr. English is uneducated and doesn't know. The novel reinforced Anand's position as one of India's leading English authors.[4] The book is highly critical of British rule in India and India's caste system.[5]

**Conclusion:** Humanism, which is the key concept of his novels like *Untouchable* and *Coolie*, reveals man's essential dignity and nobility. According to this approach to man – man is the creative source of infinite possibilities. Mr. Anand is a humanist who reveals the essential dignity of the underdogs of Indian society. Anand in all his novels emphasizes the fact that nobility and dignity are not the monopoly of the rich. The poor have their greatness, honour as well as the richness. This humanism is the central theme of his novels. His humanism justifies that man is man, be he a sweeper, a prince or a coolie. Talking about the case of Bakha in *Untouchable* Anand writes that the only solution to remove this dishonor is to introduce a scientific device whereby the life of the untouchable will undergo a sea change. The indignity comes from the work they do. Anand's solution is that the introduction of flush system changes the character of work. Anand adds another point and he says that gaining of economic

freedom will modernise their life and make them respectable human beings. The degeneration in social life is considered to be the result of a conservative religion.

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## COMPARATIVE STUDY OF SELECTED PSYCHOMOTOR ABILITIES BETWEEN LONG RACER AND TRACK CYCLISTS

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**Abstract:** This study was projected to get the difference on Selected Psychomotor Abilities among Long Racer and track cyclists. Total thirty two (N=32) Long Racer (N=16) and track cyclists (N=16) players were selected to act as subjects from Punjabi University Patiala for the present study, with the age ranging between 18-25 years. When experts of the concerned field were consulted, gleaning minutely via the available literature and keeping in mind the criteria for feasibility particularly the instrumental availability, the components as below for the variables of Psychomotor Abilities were selected to conduct the present research such as Jumping Ability, Flexibility and Running Speed. All descriptive data of players were in rank as Mean and SD. In order to test the population means the t test was used for the estimation of two independent samples which significantly differed. The significance level of test was set at 0.05. The results powerfully prove that, there is significant variation was found between Long Racer and track cyclists for their Running Speed and Flexibility but no variation found in Jumping Ability.

**Keywords:** Psychomotor Abilities, Long Racer, Track Cyclists.

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**Introduction:** The training process, with all its components, is so important that it affects the player's responses and his/her whole training status. So, different training aids should be used inside and outside the court as total adaptation of physical abilities does not depend only on training with the track, but also depends on specific exercises with or without equipments, Zaky, A. and M. Abd El-Naby, (2007)<sup>1</sup>

Directing motor response depends on the information received from the neurological system, from internal or external environment or both. Although there are no special receptors for time and duration, the brain can conclude performance durations through other information received from other senses, through which performance speed can be increased. This is done through increasing the neurological system's ability to quickly move from stimulus to cessation, increasing the inter-muscle and intra-muscles neuro-muscular coordination and increasing the efficiency of receptor senses. He also indicated that training coordinative abilities depends on feeling the contraction intensity, contraction duration and contraction motor tempo. Intervals between stimuli are very important factors affecting muscle contraction, besides stimulus intensity and frequency, Agnienszna, J., (2005)<sup>2</sup>.

When we carry out our daily tasks with energy and alertness, without too much fatigue and with full energy to like leisure moment pursuits and to meet foreseen emergencies that is called Physical fitness perhaps the nature of physical fitness can be understood in terms of co-ordination flexibility and the most important and complex of them is cardio respiratory endurance. While these components are inter-related and identifiable, they are not discrete; each contributes an essential element of physical fitness.

Physical fitness is one of the main mottos of physical education programme. This is defined as the ability of the body to adopt and recovery from strenuous exercises. The sports performance depends largely on physical fitness that is, speed, strength, power, agility and coordinative abilities. The process of improvement of a motor ability is also called conditioning. Physical fitness is a matter of fundamental importance to the well being of the every individual in the field of physical education.

Track cycling is a bicycle dashing recreations by and large held tight phenomenally fabricated banked tracks or velodromes (anyway various events are held at progressively settled velodromes where the track banking is decently shallow) using track bicycles.

The three most ordinary sorts are a track running, road running and crosscountry which are altogether described by their scene each atmosphere track avenues and normal domain, independently. Regular long-separate track races go from 3000 meters to 10000 meters (6.2 miles), crosscountry races ordinarily

spread 5 to 12 km (3 to 7½ miles), while road races can be basically more, accomplishing 100 kilometers (60 miles) and past.

**Statement:** The statement of problem is “Comparative Study of Selected Psychomotor Abilities between Long Racer and track cyclists”

**Objective:**

1. To measure the Selected Psychomotor Abilities between Long Racer and track cyclists
2. Compare the Selected Psychomotor Abilities between Long Racer and track cyclists such as Jumping Ability, Flexibility and Running Speed.

**Hypothesis:**

1. There is significant difference on Jumping Ability between Long Racer and track cyclists
2. There is significant difference on Flexibility between Long Racer and track cyclists
3. There is significant difference on Running Speed between Long Racer and track cyclists

**Limitation**

1. No special motivational technique was used during the test.
2. The researcher was not capable to control their every day routine, work out, rest and competition schedules.

**Delimitations:**

1. This study was enclosed to only Punjabi university Patiala and 18-25 years age group.
2. The study was delimited to Long Racer and track cyclists
3. This study was delimited to following Psychomotor Abilities:
  - a) Jumping Ability
  - b) Flexibility
  - c) Running Speed

**Used Tools:**

Sr.No	Variables	Test	Equipment
1	Jumping ability	Vertical Jump Test	Measuring Tape, chalk Copy pen
2	Flexibility	Sit and Reach Flexibility Test	A testing box
3	Running speed	30 Meter Dash Test	Measuring Tape stopwatch cone markers

**Statistical Procedure:** The data was analyzed and compared with the help of statistical procedure in which arithmetic mean; standard error mean, standard deviation and “t” test was use to evaluate the data and the significance level of test was set at 0.05.

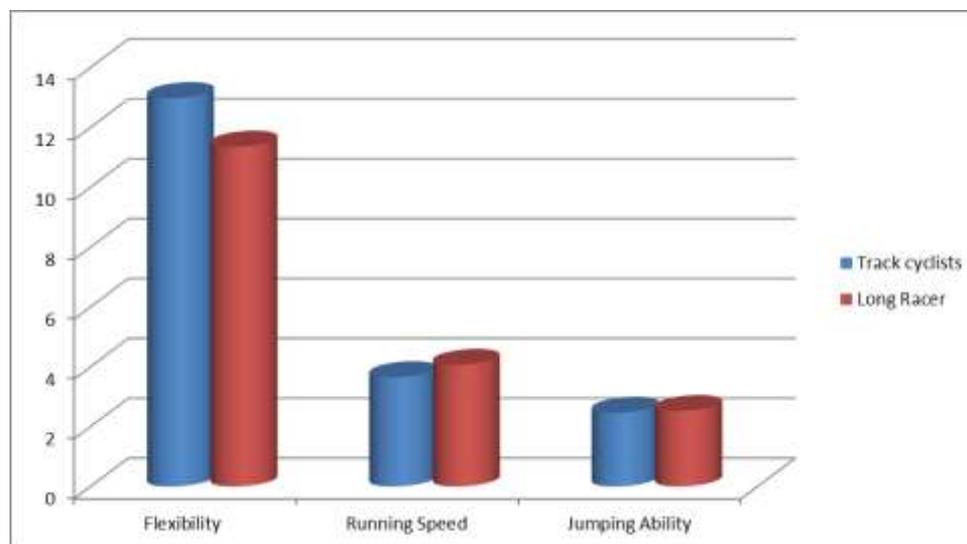
**Result:**

**Table 1:** Comparison between Long Racer and track cyclists on Selected Psychomotor Abilities

Variables	Track cyclists		Long Racer		‘t’ Value
	Mean	SD	Mean	SD	
Flexibility	12.97	4.06	11.35	4.76	4.11*
Running Speed	3.65	2.99	4.06	2.59	3.96*
Jumping Ability	2.46	2.10	2.52	2.06	1.53*

N= 32, Significance level 0.05,

From table no.1 result found that track cyclists have more flexibility ( Mean 12.97, SD 4.06) and running speed ( Mean 3.65, SD 2.99) as compared to Long Racer flexibility ( Mean 11.35, SD 4.76) and running speed ( Mean 4.06, SD 2.59) but Long Racer have more Jumping Ability( Mean 2.52, SD 2.0.) as compared to track cyclists ( Mean 2.46, SD 2.10)



**Fig 1:** Difference of Means between Long Racer and track cyclists on Selected Psychomotor Abilities

**Conclusion:** The conclusions were following drawn from the present study.

Track cyclists have more flexibility ( Mean 12.97, SD 4.06) and running speed ( Mean 3.65, SD 2.99) as compared to Long Racer flexibility ( Mean 11.35, SD 4.76) and running speed ( Mean 4.06, SD 2.59) but Long Racer have more Jumping Ability( Mean 2.52, SD 2.0.) as compared to track cyclists ( Mean 2.46, SD 2.10) So researcher found in this study that there is significant difference on variable Running Speed and Flexibility, but there is not found any significant difference on variable Jumping Ability

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## COMPARATIVE STUDY OF SELECTED BODY CIRCUMFERENCE BETWEEN SCHOOL LEVEL FOOTBALL AND VOLLEYBALL MALE PLAYERS

NAVJEET SINGH, PROF. (DR.) PRITAM SINGH

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**Abstract:** This study was projected to get the difference on Selected Body Circumference of School Level football and volleyball male players. Total thirty Six (N=36) Football (N=18) and Volleyball (N=18) players were selected to act as subjects from DAV school Batala for the present study, with the age ranging between 16-18 years. When experts of the concerned field were consulted, gleaning minutely via the available literature and keeping in mind the criteria for feasibility particularly the instrumental availability, the components as below for the variables of Kin anthropometry were selected to conduct the present research such as Chest Circumference, Upper Arm circumference, Thigh circumference Hip Circumference. All descriptive data of players were in rank as Mean and SD. In order to test the population means the t test was used for the estimation of two independent samples which significantly differed. The significance level of test was set at 0.05. The results powerfully prove that, there is significant variation was found between football and volleyball players for their Chest Circumference, Upper Arm circumference, Thigh circumference, Hip Circumference But no variation found in Calf Circumference.

**Keywords:** Kin Anthropometry, Circumference, Football, Volleyball.

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**Introduction:** Kin anthropometry is a recently rising logical specialization (Ross et al., 1978) it is the logical investigation of human size, shape, extent, organization, development and gross capacity so as to comprehend human development, exercise, execution and nourishment with suggestion for drug, training and government as for individual rights in the organization of mankind. As such, kinfolk's anthropometry is the utilization of estimations of human size, shape, extent, arrangement, development and gross capacity. It has the motivation behind helping us to comprehend human development with regards to development, exercise, execution and nourishment empowering its goals being accomplished through applications in medication, training and government (Koley and Sandhu, 2005). Indistinguishable to the unthinking methodology of human movement, anthropometry has a rich convention in games sciences and sports prescription. For example, the build of Olympic competitors was concentrated by family anthropometrics since a long back. However, in various occasions, distinctive terms were utilized like unique anthropometry, sports anthropometry, biometry, physiological anthropometry, anthropometric and so on by researchers. They are attempted to lay down a few connections between the body structure and the specific capacities required for different undertakings. They have additionally endeavored to comprehend the constraints of such connections. Aside from the estimations of auxiliary attributes, the field of family anthropometry broadens the investigation of human adaption, development, nourishment and body synthesis.

The human Body is the aftereffect of the collaboration between the genotype (the qualities of a subject) and condition, the encompassing conditions to which an individual is oppressed, including spectator sport prepare, sustenance, atmosphere, way of living, propensities and so forth kinanthropometric, the investigation of the human body as regards size, extent, construction (as far as fat and fat free mass) and capability, so as to comprehend development, execution and healthful status, particularly in connection to brandish practice Different Kinanthropometric characteristics helps in the achievement of tip top competitors yet the blend of various attributes that encourages them to wind up boss found just in little example of populace. Consequently, it is normal from best dimension competitors to have a particular physical, mental, and physiological and so forth characteristics fit to the useful necessities of the game being referred to. The relationship of body measurements to physical working and normal procedure has been extensively asked in the field of games. It is settled and wide acknowledged that execution in games need explicit human attributes. Sports researchers working medium-term to discover new strategies and methods so human body be formed to perform to its most extreme points of confinement. Researchers likewise consider the attributes of world class sports people so that from all inclusive community these qualities be chosen and refined further for games execution.

**Statement:** The statement of problem is “Comparative Study of Selected Body Circumference between School Level Football and Volleyball Male Players”

**Objective:**

3. To measure the selected body circumference between school level football and volleyball male players
4. To Compare the selected body circumference between school level football and volleyball male players

**Hypothesis:**

4. There is significant difference on the selected body circumference between school level football and volleyball male players.

**Limitation:**

1. No special motivational technique was used during the test.
2. The researcher was not capable to control their every day routine, work out, rest and competition schedules.

**Delimitations:**

1. This study was enclosed to only DAV School Batala and 16-18 years age group.
2. The study was delimited to school level football and volleyball male players
3. This study was delimited to following circumference:
  - a) Chest
  - b) Upper Arm
  - c) Calf
  - d) Thigh
  - e) Hip

**Administration of Test:**

**Chest Circumference:**

*Subject Position:* The subject accept a casual standing position with the arms hanging by the sides and somewhat stole.

*Procedure:* for the Mesosternale this is taken as a dimension. The anthropometries stand directly to the subjects stealing the flat position arms allowing the tape to pass it via thorax set up. The tape's stub as well as lodging is held finally in the accurate hand at the same time the left hand is utilized by the antrhopometrists in order to change the tape's dimensions in the backward direction to the dimension declared for the mesosternale stamped. The control of the stub is resumed by anthropometrist making use of a left hand and making use of the positions and strategy of cross hand, the front tape at the dimension of the mesosternale checked. The arms are advised to be brought down by the subject to the causal placement with the marginally stole arms. As important step to ensure that tape is not slipped it is straightened and does not essentially indent the skin exorbitantly. The subject ought to inhale typically and the estimation is taken toward the finish of an ordinary termination (end tidal). The estimation was recorded up to closest 1/10 of centimeter.

**Upper Arm Circumference:** The estimation was taken with taken with a steel dimension tape. The estimation was taken while the arm is passing on unreservedly in a casual position. The midpoint of the upper arm between substandard, outskirts of acromion and the unrivaled fringe of the leader of the sweep was stamped. The estimation was taken at the checked dimension knee, ping the tape flat. It was guaranteed that the tape was contacting delicately and not squeezing anyplace. Estimation was taken up to closest 1/10 of a centimeter.

**Hip Circumference:** Position of the subject: a casual standing position is expected by the subject with the collapsed arms over the thoracic region. The feet of the subject are supposed to be as one and gluteally loose muscles.

**Procedure:** at the dimension the bigness is taken for the projection at the back for the positioning which related as a rule interiorly about the symphysis pubis dimension. The tape is passed by the scholar in the arrangement with direction from the hips to the side. The tape's stub as well as lodging in right hand is held while scholar makes use of the left hand essentially for the modification of the tape dimension at the declared dimension's back to the projection's back which is taken as posterior. The management of stub with the left hand is resumed by the scholar and makes use of strategy of cross hand position which measures tape from front as well as sides in order to measure the held tape in flat plane at the dimensional objective. The rearrangement is done to the tape which is an important step to ensure that there is no tape slipping and also it does not indent the skin.

**Thigh Circumference:**

*Position of the Subject:* the casual standing position is accepted by the subject with collapsed over arms over the thoracic region. The feet of subject are supposed to be kept isolated with the equitably conveyed load.

*The Procedure:* at the stamped Midtrochanterion-tibiale-laterale site this is the privileged mid thigh circumference. The subject to remain on the container or stool for this sort of measure is generally needed in this case. The measure tape is passed by the researcher among the worse thighs and slides the measure tape into the right side. The tape's stub and the lodging in right hand are held so that left hand is used by the researcher for the modification of the tape to the objective dimension. The resume stub management is done by the investigator with his left hand and at the same time he makes use of cross hand.

*Method:* positions the tape with the goal that it is held in an opposite plane. The tape is then corrected as important to guarantee it has not slipped and does not exorbitantly indent the skin. Perusing was recorded up to closest 1/10 of centimeter.

**Calf Circumference:** The subjects were approached to remain with feet somewhat separated and body weight similarly bolstered on both the legs. A steel tape was utilized for the estimations. The estimations were taken at right edge to the long hub of the lower leg where the size was most extreme.

**Subject position:-** The subject accept a casual standing position with the arms hanging by the sides. The subject's feet ought to be isolated with the load equitably appropriated.

**Procedure:** the circumference of calf is greatest at the skin folded place. In the raised position are placed the subjects. For the measure to adjust to the eyes of the tape the raised position makes it further easier. The measure tape is passed by the researcher in the calf arrangement and to the right plane are slid the measure tapes. The tape's stub and lodging at the correct hands is located and to modify the dimension the left hand is used by the researcher to tape and make use of the stamped dimension. The control of the stub is resumed by the investigator and cross hand strategic position is used as well so that the tape is placed in the plane which is opposite to the leg's hub. The straightening of tape is important to ensure no slopping and for no reason indent the skin up to 1.10 centimeter the perusing is done.

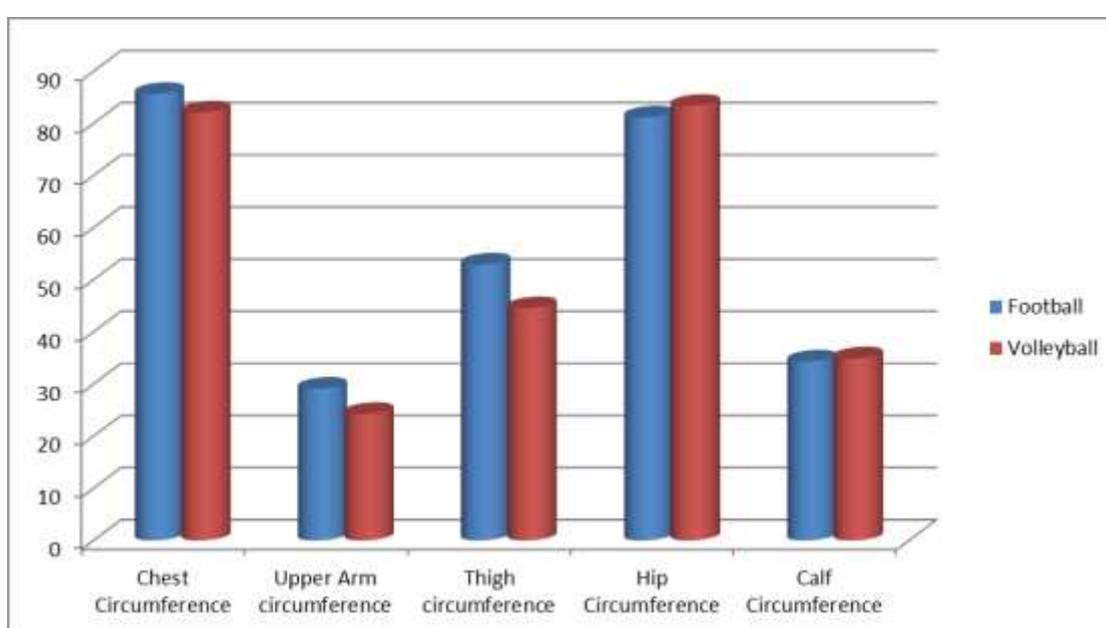
**Statistical Procedure:** The data was analyzed and compared with the help of statistical procedure in which arithmetic mean; standard error mean, standard deviation and "t" test was use to evaluate the data and the significance level of test was set at 0.05.

**Result:**

**Table 1:** Comparison between School Level Football and Volleyball Male Players on Selected Body Circumference

Variables	Football		Volleyball		't' Value
	Mean	SD	Mean	SD	
Chest Circumference	85.66	6.95	82.11	4.30	1.77*
Upper Arm circumference	29.11	3.03	24.27	2.70	4.92*
Thigh circumference	52.94	3.35	44.55	3.97	6.65*
Hip Circumference	81.16	3.40	83.38	3.14	1.97*
Calf Circumference	34.33	3.05	34.94	2.73	0.61

From table no.1 result found that Volleyball Players have low Chest Circumference, Upper Arm circumference and Thigh circumference as compared to Football Players but they have high Hip Circumference and Calf Circumference.



**Fig 1:** Difference of Means between School Level Football and Volleyball Male Players on Selected Body Circumference.

**Conclusion:** The following conclusions were drawn from the present study.

Volleyball Players have low Chest Circumference (Mean 82.11, SD 4.30) as compared to Football Players (Mean 85.66, SD 6.95), Volleyball Players have low Upper Arm Circumference (Mean 24.27, SD 2.70) as compared to Football Players (Mean 29.11, SD 3.03) and Volleyball Players have low Thigh Circumference (Mean 44.55, SD 3.97) as compared to Football Players (Mean 52.94, SD 3.35), But Volleyball Players have high Hip Circumference (Mean 83.38, SD 3.14) as compared to Football Players (Mean 81.16, SD 3.40) and Volleyball Players have high Calf Circumference (Mean 34.94, SD 2.73) as compared to Football Players (Mean 34.33, SD 3.05), So researcher found in this study that there is significant difference on variable Chest circumference, Upper Arm circumference, Hip circumference and Thigh circumference But there is not found any significant difference on variable Calf circumference.

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## RELATIONSHIP BETWEEN EMOTIONAL MATURITY AND SELECTED PHYSICAL FITNESS COMPONENTS OF MALE VOLLEYBALL PLAYERS

HARPREET SINGH, PROF. (DR.) PRITAM SINGH

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**Abstract:** The objective of the study was to find out the relationship of emotional maturity and selected physical fitness components of male volleyball players. To achieve the purpose of the study total 20 male volleyball players of MRS College Mlout, Dist Shri Muktsar Sahib were selected as subject. The age limit of the subjects was ranged from 18 to 25 years. To estimate the levels of the emotional maturity among subjects, Singh and Bhargava's (1988) Emotional Maturity Scale was used and for physical fitness (jumping ability and speed) we used Vertical Jump Test and 30 meter dash test. All descriptive data of players were in rank as Mean and SD. To search the relationship between emotional maturity, selected physical fitness components of male volleyball players' researcher used Karl Pearson's product moment coefficient correlation statistical technique. The significance level of test was set at 0.05. The results powerfully prove that, there is significant the relationship between emotional maturity and Speed of male volleyball players but Emotional maturity was found to be negative relationship with jumping ability in male volleyball players.

**Keywords:** Relationship, Emotional Maturity, Jumping Ability, Speed, Volleyball.

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**Introduction:** Volleyball was made by William G Morgan, a YMCA physical training executive, in 1895 yet was initially known as Mintonette. It was intended for "more established" people of the YMCA on the grounds that it was more delicate than b-ball yet at the same time required some physical action. In 1896, after one year, Alfred Halstead instituted the name "Volley Ball" on account of the idea of the amusement. Just around 1900 was an appropriate volleyball made for the game. The Set and Spike were just presented and aced around 1916 and the scoring changed from 21 to 15 per year later. The three hits and back line hitting rules were just presented in 1920. Volleyball was taken to the world amid 1919 when 16,000 volleyballs were issued to troops and partners. Canada was the principal nation outside the US to receive volleyball. It is evaluated that 17% of the world take an interest or watch volleyball, shoreline volleyball or recreational volleyball as it is a game that is played in many pieces of the world. In 1995, the game of Volleyball was 100 years of age, volleyball game began in the United States, and is currently simply accomplishing the sort of fame in the U.S. that it has gotten on a worldwide premise, where it positions behind just soccer among investment sports.

Today there are in excess of 46 million Americans who play volleyball. There are 800 million players overall who play Volleyball at any rate once every week. Feelings development assume a urgent job in contributing towards change of the distinct individuals who are candidly develop, they can deal with their emotions well and manage other individuals. Along these lines, a sincerely develop individual can have better alteration with himself just as others. The way to enthusiastic development includes the combination of different parts of identity into oneself.

The intra-and relational perspectives are managed from various points of view (Freud, James, Gardner and others), the enthusiastic viewpoint being seen not as the inverse of the learned person, however as corresponding to it in the tyke's and grown-up's identities. Oneself contains everything that has gone through cognizance; it is the most imperative component of awareness. Because of drives for knowing, for believing, for making, which are constantly dynamic, we accomplish a self which is more than the whole of its segments and turns into a worldwide factor as a part of our identity. This worldwide factor is the contrast between the nitwit intellectual and the inventive, completing, skilled identity. Passionate development is a necessity for beginning and looking after connections. It is an essential for long haul joy. Enthusiastic youthfulness is related with entrapments, transferences and uninspiring shallow connections.

Jumping ability in sports requires a special type of muscular contraction is based on the exhaustion of muscular force like varied types of contraction. Strength, exhausted by the human body's part is highly

mechanical in nature. So, it may be static or dynamic. It may be isotonic, is kinetic, isometric. Strength is a product so the conjoint action of muscular or other connective tissues in reference to joint.

Speed is considered as the distance covered per unit time. Speed may be either movement speed or locomotion speed. In the present study the locomotion speed was considered. If distance remains constant, time taken to cover the distance becomes the measure the speed. In the present study time taken to cover 50 m was considered as the measure of speed.

**Statement:** The statement of problem is “relationship between emotional maturity and selected physical fitness components of male volleyball players”

**Objective:**

5. To measure the selected physical fitness components of volleyball male players.
6. To measure the emotional maturity of volleyball male players
7. To find the relationship between emotional maturity and selected physical fitness components of male volleyball players

**Hypothesis:**

5. There is significant relationship between emotional maturity and speed of male volleyball players
6. There is significant relationship between emotional maturity and jumping ability of male volleyball players

**Limitation:**

1. No special motivational technique was used during the test.
2. The researcher was not capable to control their every day routine, work out, rest and competition schedules.

**Delimitations:**

1. This study was enclosed to only MRS College Mlout Dist Shri Muktsar Sahib and 18-25 years age group.
2. The study was delimited to male volleyball players
3. This study was delimited to following variables
  - Emotional maturity
  - Speed
  - Jumping ability

**Used Tools:**

**Table No. 1 (Tests)**

Variables	Test
Emotional maturity	Singh and Bhargava's (1988)
Speed	30 meter dash test
Jumping ability	Vertical Jump

**Methodology:** To complete the purpose of this study total 20 male volleyball players of MRS College Mlout dist shri muktsar sahib were chosen as subjects. The age limit of the subjects was ranged from 18 to 25 years. To estimate the levels of the emotional maturity among the players, Singh and Bhargava's (1988) Emotional Maturity Scale was used. For physical fitness (jumping ability and speed) we used Vertical Jump Test and 30 meter dash test. All descriptive data of players were in rank as Mean and SD. To search the relationship between emotional maturity, selected physical fitness components of male volleyball players' researcher used Karl Pearson's product moment coefficient correlation statistical technique. The significance level of test was set at 0.05. The results powerfully prove that, there is significant the relationship between emotional maturity and selected physical fitness components of male volleyball players.

**Statistical Technique:** In order to find out relationship between emotional maturity and selected physical fitness components of male volleyball players’ researcher used Karl Pearson’s product moment coefficient correlation statistical technique.

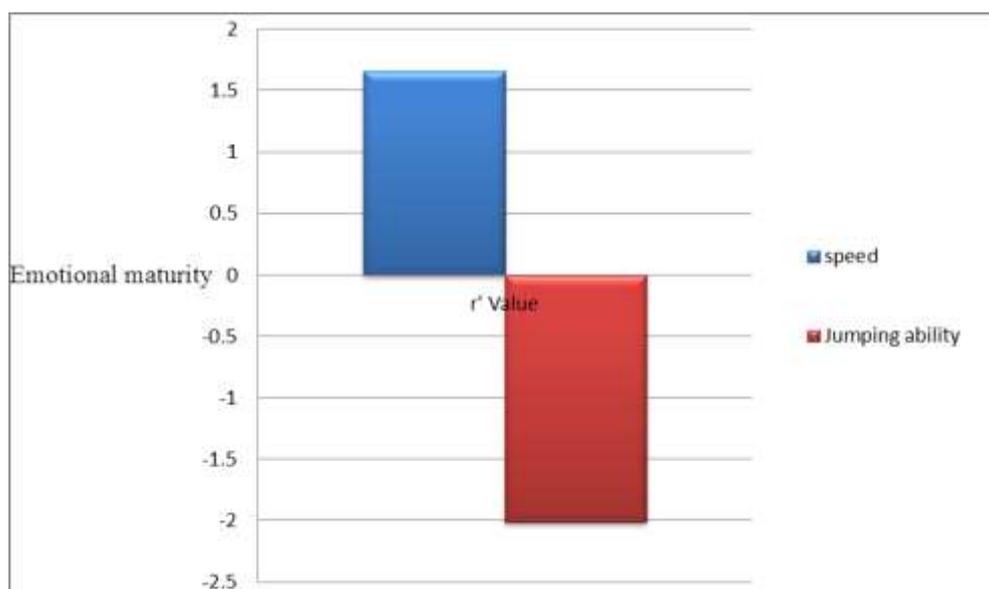
**Result:** The relationship between emotional maturity and selected physical fitness components of male volleyball players is presented in table no.2

**Table No. 2:** Relationship between Emotional Maturity and Selected Physical Fitness Components of Male Volleyball Players

	Variables Co-related	
Psychological Variables	Physical Fitness	‘r’ value
Emotional maturity	Speed	1.66*
	Jumping Ability	-2.01

N= 20, Significance level 0.05, ‘r’ (18) =.444

An examination of Table-2 clearly reveals that the value of ‘r’ in case of Emotional maturity - Speed (‘r’= 1.66), showed in significant but positive relationship and the value of ‘r’ is close to ‘o’ that means there is a relationship, if a parameter increases other will increase simultaneously. Whereas in case of Emotional maturity - Jumping Ability (‘r’= -2.01), showed negative relationship that means if a parameter increases other will decrease simultaneously,



**Fig 1:** Illustrates the Relationship between Emotional Maturity with Speed and Jumping Ability

The values shown in figure 1 above and below the 0.05 level which clearly reveals that the value of ‘r’ in case of Emotional maturity - Speed (‘r’= 1.66), showed in significant but positive relationship and the value of ‘r’ is close to ‘o’ that means there is a relationship, if a parameter increases other will increase simultaneously. Whereas in case of Emotional maturity - Jumping Ability (‘r’= -2.01), showed negative relationship that means if a parameter increases other will decrease simultaneously,

**Conclusion:** On the basis of findings of the study in conjunctions with critical review of literature and scholar’s own understanding following conclusions were drawn:

1. Emotional maturity was found to be significantly related with Speed in male volleyball players

2. Emotional maturity was found to be negative relationship with jumping ability in male volleyball players.

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## AN ASSESSMENT OF STRESS AND ANXIETY OBSERVED IN DISTRICT -LEVEL CRICKET AND KABADDI PLAYER

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**Abstract:** The main objective of this study was to find out the significance difference on stress and anxiety between District-level cricket and kabaddi players. To achieve the purpose of the study total 30 male cricket(15) and kabaddi(15) players from Dist Shri Muksar Sahib, were selected as subject. The age limit of the players was ranged from 16 to 18 years. To estimate the levels of the stress among subjects, Everyly and Girdano's stress questionnaire was used and for Anxiety we used Rainer Martens's Anxiety test questionnaire (SCAT). All descriptive data of players were in rank as Mean and SD and Independent samples t-test will be used to test because population means estimated by two independent samples differed significantly. The significance level of test was set at 0.05. The results powerfully prove that, Kabaddi players have low stress (M= 23.66, SD= 3.90) as compared to Cricket players (M=25.13, SD= 2.87). and Kabaddi players have low stress (M= 23.66, SD= 3.90) as compared to Cricket players (M=25.13, SD= 2.87). Both 't' value is less than tabulated value, so that there is no significant difference at .05 level.

**Keywords:** Stress, Anxiety, Male, Cricket, Kabaddi, District-Level.

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**Introduction:** Game Kabaddi is a group diversion and It comprises of two groups, each having 7 in court Players, contend with one another to get higher scores. Singular splendor is shown when a player strikes the adversary's court. The cooperation, the group fellowship and group technique becomes an integral factor when a rival plunderer enters the court. The most essential player necessity is stamina and lungpower. The player must have a balanced physical and psychological status, thorough focus, concentration, emotional well being, strong persona from within and the positive attitude towards self and the sport they play. Game Kabaddi is a diversion in which, the barrier players continue shifting in number amid course of play. At some random minute, there might be any number of antis running from one to seven. The pillager's assault ought to likewise fluctuate contingent on the quantity of players in the rival's court. While keeping in view the quantity of antis, the looter should likewise make a note of the antis out of court, since an insufficient, strike may get a solid enemy of and restore the protection.

Cricket is a game that produces a wide scope of response from games fans. Among the individuals who are a piece of more activity pressed athletic customs, cricket is differently observed as an exhausting, dull amusement. To its a huge number of fans joined in an extreme worldwide after, cricket is a genuinely global game, one of the immense nuance, sportsmanship, and athletic abilities. The universal challenges create an energy that is just drawn nearer by Soccer's World Cup. To play cricket as a delegate of one's nation is to accomplish VIP status in nations, for example, India, Pakistan, the different West Indies, and South Africa

Cricket is played numerous individuals in open spaces all through the nation because this is the most well known game in India. In 1983 Indian cricket team won the cricket world container. Team win ICC world Twenty 20 trophy in 2007, and after this in the 2011. cricket world container the 2013 ICC champions Trophy and shared the 2002 ICC champions Trophy with Sri Lanka. Local rivalries incorporate the Ranji Trophy, the Deodhar Trophy, the Train Trophy and the NKP Salve Challenger Trophy. Notwithstanding that BCCI conducts the Indian chief group, a twenty 20 rivalry.

A condition of pressure exists when surprising or over the top requests undermine a people prosperity or respectability. Exceptional endeavors are expected to ace the circumstance and there is the threat that adapting limits will be overpowered with the result of aggravated working, agony or uneasiness, sickness or even demise. Stress is characterized neither by the molding following up on the individual (stressor), nor by the condition of the individual (adapting assets, sense of self quality and so forth.) nor by his responses (stress reactions), yet rather by the between play of the three. It is obvious that one man's stress is another's play. The well conditioned athlete can take the stride a five-mile run which is

stressful to a sedentary academic. The forthcoming examination is stressful to the ill-prepared but ambitious student; of no great moment to either the well-prepared or the unconcerned student. In the psychological realm, it is clear that the meaning of stressor and its relevance to the needs and self concept of the person determine its impact. Students of stress psychology have called attention to the importance of acts of cognitive appraisal, which determine threat value (Lazarus, 1996).

Anxiety is a common symptom which is found in almost every individual of today. Anxiety could be characterized as a 'condition of excitement' brought about by risk to prosperity 'State' signifies a condition including the whole living being. 'Excitement' signifies a state of strain, distress, or uneasiness, or a preparation to act the react. 'Risk' signifies expectation of torment or threat or genuine obstruction with objective looking for exercises. Operationally, tension can be characterized as the programmed reaction design normal for a specific individual life form after the organization of a toxic boost. Anxiety : A feeling of tension or stress. It can be viewed as either positive or negative depending upon one's theoretical orientation.

**Statement:** The statement of problem is “an assessment of stress and anxiety observed in District-level cricket and kabaddi player”

**Objective:**

8. Stress and anxiety observed in District-level cricket and kabaddi players
9. To find the significance difference on Stress between District-level cricket and kabaddi players
10. To find the significance difference on anxiety between District-level cricket and kabaddi players.

**Hypothesis:**

7. There is significant difference on Stress between District-level cricket and kabaddi players
8. There is significant difference on anxiety between District-level cricket and kabaddi players

**Limitation:**

1. No special motivational technique was used during the test.
2. The researcher was not capable to control their every day routine, work out, rest and competition schedules.

**Delimitations:**

1. This study was enclosed to only Dist Shri Muktsar Sahib and 16-18 years age group.
2. The study was delimited to District-level male cricket and kabaddi players
3. This study was delimited to following variables
  - Stress
  - Anxiety

**Used Tools:**

**Table No. 1(Tests)**

Variables	Test
Stress questionnaire	Everyly and Girdano
Anxiety test questionnaire (SCAT)	Rainer Martens

**Methodology:** To complete the purpose of this study total N = 30 male Cricket (15) and Kabaddi(15)players from Dist Shri Muktsar Sahib were selected as subject which is participated in state tournament from his district. Subject's age limit was ranged from 16 to 18 years. To estimate the levels of the stress among subjects, Everyly and Girdano's stress questionnaire was used and for Anxiety we used Rainer Martens's Anxiety test questionnaire (SCAT). All descriptive data of players were in rank as Mean and SD. The significance level of test was set at 0.05. Every descriptive data will be report as mean and standard deviation and independent samples t-test will be apply to test if population means expected by two independent samples differed significantly.

**Statistical Technique:** In order to find out significant variation between Cricket and Kabaddi players on stress and anxiety independent samples t-test will be apply to test because population means estimated by two independent samples differed significantly.

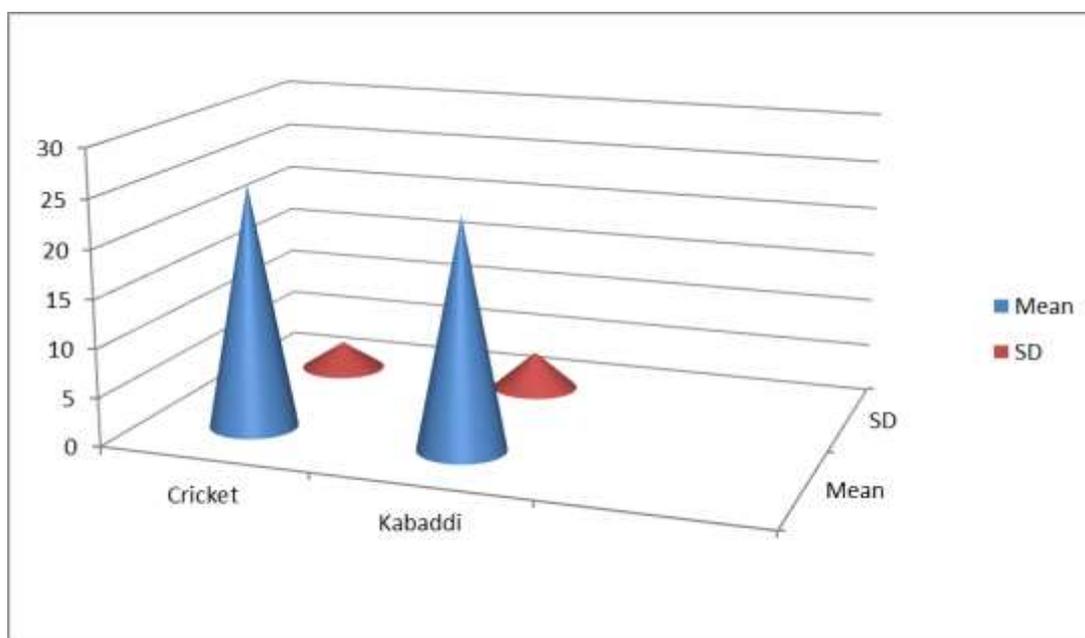
**Result:** The comparison on stress and anxiety between District-level Cricket and Kabaddi players is presented in table no.2 and 3.

**Table 2:** Comparison between District-Level Cricket and Kabaddi Players on Stress

Group	N	Mean	SD	DF	MD	T Value
Cricket	15	25.13	2.87	28	1.47	1.12*
Kabaddi	15	23.66	3.90			

(Significance level = 0.05)

From table no.1 result found that Kabaddi players have low stress (M= 23.66, SD= 3.90) as compared to Cricket players (M=25.13, SD= 2.87). The 't' value is 1.12 which is less than tabulated value, so that there is no significant difference at .05 level.



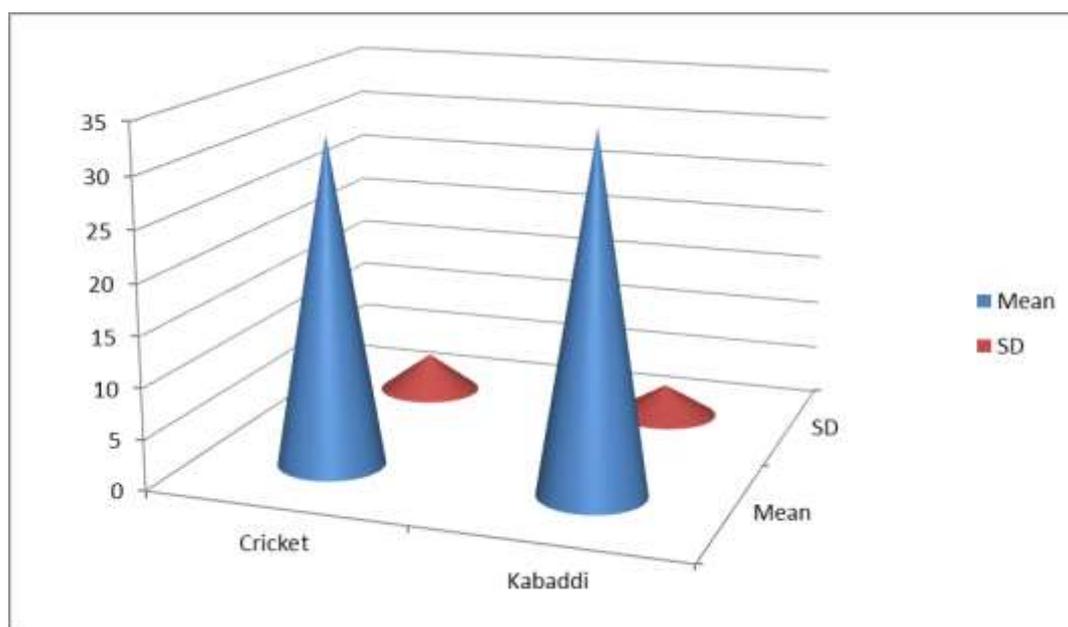
**Fig 1:** Difference of Means between District-Level Cricket and Kabaddi Players on Stress

**Table 3:** Comparison between District-Level Cricket and Kabaddi Players on Anxiety

Group	N	Mean	SD	DF	MD	T Value
Cricket	15	32.53	3.84	28	2.20	1.65*
Kabaddi	15	34.73	3.12			

(Significance level = 0.05)

From table no.1 result found that Kabaddi players have more stress (M= 34.73, SD= 3.12) as compared to Cricket players (M=32.53, SD= 3.84). The 't' value is 1.65 which is less than tabulated value, so that there is no significant difference at .05 level.



**Fig 1:** Difference of Means between District-Level Cricket and Kabaddi Players on Stress

**Conclusion:** Recognizing the limitations of this study and statistical findings following conclusions may be drawn.

The results powerfully prove that, Kabaddi players have low stress ( $M= 23.66$ ,  $SD = 3.90$ ) as compared to Cricket players ( $M=25.13$ ,  $SD= 2.87$ ). and Kabaddi players have low stress ( $M= 23.66$ ,  $SD= 3.90$ ) as compared to Cricket players ( $M=25.13$ ,  $SD= 2.87$ ). Both 't' value is less than tabulated value, so that there is no significant difference at .05 level.

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## **EFFECT OF STRETCHING AND SURYANAMASKAR EXERCISES ON SELECTED PHYSIOLOGICAL VARIABLES OF HIGH SCHOOL STUDENTS OF JAMMU CITY**

**BHUBNEHSWAR SINGH, PROF. (DR.) PRITAM SINGH**

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**Abstract:** The purpose of the study was to find out the effect of Stretching Exercises and Suryanamaskar on Selected Physiological Variables of High School Students of Jammu City. The present study consisted 40 male subjects were randomly selected from St. Xavier Convent school of Jammu City age range between 10 to 13 years. The selected subjects have been divided into two equal groups of 20 (twenty) subjects in each. One group administered as experimental and the second one as control group. The experimental group was instructed to practice stretching exercises and suryanamaskar of six days in a week for duration of eight weeks. The control group did not participate during the period of eight weeks training programme. The experimental group was treated on the basis of the following training schedules in table-1 and 2 and the training was conducted in the morning. The subjects were tested pre and post test on the selected Physiological variables as per the standard statistical procedures: Finally, the conclusions were drawn in the present study as it was observed that all the selected Physiological variables were not significantly differences in some mean scores and calculated values between the experimental and control group. It was also evident that stretching exercises and suryanamaskar have no significant changes in all selected Physiological variables of school students.

**Keywords:** Stretching, Suryanamaskar, Physiological, Students.

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**Introduction:** Everyone has known that regular exercise along with good nutrition is good for their health. But the most debate issue is that how to build sound exercise habits and a balanced diet into our busy schedule. The stress of modern time emphasis that you should necessarily develop and maintain a fit, trim and fully functioned body. Because active and physically fit are lightens our self-esteem and self-expression. Most of the research polls have indicated that people are becoming more health centered. As a result people are becoming more interested in making fitness exercise as an integral part of their life style.

Despite the difficulties, however, fitness can for practical purposes be divided into two main aspects, first, a general enhancement of health or layman's fitness and secondly, the specific fitness for athletic pursuits. While general fitness may or may not imply training and definite exertion on the part of the subject, specific fitness implies training of a definite and orderly sort leading to defined physiological aims. Apart from the likelihood that increasing fitness will promote freedom from illness and increased powers of recovery from illness or injury, the more specific effects of physical training bring about a general improvement in heart and lung function. It must be emphasized that in order to secure definite benefits from exercise, a certain modicum of effort has to be sustained, the reward for this being that the heart and lungs show an enhanced capacity to cope with given workloads. During a spell of training both the pulse and blood pressure tend to fall, and breathing capacity of the lungs tends to increase. It becomes notably easier to cope with a defined workload easier for example to lift a certain weight, or run certain distances, the time taken for, and recovery from exertion to the resting state becoming both quicker and more comfortable.

**Purpose of the Study:** The purpose of the study was to find out the effect of Stretching Exercises and Suryanamaskar on Selected Physiological Variables of High School Students of Jammu City.

**Methodology:** The present study consisted 40 male subjects were randomly selected from St. Xavier Convent school of Jammu City age range between 10 to 13 years. The selected subjects have been divided into two equal groups of 20 (twenty) subjects in each. One group administered as experimental and the second one as control group. The experimental group was instructed to practice stretching exercises and suryanamaskar of six days in a week for duration of eight weeks. The control group did not participate during the period of eight weeks training programme. The experimental group was treated on the basis of the following training schedules in table-1 and 2 and the training was conducted in the morning.

**Test Administration:** The subjects were tested pre and post test on the selected Physiological variables as per the following standard test procedures:

1. **Resting Pulse Rate:** It was counted the number of beats palpitated on radial artery at wrist and the score was recorded in numbers of beats in per minute.
2. **Respiratory Rate:** It was measured with the help counting by visually observing breathing movements of abdomen and chest and the score was recorded as the numbers of movements in per minute.
3. **Blood Pressure (Systolic & Diastolic):** It was measured with the help of Sphygmomanometer and stethoscope and the score was recorded in mm/hg.
4. **Vital Capacity:** It was measured by using dry spirometer and score was recorded in kg. or c.c.

**Table 1:** Schedule for Stretching Exercises

Exercise	Week 1 <sup>st</sup> & 2 <sup>nd</sup>	Week 3 <sup>rd</sup> & 4 <sup>th</sup>	Week 5 <sup>th</sup> & 6 <sup>th</sup>	Week 7 <sup>th</sup> & 8 <sup>th</sup>
Side bends	3 times (one side)	4 times (one side)	5 times (one side)	6 times (one side)
Trunk twists	4 Repetitions (one side)	5 Repetitions (one side)	6 Repetitions (one side)	8 Repetitions (one side)
Chest stretch	2 sets (3times in a set )	3sets( 4 times in a set )	4 sets ( 6 times in a set )	5 sets ( 5 times in a set )
Standing side bends	3 Repetitions (one side)	5 Repetitions (one side)	7 Repetitions (one side)	9 Repetitions (one side)
Shoulder and side stretch	4 times (one side)	5 times (one side)	6 times (one side)	7 times (one side)
Half squat	6 Repetitions	8 Repetitions	10 Repetitions	12 Repetitions
Standing hip & thigh stretch	6 Repetitions	6 Repetitions	6 Repetitions	6 Repetitions

**Table 2:** Schedule of Surya Namaskar

Exercise	Week 1 <sup>st</sup> & 2 <sup>nd</sup>	Week 3 <sup>rd</sup> & 4 <sup>th</sup>	Week 5 <sup>th</sup> & 6 <sup>th</sup>	Week 7 <sup>th</sup> & 8 <sup>th</sup>
Surya namaskar	3 Repetitions	4 Repetitions	5 Repetitions	6 Repetitions

N.B: After every set 05 sec. Rest

**Statistical Analysis:** The data was analyzed by using t' test that whether any significant differences on selected physiological variables exist between pre and post test of the Experimental and Control group.

**Result:**

**Table 3:** Table Shows the Mean Differences between the Pre and Post Test of Experimental and Control Group of the Physiological Variables.

S.no	Variables	Groups	Tests	Mean	S.D	M.D	't' Value
1	Resting Pulse Rate	Experimental	Pre	72.4	1.21	0.80	0.67
			Control	Pre	73.2		
		Experimental	Post	70.6	2.14	2.9	1.76
			Control	Post	73.5		
2.	Respiratory Rate	Experimental	Pre	18.44	1.96	.21	1.06
			Control	Pre	18.65		
		Experimental	Post	15.60	1.21	3.12	3.92*
			Control	Post	18.72		
3.	Blood	Experimental	Pre	112.15	1.12	0.98	0.95

	Pressure (Systolic)	Control	Pre	111.17	1.09		
		Experimental	Post	110.27	2.13	0.78	1.43
		Control	Post	111.05	1.08		
4.	Blood Pressure (Diastolic)	Experimental	Pre	75.14	6.18	0.28	1.24
			Control	Pre	74.86		
		Experimental	Post	69.45	5.23	5.79	3.98*
			Control	Post	75.24		
5.	Vital Capacity	Experimental	Pre	3.98	0.76	0.12	0.97
			Control	Pre	3.86		
		Experimental	Post	4.46	0.98	0.54	4.16*
			Control	Post	3.92		

\* Significance at .05 level of confidence.

The table No. 3 reveals that there was significance differences of mean scores in some selected Physiological variables (Resting pulse rate, Respiratory rate, Blood pressure(systolic & diastolic) and Vital Capacity) between pre and post test of experimental and control group as the calculated t' values of 0.67, 1.06, 0.95, 1.24, 0.97 and 1.76, 3.92, 1.43, 3.98, 4.16 are respectively. Tabulated value t' 2.03 at .05 (38) df is less than that the some calculated values and some higher than that the calculated values. Therefore, the data provide significance evidence to ensure that mean scores of the some variables significantly higher and some variables were lesser in comparison between experimental group with control.

**Conclusion:** Finally the following conclusions were drawn in the present study

It was observed that all the selected Physiological variables were not significantly differences in some mean scores and calculated values between the experimental and control group. It was also evident that stretching exercises and suryanamaskar have no significant changes in all selected Physiological variables of school students.

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## LOVE AND DEATH IN EMILY DICKINSON'S POETRY

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**Abstract:** The main purpose of the present paper is to bring out the expression of love and death in the poetry of Emily Dickinson. The majority of her poems deeply dwell upon the effects of these passions upon the human soul and one can easily see how the treatment of love and death occupy an important place. As regards the theme of love, she describes three motifs in her poems where the first one shows the anticipation of lover's visit follows with the meeting of the lovers and concludes with the promise of heavenly bliss. She describes the anticipation of lover's visit, meeting of the lovers and promise of divine bliss in an effervescent way. At the same time, Emily perceived that death remained as the free agent than nature and imagined as For Dickinson, death is the supreme touchstone for life. She lived incessantly in his presence. She was always conscious of its nearness and inevitability. It becomes her closest and dearest friend. Investigation of the theme of death gave her a panoramic view of vital issues such as religion, God, nature, love and immortality. The article focuses on the expression of love and death in some of the poems of Emily Dickinson such as 'Far from Love the Heavenly Father' 'Heart, We Will Forget Him' 'The Soul Selects Her Own Society' 'Far from love the Heavenly Father' 'Because I Could not Stop for Death' 'I Heard A Fly Buzz – When I Died'

**Keywords:** Expression, Love, Death, Human Soul, Emily Dickinson.

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**Introduction:** The title 'The born poetess's is often given to Emily Dickinson as she started writing poems at an early age. She has created a philosophy and tradition of her own in writing poems wherein revealing puritan ideas adds the enigma through different images. According to Prof. T. W. Higginson, she creates a contradiction and problem not yet solved. [1] A large chunk of her poems deal with the deep and passionate presentation of love and death. Her poetry contains the most emotional and imitative love lyrics. The poems also concentrate on erotic prospects, employing the bee-flower image to express the sensual aspiration. The imagined visits of longing suggesting her ecstasy and triumph, her living in a world of reverie, calling herself a true wife and thinking herself a passionate woman in her poetry etc mark her love poetry. Most of her love poems are composed with the concrete gathering of the lovers. The lovers meet, separate and realize that they cannot live together passionately as they would imagine. The poetess speaks about her lover in the poems and utters that she cannot live a complete life with the male partner. But in the mean time she can't imagine them aging and dying. The poetess finds no promise in conservative religions. Her straight appeal to god for comfort remains a distant reality. The love poems of Dickinson portray not only happiness but also frustration in love. She writes about her dream male with greater aspiration. But in the course of time she says about the result of separation from him has seemed finally to fade away. She realizes and opines that their relationship was inspiring and scarce their love for Divine. Her treatment of love is vital and can be elucidated in a passionate manner.

**The Treatment of Love:** Emily Dickinson's poem 'Far from love the Heavenly Father' puts forth a paradoxical view that through trials and tribulations are the chosen brought to heaven. It is not an evil-doer who brings about trials, but the very Father in Heaven who does so. Although the images suggest the action in the poem takes place in the physical realm, a more pragmatic, worldly application can be found: those who seek comfort, rarely find it; those who take upon themselves challenges, eventually do find comfort:

"Far from Love the Heavenly Father  
Leads the Chosen Child,  
Oftener through Realm of Briar  
Than the Meadow mild"

Paradox in the above lines shows that Heavenly Father's love is tough love and Irony is visible in chosen child is led through briars, not meadows; the chosen child is lead by the claw of a dragon, not by a friend. Dickinson's Calvinistic leanings toward predestination come forth in the last two lines. Her idea of those predestined, and those who are "chosen" contrasts the traditional idea of the "chosen" ones.

Dickinson captures the inner turmoil associated with love and rejection in 'Heart, We Will Forget Him'. She vows to her heart, personified as a dear friend, that they will forget "him." While in the act of forcing herself to forget, the speaker focuses on the person whom she is trying to forget and his good qualities. She realizes she and her heart are fighting a losing battle as the speaker urges her heart to forget quick, for she is helpless to forget otherwise. The concept of love as a source of harmony in the universe is the central idea in her love poems. She believes that the earth is created for lovers. Her love poems are closely related to her personal experience. She portrays the development of the emotional life until it reaches maturity that makes her persona immortal.

In poem "My Life Had Stood-A Loaded Gun" Emily expresses her need for the fulfillment through her commitment to love. The central metaphysical conceit of a "gun" which is loaded signifies the potential energy within the explosive power. This inert force released by the active hunter who possesses the passive woman.<sup>19</sup> She sees her life as a "loaded gun" filled with emotional force and sensitivity, waiting for identity, as the lover claims her as his own:

My life had stood \_ a loaded Gun  
In corners - till a Day  
The owner passed - identified- And carried Me away....

She stresses the power of her emotions to protect her lover. It is like the (gun). But with the death of the lover, the gun will be futile. She remains inert has the power to kill, but lacks the right to die: "For I have but the power to kill,/ without - the power to die." Hence she wishes to die to be united with her lover whose soul transcends the Eden of mortal love and enters the paradise of immortal heavenly love. Thus the owner of the gun (the lover) and the gun (the beloved) will be immortal. Talking about Emily, George Perkins and Barbara Perkins write that she is incomparable because her originality sets her apart from all others.[2]

**The Treatment of Death:** Throughout Emily Dickinson's poetry there is a reoccurring theme of death and immortality. The theme of death is further separated into two major categories including the curiosity Dickinson held of the process of dying and the feelings accompanied with it and the reaction to the death of a loved one. Emily Dickinson dedicated much of her thought on the subject of death and the afterlife. She came across many tragedies in her childhood that resulted into her long lasting obsession for death. In the long list of her death poems 'Because I Could not Stop for Death' and 'I Heard a Fly Buzz' hold a special place of prominence.

During the years between 1855 and 1863 Emily Dickinson wrote most intensely and she experienced the death of many people close to her, including that of her cousin. It is easy to see why she felt familiar with death. Dickinson also lived near a cemetery, so she watched many people, even loved ones riding in a hearse to their final resting places. 'Because I Could not Stop for Death' is the result of this experience and a likely inspiration for the setting of this poem.

'Because I Could not Stop for Death' makes it very clear that the author, at some point in her life, viewed death as something sweet and gentle. She welcomed death, perhaps because of the idea that she would be only passing from this life to somewhere better. This is portrayed in the first stanza of the poem when the author begins her ride with Death, viewing him as a welcome and familiar friend. She is calm and reflective as she passes by the school children and the grain field. She's at peace watching the beautiful sun set on her life. But when the warmth of the sun is gone and the damp cold sets in, she looks at her new home, and it isn't a mansion in the sky (John 14:1-3), but merely a swelling of the ground. Dickinson appears to have toyed with the idea of believing in an afterlife in paradise, but in the end claimed that she was "one of the lingering bad ones", which suggests that she wanted to believe in life after death in paradise, but could not. In the end, she believed the grave was her final resting place [3]

In the poems of Emily Dickinson the centre stage is occupied by the theme of death. She provides a very touching poetic insight into the nature of death. Being a spiritualist she affirms the deathlessness of death. In fact she assigns death next to God. Death is always powerful, evergreen and the free agent of

God. The man made creations and kingdoms depart permanently with the passage of time except death. It is evident that death is immortal and holds a divine place in nature.

Emily Dickinson clearly examines the relation of death with love and considers it as a physical process in her poetry. Most of her poems deal with the theme of death. This theme begins in her early poetry and continues in her later poetry. She does not portray death in the same manner in all the poems. It varies in tone from elegiac despair and confident belief. She considers death as a hidden mystery.

Most of the critics classify the concept of death in Dickinson poetry into various headings. Johnson opines, 'The poems based on death fall into three groups. There are those which are concerned with the physical demise of the body, some describing the act of dying with clinical detachment, with emotional vehemence'. [4]

Emily Dickinson's poetry deals with death, immortality, physical aspects and personifies death. The poetess has lived and experienced various features of life intensely. The initial poems of Dickinson deal with death-immortality, later poems embellish the physical aspects of death and the last poems are considered elegiac in nature. In a way her poetry potted her personality and provided the required balance in her poetic journey. Isolation and suffering helped her to introspect the hidden aspects of the soul. Instead of escaping from the clutches of life, Dickinson tried to battle her own spirit and experienced it through her poetic work of art.

Emily Dickinson creates an anxious situation by complementing the condition of the dead by the condition of living and external escalation of Nature. Her poem 'I Heard a Fly Buzz' compares the prospects of death with its pragmatic occurrence. A delicate and small fly quashes the conventional Christian faith that leads to ceaseless cheerfulness. The words signed and assignable satirically exemplifies death's superlative power. Here insignificant documents, blank phrases, interested momentous and a humiliating body can be left at the back. The satire enhances as the inner voice quietly arranges everything and lingers assertively for death. The readers can witness this grand moment, but regrettably a fly disrupts the ritual:

"I heard a Fly buzz – when I died The stillness in the Room  
Was like Stillness in the Air  
Between the Heaves of Storm".

The poem 'I Heard a Fly Buzz' hints at the symbolic of Dickinson's religious faith. The death of body dole out as a reason to muse over the perpetuity. The poet sneaks into the Kingdom of the Absolute when the soul achieves a transitory insight into the Perpetuity. The poem highlights both success and failure. A man must go back to actuality after knocking down all obstructions of intellect into perpetuity.

Furthermore a factual fly is black and not blue. But the soul departing the body understands the blue of the devout eye through which fly must trek. The Buzz sound would be the resonance of the fly of spiritual vigor as it starts to travel in the spine. In other words, the spiritual progression of the poetess might be depicted as a buzz. Although the poetess Dickinson did not cram philosophy, but her poems reflect on the perfect images of the dying course and after death experiences advocate that she had some normal spiritualist aptitude. In her view, death is not dead but it is beautiful, fantastic and mystical.

**Conclusion:** The literary works of Emily Dickinson clearly exhibits that poetry influenced her thinking and way of writing. In fact, the poetry of Emily Dickinson on the subject of love and death encloses maturity about various aspects of life. To the core, all her observations are spiritual. It is clear that Dickinson employs different figures of speech like personification, symbolism and metaphors in order to express the concept of love and death in her poetry. It makes her expression of love and death not only intricate but also imaginable. In the words of Diyanni "Dickinson's writing was complex because she uses unusual grammar, peculiar rhythm, distinctive punctuation and various figures of speech. All these devices made her poems difficult to read but meaningful and profound". [5]

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## A DISCUSSION ON DIASPORIC DIMENSION IN ANITA DESAI

PARAMJEET KUAR, DR. DINESH KUMAR SHARMA.

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**Abstract:** Alienation, nostalgia, displacement, loneliness, assimilation, acculturation, quest of identity etc are the images that start flashing across the mind the moment the term 'diaspora' is mentioned. At its simplest, diaspora is the dispersal of people from their own land. The term diaspora comes from a Greek word that means "to scatter about" thereby indicating the scattered people who had to leave their homeland and settled in a new place across the world. Existential rootlessness, disintegration of cultures, readjustment, adaptation, participation are the atonement that one has to undergo during diaspora. When an individual migrates from one place to another, from one country to another, the borders change and the identity of an individual takes a new shape. There is a desire to return to what has been left behind leaving in its wake a sense of nostalgia with the sketches of their past always remaining with them. Rohinton Mistry, Bharati Mukherjee, Amitav Ghosh, Jhumpa Lahiri, M.G. Vassanji, V.S. Naipaul, Salman Rushdie, Shyam Selvadurai, and Kiran Desai are some of the names whose contribution to the diasporic literature is really commendable. Anita Desai with her mixed parentage - her mother being a German Christian and father is a Bengali Indian exactly fits the bill here. This complex origin has lent her the credibility and suitability to become a Diaspora writer. The present paper dwells upon discussing the diasporic elements in the writings of Anita Desai.

**Keywords:** Desires, Diaspora, Readjustment, Dispersal, Nostalgia, Disintegration, Scattered.

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**Introduction:** Diaspora may mean many things to many people. From the view point of type there are different types of the diaspora. They are Victim diaspora, Trading diaspora, Imperial diaspora and Labor diaspora. This being the reason migrant communities are referred to such as diaspora, exile and expatriate. This migration may take place for various reasons such as historical, economical, and social reasons. Some times higher education also becomes a reason for the migration. But in the case of Indians they have shown a greater sense of adjustment, adaptability and acceptability. But genuinely people experience the sense of homelessness. Sometimes the intensity would be more. Nagging sense of guilt, nostalgia, insider and outsider syndrome, up-rooting and re-rooting and quest for identity are the characteristic features of diaspora.. Anita Desai is the best example in this regard with her complex origin as her parents belong to different origins. Having the advantage of double perspective, the writings of Anita Desai can well describe India and Indians and as well as about migrants in India and Indian migrants to the West. She is both insider and outsider. She is outsider if seen from her mother's side. She is insider from her father's side. The diasporic Indian can be seen in her novel *Bye-Bye Blackbird*. She has also dealt with the character of migrant Austrian Jew in India in her novel *Baumgartner's Bombay*. In the novel, *Journey to Ithaca*, she has shown an Egyptian acculturated in India along with a spiritual seeker in the subcontinent. Finally, she has also shown the predicament of a lonely Indian, Arun in USA, in her novel *Fasting, Feasting*. Here in the present research the novel 'Bye-Bye Blackbird' has been taken up for the study of diasporic element. Alan Lightman rightly points out, "She is a novelist of human psyche and approaches her subjects quietly and delicately. She is one of the world's most distinguished novelists in English"[1].

Authored by Anita Desai, the novel *Bye - Bye blackbird* showcases the life of the immigrants, who suffers a mixed feeling of love and hate towards their adopted country, in an alien society. It examines the plight of Indian immigrants in London. The term blackbird used in the title of the book is referred to the immigrants to whom the people of London want to say goodbye. The author explores the adjustment and feelings that the people from India have to undergo there. The story's division into three parts -arrival, revelation and perception and finally abandonment helps in the easy understanding of the story. The recipient of Sahitya Academy Award *Bye-Bye Blackbird* is unique in its vivid and elegant narration. It rightly describes the lives of the outsiders seeking to improve a new identity in an alien society depicting cross cultural relations in a diasporic society. Here it is in the fitness of the things to quote Devendra Kohali and M.M. Jain who have rightly observed that, "The importance of Desai's art lies not only in her ability to pursue these various strands but also in the skill with which she evokes the

very nuances of a consciousness engaged in the process of re-counseling these landscapes" [2]. Identity crisis on one hand and the East-West encounter on the other hand find the best expression here in this novel.

Here the author has actually expressed the feelings of diasporic society and described it in a skillful manner. Further, it has been rightly noted that literature in its many forms and facets plays an important part in the author's novels. Many of her characters are keen readers, and allow themselves consciously or unconsciously to be influenced in their actions and attitudes by what they read. Truly enough, these characters serve as the powerful vehicles of her feelings and expressions. The clash of ideas, traditions, and social systems are bound to arise where two opposite cultures collide and create confusions. The theme of immigration and consequent alienation of characters concerned has been the subject matter of choice for many Indo-Anglian artists. But what sets Anita Desai from others in the same sphere is her capacity to turn such experiences into the monument of living art. It is the simple rendering of emotions of Indians who face abnormal situations living every moment of life on an alien soil.

The novel deals with inner problems of immigrants. Local English society considers Indians as blackbirds. S. Krishnamoorthy Aithal comments that "Bye-ByeBlackbird" deals with the theme of East-West encounter"[3]

Of the three parts that the novel is divided into, the first part deals with the Indian psyche of new immigrant Dev and his adjustment problems in the totally new and alien environment of London exploring at the same time the happy conjugal life of Adit and Sarah. In the first part, writer tells about Adit's deep adoration for England, who finds it dynamic and prosperous. He criticizes India for being somnolent and dull with no activeness. But on the other hand, Dev finds emptiness in the alien surroundings of London. He feels it sickening and revolting and wishes to go back to India, the land of brightness and warmth, status and freedom. The second part depicts the magnificent sights of London, Dev's venture into the city and his amazement at the private and personal lives of Englishmen and the barrenness that enclosed them.

While revealing the voidness of English private lives, writer explains, "he walks down the street, thinking surely somewhere a child will cry, somewhere a radio will be playing, but the houses might be uninhabited if it were not for the window boxes of geranium, freshly watered, here and there, and the lights that come as in the dark...a cold wasteland of brick and tile."

At the same time, writer also manages to analyze the confused psyche of Dev as a new immigrant Indian who soon find himself besotted with the magic of England. He gradually feels a tumult inside him that disturbs him day and night and wonders him whether he should stay, or go back. As it is clearly illustrates, "he is perfectly aware of the schizophrenia that is infecting him like the disease to which all Indians abroad, he declares, are prone...He is not sure, any longer".

The concluding part throws light on the emotional upheaval, whirlpool of chaotic sentiments due to uncertainty of existence that is suffered by Adit and Sarah since ultimately Adit realizes that he is leading an unreal life in an alien land by imitating a fake identity and yearns for his motherland. He started feeling homesickness and decides to return back India. The writer has also beautifully portrayed the turmoil undergo by the English psyche of Sarah, the wife of Adit who prepares to own a new identity and a new life in India by embracing her husband's decision. It unravels the decision of Dev finally gets employment in London and decide to prolong his stay.

The whole novel delves deep into the psychological ups and downs of immigrant Indian minds and highlights the truth behind the Indians vulnerable psyche to English as it is explicit in Dev's admiration, "nothing in his past twenty- two years had resembled remotely this world ha had entered by stepping through the door of the king's arms, this world of beer-soft, plum -thick semi-darkness and its soft, thick characters. Yet it was known, familiar, easy to touch, enjoy and accept because he was so well prepared

to enter it- so well prepared by fifteen years of reading the books that had been his meat and drink, the English books that had formed at least one half of his conscious existence".

Anita Desai uses certain slogans in connection with Dev looking for employment in London. N. R. Gopal feels that this is a "subtle device to make the reader feel that he is in London". These sub-headings or slogans are used instead of the cockney dialect to convey "the feel of London milieu".[4] A few of these sub-headings are : Happiness is egg-shaped, Drinka pinia milka day, Keep Britain Clean and so on. Again this goes to show the inner psyche of Dev in general and the diasporas in particular.

Here it is pertinent to quote William Safran who in his "Diasporas in Modern Societies: Myths of Homeland and Return" defines 'Diaspora' as expatriate community that shares several qualities. The chief among them are:

1. Their own / their ancestors' dispersion from a specific homeland to another country or place.
2. Retention of a collective memory, vision or myth about their original homeland.
3. Experience of a feeling of alienation and antagonism from the host society, and the feeling that they can never fit in.
4. Regarding the ancestral homeland as their true home and their sojourn as temporary, with the hope that they or their descendants would someday return.
5. Treasuring the collective past;
6. Commitment to the maintenance or restoration of the homeland.

These characteristics described above are fully applicable to the novel "Bye-Bye Blackbird".

**Conclusion:** The above discussion about diaspora fully fits the bill in the case of this novel. Just as the United Kingdom, the United States of America has also attracted Indians as a destination of academic and economic prosperity. The size of the Indian diaspora community in the US is gradually increasing in the post-globalization era. But it is quite debatable to assert that globalization has solved the problems of the diaspora Indians. No doubt, problems like racism are no longer as headstrong as before, but the problems of the inner "human condition" still plague the diasporic community. An inviting doorway does not mean that the hearth inside can make one feel like home, especially when the idea of home and family differs from culture to culture. This difference is not fundamental; it is superficial. But so are all cross-cultural conflicts and paradoxes. The first encounter that any migrant has with his/her country of adoption is with superficialities. It definitely takes time to scratch this surface of superficiality and till then it is only loneliness for company. Transnational identity of Diasporas, dispersed people, presents the transformative processes and developments of a transnational, transcultural, multilingual individual. The notion of Diaspora in the context of transnationalism claims that 'Diasporas' are the 'products' of transnational mobilization activities. They are conceived of as transnational ethnic groups defined by a common identity and attachment to real or imagined homeland.

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**Global Trends in  
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## USE OF BALANCED SCORECARD FRAMEWORK FOR COMMUNITY-BASED TOURISM DEVELOPMENT, ITS BUSINESS MODEL DESIGN AND IMPLEMENTATION

DR. CHAI CHING TAN

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**Abstract:** No previous study in the discipline or topics relating to community-based tourism has shown a management-oriented approach through the lens of balanced scorecard (BSC). This paper contributes to this gap and considers three interrelated research questions: (1) What is the relevant focus of each perspective in the BSC structure, and (2) what benefits the communities implementing CBT that is guided by BSC framework can have, and (3) how BSC can guide the communities design and implement their CBT business model? This research forms as a part of the overall research efforts of the author and presents only the questionnaire-based survey aspect of the results. The other methodological instruments, such as participant observations, individual and focus-group interviews, provide the necessary triangulated and instrument-design supports, which contribute to construct and content validities, and reliability. The convergent and divergent validities of the survey instrument are discussed prior to SEM assessments. The implications were discussed in view of the three research questions raised. The data were collected from the communities currently implementing community-based tourism (CBT) in the highlands located in Chiang Rai, Thailand. Coffee and teas cultivation and trading form the central livelihood means of the communities.

**Keywords:** Balanced Scorecard, Business Model, Community-Based Tourism, Sustainability.

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**Introduction:** Community-based tourism (CBT) offers an alternative option for tourists and visitors to experience the lifestyle and the unique livelihood-oriented products and services, and agricultural activities offered by the communities, which otherwise would be difficult to experience in urban-bound tourism or city-bound tourism. CBT is attractive particularly for central and provincial government, learning institutions and private enterprises as these institutions have, at the core of their philosophies and policies, to offer innovative social responsibility and assistance to the needed, in fulfilling their social contracts and responsibilities. Thus, opportunities to offer the communities resourceful assistance could help them improve their qualities of life, and also help them maintain and better preserve the ecological diversity and environmental vitality that are also important to the downstream population. The academicians are also drawn towards the research efforts focusing on CBT.

Many significant findings that are widely shared across in the different parts of the world and livelihood contexts (i.e. different agricultural bases) are available in the extant literature; for instance, to succeed, CBT would assume co-operation between different stakeholder groups at the local level (Matilainen, Suutari, Lahesmaki and Koski, 2018). Due to unique community locations, i.e. located in, for instance, fertile highlands, the communities can exploit the locality resources and their agricultural strengths to bring about positive socio-economic benefits or impacts (Tolkach and King, 2015).

Although a community participation approach has long been recognized and advocated as an integral part of sustainable CBT development (Okazaki, 2008), and many factors have been shown important to induce successes in CBT initiatives, the extant literature still lacks a coverage of practical management-oriented framework to help the communities learn and develop their competencies and devote their efforts in systematic manner. The author has come across this issue during some casual and formal interrogation sessions with many different stakeholders of the CBT-offered communities in northern Thailand, including Chiang Rai and Nan provinces. It is assumed that a simple but structural framework could eventually help the residents and relevant stakeholders systematically learn and improve their offers that are truly valued by tourists and visitors, while also provide a knowledge base for developing CBT that can generate positive sustainability impact. The learning attribute of a structural framework is important. For instance, in Pookaiyudom (2013), the research indicates that an integrated learning of CBT can lead the students to form a holistic understanding of community-based tourism at the principal level and from the practice angle. To address these potential benefits and fill the gap of a management-

oriented structural framework that is capable to help the communities in managing their CBT initiatives and efforts, systematically, and in contributing positively to the sustainability-oriented goal, a balanced scorecard (BSC) concept is proposed. In other words, the purpose of the research objective is:

To develop a management framework convincing enough to guide the communities develop their CBT initiatives and efforts, by use of balanced scorecard (BSC) structure, and by convincing, structural equation model (SEM) fitness should be reasonably robust to provide evidential and convincing explanation to the community members and the relevant stakeholders.

More specifically, the following questions are raised to address the research objective: (1) What is the relevant focus of each perspective in the BSC structure, and (2) what benefits the communities implementing CBT that is guided by BSC framework can have, and (3) how BSC can guide the communities design and implement their CBT business model? Clearly, these three questions are interrelated. Question 1 ensures a balanced coverage to meet the sustainability criteria of the community, which should deliver clear sets of benefits as articulated in question 2. Question 3 addresses the pragmatic core of the BSC that takes an aim in the design and implementation of CBT business model.

**Literature Review:** In line with the requirement for a management-oriented structural framework by use of balanced scorecard (BSC) to guide the systematic development of the communities in CBT initiatives and efforts, the literature review would highlight the nature and the significant values of BSC, so as to lay the theoretical groundwork in addressing the research objective and the corresponding research questions.

Although BSC is widely used as a performance measurement system (Rajesh, Pugazhendhi, Ganesh, Ducq and Koh, 2012), its original role and intention has long been shifted towards a performance management system (Kaplan and Norton, 1996). BSC concept was awarded and recognized as “the best theoretical contribution in 1997” by the American Accounting Association (Norreklit, 2003). The core theme in BSC is the balanced perspective incorporation of strategically important commitment that, when arranged in cause-and-effect relationship structure, can provide a logic of competition. In short, the interlinked factors of commitment should form a strategy that helps the communities achieve their strategic objectives (Leung, 2015), such as sustainability. Four perspectives are considered in this research, namely the growth-oriented domain, the internal business process, customer perspective, and sustainability impact. The growth-oriented domain is used, which excludes the learning perspective, for simplicity, as the author reckons that the entire BSC structure is itself a learning mechanism and system (Tan, 2004).

The relevant growth-oriented factors are predominantly obtained from the first-hand interrogation of the author to the community, but are theoretically supported by further literature review. To grow collectively among the community members, towards insight generation and gaining the competency for problem-solving, it is important social attitude such as trust and community beliefs are considered (Arrow, 1972). As it is inferred from the theory of planned behavior (Ajzen, 1991), there are numerous growth-supportive antecedents important to cause the development of both the supply-side and demand-side activities (the internal business perspective). Besides considering the attitudes and beliefs that represent the collective synergy and intentional strengths of the community members, human capital development and appropriate resource management and resource availability are important factors that could infer the existence of perceived behavioral control of the community members. Human capital development is positively correlated to innovation, and both can help facilitate the adoption of technology and new ideas to improve both the supply-side and demand-side strategies (Danquah and Amankwah-Amoah, 2017), which can facilitate as the sources of organizational competitive advantage (de Pablos and Lytras, 2008).

Communities, who are responsible to make CBT successful, are also suggested to be service-oriented and innovation driven, so that they can bring out the authenticity and differentiation. Along this line of

thought, Sanchez-Canizares and Castillo-Canalejo (2014) reckon that innovation is needed because communities are often located in “small, out-of-the-way areas, far from large coastal towns” (p. 219), and thus, the ability to offer attractive products and services is important. The last factor considered for the growth-oriented management to contribute towards sustainability and tourist value attraction, through means of development in both the supply-side and demand-side activities, is the resource exploitation and resource management, based on the assumptions that could be summarized by stating that communities are surrounded by sustainable ecological and socio-cultural resources, which should be systematically managed and organized for competitive advantages (Barrutia and Echebarria, 2015). In view of the aforementioned discussions, the following hypotheses are raised:

H1: The growth-oriented factors, constituting of attitude and beliefs toward CBT, human capital development, innovation, tourism resources and tourism resource management, can significantly predict tourism activities and product development (representing the supply-side activity).

H2: The growth-oriented factors, constituting of attitude and beliefs toward CBT, human capital development, innovation, tourism resources and tourism resource management, can significantly predict market demand identification and marketing strategy development (representing the demand-side activity).

Both H1 and H2 provide the causal linkages between the growth-oriented factors, which incorporate not only resource-advantage view, but also socio-psychological variables in terms of attitudes and belief. H1 and H2 configure the first two layers of the BSC structure.

To operationalize the customer perspective, the concept of customer value proposition (CVP), which bridges the supply-side and the demand-side activities of the business model, is advocated. Without a clear customer value proposition, the business model would lack the central theme and direction for value creation, value production and value delivery. The value propositions, together with the supply-side and the demand-side activities, constitute the so-called business model (Aung and Tan, 2016; Tan and Anomasiri, 2017), which depicts the theory of the business (Kannisto, 2017). In view of these understandings, two further hypotheses are assumed, namely:

H3: The growth-oriented factors, constituting of attitude and beliefs toward CBT, human capital development, innovation, tourism resources and tourism resource management, can significantly predict the values offered to tourists.

H4: Both the supply-side and the demand-side activities of CBT can significantly predict the values offered to tourists.

Hypotheses H3 and H4 interconnect the growth perspective and the internal business process perspective to the customer perspective, and form the structural shape of business model. When the business model is systematically developed, by taking a strong root as illustrated in hypotheses H1 to H4, business sustainability can be assumed to be established. As noted in Formentini and Taticchi (2016, p. 1921), “business sustainability is defined as the ability to conduct business with a long-term goal of maintaining the well-being of the economy, environment and society”, which is a broader management goal than the original financial performance goal advocated in Kaplan and Norton (1996). The sustainability focus in the BSC also connotes a socially responsible image to organizations (Ritala et al. 2018), which aims in designing and developing a sustainable business model. Sustainability is described by the socio-cultural, economics, and environmental impact of the business model and efforts made by the communities. At this juncture, a BSC oriented management framework is taken shape, filled by the last hypothesis H5 stated as follows:

H5: The business model of CBT, constituting of the values offered to tourists, and the supply-side and the demand-side activities, can significantly predict the sustainability impact.

The conceptual model is shown in Figure 1, which integrates the five stated hypotheses in the BSC framework.

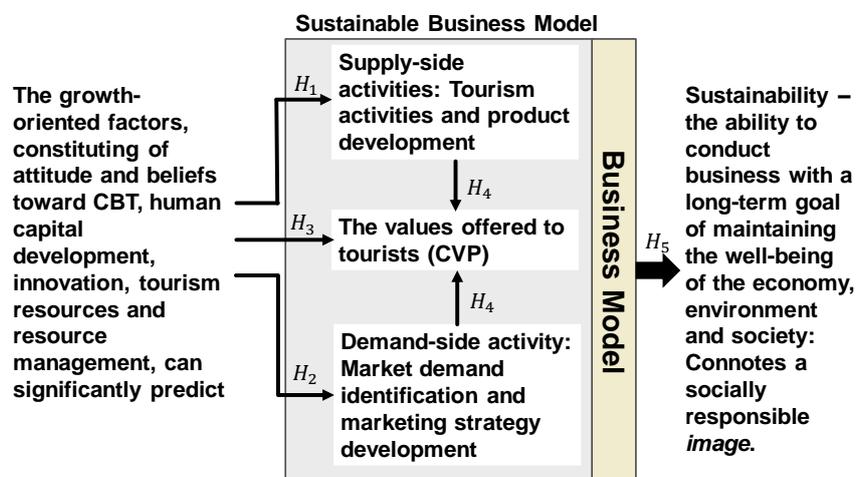


Figure 1: The BSC Framework for CBT Management

The BSC framework can also be reasoned as a platform for community development, which should aim to develop the community-based social capital or social capacity to describe the abilities of the residents to organize and mobilize their resources for the accomplishment of consensual defined goals. The outcome is the sustainability and the ability to further strengthen the community norms, support problem solving, resources of the community, and community improvement, i.e. quality of life. Thus, BSC is also a process of creating or increasing solidarity as manifested in deep sense of shared identity and a code of conduct and agency as manifested in building the capacity to execute business model for collective benefits (Tan et al. 2018).

**Methodology:** In responding to the nature of the research question and the research objective, which investigate a contemporary phenomenon in which there is still a lack of clear knowledge structure presented in comprehending the dynamics of the CBT management, case study or case research method as advocated in Yin (1993) is suitable. The cases involve the highland communities who rely on either coffee or tea cultivations as the main sources of livelihoods. The case communities share some similar ethnicity backgrounds such as Aka tribes, Lahu and Lisu tribes, and ecological resources and landscapes. A valid eighty-seven set of questionnaires was collected from the community members, who are parts of the so-called Tribes ETC (Experience, Tea and Coffee) participated communities located in Chiang Rai: Doi Chang, Huai Nam Guen village, and Ban Pha Mee village. The data were collected in 2017-2018 period, during off-raining seasons and hot summers.

The operationalization of the questionnaires follows the definition of the given constructs within the CBT context, in order to ensure validity and reliability. Specifically, the instrumentation design guidelines follow, for instance, those recommended in Hinkin, Tracey and Enz (1997). Attitude and belief towards CBT delineate the nature of the attitude and beliefs of the community members, and are operationalized by items such as committing on CBT expansion program without diluting the identity of the community, and by accentuating on the community's uniqueness and its livelihood, and lifestyle. Human capital development explains the extent to which the communities make efforts in developing leadership of the community members as a thrust for the CBT initiatives. Innovation measures the effort of innovation of the community towards CBT in terms of innovative services and reaching-out innovation. Tourism resources present the nature of ecological and man-made resources available to the communities, manifested, for instance, in terms of the lifestyle, abundance of fertile land, conservation measure, culture and heritages. Tourism resources management articulates the extent of efforts of the community in managing the various aspects of resources, and activities measured involve waste management, tourism carrying capacity, monitoring and continuous development, network leveraging

of tribe members, and design of rules and regulations for appropriate resource management purposes. Tourism activities and product developments are the supply-side activities, which involve developing the experiential activities for the tourists, such as eco-trekking, agricultural practice learning, local culinary tasting, leisure and recreation, homestay experiences, stories and interpretation of local attractions, enjoyment of natural landscapes, local lifestyle understanding, and exhibiting souvenir production. Market development identification and marketing strategies are the two market-side or demand-side activities which the community focuses, in the design and implementation of the business model, which focuses on the level of efforts in pricing, promotion strategies, and market development and fulfilment. The values offered to the tourists are operationalized by the degree of efforts made in the various domains or features of tourist values, such as functional value, educational value, cultural value, ecological value, which provides a bridging to brand studies in another article of the author. The sustainability impacts present the four facets of sustainability, namely (1) economic impact (i.e. family income increase, job creation, better earning, profit distribution), (2) cultural impact, which touches on cultural awareness increase of the community members, cultural maintenance, and new knowledge and valuable experiences gained as a result of open interactions with the visitors, (3) social impact, which focuses on infrastructure development, medical and educational improvement, and quality of life and sense of belonging of the community members, and (4) environmental sustainability, which includes measurement items such as systematic waste and water management benefits, and sense of love and care for the environment.

**Result:** This section, first, presents the results of the statistical analyses in justifying the discriminant and convergent validity, and reliability of the measurement instruments, before examining the statistical fits of the structural equation modeling (SEM). With the square root of average variance extracted (AVE) shown exceeding the cross-correlation terms in Table 1, as highlighted by the diagonal value exceeding the off-diagonal in each column, then, as suggested in Fornell and Larker (1981), divergent validity is established. Furthermore, with each factor loading (not shown) of the measurement items exceeding the 0.70 threshold, and with AVE, over 0.5, and with reliability index beyond 0.70 threshold, the convergent validity is also established. As explained in Neuman (2006), convergent validity means that “multiple measures of the same construct hang together or operate in similar ways” (p. 194), and discriminant validity is the opposite in that “the indicators of one construct hang together or converge, but also are negatively associated with opposing constructs” (p. 194).

**Table 1:** Discriminant and Convergent Validity, and Reliability Assessments

Latent Construct	1	2	3	4	5	6	7	8	9	10	Cronbach Alpha	AVE
1	0.853815										0.814	0.729
2	0.354	0.831264									0.943	0.691
3	0.508	0.691	0.801249								0.921	0.642
4	0.553	0.519	0.553	0.811788							0.892	0.659
5	0.519		0.364	0.505	0.89666						0.757	0.804
6	0.402	0.612	0.657	0.471	0.325	0.842021					0.794	0.709
7	0.735	0.504	0.612	0.661	0.626	0.565	0.846759				0.905	0.717
8	0.435	0.658	0.729	0.671	0.461	0.596	0.594	0.798749			0.823	0.638
9	0.514	0.552	0.603	0.649	0.333	0.377	0.567	0.669	0.87178		0.895	0.76
10	0.758	0.575	0.763	0.675	0.593	0.611	0.754	0.761	0.719	0.871206	0.969	0.759
Discriminant Validity:	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK		

**Note:** All the correlations coefficient presented are significant at the 0.01 level (2-tailed), and the diagonal value represents the square root of AVE for the corresponding construct. 1 = Attitude and belief towards CBT. 2 = Human capital development. 3 = CBT management. 4 = Innovation. 5 = Tourism resources. 6 = Tourism resource management. 7 = Tourism activities and products. 8 = Market demand identification and marketing strategy development. 9 = Values to tourists. 10 = Sustainability impact. Table 2 below is a creative combination of both the mean descriptive and the ANOVA or t-test of the constructs in view of two important variables, namely CBT head versus not CBT head, and the agricultural livelihood types: either tea or coffee, or both. Table 2 shows significant differences between the CBT head and non-head. Apparently, there is a perception gap, which highlights that the CBT heads, in general, perceive at a higher level than the non-head across the constructs studied. In addition,

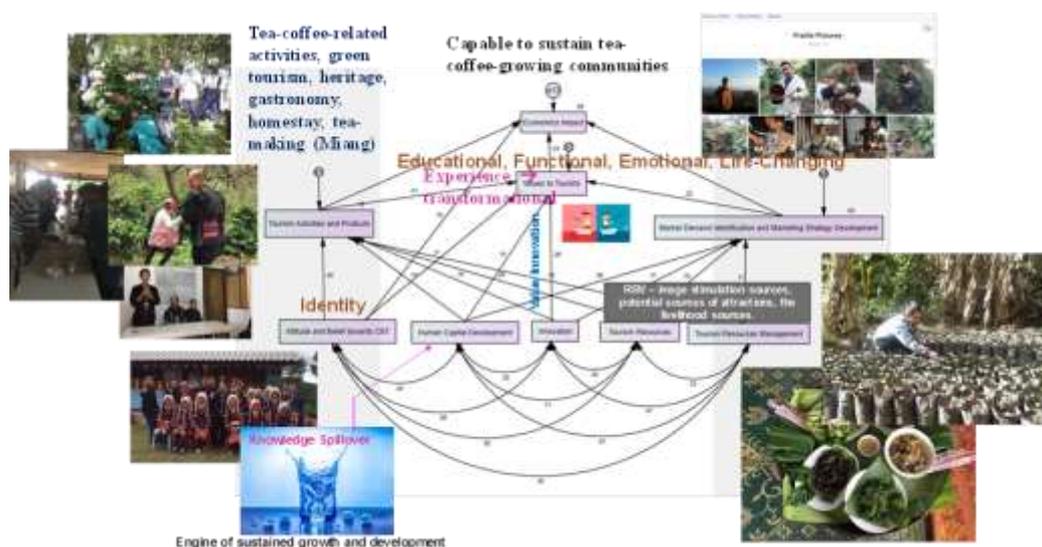
although coffee shops seem booming at an accelerated rate much higher than the tea-based beverages in Chiang Rai, the communities who rely on tea as the main livelihood show better perceptions in the overall BSC efforts, when compared to the communities planted coffees in majority. The perceptual mean that crosses four scale, of the five Likert scale, with 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree, belongs to only two constructs, namely attitude and belief towards CBT, and tourism activities and product development, which highlights a more collective synergy among the members, and also shows relatively homogeneous, higher level of commitment in the production-side. In general, the communities lack the skills, competencies and knowledge in the demand-side and the sustainability domains of goals.

**Table 2: Mean Descriptive and T- or ANOVA Test**

Latent Construct	Agricultural Livelihood Type - Main Income Earner						ANOVA		CBT Role		
	Mean	Std. Dev.	Mean Value			Test of Homogeneity of Variance		F	Sig.	Mean Value	
			Tea	Coffee	Both	Levene Statistic	Sig.			CBT Head (11.4%)	Not CBT Head (88.6%)
1	4.14	0.62	4.40	3.89	4.24	1.494	0.222	4.681	0.001	4.43	4.09
2	3.44	0.72	3.86	3.11	3.42	1.085	0.36	5.976	0.000	3.96	3.37
3	3.66	0.59	3.91	3.35	3.84	0.337	0.799	7.422	0.000	4.12	3.59
4	3.73	0.61	3.90	3.60	3.62	2.47	0.06	2.909	0.039	4.04	3.69
5	3.77	0.52	3.88	3.70	3.77	2.228	0.091	1.522	0.215	3.92	3.74
6	3.45	0.71	4.04	3.00	3.43	0.772	0.513	15.003	0.000	3.81	3.39
7	4.02	0.56	4.37	3.80	3.77	0.604	0.614	6.334	0.001	4.32	3.97
8	3.78	0.55	3.98	3.62	3.80	0.692	0.559	2.38	0.075	4.15	3.72
9	3.91	0.61	3.94	3.78	3.88	0.663	0.577	2.27	0.086	4.10	3.88
10	3.95	0.48	4.20	3.72	3.99	1.019	0.388	6.737	0.000	4.22	3.91

Note: 1 = Attitude and belief towards CBT. 2 = Human capital development. 3 = CBT management. 4 = Innovation. 5 = Tourism resources. 6 = Tourism resource management. 7 = Tourism activities and products. 8 = Market demand identification and marketing strategy development. 9 = Values to tourists. 10 = Sustainability impact.

The five hypotheses raised in the literature review section basically can be fundamentally confirmed by the structural equation models (SEM) shown in separate sustainability domains, namely Figure 2 for economic impact, Figure 3 for cultural impact, Figure 4 for social impact, and Figure 5 for environmental impact. There are minor additions of the direct relationship between attitude and belief towards CBT and the various facets of the sustainability achievements, signifying a significant value and role of collective socio-psychological variable.



**Figure 2: BSC Structure Contributing to Economics Impact**

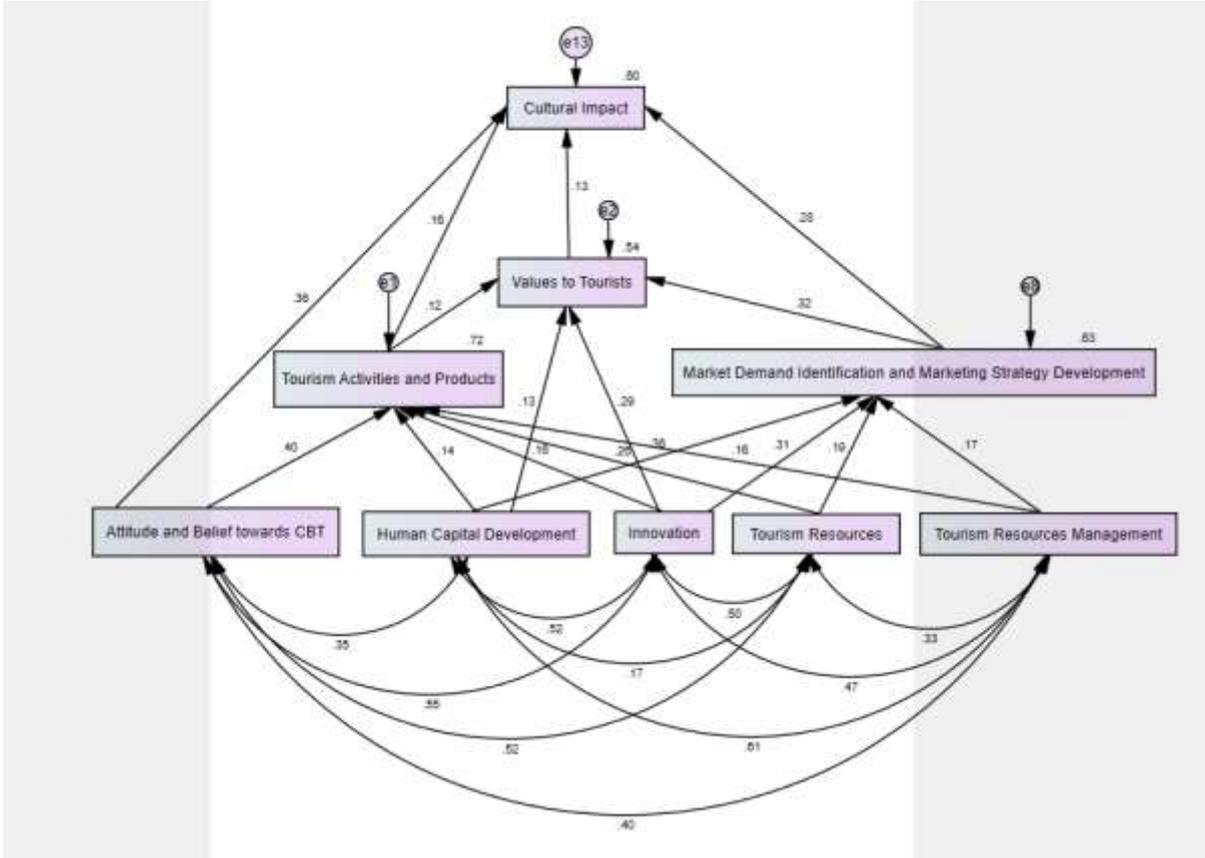


Figure 3: BSC Structure Contributing to Cultural Impact

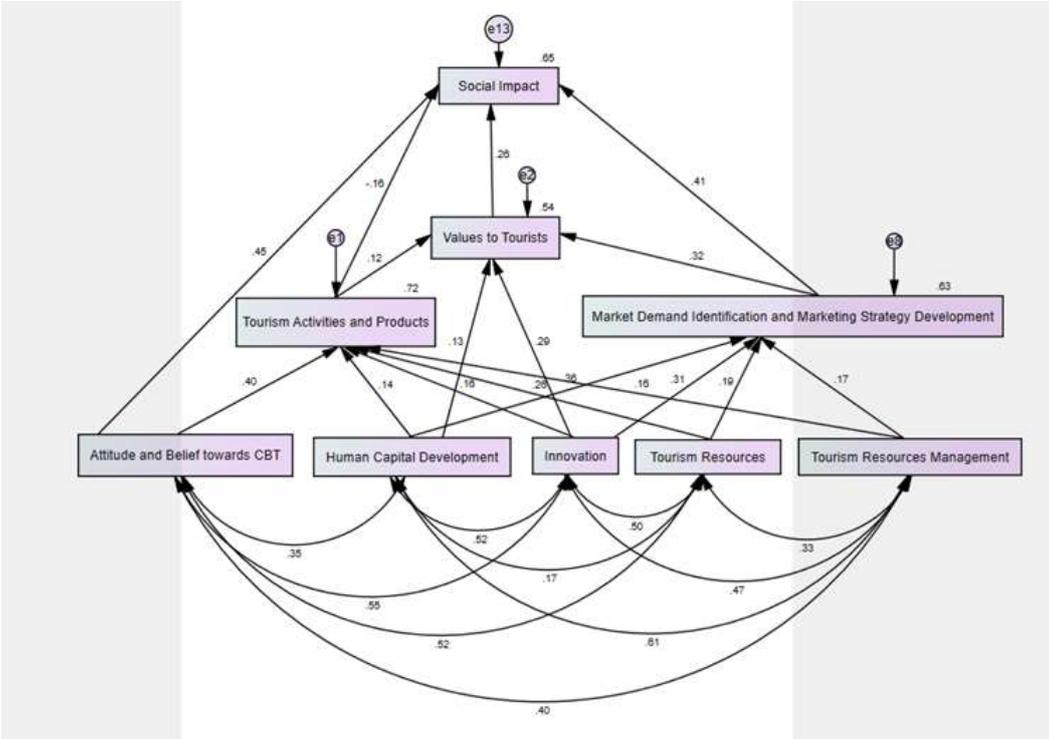
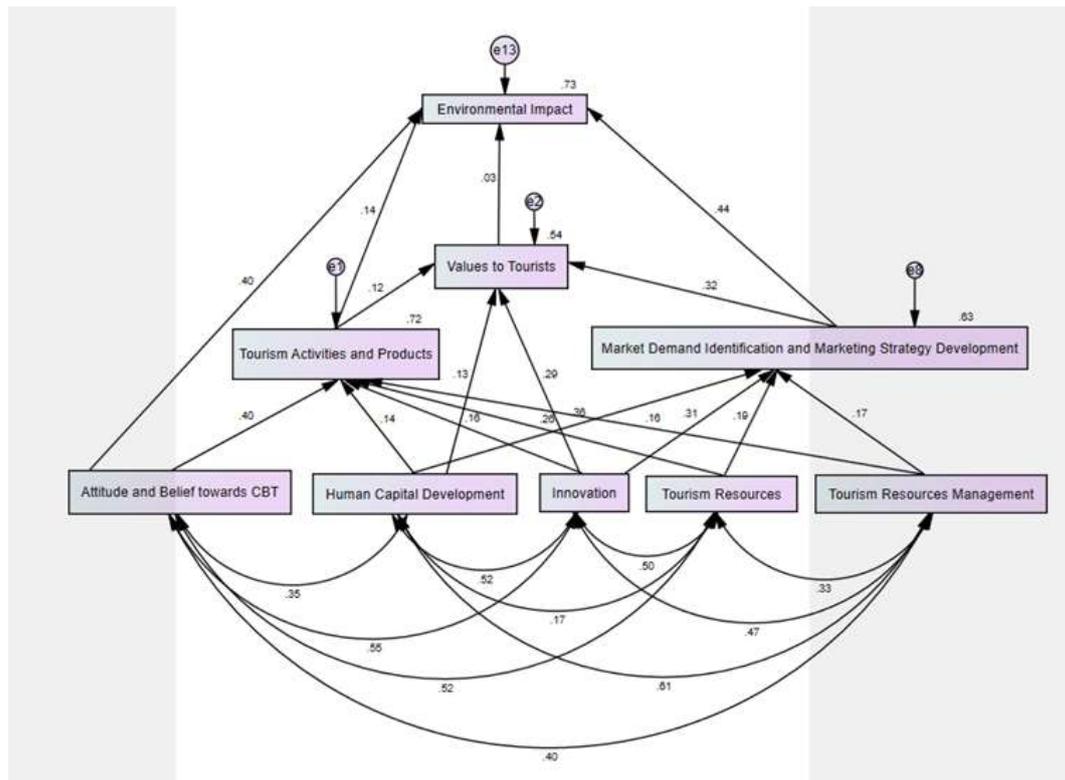


Figure 4: BSC Structure Contributing to Social Impact



**Figure 5:** BSC Structure Contributing to Environmental Impact

The SEM fit statistics are given below, respectively for the SEMs results in Figures 2 to 5:

- (1) Economics impact: Chi-square/df = 1.446, NFI = 0.977, RFI = 0.897, IFI = 0.993, TLI = 0.966, CFI = 0.992, and RMSEA = 0.072,
- (2) Cultural impact: Chi-square/df = 1.047, NFI = 0.982, RFI = 0.927, IFI = 0.999, TLI = 0.997, CFI = 0.999 and RMSEA = 0.023 for social impact,
- Social impact: (3) Chi-square/df = 1.566, NFI = 0.972, RFI = 0.889, IFI = 0.990, TLI = 0.989, and RMSEA = 0.081, and
- (4) Environmental impact: Chi-square/df = 3.43, NFI = 0.945, RFI = 0.779, IFI = 0.960, TLI = 0.833, CFI = 0.958, and RMSEA = 0.167.

RMSEA represents the root mean square error of approximation, which indicates how well the SEM fits the population, not just a sample used for the estimation, and acceptable value should be below 0.10 (Hair et al. 2006, p. 748). A good fit is also shown in Chi-square / df (goodness of fit, GOF) in the range of 3:1 or less (Hair et al. 2006, p. 748). While RMSEA and GOF are measures of absolute fit, in quantifying the differences between the observed and the estimated covariance matrices (Hair et al. 2006), the incremental fit statistics are represented by NFI (Normed Fit Index), CFI (Comparative Fit Index), TLI (Tucker Lewis Index), and RFI (Relative Fit Index), which were shown exceeding the 0.90 threshold, or approach 1, for a good model fit.

**Discussion:** The structural equation modeling (SEM) configurations conclude good incremental and absolute model fits, which highlight that the values offered to tourists are a result of two types of activities typically understood in a business model concept (Aung and Tan, 2016; Tan and Anomasiri, 2017), namely the supply-side activities (tourism activities and product development) and the demand-side activities (market demand identification and marketing strategy development). Both human capital development and innovation are shown significantly able to impact positively on the degree of efforts made on tourist value proposition design and development. The tight interrelationship between innovation and customer value design is the central theme in the blue ocean strategy, in which Leavy (2005, p. 13) stated that “In Blue Ocean Strategy, value and innovation are inseparable. Value innovation places equal emphasis on value and innovation”. As to human capital, its role has the knowledge

spillover effect, which is often regarded as the engine of sustained growth and development (Chang, Wang and Liu, 2016), being realized through the contribution of human capital in the various aspects of CBT business model, whether in the tourism activities and products, values offered to tourists, or market demand identification and marketing strategy development.

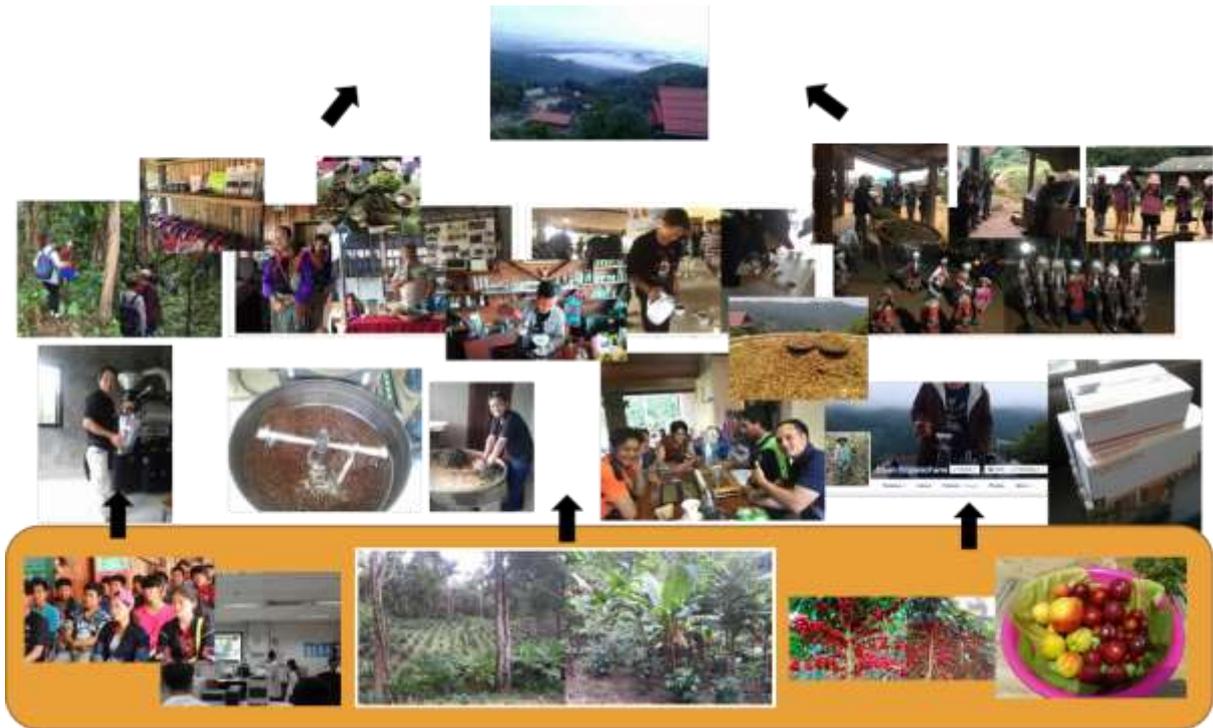
The structural equation models (SEMs) also show the significant linkages between the extent of efforts the communities put into tourism resources and their management, and in the developments of both the supply-side and demand-side aspects of the CBT business model. The role of resources is significantly important, being judged from the fact that the communities rely on the available natural, cultural and livelihood resources as potential sources of attractions and tourist organism stimulations. In Ryan (2010), it is noted that the multi-faceted resources, in combination, can provide the sources of stimuli in stimulating the formation of images, and could also help the tourists formulate the criteria by which they evaluate the success of otherwise of their stay (Chen, Chen, Lee and Tsai, 2016).

The fact that a significant percentage of variance of the sustainability achievements, in the ranges between 0.58-0.73, can be explained by the business model elements of the BSC structure of CBT management, including growth-oriented factors of innovation and human capital development, is well aligned with the definition of CBT as follows:

“CBT is a sustainable, community-owned and community-based tourism initiative that enhances conservation and in which the local community is fully involved throughout its development and management are the main beneficiaries through community development” (Manyara and Jones, 2007: 637).

The commitment and efforts of the communities in managing their natural and cultural resources (i.e. resource management) ensure that resources are maintained to the best productive levels possible to favor the production activities. In line with also the guidelines advocated in UNEP & UNWTO (2005: 11-12), “sustainable tourism should make optimal use of environmental resources that constitute a key element in tourism activities, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity”.

**Conclusion:** Three research questions were raised and SEM statistics were used in the responding. The four interlinked perspectives of the BSC framework address the first research question: (1) growth-oriented factors constituting of attitude and beliefs toward CBT, human capital development, innovation, tourism resources and their management; (2) the internal CBT development process perspective, consisted of the supply-side activities (tourism activities and product development) and the demand-side activities (market demand identification and marketing strategy development); (3) the values offered to tourists (customer value propositions, CVP) as the customer perspective; and (4) the sustainability perspective, which indicates the ability of the communities to conduct business with a long-term goal of maintaining the well-being of the economy, environment and society, and connotes a socially responsible image. The combined internal process and CPV perspectives form the essential logic of the CBT operations known as business model. The second question illuminates the following benefits: The valid BSC framework can provide the community with a simple management structure to guide them in: learning, growing, planning, designing, execution, organization, and in contributing to sustainability. In other words, BSC serves as a platform for observation and reflection to assist the community members to reflect on their initiatives, so they can better improve their business models. Community learning is embedded in and enabled through the BSC structure – causal linkage and forms as a base for continuous improvement. The BSC structure serves also as a management system for community development and CBT capacity planning – essentially an emphasis of functionalist theory and structuration theory. The BSC model can also be a guide for business model design and implementation – considering resources, partnership and socio-psychological variables, and human capitalization and innovation, as important resources and capabilities, to contribute to sustainability, as shown in Figure 6, which responds to the third research question.



**Figure 6: BSC for CBT Business Model Design and Implementation**

Thus, BSC is a useful and practical management-oriented tool that can assist the communities to design and implement business model. The business model structure that is facilitated by the BSC is shown Figure 7 configuration, which sees the prevailing influence of “resources and capabilities, and the socio-psychological capitals of the communities” being used in designing, implementing and fine-tuning the values offered to tourists, and the supply-side and demand-side activities. Sustainability performances, which consist of socio-culture, economics and environmental maintenance, are important aspects of the “values” captured from the CBT business model.



**Figure 7: Business Model Design and Implementation facilitated by BSC**

The communities surveyed are generally strong in the supply-side of the CBT development and have strong preferences for synergistic attitudes (which contribute to socio-psychological capitals), but they are weaker in the domains of demand-side activities, tourist value design and innovation- and resources-managed growth-oriented commitment. Also, the significant perceptual gap between CBT head and the non-heads, as revealed in the t-test, indicates a need to improve the community’s communication

measures and other relevant strategies so as to bring into closer alignment among the members on common goals and strategies.

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## A COMPARITIVE STUDY ON IMPORTANCE OF PLACE OF PURCHASE IN URBAN AND RURAL INDIAN MARKET FOR SELECTED CONSUMER DURABLE PRODUCTS

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**Abstract:** Consumer behaviour is the buzzword now. Firms who underestimate their consumers will have no chance to serve them. Competition is intensifying day-by-day and the firms have to evolve their strategies based on the behaviour of the consumer, on a continuous basis, to stay ahead and win the race. Consumer behaviour as a discipline is quickly gaining new ground over the years. This has become even more relevant in the present day world, marked up by rapid changes and explosion of information technology. It holds great interest for marketers, consumers and students of human behaviour.

**Keywords:** Consumers, Urban, Rural, Durable Products, Rural Market, Retailer.

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**Introduction:** Customers are the buyers of products and services. They also might be the final consumers of the products and services. Marketers need to identify these end users and frame marketing plans rather than considering the wholesalers and retailers who actually are the intermediaries in the process of purchasing. Although these channel members are important for a marketer; yet it is wise on their part not to dissipate their energies toward these as the ultimate users decide the fate of the firm's products and services. Marketers, therefore, should consider the consumers and then develop their plans of action. Here lies the essence of marketing – the consumer is the king and all actions should start with this notion in mind.

Consumer behaviour is the buzzword now. Firms who underestimate their consumers will have no chance to serve them. Competition is intensifying day-by-day and the firms have to evolve their strategies based on the behaviour of the consumer, on a continuous basis, to stay ahead and win the race. Consumer behaviour as a discipline is quickly gaining new ground over the years. This has become even more relevant in the present day world, marked up by rapid changes and explosion of information technology. It holds great interest for marketers, consumers and students of human behaviour.

Consumer behaviour is influenced by a variety of variables and it is important to understand the nature of these variables, and draw inferences out of these. Marketers use this knowledge to come out with new products and services that satisfy their consumer's needs and wants. So researching on consumer behaviour is a very vital exercise and the results got, could be used by people for a variety of purposes.

The rationale behind the study was to highlight the findings of consumer behaviour towards place of purchase on selected consumer products carried out in urban places of Hyderabad city and in rural areas of Telangana region in Andhra Pradesh. It is expected that this study will help the researchers to contribute and throw more light on this topic.

**Scope of the study:** The scope of the study was restricted to selected consumer products. The study covered four consumer durable products as shown below:

### **Consumer Durable Products**

1. Television
2. Fans
3. Watches
4. Refrigerators

The study has been carried out in rural areas of Telangana region and urban areas of the capital city of Telangana i.e., Hyderabad. Telangana State is situated in the central stretch of the eastern seaboard of the Indian Peninsula. Telangana State has the largest area, with 114,800 square kilometers (44,300 sq mi).

**Sample Design:** The buyers of the urban and rural areas of Telangana State and aged 18 years and above constituted the universe for the purpose of study. The primary data were collected from the buyers in rural areas of Telangana State i.e., Karimnagar, Nizamabad, Adilabad, Nalgonda, Warangal, Mahabubnagar, Medak, and Khammam and urban area of Hyderabad. (Primary data formed the core of the research study) The sample design for the study is as follows: In all respondents have been requested to fill in the structured questionnaires for the purpose of the study. The study used the convenience sampling method for collecting necessary primary data. In the convenience sampling method, the researcher selects the most accessible population numbers from whom to obtain information.

**Data Processing and Analysis:** The questionnaires collected from the respondents were examined for the completeness in all manners. Later a code book was prepared in order to enter the data in the statistical package for social sciences (SPSS v17). Data were processed using the same statistical package. Firstly, frequency tables were prepared for the personal background variables which include gender, age, Income, educational qualifications, Occupation. Secondly, means and standard deviations were computed for the independent and dependent variables in order to present the results pertaining to the perceived buyer behaviour.

**Period of the Study:** The primary data for the study were collected between January 2018 and December 2018

**Limitations of the Study:** The study was carried out to understand the place of purchase behaviour of buyers in urban and Rural Areas. However, only one State was covered and hence this is a limitation of the study. The findings of the study are entirely dependent on the sample and hence cannot be generalized. In spite of the above limitations, the study throws some light on the understanding of place of purchase of Buyer behaviour. Since the study was exploratory in nature, it is expected that this will pave the way for further research in the area.

**Place of Purchase (Television):** The questionnaire given to the consumers requested them to answer the place of purchase of their Television and the recorded observations are indicated in table 01.

Table 01 shows that 76% of urban consumers and only 3% of rural consumers prefer going to company's show room 10% of urban consumers and 11% of rural consumers go for exclusive dealers for purchasing Television. However a majority of the rural consumers i.e., 86% of them make a visit to the retailer stocking more than one brand and buy from him. In context, it's only 14 % with the urban consumers.

Two things are very clear here. A majority of urban consumers shop at company's show room for Television, while in rural the majority goes to the retailer stocking more than one brand.

**Table 1:**

Sl.No.	Place of purchase of Television	Urban % Consumers		Rural % Consumers	
1.	Company's Show room	152	(76%)	06	(03%)
2.	Exclusive dealer	20	(10%)	22	(11%)
3.	Retailer stocking more than one brand	28	(14%)	172	(86%)
	<b>TOTAL</b>	<b>200</b>	<b>(100%)</b>	<b>200</b>	<b>(100%)</b>

**Place of Purchase (Fans):** A question was thrown to the consumers about their place of purchase of fans and the answers are placed in table 02. Table 02 indicates that 74% of urban and 14% of rural consumers prefer buying from a company's show room. From the exclusive dealer it is 19% in urban and 29% in rural, preference for the retailer stocking more than one brand is very much seen among the rural consumers (67% of them), while in urban it's only 7%.

Show rooms are preferred by consumers in urban and retailers stocking more than one brand are favoured by rural consumers and this is the main point one can note from this table

**Table 2:**

Sl.No.	Place of purchase of Fans	Urban % Consumers		Rural % Consumers	
1.	Company's show room	148	(74%)	8	(4%)
2.	Exclusive dealer	38	(19%)	58	(29%)
3.	Retailer stocking more than one brand	14	(07%)	134	(67%)
<b>TOTAL</b>		<b>200</b>	<b>(100%)</b>	<b>200</b>	<b>(100%)</b>

**Place of Purchase (Watches):** The consumers were requested to reveal the source of place of purchase of watches and the disclosed information is highlighted in table 03. Table 03 throws light on the place of purchase of watches by urban and rural consumers. A majority of urban consumers (87% of them) prefer to shop at the company's show room for making the purchase and in case of rural it's only 11%. Regarding the purchase at the exclusive dealer only 12% in urban and 8 % in rural are inclined to do so. However, a great majority of them in rural (81%) go for the retailer stocking more than one brand in making watch purchases.

A look at the below table given an idea of the preferences of urban and rural consumers in making watch purchases. A great majority in urban go for company show room while in rural it's the retailer stocking more than one brand, so places of purchase are different.

**Table 3:**

Sl.No.	Place of purchase of Watches	Urban % Consumers		Rural % Consumers	
1.	Company's show room	174	(87%)	22	(11%)
2.	Exclusive dealer	24	(12%)	16	(08%)
3.	Retailer stocking more than one brand	02	(01%)	162	(81%)
<b>TOTAL</b>		<b>200</b>	<b>(100%)</b>	<b>200</b>	<b>(100%)</b>

**Place of Purchase (Refrigerator):** A query on the place of purchase of refrigerator was posed to the consumers in both urban and rural and the findings are listed in table 04. Table 04 reveals that 84 % of urban consumers and only 7% rural consumers prefer going to a company's showroom. Incase of an exclusive dealer, it is 15% of urban and 79% of rural. The retailers stocking more than one brand are preferred by only 1% in urban and 14% in rural.

From the above, it can be concluded that company's show room are the preferred places of purchase in urban and exclusive dealer in case of rural consumers.

**Table 4:**

Sl.No.	Place of purchase of Refrigerator	Urban % Consumers		Rural % Consumers	
1.	Company's show room	168	(84%)	14	(07%)
2.	Exclusive dealer	30	(15%)	158	(79%)
3.	Retailer stocking more than one brand	02	(01%)	28	(14%)
<b>TOTAL</b>		<b>200</b>	<b>(100%)</b>	<b>200</b>	<b>(100%)</b>

This study reveals that majority of consumers are now-a-days a highly enlightened lot. The products should be made available at various outlets for the consumers to purchase or procure. Hence, the marketing distribution systems or marketing channels should be well-established. This helps the consumers to purchase items with minimum of efforts. Retailers, on their part should try to help the consumers in picking up quality products. i.e., they should recommend quality items for their consumers, at a price they can afford.

As the consumer behaviour involves understanding the acquisition, consumption, and disposition of the products and services those involved in analysing it - be it the consumers, marketers, middlemen, or regulatory agencies should continuously make sincere and necessary efforts and take periodic measures to strengthen the body of knowledge that is already existing.

The best place of purchase can increase brand visibility, Place of purchase can also influence a business's ability to market itself, the competition it faces from businesses, the total cost of operation, taxes the business owner has to pay and the regulations they must follow. Place of purchase also matters for marketing. The importance of place of purchase goes beyond your business' physical place of purchase and your website rank in Google search results. It extends to the placement of your advertisements.

**Easy Access Is A Huge Advantage:** Basically, you just want to be wherever your customers are and make it as convenient as possible to visit you. Place of purchase is of utmost importance especially to businesses that sell goods or services directly to customers at brick-and-mortar establishments. Some customers choose to buy from certain companies because of the perception they have about them. A business in the commercial area of a city gives the perception that the business is successful and can afford a good place of purchase.

Your business should also consider if parking is available for prospective customers. Many customers will choose to go somewhere else if it's too hard to find parking.

**Think about Importance of Place of Purchase:** Depending on your business, suppliers could influence your place of purchase. Price and quality are pre-requisites in choosing a supplier, but the speed of delivery has a huge impact on productivity. For better and quicker businesses operations, it's important to consider the place of purchase of your company to make it easy for your suppliers to reach your premises on time to deliver goods and provide the necessary service for your business to run smoothly. And the closer you are to your suppliers, the quicker your product can be on the market. Place of purchase will always be important especially for many businesses despite the rise of remote work, collaboration, telecommuting and virtual offices. If your business is conveniently located at the best place to attract customers, you can be certain of growth, an increase in sales and brand visibility.

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## THE ECONOMIC, TECHNOLOGICAL, AND HUMAN RESOURCE IMPLICATIONS OF PRIVACY LEGISLATION ON CLOUD COMPUTING ADOPTION

PETER HOLOWKA

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**Abstract:** As the use of technology increases globally, so too do concerns over reliability, access, sustainability, information security, and user privacy. Across many jurisdictions, governments at multiple levels have introduced legislation aimed at protecting users' privacy and data. This presentation will critically examine such initiatives, exploring the practices of Western Canadian K-12 school districts within their respective legislative contexts. The findings and implications of this presentation are based on an exhaustive study of all 75 large K-12 districts in Canada's three westernmost provinces: British Columbia, Alberta, and Saskatchewan. The K-12 districts within these provinces were found to be world leaders in cloud computing adoption, making their experiences particularly valuable as cloud computing adoption continues to increase across industries and around the globe. Multiple case study analysis, followed by correlation analysis, was used to explore the nature of IT infrastructure and cloud computing use in these provinces. A data transformation model mixed methods triangulation design methodology was used. This study encompassed over 1.1 million students and a geographical area of 2,258,483 square kilometres. The findings and implications of this exhaustive research provide a template for organizations and governments around the world as they address the challenge of balancing divergent goals, such as security, financial viability, performance, etc. A major finding of this study was that regional legislation was the most influential determinant of IT infrastructure. As cloud computing continues to increase worldwide, the K-12 districts in Western Canada serve as valuable cases for the study and benefit of others.

**Keywords:** Cloud Computing, Human Resources, IT Infrastructure, Privacy Law.

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**THE STIMULUS-ORGANISM-RESPONSE (SOR) FRAMEWORK  
FOR COSMETICS BRAND MANAGEMENT AS SUGGESTED  
BY CONSUMER BRAND PERCEPTIONS STIMULATED  
BY LOGISTICS-MARKETING MIX ANTECEDENTS: IMPLICATIONS  
FOR NEW START-UP LANADENE**

**YU THIN ZAR AUNG, CHAI CHING TAN, CHATRUDEE JONGSUREYAPART**

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**Abstract:** The purpose of this paper is to investigate how brand perceptions formation by means of brand image and brand trust can be developed through a holistic integration of logistics-marketing variables, which includes factors such as living compound of place, and strategic location, choice and accessibility of place, in impacting positively on consumer loyalty. There are some important contributions illuminated in this research. The consumers who have obtained some levels or scopes of information clarity tend to perceive positively on the logistics-marketing mix variables. This insight is generally not addressed in the available literature. The overall conceptual integration can be structured in a structural equation model known as stimulus-organism-response (SOR) model. The SOR structure fits into the strategic intention of branding by embedding important stimulus-response capabilities and initiatives that could be used to drive repetitive purchases. Theoretical and some practical scopes of implications are discussed.

**Keywords:** Cosmetics, Brand, Stimulus-Organism-Response, Lanadene, Marketing Mix.

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**Introduction:** Cosmetic business is one of the record-breaking profitable industry for most of the manufacturers in the world where majority of population are actively consuming millions of cosmetic products every year. These days, attractiveness of a person solely depends on cosmetic and it is becoming a tendency for most people to use cosmetic in their daily life regardless of genders. Thailand's cosmetic industry is standing as a good demonstration on the diversity of consumer's various choice including foreign imported and national products (Phupoksakul 2006). Beauty is the great concern for the women especially for the Thai people who believe that beautiful proportional facial structure could attract the complimented admires in both men and women. The trend has been going on for many decades that people cannot stay without cosmetics just to look presentable in the society. Having said that, there has been numerous cosmetic products available every nook and corner of the world. When customers have ample of products at their wish, this can be tricky when the businesses dealing with same or identical products retain their customers. The buyer's decision makes great influence in their selection of the products. There are wide range in customer decision making processes in cosmetic purchasing behavior that the start-up stage cosmetic businesses should have with the strategic marketing plan. Not only should the diversity in customer's decision-making process, the companies must have strategic planning along with the logistic strategy of "Place" as well.

An example of a start-up is LANADENE. LANADENE is the cosmetic product of School of Cosmetic Science of Mae Fah Luang University, located in Northern most of Thailand. The "LANADENE" cosmetic product is developed by the researchers with specialized knowledge and skills with no hazardous substances used in the products. The extract is mainly from nature with the formula of the researchers who have experimented and tested to ensure efficiency and safety of the users. Since the Lanadene products are in the development stage with limitation and obstacles, such as marketing tools, rules and regulation that could not properly create the strong brand perception to customer decision making processes. LANADENE would be one of the variables considered in this research, and as LANADENE is both a result of the research incubation works of Mae Fah Luang University (MFU), and the brands are mostly sold in MFU campus, the sampling would be focused on the population in the MFU campus. In this way, the comparative context would be meaningful to the management teams of LANADENE.

Specifically, the following research objective is raised for this paper:

The purpose of this paper is to investigate how brand perceptions formation by means of brand image and brand trust can be developed through a holistic integration of logistics-marketing variables, which includes factors such as living compound of place, and strategic location, choice and accessibility of place, in impacting positively on consumer loyalty. A particular implication would be drawn to suggest for LANADENE brand for a more holistic management of its brand.

**Literature Review:** The literature review will discuss the underlying theoretical perspectives that support the stated hypotheses, and in particular, the stimulus-organism-responses theory of combined consumer behaviors and brand management (cf. Tan, 2017; Tan, 2018a, 2018b; and Tan, 2019) would lead the way. This section will also illustrate the logistics-marketing mix constructs which influence brand perceptions of consumers consuming cosmetics products.

**Logistics-Marketing Mix Constructs:** Many organizations still face the challenges in measuring marketing effectiveness, which leads them to resolve to a compromising premise that an imperfect measure is better than none (Brooks and Sim, 2012). Part of the reasons, for instance, according to Wise and Sirohi (2005), is that companies “lack enough hard data on what marketing stimuli work best in which circumstances and with which customers” (p. 10). Marketing mix concept has often been centralized in terms of Ps, such as the 7Ps (Ivy, 2008), namely product, place, promotion, price, physical evidence and people or process. Nevertheless, if skillfully implemented many alternative Ps can be absorbed into the traditional marketing mix of product, place, promotion and price, for instance, promotion can exploit the people concept, as “Salespersons of the brand I usually purchased are enthusiastic in explaining the products.” Marketing mix is also strategically and conceptually rooted with tight connection in logistics through Logistics Avenue in terms of place. The exploratory factor analysis of place in this research identifies two important logistics parameters, namely the living compound of place and the strategic location, choice and availability of place. In other words, the marketing organizations should consider a holistic marketing place that embraces the different logistical dimensions of place in the marketing mix initiatives, for instance, the strategic location decision of place is an important factor.

As information and Internet technologies are getting more sophisticated, the various marketing initiatives-logistics variables should be seamlessly integrated. For instance, in a recent Forbes Insight (2019)’s report, it was quoted that “In the old ways, we would mass market a message on three television networks and reach everybody... But today isn’t the case. Everything is so much more tailored to people’s tastes and behaviors”. Judged on these arguments and the pace of today’s Internet technology advancement, location-based or place-based marketing becomes real-time, and the initiatives are often promotions customized to locations.

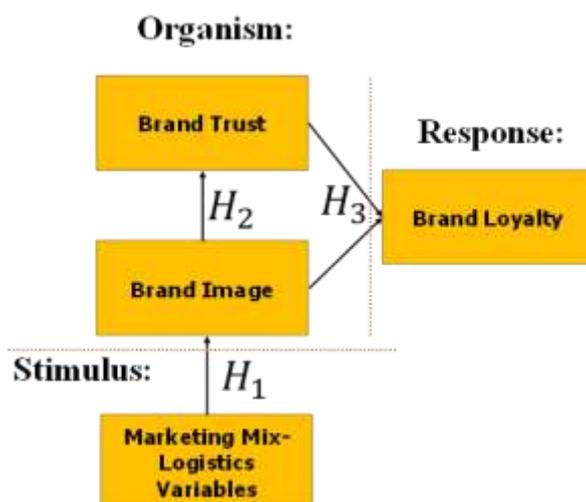
While taking a holistic approach, marketers should attempt to maximize their creativity capacities to the fullest as creative approach to marketing mix can leverage its effectiveness to a much higher level. For instance, in Kim, Choe and Petrick (2018), they study and find that a celebrity inclusion in the promotion avenue can induce the visitors to a destination to form positive and desirable destination brand images and thus loyalty.

**Brand Image and Brand Trust as Organism for Closure of SOR Framework:** In finding the best marketing mix strategies, Wise and Sirohi (2005) suggest that organizations should keep both brand and revenues in mind. Translating into the context of consumer behaviors and brand management, organizations should integrate brand perceptions (organism) and brand loyalty (that reflects revenue-earning potential) with marketing mix strategies (Tan, 2017; Tan, Sitikarn and Anomasiri, 2018), which leads to suggesting a stimulus-organism-response (SOR) framework (Tan, 2018a; 2018b; Tan and Patthracholakorn, 2018). The SOR thus should present the strategic factors of success (Kreutzer, 1988) for cosmetics brand management that integrates concepts of consumer behaviors through logistics-marketing mix antecedents.

Branding is an important part of product marketing (Vignali and Davies, 1994), and to sustain the brand development, Arshan and Altuna (2010) show that product brand image consideration is important. When the brand image formation variables such as marketing mix are out of tune with the core theme of brand, it can lead to customer defecting from the loyal bases (Hogg, Cox and Keeling, 2000). The inclusion of brand image as an important mediating organism in the SOR model is important, as it is often reckoned as “a process of symbolizing the experience of objects stored in human’s association memory, tends to be a significant representation of the significance of consumption and include characteristics of self-expression (Song, Wang, and Han, 2019, p. 511; citing Paivio, 1969, and Lau and Phau, 2007). Being a significant part of consumption, brand image is thus highly related to brand trust in terms of how consumers categorize the brands as parts of the self (Escalas and Bettman, 2003; Gaustad, Samuelson, Warlop, and Fitzgimons, 2019), eventually leading to positive responses in terms of brand loyalty (Song et al. 2019).

S-O-R model, Stimulus-Organism-Response model, proposed in 1974 by Mehrabian and Russell. They stated that environmental stimulus affects the reactions and individual’s cognitive and it turn leading to some behavior (Mehrabian & Russel 1974). The external environmental condition and factors are affecting the inner state of perception, feelings and thinking exercise called organisms (Bagozzi, 1986) and actuate the execution of additive conduct. The previous researches considered as the positive and negative effects in order to make their final choice and the response as the behavior accordingly. (Mehrabian & Russell, 1974). In this study, Environmental Stimulus, Marketing Mix-Logistic variables are affecting to the inner stage of Organism “Brand Image and Brand Trust”. These inner perception and feelings or thinking create and occurs the response as “Brand Loyalty”.

In view of the above arguments, the following conceptual model is developed, as shown in Figure 1, together with the hypotheses.



**Figure 1:** The Stimulus-Organism-Response (SOR) Conceptual Model for Cosmetics Brand Study

**Hypotheses:**

H1: Marketing mix-logistics variables, in terms of needs recognition and information searching, product, place, promotion and price variables, can significantly predict brand image.

H2: Brand image can significantly predict brand trust.

H3: Brand image and brand trust can significantly predict brand loyalty.

**Methodology:** This research attempts to study the antecedent factors influencing brand perceptions of consumers in the use of cosmetics products, and the consequence in terms of brand loyalty. The researchers acknowledge that these phenomena can be examined objectively in search for single-, structural truth revealed by statistical analysis. Thus, a positivism paradigm is adapted, which exploits questionnaire-based survey method in data collection. The data were collected based on convenience-based sampling criterion, by means of distributing the survey online, and requesting the response

online. The sampling population is targeted based on an attempt to study the implication for the new start-up of Lanadene brand, such as to what extent Lanadene brand is used and the comparative perception with other brands. Thus, the sampling is focused on the Mae Fah Luang University’s campus. A four-part questionnaire for the study was developed along with the demographics by the researchers in order to measure the research variables. In the questionnaires, six of the items were designed to examine brand image according to the theory of Kirmani and Ziethaml 1993, etc.; four of the items were designed to brand loyalty according to the adaptation of five level of brand equity from Moisescu. O. 2006, etc; three of the items were developed to Brand trust according to the perceptive on brand loyalty of He, Li and Harris 2012, etc.; and twenty-five items were included to the traditional marketing mix 4Ps (Product, Price, Place and Promotion) by Lambert, D. M., and Harrington, T. C. 1989, etc.

**Result:** The results are presented in numerous sections. First, the sampling profile is discussed, followed on the second, by the research quality assessments on both the reliability and validities. Correlations and structural equation modeling (SEM) analyses provide the inferential analyses.

**Sampling Profile:** The majority of the survey participants are female, at 62.7 per cents; also 54.9 per cents in age group 20-less than 25, and 60.8 per cents as students, and 58 per cents as residents of Chiang Rai, purchasing from the shops at 80.4 per cents, and 86.3 per con habitual purchase of international cosmetics brands at 86.3 per cents.

**Measurement Quality Assessments:** The measurement quality assessments are evidenced by the reliability index and the different aspects of validity, in terms of construct validity, content validity, convergent validity and discriminant validity. These evidences are shown in the quality assessment tables below. Reliability index is indicated by Cronbach Alpha exceeding 0.80 the highly reliable threshold (Tan, 2019). The construct validity and the content validity are reflected in the questionnaire items shown in the tables below, under the guidance of the construct definition and the topicality context of the research. Pilot assessments were also carried by the researchers by testing with the actual consumers of cosmetics products, the researcher with reasonable competencies in research methodologies and the cosmetics sales and manufacturing organization. To obtain statistical evidences, both convergent validity and discriminant validity were shown in the tables below. In particular, the convergent validity is established by the total variance explained (TVE) in exceeding 0.50, the factor loading of the items over 0.70 (those below 0.70 were deleted and thus were not included in further statistical analyses), and reliability index over 0.80 (Tan, 2019). The discriminant validity is established also by the square root of TVE exceeding the cross-correlation coefficients (Tan, 2019).

**Table 1:** Measurement Quality Assessment for Needs Recognition and Information Search

Needs recognition and information search:	Factor Loading	
Before I buy the product, first thing is look for the product information.	0.822	Reliability = 0.810 (Cronbach Alpha) KMO of sampling adequacy = 0.800 Bartlett’s test of sphericity: Approx. Chi-Square = 162.572, df = 10, sig. = 0.000 TVE = total variance explained = 0.5746 Square (TVE) = 0.758
Before I buy the product, I look for the usage and benefit of the product.	0.737	
Before buying the product, I check the price of the product.	0.734	
I check the availability of the product before buying the product.	0.732	
I check the promotional sales of the product.	0.725	
I compare the price before purchasing the product. (deleted due to < 0.7 on factor loading)	0.656	
I usually investigate the review of the product on social media such as in website or blog. (deleted due to < 0.7 on factor loading)	0.479	

**Table 2:** Measurement Quality Assessment for Product

Product	Factor Loading	
The brand I usually purchased is the high-quality product.	0.696	Reliability = 0.869(Cronbach Alpha) KMO of sampling adequacy = 0.872 Bartlett's test of sphericity: Approx. Chi-Square = 266.318 df = 15, sig. = 0.000 TVE = total variance explained = 0.60989 Square (TVE) = 0.7809
The brand I usually purchased has wide varieties of cosmetic products for different purposes.	0.705	
The brand I usually purchased describes the content of ingredients properly.	0.768	
The brand I usually purchased properly describes the direction of the product usage.	0.845	
The brand I usually purchased is well known in the region I live.	0.728	
The brand I usually purchased is reliable.	0.671	
The packaging of brand I usually purchased is attractive.	0.710	
The packaging of brand I usually purchased is attractive.	0.770	

**Table 3:** Measurement Quality Assessment for Price

Price:	Factor Loading	
Price of the brand I usually purchased is reasonable	0.743	Reliability = 0.862 (Cronbach Alpha) KMO of sampling adequacy = 0.886 Bartlett's test of sphericity: Approx. Chi-Square = 234.4, df = 15, sig. = 0.000 TVE = total variance explained = 0.59342 Square (TVE) = 0.7703
Price of the brand I usually purchased is quite obviously different from other cosmetics brands in the market that I know.	0.714	
The brand I usually purchased offers competitive prices.	0.808	
Price of the brand I usually purchased is definitely a value-for-money.	0.818	
The brand I usually purchased offers attractive pricing.	0.781	
The pricing of the brand I usually purchased give me no hesitation to make decision on its purchased.	0.756	

**Table 4:** Measurement Quality Assessment for the Living Compound of Place  
(Result of Exploratory Factor Analysis)

Living compound of Place:	Factor Loading	
The brand I usually purchased can be seen anywhere within area where I live.	0.939	Reliability = 0.863 (Cronbach Alpha) KMO of sampling adequacy = 0.50 Bartlett's test of sphericity: Approx. Chi-Square = 84.991, df = 1, sig. = 0.000 TVE = total variance explained = 0.88137 Square (TVE) = 0.938
The brand I usually purchased can be seen anywhere even outside of the area that I live.	0.939	

**Table 5:** Measurement Quality Assessment for the Strategic Location, Choice and Accessibility of Place (Result of Exploratory Factor Analysis)

<b>Strategic Location, Choice and Accessibility of Place:</b>	<b>Factor Loading</b>	
The outlets of the brand I usually purchased are easily accessible.	0.849	Reliability = 0.833 (Cronbach Alpha)
The brand I usually purchased are easily available most of the time I visit the shop.	0.844	KMO of sampling adequacy = 0.805
The outlets of the brand I usually purchased are situated in strategic locations i.e. supermarket.	0.824	Bartlett's test of sphericity: Approx. Chi-Square = 151.938, df = 6, sig. = 0.000
The brand I usually purchased has abundant choices displayed in the shop.	0.755	TVE = total variance explained = 0.67049  Square (TVE) = 0.8188

**Table 6:** Measurement Quality Assessment for Promotion

<b>Promotion:</b>	<b>Factor Loading</b>	
The brand I usually purchased has many promotions to create or induce my interest.	0.778	Reliability = 0.851(Cronbach Alpha)
Promotion of the brand I usually purchased creates more awareness of the products.	0.842	KMO of sampling adequacy = 0.835
The brand I usually purchased often have attractive special promotion.	0.822	Bartlett's test of sphericity: Approx. Chi-Square = 205.816, df = 10, sig. = 0.000
Salesperson of the brand I usually purchased are enthusiastic in explaining the products.	0.736	
The advertisement of the brand I usually purchased always catches my attention.	0.0.785	TVE = total variance explained = 0.62953  Square (TVE) = 0.793

**Table 7:** Measurement Quality Assessment for Brand Trust

<b>Brand Trust:</b>	<b>Factor Loading</b>	
I trust the brand that I usually purchased because it is made by professional institution.	0.882	Reliability = 0.883 (Cronbach Alpha)
I trust the brand that I usually purchased because it has the strict quality control and appropriate certification.	0.9192	KMO of sampling adequacy = 0.736  Bartlett's test of sphericity: Approx. Chi-Square = 162.664, df = 3, sig. = 0.000
I trust the brand that I usually purchase because products meet my cosmetic needs.	0.8993	TVE = total variance explained = 0.81022  Square (TVE) = 0.9001

**Table 8:** Measurement Quality Assessment for Brand Loyalty

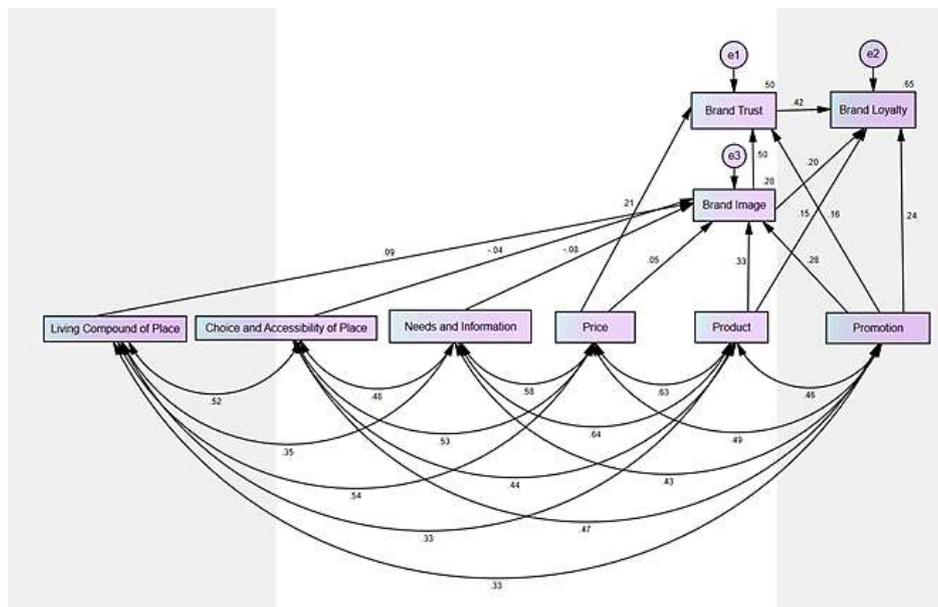
<b>Brand Loyalty:</b>	<b>Factor Loading</b>	
I often stick to the brand I usually purchased if no other brands can match in various aspects such as product quality, pricing or promotion.	0.748	Reliability = 0.786 (Cronbach Alpha) KMO of sampling adequacy = 0.787 Bartlett's test of sphericity: Approx. Chi-Square = 105.273, df = 6, sig. = 0.000 TVE = total variance explained = 0.61034 Square (TVE) = 0.781
I always keep speaking good terms of the brand that I usually purchased.	0.778	
The brand that I usually purchased is always my first choice in cosmetic products.	0.791	
Even if the price of the brand that I usually purchased may fluctuate in price, I would not intend to switch to the other brands.	0.807	

**Table 9:** Measurement Quality Assessment for Brand Image

<b>Brand Image:</b>	<b>Factor Loading</b>	
The cosmetic brand that I usually purchased gives me the better self-image.	0.898	Reliability = 0.937 (Cronbach Alpha) KMO of sampling adequacy = 0.910 Bartlett's test of sphericity: Approx. Chi-Square = 493.123, df = 15, sig. = 0.000 TVE = total variance explained = 0.76512 Square (TVE) = 0.874
The cosmetic brand that I usually purchased supports my confidence in public.	0.857	
The cosmetic brand that I usually purchased matches my personality.	0.877	
The cosmetic brand that I usually purchased gives me the positive outlook in the public.	0.920	
The cosmetic brand that I usually purchased matches the aesthetic look of my job lifestyles.	0.843	
The cosmetic brand that I usually purchased ensures my skin are beautifully taken care, leading to positive acceptance in the public.	0.851	

After the quality assessments of the survey instrument, correlations and structural equation analyses were conducted. The correlations analysis shows that there are positive relationships for the actions taken in needs recognition and information searching, and the various logistics-marketing mix variables. Thus, indirectly or directly, the consumers who have obtained some levels or scopes of information clarity tend to perceive positively on the logistics-marketing mix variables. This insight is generally not addressed and not discussed in the extant literature, and thus is an important contribution.

Hypotheses validation: Hypotheses H<sub>1</sub>, H<sub>2</sub> and H<sub>3</sub> are shown supported by means of structural equation modeling (SEM) analysis. Figure 2 depicts the analyzed structure, which illuminates the significant relationships among the constructs. The right-hand-corner digit explains the percentages of the variance explained for the construct, as a result of the predictors with arrows pointing towards it. For instance, brand trust can be explained at 50% of its variance by brand image, price and promotion, with standard regression coefficients at 0.50, 0.21 and 0.16, respectively. For brand loyalty, 65 percentages of its variance can be explained by brand trust (beta = 0.42), brand image (beta = 0.20), product (beta = 0.15) and promotion (beta = 0.24). As to brand image, its 28 percentage of variance can be explained by predominantly promotion (beta = 0.28) and product (beta = 0.33). Clearly, brand image and brand trust are the two important mediators between marketing mix, especially product and promotion, and brand loyalty, which signifies that brand perceptions of consumers, in terms of image and trust, are vital.



**Figure 2:** Structural Equation Model of Lanadene Cosmetics Brand Perceptions

The structural equation model (SEM) statistics show an absolute model fit: evidenced with  $\chi^2$  not significant at 0.440, and CMIN/DF below the upper threshold of 5 (Tan and Anomasiri, 2017; Tan, 2019) and RMSEA (root mean square error of approximation) at 0.000. The incremental fits are also evidenced by NFI (normed fit index) at 0.983, CFI (comparative fit index) at 1.00, and other indexes near 1.0 (Tan and Anomasiri, 2017; Tan, 2019).

Comparative Study: The following table summarizes the results of either T-test and ANOVA tests of the control variables. The color-coded highlights indicate the significance of differences. Lanadene is MFU (Mae Fah Luang University) brand, which scores the lowest across all the constructs studied, especially in product and logistical distribution. In the career domains, there are no significant differences between the student and the working categories, except the “otherwise” category without any specific clarification, and thus, the researchers have no idea what the “otherwise” means. The “otherwise”, nevertheless, scores the lowest in the career control variable. Also, the residents of Chiang Rai perceive at higher level in the availability in the living compound of place – namely the products can generally be seen whether within or outside the area where the respondents live. In terms of age, those of age 40 or above score the lowest of all the constructs studied.

**Table 10:** The results of T-test and ANOVA tests

		Needs and Information	Product	Price	Living Compound of Place	Strategic Location, Choice and Accessibility of Place	Promotion	Brand Trust	Brand Loyalty	Brand Image
Lanadene	Lanadene	3.54	3.24	3.37	3.23	3.16	3.57	3.63	3.78	3.45
	Otherwise	3.95	3.71	3.57	3.41	3.59	3.46	3.88	<b>4.00</b>	3.71
Brand Country Origin	National	3.61	3.42	3.40	3.25	3.51	3.52	3.71	3.78	3.55
	International	3.92	3.67	3.56	3.40	3.52	3.47	3.86	3.99	3.69
Purchase Channel	Online	3.98	3.61	3.71	3.07	3.43	3.69	3.92	<b>4.00</b>	3.67
	Shop	3.86	3.64	3.50	3.45	3.54	3.43	3.82	3.96	3.67
Gender	Female	<b>4.07</b>	3.75	3.60	3.40	3.48	3.55	3.95	<b>4.06</b>	3.66
	Male	3.54	3.41	3.44	3.32	3.58	3.35	3.64	3.801	3.68
Resident	Chiang Rai	3.81	3.68	3.56	<b>3.40</b>	3.47	3.51	3.94	3.95	3.62
	Not CRai	3.97	3.72	3.37	2.55	3.31	3.04	4.00	4.25	3.97
	Otherwise	4.00	3.55	3.56	3.54	3.71	3.57	3.67	3.94	3.68
Career	Student	3.90	3.72	3.64	3.52	3.56	3.54	3.98	4.03	3.71
	Working	4.01	3.68	3.51	3.33	3.46	3.57	3.84	4.11	3.833
	Otherwise	3.38	2.93	2.96	2.65	3.42	2.82	3.00	3.13	2.95
Age	16-Less than 20	4.16	4.06	3.74	3.45	3.77	3.45	4.03	4.12	3.84
	20-Less than 25	3.88	3.68	3.59	3.38	3.46	3.56	3.94	4.05	3.73
	25-Less than 30	3.98	3.62	3.58	3.44	3.48	3.31	3.96	3.92	3.61
	30-Less than 40	3.77	3.59	3.52	3.85	3.60	3.54	3.40	3.71	3.75
	40 or Above	3.49	<b>2.98</b>	2.98	2.85	3.57	3.28	<b>3.18</b>	3.53	3.20

**Discussion:** The structural equation model illuminates a stimulus-organism-response (SOR) structure, which integrates some of the logistics-marketing mix variables as the antecedent roles in influencing the organism perceptions of consumers. The SOR structure fits into the strategic intention of branding, which embeds in it an important stimulus-response capability that drives the consumers to repeat purchases (Hull, 1943; Tan, 2018a;b). Two important organism constructs are brand trust and brand image, and they are hierarchical in nature. The logistics-marketing mix variables involve the need for the cosmetics organizations to consider the role of information, which is key logistical variables, and in particular, the logistical information relating to utility of cosmetics products, product information, the availability and promotional issues should be operationally focused upon. The similar SOR structure was also identified in Kamkayan and Tan (2015) by using the concept of marketing 3.0, in terms of brand identity, brand integrity and brand image. Nevertheless, this research extends the works of Kamkayan and Tan (2015) and includes, specifically, brand self-image theory or identity-congruence (Tan, Sitikarn and Anomasiri, 2018; Tan and Sitikarn, 2018), which supports the confidence level of consumers, a feeling of positive outlook in the public and feeling of appropriate matches in areas of, for instance, the aesthetic look of job lifestyles and personality.

The brand image, being explained by logistics-marketing mix variables, highlights that brand image is a result of a network of information being kept in consumer memory about a brand that is caused by a set of associations (Loken and John, 1993). As depicted in the structural equation model, the significant associations come from product and promotion, i.e. the quality and variety of choices of products, the socially responsible actions taken by the cosmetics organizations in terms of ethical and caring labeling in explaining the content of ingredients and the direction of product usage, and packaging clarity and attractiveness. The promotional focuses should be holistic in nature, involving the enthusiastic attitude of salesperson in explaining the products, the eye-catching attractions of the advertisement, and the overall power of promotion to promote awareness, induce interests and catch the attention of consumers. In this way, the role of marketing mix, represented as important association variables for influencing brand image (Kamkayan and Tan, 2015), can be reasoned as a result of consumers perceiving differentiation of the cosmetics products as stimulated by marketing mix initiatives (Boulding, Lee and Staelig, 1994).

**Conclusion:** This research validates the effectiveness of stimulus-organism-response (SOR) model as suitable framework for brand management, and the comparative study also provides some scopes of insights to help new start-up LANADENE in further developing and improving its brand. Brand managing is important especially brand is predominantly intangible in nature (Lehmann, Keller and Farley, 2010), and as explained and illustrated in Tan (2018a, 2018b), brand management should be prioritized in three domains or levels, namely the stimulus, the organism and the response. Although LANADENE aims for a bigger role in the national market, but its new start-up is currently focus as testbed in the university campus, and also in some sales offices in Bangkok. The comparative context thus needs to be constrained within the university campus so that the management team of LANADENE can better able to make sense of it. There are numerous findings that are critically important. First of all, an effective brand management, whether for LANADENE or for more international brands, stimuli play important role, and this research highlights the interrelationships of the various logistics-marketing mix stimulus factors, but the product and promotion strategies of brand are obviously having significant weights. The logistical issues should focus on the availability, choices of products and the strategic locations where consumers can find the brands of their preferences. Secondly, the brand marketers should realize that these brand stimuli, in terms of logistics-marketing mix strategies and offers, should be consistent with the intended and formed brand perceptions of the consumers. Two important brand perceptions of consumers are brand image and brand trust. Brand image is obviously associated with the consumers' experiences with the various aspects of the stimuli, but most importantly, should also contain a strategic element that is shown by the brand capability to help the consumers form positive images in front of public and is able to help in their career presentation. The identity-induced image is also highlighted in Tan et al. (2018) and Kamkayan and Tan (2015). Thirdly, brand loyalty is shown to be directly impacted upon by both brand image and brand trust, but is also heavily influenced by the continuous promotional commitment of the brand organizations. It is also learned from this research

that promotion should actively embrace and integrate the other aspects of the logistics-marketing mix, such as by use of people and Internet as seamless platform for creative promotion. Fourth, indirectly or directly, the consumers who have obtained some levels or scopes of information clarity tend to perceive positively on the logistics-marketing mix variables. This insight is generally not addressed and not discussed in the extant literature, and thus is an important contribution. Thus, it is important the brand marketers stress on information visibility and the professional presentation of it. Fifth, based upon the lower sampled proportion of consumers who are currently using LANADENE, in comparison to their other preferred brands, of majority international origins, and from the fact that promotion is a significant important determinant to brand loyalty, it is important promotion should be actively and creatively managed and implemented by the new start-up like LANADENE. Besides, promotion is a single important factor that influences positively on both brand image and brand trust. Thus, the role of promotion should actively be pursued.

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## A STUDY OF FACTOR AFFECTING THE ADOPTION, PARTICIPATION AND USAGE OF SOCIAL NETWORKING WEBSITES IN POLITICS

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**Abstract:** Social networking websites are rising in status and practice in Asia. Through the growing accessible of computers and electronic items, citizens are competent to use the mobile Internet and connect via mobile social network. This planned learning discovers how social networking websites is utilized by people of Asia with their political participation. Social media like Facebook and other new media programmes broadly used by people have been seen as a potential medium to participate and engage people in political contest. The probable utility of such applications for building connections for people and organizing political action was highlighted in recent times during the elections in India, Vietnam, Philippines and Kazakhstan. The concept of e-democracy has elevated and features the prospective of the Internet to develop the movement and political action. It becomes necessary to learn the importance and need of social media in today politics.

**Keywords:** Social Networking, Politics, Facebook, Twitter, Elections.

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**Introduction:** Social networking is a current trend of curiosity to many scholars these days. Though most of the latest research on social networking sites has paying attention on client individuality, very few researches have inspected their roles in appealing people in the autonomous method. Social capital signified collective funds that assist social action to create wanted welfares (Coleman, 1990) and is inbuilt in lifelong social relations as latent energy in a civilization (Paxton, 1999). Local participation refers to activities and tasks that concentrate on society apprehensions through non-electoral means. Political involvement alarms the actions that intend at openly controls the choice of selected officials and execution of public guidelines (Delli Carpini, 2004). Both political contribution and civic contribution play a mandatory condition in forming an inhabitant. Experimental studies declared that the two types of participation are connected in various forms. According to Wilkins (2000) local involvement is a major affirmative analyst of political involvement. Putnam (1995a) contended both are diverse models, he integrated political affairs in the case of civic involvement. Both form of participations are important if there is more focus on community involvement and there welfare. Trust is defined as outlook that “people have of each other, of the association and organization in which they exist, and of the natural and moral social orders, that set the basic perception for their lives” (Barber, 1983, p. 165). High trust signifies feelings of connectedness to one another in a group of people and a “standing decision” to give most people—even friends or complete outsider—the benefit of the doubt (Delli Carpini, 2004). Person with higher trust suppose others to go after the similar rules or attitudes and more likely to interact with other local groups (Orbell & Dawes, 1991; Levi, 1996; Wamba et al., 2017; Criado 2017). This belief takes place among persons or between an individual and political and social associations. Due to involvement by people the trust for their members increases and there is also the immense growth of social capital. Consequently, citizens are more interested for participation in political or civic activities (Brehm & Rahn, 1997; Putnam, 1995a; Sullivan & Transue, 1999; Uslander, 1998; Zhang et al., 2017; Criado 2017). The associations among trust and public commitment have formed a “virtuous circle” (Putnam, 1995b; Shah, 1998); as they are tightly mutual and jointly fundamental. Mass media use is another element of political and civic participation. One of the lasting questions about the liaison between media use and political or civic participation is whether approach and customs such as belief that originates from media beside social networks as component allowing a civilization to resolve issues.

**Table 1:** Factors Affecting People Adoption and Participation/Usage of Social Networking Websites

Determinants	Variables of Adoption and participation/usage of social networking websites	Review of literature
1. Demography	Age, marital status, education, income, occupation, gender.	Kraut et al., 2009; Alkhunaizan & Love 2014; Chu, 2011; Park et al., 2009; Bolton et al., 2013; Kwon, & Wen 2010; Lin, 2011; Criado 2017; Wamba et al., 2017; Yoo & Alavi 2001; Zhang et al., 2017; Fishbein & Ajzen (1975); Luo, Feng, & Cai (2005); Dickerson & Gentry (1983); Romão, J., van Leeuwen, E., Neuts, B., & Nijkamp, P. (2015); Valdez, R. (2012), Kim, Lehto, & Morrison (2007); Rogers (1995); Dickerson & Gentry (1983); Mintel Intelligence (2001), Alashri et al., 2018
2. Innovation	Education, belief, Income, nationality, culture, personal innovativeness, socializing, entertainment, self status seeking, information seeking,	Li & Zhang (2002: 508); Athiyaman (2002); Statia Elliot & Marion Joppe (2010); Ajzen (1991); Cezar, A. & Ögüt, H. (2012), Rogers (1995); Singh et al (2003); Sun (2001); Cyr & Trevor -Smith, (2004); Evers & Day (1997); Nielsen & del Galdo, (1996); Luna et al., (2002); Romão, J., van Leeuwen, E., Neuts, B., & Nijkamp, P. (2015). Goldsmith (2002); Limayem Row (2001); Skik & Limayem (2002); Annie Couture et al. (2015); Goldsmith & Hofacker (1991,p. 211,) Kim, Christodoulidou, & Brewer (2012); Morosan (2012); San Martin & Herrero (2012) ; Kraut et al., 2009; Alkhunaizan & Love 2014; Chu, 2011; Park et al., 2009; Bolton et al., 2013; Kwon, & Wen 2010; Lin, 2011; Criado 2017; Wamba et al., 2017; Yoo & Alavi 2001; Zhang et al., 2017; Alashri et al., 2018
3. Culture	Nation, personal source of information, risk tolerance, cultural congruity, trust, type of internet user, socio-economic, product usage, media access, purchase involvement, human interaction. Social influence.	Kraut et al., 2009; Alkhunaizan & Love 2014; Chu, 2011; Park et al., 2009; Bolton et al., 2013; Kwon, & Wen 2010; Lin, 2011; Criado 2017; Wamba et al., 2017; Yoo & Alavi 2001; Zhang et al., 2017; Cezar, A. & Ögüt, H. (2012); Chen & Gursoy (2000); Singh et al. (2003); Sun (2001); Cyr & Trevor -Smith (2004); Evers & Day (1997); Nielsen & del Galdo; (1996); Reisinger & Turner; (1999); Money & Crotts (2003); Ruef et al. (2004); Ziegler & Lausen (2004); Golbeck (2009); Rogers (1962); Mahajan et al. (1990); Yang, Lester & James (2007); Toh et al., (2012: 84); Luna et al. (2002); Rogers (1962); Li & Zhang, (2002: 508); Mahajan et al. (1990); Yang, Lester & James (2007); Toh et al. (2012: 84.); Hoffman & Yung (1999); Volle (2000); Hui-Min Lai et al. (2016); Alashri et al., 2018

4. Perceived ease of use	Convenience, information content, information quality, functionality, logistical ease value for money, perceived usefulness, perceived ease of use.	Kraut et al., 2009; Alkhunaizan & Love 2014; Chu, 2011; Park et al., 2009; Bolton et al., 2013; Kwon, & Wen 2010; Lin, 2011; Criado 2017; Wamba et al., 2017; Yoo & Alavi 2001; Zhang et al., 2017; Fauziah Adli et.al (2014); Jung & Butler (2000); Al-Maghrabi, et al. (2011); Lin (2010); Statia Elliot & Marion Joppe (2010); Annette Steinbauer & Hanes Werthener, Moharrer et al. (2006); Yang & Jun (2002); Moharrer et al. (2006); Ku & Fan (2009); Tsang et al.(2010); Hui-Min Lai et al. (2016).
5. Usefulness	Price, better deal, empathy, online order tracking services, free trials, membership rate, last minute deal, image, job relevance, output quality, result demonstrability experience, voluntariness.	Park et al (2007); Ku & Fan (2009); PU Sam, M., Fazli, M., & Tahir, M. N. H. (2009), Annette Steinbauer & Hanes Werthener (2007); Al-Maghrabi et.al (2011); Heung (2003); Weiner & Brown (1995); Yusniza Kamarulzaman (2007); Venkatesh & Davis (2000); Suebsin & Gerdri (2009); Kraut et al., 2009; Alkhunaizan & Love 2014; Chu, 2011; Park et al., 2009; Bolton et al., 2013; Kwon, & Wen 2010; Lin, 2011; Criado 2017; Wamba et al., 2017; Yoo & Alavi 2001; Zhang et al., 2017; Diez, 2008
6. Online shopping experience	Habit, form of payment, delivery terms, service offered, risk involved, personalization, visual appearance, navigation, skill & enjoyment. content of search (types of information sought) & degree of search (time spent online) product information,	Rogers (1995); Goldsmith & Hofacker (1991); Kim, Christodoulidou, & Brewer (2012); Hudson & Gilbert; (2006, p. 102), Beldona et al. (2005); Weber & Roehl (1999); Lin (2005), Odile Lefranc (2014), Goldsmith & Litvin (1999); Morosan (2012); San Martin & Herrero (2012); Chen et al. (2002); Hudson & Gilbert, (2006, p. 102), Beldona et al. (2005); Chen et al. (2002); Venkatesh et al. (2012); (Lehto, Kim, & Morrison (2006); Goldsmith (2002); Limayem Row (2001); Skik & Limayem (2002); Citrien et., al. (2000); Goldsmith (2000); Statia Elliot & Marion Joppe (2010); Annie Couture et al. (2015); Diez, 2018
7. E-trends	E-wom, displayed behavior, human interaction, documenting & community forum participation, social influences, comments & reviews, press media, word of mouth, compatibility	Hartwick & Barki (1994); Jeffrey & Fawzy (1999); Yoh, Damhorst, Sapp & Laczniak (2003); Hansen, Jensen & Solgaard 2004); Suebsin & Gerdri (2009); Venkatesh & Davis (2000); Sang & Lee (2009); Kraut et al., 2009; Alkhunaizan & Love 2014; Chu, 2011; Park et al., 2009; Bolton et al., 2013; Kwon, & Wen 2010; Lin, 2011; Criado 2017; Wamba et al., 2017; Yoo & Alavi 2001; Zhang et al., 2017; Wu et al. (2008); Al-Maghrabi et.al (2011); Park et al. (2007); & Liu & Arnett (2000); Sung-Bum Kim & Dae-Young Kim, Sinha, R. & K. Swearingen (2001; Norzalita Abd et al. (2010); Valdez, R. (2012), Lixuan Zhang et.al (2012); Diez, 2018

8. Self efficacy	User individualistic & collective nature, enjoyment, actual use of website.	Annette Steinbauer & Hanes Werthener, (2007); Vijayasarathy (2004); Nikos Joshua H. S. & Vera Pujani (2014); Parasuraman et al., (2005); Jun et al. (2004); Ruiz et al. (2010); Puteri Fatin Nadia & Vera Pujani (2014); Annette Steinbauer & Hanes Werthener (2007); Carmen M, Sabiote et.al (2012) Kraut et al., 2009; Alkhunaizan & Love 2014; Chu, 2011; Park et al., 2009; Bolton et al., 2013; Kwon, & Wen 2010; Lin, 2011; Criado 2017; Wamba et al., 2017; Yoo & Alavi 2001; Zhang et al., 2017; Diez, 2018; Siegel, 2018
9. System quality	Additional information, high speed, memory load, content density, adaptive behavior, customization features, social feature, secure transactions, and secure payment system, perception of risk, relaxation & safety.	Kraut et al., 2009; Alkhunaizan & Love 2014; Chu, 2011; Park et al., 2009; Bolton et al., 2013; Kwon, & Wen 2010; Lin, 2011; Criado 2017; Wamba et al., 2017; Yoo & Alavi 2001; Zhang et al., 2017; C.O. Seneler, N. Basoglu & T. Daim (2009); Law & Leung (2000); Egor Bychkov (2014); Zhang et al. (2007: 21); Peng et al. (2013: 1); Odile Lefranc (2014); Weber & Roehl (1999); Hudson & Gilbert (2006 p. 102); Beldona et al. (2005); Chen et al. (2002); Venkatesh et al. (2012); Lehto, Kim, & Morrison (2006); Lin (2005), Ahn et al. (2007), Lee et al. (2007); Volle (2000); (Chang, 2004); Wang et al. (2002); Rong et al. (2009); Vogt & MacKay (2004); Kim & Kim (2004); Statia Elliot & Marion Joppe (2010); Pritwani & Sharma (2011); Carmen M, Sabiote et.al (2012).
10. Product nature	Detailed information & availability, reward & price, facilitated information, risky product, trustworthy reputation with a reasonable price.	Beldona et al. (2005); Degeratu, Rangaswamy & Wu; (2000); Beatty & Ferrell; (1998)); Shanshan Qi, Rob Law, Dimitrios Buhalis; Morrison Jing, O'Leary & Cai (2001); Card, Chen, & Cole (2003); Diez, 2018; Siegel, 2018
11. Experiential Perceived value	Service quality, interaction, entertainment value, economic value & excellence, Website interface (TWI), perceived quality of the services & products offered by the Website (PQTW), & the perceived value of the Website to the customer (PVTW).	Naylor (1996); Bolton & Drew (1991); Zeithaml (1988); Monroe & Krishnan (1985); Day (1990); Park et al. (2009); Knutson (1988); Yavasa & Babakus (2005) Shanshan Qi, Rob Law, Dimitrios Buhalis, Holbrook (1999); Babin & Darden (1995); Batra & Ahtola (1991); Ines Soltani, Jamel-Eddine Gharbi (2008); A. Bhattacharjee (2000); Mathwick, Malhotra & Rigdon (2001); Alastair M. Morrison (2003); Siegel, 2018
12. Information quality	Convenient & facilitated information loyalty, advanced & predictive techniques, accuracy, relevance, adequacy, & understandability of report contents, while form included quality of format, timeliness of reports, mode of presentation, &	Egor Bychkov (2014); Raul Valdez M, Shih-Chih Chen et.al, (2009); Lin & Ding (2005); Srinivasan (1985); Lederer et al. (2000); Buhalis & Law (2008 p. 610); Kim et al. (2010); &reu et al. (2010). Kraut et al., 2009; Alkhunaizan & Love 2014; Chu, 2011; Park et al., 2009; Bolton et al., 2013; Kwon, & Wen 2010; Lin, 2011; Criado 2017; Wamba et al.,

	sequencing of information.	2017; Yoo & Alavi 2001; Zhang et al., 2017
13. E- trust	Cognition of navigation function, culture, Trust in product, social network tool, social rating & comments, internet past experience, usefulness of websites, internet familiarity & self efficacy.	Kim, M.J., N. Chung, & C.K. Lee (2011); Hsu, C.H.C. & S. Huang (2010); Arunasalamsambhanthan, Alice Good (2012); Jarvenpaa et al. (1999); Junglas & Watson (2004); Sun (2001); Saleh & Bukhari (2012); Annette Steinbauer & Hanes Werthener (2007); Wanida Suwunniponth (2013). Kraut et al., 2009; Alkhunaizan & Love 2014; Chu, 2011; Park et al., 2009; Bolton et al., 2013; Kwon, & Wen 2010; Lin, 2011; Criado 2017; Wamba et al., 2017; Yoo & Alavi 2001; Zhang et al., 2017

Putnam discuss (1995a, 1995b) that medium, mainly television, truly save time that people most likely to spend in would otherwise spend appealing in political or civic activities. He also discussed that media make doubt of others, that sadden civic or political activities. Though, these arguments for unfavorable media outcomes on civic commitment have been condemned as “instinctively interesting yet simplistic” (Shah, McLeod, & Yoon, 2001, p. 465). Many scholars have discussed that only time spent with television does not matters but the particular types of media substance that manipulates citizens’ local and political contribution (e.g., McLeod, 2000). They also sponsor that the diverse functions media provide and numerous motives of media users should be measured in accounting for media power on civic and political participation (Shah, McLeod, and Yoon, 2001). There is no single theory of mass communication can yet integrate all these features collectively and offer a sound clarification for the relationship between media use and civic and political contribution. The present findings, however, suggest at least two directions. First, research demonstrates that media consumption does not essentially hinder individuals ‘civic and political activities. For instance, television viewing (Putnam, 1995a, 1995b) and Internet use (Kraut et al., 1998; Criado 2017) have been charged of being the offenders for local disconnection, whereas newspaper reading has been constantly found to enlarge political and civic participation. The cross-sectional surveys (McLeod et al., 1996, McLeod, Scheufele, & Moy, 1999; Norris, 1996; Shah et al., 2001; Zhang et al., 2017; Alashri et al., 2018) and longitudinal studies (Smith, 1986; Wamba et al., 2017) have established a positive relationship between newspaper reading and political participation. Moreover, Shah et al. (2001) indicated this positive relationship to grasp across all generations, with youthful people who do not enjoy reading newspapers much. Also, difference in substance exerts diverse influence on civic and political participation. For instance, though screening TV programs that give distraction from routine daily life such as science fictions and reality shows has been found to be harmfully related to civic participation, but it also increase political participation by experiencing public affairs programmers on television. (McLeod et al., 1996, 1999; Norris, 1996; Sotirovic & McLeod, 2001; Alashri et al., 2018; Diez, 2018).

**People and Technology; Internet, Social Networking Website Adoption: A Review of Literature:**

The technologies of the Internet are providing a strong impetus to the creation of electronic social media, accelerating migration toward various forms of digital business and increasing the use of open systems within and among enterprises to achieve new forms of horizontal coordination and collaboration. Analogous transformations of services and delivery channels are taking place in public or not-for-profit industries such as government services, education etc.

The increasing globalization and use of the Internet technologies, accompanied with multiple resources, pose challenges to the modern management theories and success of entities in the market, accompanied with the number of emerging technologies which compete for integration within the current markets (Arns et al. 2002).

As far literature in internet and social websites is concerned, researcher has made it complicated and crucial issues of technology adoption. Web sites dimension is also changing by the day, these are not

only information broadcasters but have started advance forms of website content “content influences the customers” destination image with improved experience with interactive sites (Gretzel, Yuan & Fesenmaier, 2000; Siegel, 2018), importance of Internet and the social networking websites in the decision making process of users has led the development of abundant studies on the adoption (Kim et al., 2008; Bigné et al., 2010) and the characteristics determining the success of internet websites (Park & Gretzel, 2007; Siegel, 2018), In information and communication technology, research is classified as diffusion approach, an adoption approach, or a domestication approach. Diffusion approach is time based function of adopter (Mahajan, Muller & Bass, 1990), second approach of adoption is decision making based and lastly domestication is the actual adoption in daily routine of life (Silverstone & Hirsch, 1992) such as telephones and television usage patterns (Silverstone & Hadon, 1996), supporting factors have formed competitive market and now enterprisers are considering the issues of usage and adoption.

**Adoption of Internet and Social Networking Websites by People:** Al-Maghrabi et al. (2011) stated adoption of social websites is defined as the use of the Internet (retail websites, specialist collaborative websites, blogs, and social networks, etc.) to look for, book or services, it is a measure of the respondents’ general attitude to the adoption of social networking websites not just their appreciation of the occasion people were organizing. Hence, in social networking websites adoption context psychological segment of People is crucial and their intensity is measured, it has been operational zed in different perspectives and investigated in several ways.

**Conclusion:** The social networking websites can boost both bridging and bonding social capital. Studies find out that social network users are more interested to join with the person they know off line rather than mixed up with new people and differentiate that the key spectators for their SNS profile are citizens who they are connected to off-line, telling that social networking sites enhances bonding social capital (Ellison, Steinfield & Lampe, 2007; Zhang et al., 2017; Criado 2017). Social network sites also allowed many users to connect groups and causes that could potentially take them in get in touch with a different kind of people. Almost 80% of MySpace and Facebook clients in one survey had connected a group (Royal, 2008), signifying that social network sites can also form linking capital. Certainly many researchers recommend that intensity of social network use is connected to both bridging and bonding social capital (Ellison et al., 2007; Royal, 2008).The relationship was stronger for bridging social capital, perhaps because the social network sites without difficulty allowed people to connect groups (Donath & Boyd, 2004; Ellison et al., 2007). The probable value of such internet and mobile applications for creating networked publics and mobilizing political motives and action was highlighted recently during the elections in Vietnam, India, Kazakhstan, Philippines. Facebook and Twitter have been used to target potential voters in their countries. There is a need to study the function and importance of social networking websites to use as a vehicle in politics. However, the subject is vast and based. To explore the literature the uses of internet is need of hours although these things have made the area approachable but the new inventions such as upcoming research development and updating literature during the study affects the established work and also remains a challenge in the development of hypothesis.

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## NARCOTIC DRUGS AND PSYCHOTROPIC SUBSTANCES ACT (NDPS 1985): A CRITICAL ANALYSIS

MONICA KHANNA, DR SEEMA GARG

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**Abstract:** Narcotic and Psychotropic Substances Act is an Act which was presented in the Parliament of India and came into existence on 14<sup>th</sup> November 1985, it prohibits the person to produce, manufacture, cultivate, possess, sell purchase, transport, and store or consume any narcotic drug or psychotropic substance in any form. The main aim of this law is to control the manufacture and distribution of drugs, to keep check on quality of drugs, to mandate the display of ingredients of drugs and to prevent substance abuse in the society. Cannabis and its derivatives (marijuana, hashish/charas, and bhang) were legally sold until 1985 and their recreational use was common place before the enactment of the Act. The violation of this law results in the punishment which includes rigorous imprisonment or fine or both. The degree of the punishment depends upon the harshness of the case which is being dealt with. The present study is a look into the limitations and the drawbacks of the Act and its competency in implementations of the NDPS law.

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**Introduction:** India is known as the “land of gods” lord shiva the universal of this universe is worshipped in the most mysterious and eccentric way, the bhang, a form of cannabis celebrating the religious festival known as “Shivratri” In Ancient religious cultures the deva’s especially the Indra deva has been seen consuming “Somras” The word “soma” is a Sanskrit word which mean intoxicating, the same property which is used by the narcotic drugs used as somras since centuries and historical times. Similarly Opium is offered at “akha teej” which is celebrated to bring the family members closer together with one another thus tightening the bond between the each member of the family.<sup>[1]</sup>

The menace of drug abuse cannot be overlooked which is on a rapid rise in our country like India. We are having large number of addicts in our society who bring lot of problems to the society like increased mortality rate, increased psychiatric problems, socio economic issues, financial constraints etc. Disintegration of the family leads to criminal activities like theft, murder thus finally ruining their lives as well as the lives of the society. It is the actual cause of the rise of the white collar crimes to blue collar crimes.<sup>[2]</sup> Drugs have become the way of funding the terrorist activities and these views should be taken into consideration while framing and amending the laws related to NDPS Act.

Narcotic Drugs and Psychotropic Substances Act (NDPS) is an Act which was passed in the Parliament of India and this Act prohibits the person to produce, manufacture, cultivate, possess, sell purchase, transport, and store or consume any narcotic drug or psychotropic substance. The main aim of this law is to control the manufacture and distribution of drugs, to keep check on quality of drugs that are being manufactured, to mandate display of ingredients of drugs and to prevent drug abuse in the society. Cannabis and its derivatives (marijuana, hashish/charas, and bhang) were legally sold until 1985 and their recreational use was common place. Consumption of cannabis was not seen as the socially deviant behavior and was similar to the consumption of alcohol; ganja and charas were considered as poor man’s intoxicant while rich consumed bhang during holi. The United States campaigned for worldwide laws against all drugs following adoption of the Single Convention on Narcotic Drugs in 1961<sup>[3]</sup>. India stood against the American Pressure to keep Cannabis illegal for 25 years, as the pressure from the U.S. increased in 1980 and 1985, the then Government of India implemented the NDPS Act thus banning all the drugs in India. The Central Government has the power to add or to omit any drug from the list of psychotropic substance by notification in the official gazette. The Central and the State Government takes measures for preventing and combating abuse of and illicit traffic in narcotic drugs. The NDPS Amendment Act, 2014 (Act 16 of 2014) amended the NDPS act to relax restrictions placed by the act on Essential Narcotic Drugs (Morphine, Fentanyl and Methadone) making them accessible for use in pain relief and palliative care. India has not placed fentanyl on its controlled substances list, easing production and export. Indian only regulates 17 of the basic precursor chemicals for fentanyl. The NDPS Amendment also contained the measures to improve treatment and care for the people dependant on the drugs, opened up the processing of opium and concentrated poppy straw to private sectors and

strengthened the provisions related to the forfeiture of property of persons involved in drug trafficking. The amendment also removed the mandatory death sentence for repeated conviction in large quantities of drugs giving courts the discretion to use the alternative sentence of 30 years imprisonment of repeated involvement in the offence. However the amendment increased the punishment for carrying the “small quantity” from 6 months to 1 year imprisonment.

The Punishment for contravention of the NDPS Act includes rigorous imprisonment and fine or both if person is found in possession of the banned drugs.

Drug	Small Quantity (grams)	Punishment	Commercial Quantity (kilograms)	Punishment	Intermediate (In between smaller & commercial quantity)
Amphetamine	2 gm	Maximum of 1 year rigorous imprisonment or fine up to Rs 10,000 or Both	50 gm	Rigorous imprisonment from 10 years (min) to 20 years (max) and a fine from Rs 1 lac to 2 lac	Rigorous imprisonment that may extend to 10 years and fine that may extend to Rs 1 lac
Charas	100 gm		1 kg		
Coca leaf	100 gm		2 kg		
Cocaine	2 gm		100 gm		
Ganja	1 kg		20 kg		
Heroin	5 gm		250 gm		
LSD	2 mg		100 mg		
Methadone	2 gm		50 gm		
Morphine	5 gm		250 gm		
Opium	25 gm		2.5 Kg		

Whereas the contravention involves a “small quantity” then the rigorous imprisonment is from 6 months to 1 year or a fine of Rs 10,000/- (Ten Thousand only)

Whereas the contravention involves quantity lesser than commercial quantity but greater than the small quantity then the rigorous imprisonment may extend to 10 years and fine to the tune of Rs 1,00,000/- (One Lac only)

Whereas the contravention involves commercial quantity then the rigorous imprisonment is not less than 10 years but may extend to 20 years and also a fine which shall not be less than 1,00,000/- (One Lac only) but may extend to 2,00,000/- (Two Lac only)

**Bottlenecks of the NDPS Act:** One of the major drawbacks of the NDPS Act is that

1. It presumes the guilt of the accused bringing the complete responsibility of proving his innocence on himself alone. Bails cannot be granted to the accused which falls under Section 19, 24, or 27 A of the act and to those relating to the commercial quantity. Though our judicial system considers each person innocent till proven otherwise “Justice delayed is justice denied” but the person is sent to prison as soon as he is arrested with the drug. Though special courts have been also assigned but delayed judgments are too common. The main reason for the delay in the justice system is that there is too many cases. Once a person is arrested by the police, the trial begins and the case property is produced in the court. The case property is opened in the presence of the Judge and then it is resealed in his presence only. Photographs are clicked with the help of digital camera of the entire proceeding. The sealed case property is then sent to FSL (Forensic Science Laboratory), Mohali (Chandigarh) if we talk about the cases from Punjab. Usually it takes 6-8 months for the report of the FSL to come and during this tenure the accused arrested in the NDPS case is kept in the custody. This delay in the report of FSL is due to lot of samples which are sent daily for testing in the FSL, Mohali. Hence due to the heavy work load the testing, pendency the case gets delayed.
2. In certain cases the accused arrested for having small quantity of drugs are freed from custody after a very long time which ruins their job as well as socio-economic life thus ruining their family and children. If we look into the pharmaceutical classification of the drugs the drugs are categorized into hard drugs and soft drugs. Hard drugs are those which are hard in nature for example Heroin. Softer

drugs are those drugs which are soft in nature for example Opium. Heroin is a potent drug which is used by the addicts to give them a “kick” than the opium. As the addict wants a “kick” and it is faster in action than opium hence the drug peddlers move towards the heroin than the opium because it provides more profits in small quantities than opium and hence preference is given to heroin than opium. Synthetic drugs has higher effect on the systemic circulation of the human body hence it is being given preference now a days over natural substances of abuse.

3. In the section 54 of the NDPS Act it is stated that unless the person is proved it is presumed that the accused has committed an offence related to the drug. Here it is worthy to mention that harsher punishments have been proposed for repeated offences. An amendment made in 1989 section 31A mentions death penalty for the repeated offence if the quantity of the drug seized from the accused is more than the certain limits.
4. There is no distinction between a casual drug user, a hard core addict, a small petty drug peddler, drug peddler and an addict. Apart from there there is a need for the review of the act from time to time since newer and newer drug forms are coming into existence. Earlier amphetamine was seized in large quantities. Now let us discuss the newer forms of the drugs being used by the addicts.

Fentanyl is a potent narcotic synthetic opioid 80-100 times stronger than morphine. It is a mu opioid agonist. It has analgesic and anesthetic properties. Fentanyl was first developed in 1959 and introduced in 1960 as intravenous anesthetic and its powerful pain killing activity diverted it to misuse. Fentanyl is added to heroin to increase its potency or disguised as highly potent heroin. Most of the users think that they are buying heroin but actually don't know that they are purchasing fentanyl and don't have tolerance to fentanyl thus over dosage results in death.

Methadone is used in de-addiction centres to treat heroin addicts who are mostly adolescents. The drugs help to prevent withdrawal symptoms in the patients addicted to opiate drugs. Methadone produces less intense effects and helps addict avoid withdrawal symptoms Methadone produces effects similar to drugs like brown sugar and one feels sedated and relaxed. When methadone is taken there is no “rush” in the body and the drug produces its effects slowly. The effect of the drug methadone on the user last for up to around 86 hours making him sluggish for the period of time. Often methadone addiction is seen when one of the following things occurs firstly an addict convinces the doctor to give him more of the drug than he actually needs, secondly when methadone is prescribed and the dose is increased. As the treatment continues the patient develops tolerance and more of more methadone has to be used to get the desired effect. Methadone if combined with alcohol becomes a deadly combination thus leading to death.

In such newer drugs and its derivatives it becomes difficult to justify it in NDPS Act. Inclusion of the newer drugs and newer drug derivatives is required for increasing the effectiveness of the NDPS law. NDPS Act amendment came in the year 2014 (1 May 2014), under section 71 of the NDPS Act the management of the drug dependant cases and rules for the treatments facilities has been incorporated. The amendments increased the penalties for the offences at lower level and continued to punish the addicts consuming the drugs. Morphine producers just need single license from respective State Drug Controller unlike the earlier procedure and the prolonged steps and multiple licenses and formalities. This amendment ensured uniform regulations within the country thus eliminating the state wise conflicts between them. The death penalty for repeated attempts of trafficking larger quantities of drugs has been diluted with given courts to discretely sentence for 30 years whereas on the other hand the punishment has been increased for “small quantity offences” from a maximum of 6 month to 1 year imprisonment after this amendment.

**Conclusions and Recommended Suggestions:** Time to time amendments with the addition of newer drug substances and their derivatives need to be done. Quality assurance must be taken into account. Maintenance of drug data of addicts should be maintained and regulated by incorporating various agencies and organizations working in this area. Transparency in the policy needs to be implemented for solving the crime related problems, differentiating the synthetic drugs from natural substances of abuse, bringing awareness and educating the people can eradicate the problem of drug addiction.

Rehabilitation centers should coordinate with the central and state government for preventing the substance abuse.<sup>[4]</sup>

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## INDIAN POSITION ON LEGAL STATUS OF REFUGEES

KUNJANA, SHALINI, DR. SEEMA GARG

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**Abstract:** India is one of the few countries in the world which has experienced refugee situation, time and again and that too on a gigantic scale in the last less than half-a-century. History of India is marked by large scale migrations of people from other countries and continents. These migrations had principally taken place across of two gateways- Hindukush Mountains in the west and patkoi range in the East. As Prof. M.P. Singh observed<sup>1</sup>: “*From the times immemorial, people from different parts of the world have been coming to India in various categories such as travellers, invaders, settlers, refugees etc., and have made, this land their home with or without separate identity*”. An intricate legal question arose as to the legal status of displaced persons as the definition of displaced person provided by the Rehabilitation Finance Administration Act of 1948, is at variance from the definition of the term refugee provided by the 1951 convention relating to the status of refugees. In this case, the situation creating the refugees was the result of an agreement between the two governments. Prof. Khan aptly observed that the plight of the people who had migrated was the same as that of refugees. They were displaced from one country to another, had undergone harrowing experiences and had sought refuge in a country not of their origin<sup>2</sup>.

**Keywords:** Rehabilitation Finance Administration, refugee, Hindukush Mountains

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**Refugee:** Generally speaking, A refugee is a person who is displaced or who has been forced to cross his national boundaries and also cannot return his home safely.

**The Legal Definition:** “owing to well founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular group, or political opinion, is outside the country of his nationality and is unable or, owing to such fear is unwilling to avail himself of the protection of that country, or who not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it.

**A.** Some definitions by eminent judges and defines in the conventions:

- a) A refugee is a person who has left his or her native country and is unable or unwilling to return there only because of a threat to his or her life or freedom.
- b) Asylum seeker:-**It is a legal term referring to a person who has applied for refugee status and not yet received a final decision on his or her claim.
- c) A refugee is someone who<sup>3</sup>:
  - Is outside his or her country of origin or habitual residence;
  - Has a well- founded fear of being persecuted because of his or her Race, Religion, Nationality, Membership of a particular social group ; or political opinion.
  - Is unable or unwilling to avail him- or herself of the protection of that country, or to return there, because of fear of persecution; and
  - Is not explicitly excluded from refugee protection or whose refugee status has not ceased because of a change of circumstances.

From the above mentioned definition it is evident that a person is not a refugee until and unless he has not fulfilled the criteria contained in this definition.

**d)** A regional refugee definition also including<sup>4</sup>:

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<sup>1</sup> M.Katju, “India’s Perception of Refugee Law” 251-253, ISIL year book of International Humanitarian and Refugee Law, 2001.

<sup>2</sup> J.N. sexana “Legal Status of Refugees: Indian Psition” 501-515, Indian journal of International law 1986.

<sup>3</sup> According to the 1951 Convention relating to the status of Refugees and its protocol 1967.

<sup>4</sup> According to the Organisation of African Unity (OAU) 1969 Convention Governing the specific Aspects of Refugee Problems in Africa

- Any person compelled to leave his or her country “owing to external aggression, occupation, foreign domination or events seriously disturbing public order in either part or the whole of his (or her) country of origin or nationality “.
- e) A refugee definition to include<sup>5</sup>:
  - Person who flee their countries “ because their lives, safety or freedom have been threatened by generalized violence, foreign aggression, internal conflicts, massive violation of human rights or other circumstances which have seriously disturb public order”.

In other words Refugee is a name given by the circumstances or by fate and the circumstances are such which are beyond that person’s control. There are some specific grounds to be recognised as a ‘Refugee’ and these grounds are fear of persecution and consideration of a number of factors which may be responsible individually or collectively.

**f) Other foreigners who are not come in the definition of refugees<sup>6</sup>:**

**Who are foreigners:** All the persons who are not Indian citizens are ‘foreigners’ which also includes categories. But there are some categories who are different from ‘refugees’. And these categories are:-

- (i) **Temporary Residents, Tourists and Travellers:** These are the specific Category of persons who come to India for a specific purpose and duration with the prior permission of the Government of India. In some cases persons fall in this category could become eligible for being a Refugee.
- (ii) **Illegal Economic migrants:** Any foreigner who left his or her country of origin without any permission from the authorities. For the purpose of improving his or her economic prospects is not a Refugee. Bangladeshis who are the illegal migrants are the best examples of this category.
- (iii) **Criminals, Spices, infiltrators, militants (etc.):** persons Falls in this category can never become eligible to be Refugee. But on the other hand they have to be dealt with many provisions of the Indian criminal laws or any other special laws.
- (iv) **Internally displaced persons (IDP):** a person falls in this category or those persons who have not crossed any International border. But those persons who are fleeing persecution and violation of human rights from one region of the country and then take shelter/refuge in another region of the same country. For not crossing the International border they are not termed as refugees. But categorised as ‘internally displaced person’. Best example of this categories or Kashmiris in Indian origin who have been forced to flee from Jammu and Kashmir and then settled in other parts of India.

**Historical Background:**

- The Declaration of Independence in 1947 resulting in the creation of India and Pakistan, caused the world’s largest uprooting and movement of population in recent history in the Indian sub-continent estimated at 15 million, nearly 8.5 million immigration from India to Pakistan and 6.5 million the other way round<sup>7</sup>.
- At the initial stage, 160 relief camps were organized and the total expenditure incurred on relief up to the end of 1950 was Rs. 60 crores. Various schemes were prepared for the rehabilitation of the refugees. The Government of India took necessary legislative and administrative measures to meet the situation<sup>8</sup>.
- The Rehabilitation Finance Administration Act,1948 was passed in this direction. The two Governments ( India and Pakistan) entered into a special treaty on April 8,1950, regulating the flow of refugees and evolving modalities for settlement of claims of refugees over property, and payments<sup>9</sup>.

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<sup>5</sup> According to the Cartagena Declaration, 1984

<sup>6</sup> T. Ananthachari” Refugees In India: Legal Framework, Law Enforcement and Security” page no.3, ISIL Year Book of International Humanitarian and Refugee Law ,2001.

<sup>7</sup> Cornellis D. jong de,”The Legal Frame work: The Convention Relating the status of Refugees and the development of Law Half a century Later” International journal of Refugee law, vol.10(1998),pp.688-99

<sup>8</sup> *Supra* 5

<sup>9</sup> Tim Dunne and Nicholas j.Wheeler,(ed) Human Rights in Global Politics(Cambridge 1999)

- The Chinese takeover of Tibet in 1950, India had faced another refugee influx in 1959 when Dalai Lama along with his 13,000 followers fled the country and reached India as refugees. The Government of India granted political asylum to the Dalai Lama and his followers. The institution of Dalai Lama was dealt a severe blow.
- India faced another massive refugee influx in 1971 when 10 million people fled from the erstwhile East Pakistan, now Bangladesh and reached India as refugees.
- India is not a party to the 1951 UN Convention on Refugees or its 1967 Protocol, nor is there any Indian law establishing asylum or refugee status. The Government of India handles refugee matters administratively, according to internal domestic and bilateral political and humanitarian considerations. UNHCR has no formal status in India and it is usually permitted to deal only with nationals from countries not bordering India<sup>10</sup>.

The following discussion examines the general law relating to refugees focusing mainly on the status of refugees and protecting under international law. It also highlights elaborately on the legal aspects of the current refugee situations in India keeping in view the question of bindingness of international refugee law on India and its relations with India municipal law.

**Refugees and Legal Provisions:** Indian being a sovereign nation, has the absolute right either to grant asylum or to refuse to admit an alien. But, at the same time India, like any member of the international society, has to respect the international obligations. At least, India is bound by customary international law to provide certain minimum standards of treatment which should respect the fundamental human rights of the refugees. In spite of the fact that India faced many times in the past and is still facing acute refugee problems there is no specific legislation to deal with the problem. It has handled the issue at the political and administrative levels, with the single exception at the time of partition in 1947. The Rehabilitation Finance Administration Act was passed in the year 1948 to cope with the massive migration of people from Pakistan. The other relevant documents and legislations are:

- 1) The Constitution of India
- 2) The Foreigners Act of 1946
- 3) The Registration of Foreigners Act of 1939
- 4) Tize Extradition Act of 1962
- 5) Passport Act of 1967
- 6) Etc.

These are various constitutional and legal provisions with the refugees may be concerned under varying circumstances<sup>16</sup>:

**B. Constitutional Provisions:** There are few articles of the Indian Constitution which are equally applicable to refugees on the Indian soil in the same way as they are applicable to the Indian Citizens<sup>11</sup>.

1. "The state (India) shall endeavour to foster respect for international law and treaty obligations in the dealings of organized peoples with one another"<sup>12</sup>. These are mentioned in the directive principles of state policy in the part of IV of the constitution which are not enforceable in the court.
2. The constitution lays down that "Parliament has power to make any law for the whole or any part of the territory of India for implementing any treaty, agreement or convention with any other country or countries or any decision made at any international conference, association or other body"<sup>13</sup>.
3. Right to life and personal liberty, applies to all irrespective of the fact whether they are citizens of India or aliens<sup>14</sup>.

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<sup>10</sup> B.S. Chimni, International Refugee Law (New Delhi,2000)

<sup>11</sup> Article 14,20 and21 of the Indian constitution.

<sup>12</sup> Article 51 c of the Indian constitution law.

<sup>13</sup> Article 253 of the constitution of India

<sup>14</sup> Article 21 of the constitution of India

4. The various High courts in India have liberally adopted the rules of natural justice to refugee issues, along with recognition of the United Nations High commissioner of refugees as playing an important role in the protection of refugees.
5. The Hon'ble High Court of Guwahati has in various judgements, recognised the refugee issue and permitted refugee to approach the UNHCR for determination of their refugee status, while staying the deportation orders issued by the district court or the administration.
6. Case laws:
  - a) **Gurunathan and others Vs. Government of India and others**<sup>15</sup> and in **A.C. Mohd. Siddique Vs. Government of India and others**<sup>16</sup> in both cases, the High court of Madras expressed its unwillingness to let any Sri Lankan refugees to be forced to return to Sri Lanka against their will.
  - b) In **P.Nedumaran Vs. Union of India**<sup>17</sup>, before the Madras court Sri Lankan refugees had prayed for a writ of mandamus directing the union of India and the state of Tamil Nadu to permit UNHCR officials to check the voluntariness of the refugees in going to back to Sri Lanka, and to permit those refugees who did not want to return to continue to stay in the camps in India. The Hon'ble court was pleased to hold that since the UNHCR was involved in ascertaining the voluntariness of the refugees return to Sri Lanka, hence being a world Agency, it is not for the court to consider whether the consent is voluntary or not. Further, the court acknowledge the competence and impartiality of the representatives of UNHCR.
  - c) The Bombay High Court in the matter of **Syed Ata Mohammadi Vs. Union of India**<sup>18</sup> was pleased to direct that "there is no question of deporting the Iranian refugee to Iran, since he has been recognised as a refugee by the UNHCR". The Hon'ble court further permitted the refugee to travel to whichever country he desired. Such an order is in line with the internationally accepted principles of 'non-refoulement' of refugees to their country of origin.
  - d) The Supreme court of India has in a number of cases stayed deportation of refugees such as **Maiwand's trust of Afghan Human Freedom Vs. State of Punjab**<sup>19</sup> and in the case **N.D .Pancholi Vs. State of Punjab & ors**<sup>20</sup> & **Malavika karlekar Vs. Union of India**<sup>21</sup> the supreme court directed to stay of deportation of the Andaman Island Burmese refugees, since "their claim for refugee status was pending determination and a prima facie case is made out for grant of refugee status." The Supreme court judgement in the Chakma refugee case clearly declared that no one shall be deprived of his or her life or liberty without the due process of law. And other case –**State of Arunachal Pardesh Vs. Khudiram Chakma**<sup>22</sup> and **Luis De Raedt Vs. Union of India**<sup>23</sup> had also stressed the same point.

**Treatment of Persons Granted Asylum in India:** This may be discussed under these heads:

- (a) National treatment
- (b) Treatment that is accorded to foreigners
- (c) Special Treatment

**(a) National Treatment**<sup>24</sup>:

1. **Equal Protection of Law:** Article 14 of the Indian Constitution guarantees the right that state shall not deny to any person equality before the law or the equal protection of the law within the territory of India. This right is available to all persons including non-citizens. So, as per the

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<sup>15</sup> WP No.S6708 and 7916 of 1992

<sup>16</sup> 1998 (47)DRJ(DB)p.74.

<sup>17</sup> This case is pending before the National Human right Commission of India,13 August 1997.

<sup>18</sup> Criminal writ petition no.7504/1994 at the Bombay High Court.

<sup>19</sup> Crl.WP No.125 &126 of 1986

<sup>20</sup> WP civil no.1294 of 1987,unreported

<sup>21</sup> Crl.WP no.243 of 1988

<sup>22</sup> 1994 supp.(1)SCC615

<sup>23</sup>( 1991) 3 SCC544

<sup>24</sup> B.S. Chimni"Legal condition of Refugees in India" p378-401,7 ,Journal of Refugee studies, 1994

provision of this Article, State would not discriminate a refugee against other refugees of same class regarding any benefits or rights they enjoy by virtue of their refugee status.

2. **Religion Freedom:** Article 25 of the Indian Constitution provides that subject to public order, morality and health and to the other provisions of the constitution, all persons are equally entitled to freedom of conscience and the right freely to profess, practice and propagate religion.
3. **Right to Liberty, etc.:-** Article 21 of the Indian constitution guarantees the right to life and personal liberty of all persons. A person is further guaranteed protection against arbitrary arrest and detention and free access to the courts. That the right to life, personal liberty and free access to the courts (under article 21 and 22 ) have been extended to every person irrespective of the fact whether the person concerned is an alien, refugee or a citizen of India. His free access to the courts is assured under articles 32 and 226 of the Constitution equality and protection of law, right to practice his own religion, the right to life and personal liberty. So as desired in Art.16 of the 1951 Refugee Convention, a refugee has free access to the courts of law in India as permitted under the Constitution.
4. **Right to Social Security:** Regarding right to Social Security, there is no special provision on social security in any Indian legislation, but non-citizens in India enjoy social security- equally with citizens.
5. **Educational Rights:** India has been providing free primary education to all recognised refugees, although there is no legal guarantee for the enjoyment of that facility as a matter of right. As for higher education, only Tibetan refugees enjoy that privilege.

**(b) Treatment that is accorded to Foreigners<sup>25</sup>:**

1. **Right to employment or profession:** Among the main rights of concern to the refugee is that of free access to employment, which in practice means the right to an independent existence. In the case of wage earning employment, Article 17 of the 1951 Convention provides that the contracting state shall accord to refugees lawfully staying in their territory the most favourable treatment accorded to aliens. Article 17 further invites contracting states to give sympathetic consideration to assimilating the rights of all refugees with regard to wage –earning employment to those of nationals. The provisions of Articles 18 and 19 concerning self employment and the liberty of profession do not go so far.
2. **Freedom of movement and residence:** Article 26 of the 1951 convention proclaims the right of refugees to choose their place of residence and to move freely within the territory of the country concerned<sup>26</sup>. In India this freedom of movement and residence is available to all refugees, subject to the restrictions necessary for the safety of India or its international relations. The refugees who could afford to live on their own are allowed to live wherever they want and they are given freedom to move within India subject to conditions such as national security or public order<sup>27</sup>. In case of large number of refugees such as Chakmas in Tripura and Sri Lankan Tamils in Tamil Nadu, their right to freedom of movement and residence is hampered by the fact that they are totally dependent on the Government. They are therefore, confined to camps. When they need to go out from the camps they need to take permission of the camp authorities<sup>28</sup>.
3. **Right To Housing:** The requirement of Art.21 of the 1951 Refugee Convention in connection with housing is fulfilled and while the refugees are free to live in refugee camps, there is no rule to prohibit them from residing in private houses if they can afford. Many Afghan and Sri Lankan refugees are residing in private houses in Delhi and Madras respectively<sup>29</sup>.

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<sup>25</sup> J. Garvey "Toward a Reformulation of International Refugee Law",p.48326 *Harvard International Journal* 1985

<sup>26</sup> J.L.Goldenziel,"Regulating Human Rights: International Organizations, Flexible Standards and International Refugee Law 453-464,14 *Cicago Journal of International Law* 2013-2014.

<sup>27</sup> *Supra* no.8

<sup>28</sup> G. Ghosh "GOD IS A REFUGEE": Nationality, Morality and History in the 1947 Partition of India" 33-45, 42(1)*The International Journal of Social and Cultural Practice*,1998.

<sup>29</sup> *Supra* no.25

4. **Right To Form Association:** Article 15 of the 1951 Convention Relating to the status of Refugees lays down that as regards non-political and non-profit making associations and trade union the contracting states shall accord to refugees lawfully staying in their territory the most favourable treatment accorded to nationals of a foreign country<sup>30</sup>. In India, like foreigners, refugees too enjoy the right to form peaceful associations. Burmese and Chakma refugee communities have formed student and welfare refugee associations.
5. **Right To Property:** Article 13 of the 1951 Convention states that the contracting states shall accord to a refugee treatment as favourable as possible and in any event, not less favourable than that accorded to aliens generally in the same circumstances, as regards the acquisition of movable and immovable property and other rights pertaining thereto and to leases and other contracts-relating to movable and immovable property.  
However, in India this right has not been accorded to the refugees. Even after three decades of their rehabilitation, Tibetans do not enjoy any property rights over the agricultural land and houses which they were allowed to use on lease.

#### **Special Treatment:**

1. **Exemption from Penalties<sup>31</sup>:** Art.3 (1) of the 1951 Refugee Convention provides that “the contracting state shall not impose penalties, on account of their illegal entry or presence on refugees who coming directly from a territory. Where their life or freedom was threatened...enter or are present in their territory without authorization, provided they present themselves without delay to the authorities and show good cause for their illegal entry or presence. This is one area where India is very apathetic towards refugees. Under Section 14 of the Foreigners Act, 1946 a foreigner is liable- to the punishment with imprisonment for a term which may extend to five years and is also liable to fine. Due to lack of a procedure for considering asylum claims, all individual asylum-seekers who entered illegally or stayed in India without authorization were persecuted and punished under this section. However, in case of large-scale influx, India has always acted according to the principle laid down in the Refugee Convention and has not imposed penalties on the refugees.
2. **Identity And Travel Documents:** Since refugees do not enjoy the protecting of the government of their country of origin, they cannot claim a national passport. Only the authorities of the country of residence can make good this deficiency by issuing them a suitable travel documents. Since, however, this document is of no value unless it is recognised internationally, each of the agreements concluded after the First World War to assist various group of refugees make explicit reference to it. The 1951 Convention was no exception to this rule. Article 28 of the Convention provided that: “The Contracting States shall issue to refugees lawfully staying in their territory travel documents for the purpose of travel outside their territory unless compelling reason of national security or public order otherwise require<sup>32</sup>”. In India, all refugees who are recognised so were given identification certificates showing their refugee status. But, as regards travel documents, no refugee has so far had a privilege of getting travel documents except Tibetan refugees. Tibetan refugees can even travel to foreign countries and come back to India on the basis of these such identification paper.

**Conclusion:** Lastly, I want to discuss that India for the first time established its former relationship with the United Nations high Commissioner for refugees in 1969 down for rehabilitating Tibetan refugees in India. When the high commissioner visited India in July 1963, India expressed its interest in receiving assistance from the office of the United Nations high Commissioner for refugees for Tibetan refugees. UNHCR made available some funds from the proceedings of the sale of “All Star Festival” record. Since a pre-requisite for such assistance was the proper supervision of UNHCR funds and careful coordination of international efforts, Indian government agreed that the presence of an on-the-spot UNHCR representative was desirable. A branch office of UNHCR was officially opened in Delhi on February 1, 1969. In-corporation with India UNHCR undertook new projects and consolidated old ones in the fields

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<sup>30</sup> Supra no.24

<sup>31</sup> J.C.Hathway, “Reconceiving Refugee Law as Human Rights Protection” 113,123, Journal of Refugee Studies 4(2) 1991.

<sup>32</sup> Supra no.29

of agriculture settlement, housing for the aged lamas, and medical facilities. Thus a close working relationship between UNHCR and India was established by the time India government involved in providing emergency Delhi to Bangladesh refugees.

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