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Abdulrazak Gurnah
Nobel Prize in Literature
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David Card
Nobel Prize in Economic Sciences
For his empirical contributions to labour economics

Benjamin List
Nobel Prize in Chemistry
For the development of asymmetric organocatalysis

Ardem Patapoutian
Nobel Prize in Medicine or Physiology
For their discoveries of receptors for temperature and touch

PRAGNAVANI
BI-ANNUAL JOURNAL
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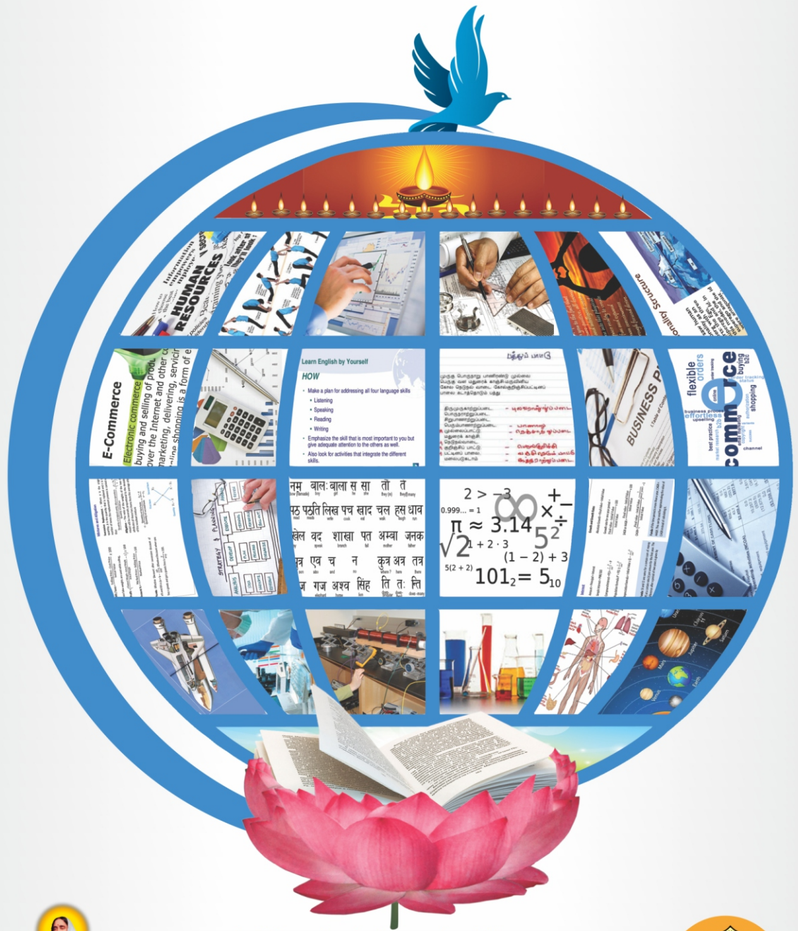

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(1) Desiraju G R 1991 *Acc. Chem. Res.* **24** 290

(2) Chakraborty A, Kar S, Nath D N and Guchhait N 2007 *J. Chem. Sci.* **119** 195

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(1) Lippert E, Luder w and Boos H 1962 In *Advances in Molecular Spectroscopy,* A Mangini (ed.) (Oxford: Pergamon) p.443

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CUSTOMER RELATIONSHIP MANAGEMENT IN BANKING SECTOR

[*]P.Supriya and R. Muthulakshmi
[*]Ph.D. Research Scholar (Reg No: 19111261012010),
Department of Commerce,
Sri Sarada College for Women (Autonomous), Tirunelveli - 627 011,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tamilnadu, India)
(Corresponding Author Mail ID: [**]muthulakshmisarada@gmail.com)

ABSTRACT

It is felt that Modern Banking has become wholly customer – driven and technology driven. During the last decade, technology has been dramatically transforming the banking activities in India. Driven by challenges on competition, rising customer expectation and shrinking margins, banks have been using technology to reduce cost. Apart from competitive environment, there has been deregulation as to rate of interest, technology intensive delivery channel like Internet Banking, Tele Banking, Mobile banking and Automated Teller Machines (ATMs) etc have created a multiple choice to user of the bank. The banking business is becoming more and more complex with the changes emanating from the liberalization and globalization. For a new bank, customer creation is important, but an established bank it is the retention is much more efficient and cost effective mechanism. Customer Relationship Management (CRM) would also make Indian bankers realize that the purpose of their business is to create and keep a customer and to view the entire business process as consisting of Highly Integrated effort to discover, create and satisfy customer needs. But it is surprising to note that much of the activities of the banking and financial remain focused on customer creation not retention. It is revealed in the National Survey that the most effective media for increasing awareness of the bank products is publicity through friends and relatives of potential savers. In rural areas, there is a tremendous potential for deposits and advances, but most of the potential is left untapped due to lack of awareness of basic products scheme. A satisfied customer is silent advertiser for banks products. Under these situations it has been thought fit to conduct a study and CRM in banking sector.

Keywords - Customer, Management, Banking sector, CRM

INTRODUCTION

Banking Industry in India has undergone a rapid changes followed by a series of fundamental developments. Most significant among them is the advancement in Information Technology as well as communication system. This has changed the concept of Traditional Banking activities and has been an instrumental behind broadening the dissemination of financial information along with

lowering the cost of many financial activities. Information technology and communication networking systems have revolutionized the functioning of Banks. Secondly increasing competition among a broad range of domestic and foreign institutions in product marketing area becomes a prevalent practice. Thirdly, inline with the increase in overall economic activities, financial institutions too, have modified themselves accordingly in all spheres including customer service The customers are now demanding more on price (interest rate) financial security, quick service, convenience, attractive yield, low cost loan, professional service, advice/ counselling, Easy access, simple procedure, Friendly approach, and variety of product.

The whole service sector is now metamorphosed to become customer specific. Until the implementation of the Narasimhan Committee recommendations, banks in India operated under protected environment. Even after 1993 saw the emergency of a new breed of banks called new private sector Banks and opening of most foreign banks in India. The nature of competition that characterizes the banking industry before 1993 is shown in the following table.

REVIEW OF LITERATURE

1. Kamath (1979) in his thesis entitled "Marketing of bank services with special reference to branches in Bombay city of syndicate bank" has concluded that quicker and better service offered by bank will be the most important variable in attracting and retaining customer.
2. S.G Shah (1985) in his article has stated that quality of customer service in bank has to very sunk to very low and poor levels because of two vastly different reasons. The first is that even the simple routine service have broken down. The second area in which customer service is lagging is that of special situation.
3. John Brooks former president and chairman of the council of the charted institute of Bankers, London states "Customer care is emerging as a critical factor in the banking industry and bankers are fully conscious of the need for attaining international standard for service".

OBJECTIVES

1) To study the perception of the customers as to CRM of the banks with respect to service quality management,
2) To study the perception of the customers as to CRM of the banks with respect to customer interaction management,
3) To study the perception of the customers as to CRM of the banks with respect to customer retention management

METHODOLOGY

1. **Primary Data:** Primary data are collected from 215 respondents through systematically prepared questionnaire.

2. Secondary Data

The secondary data and literature for the study purpose were collected from the number of reference books, journals and website.

ANALYSIS AND DATA INTERPRETATION

Table-1: Socio-Economic profile

Gender	**No of Respondents**	**Percentage**
Male	121	56.3
Female	94	43.7
Total	**215**	**100**
Age	**No of Respondents**	**Percentage**
20-30 years	43	20.0
30- 40 years	63	29.3
40- 50 years	46	21.4
50-60 years	36	16.7
Above 60 years	27	12.6
Total	**215**	**100**
Education	**No of Respondents**	**Percentage**
S.S.L.C	28	13.0
HSC	30	14.0
UG	36	16.7
PG	34	15.8
ITI	48	22.3
Professional	39	18.1
Total	**215**	**100**
Monthly income	**No of Respondents**	**Percentage**
Below Rs. 10,000	37	17.2
Rs. 10000- Rs. 20000	38	17.7
Rs. 20000- Rs.30000	46	21.4
Rs.30000- Rs. 40000	49	22.8
Above 40000	45	20.9
Total	**215**	**100**

Source: Primary data

The above table shows that 56.3 percent of the respondents are male and 43.7 percent of the respondents are female. The above table shows that 20.0% of respondents are come under the age group of 20-30years, 29.3% of respondents are come under the age group of below 30-40 years, 21.4% of respondents are come under the age group of 40-50years, and 16.7% of respondents are come

under the category of above 50-60 years and 12.6% of respondents are come under the category of above 60 years.

The above table shows that 13.0% of respondents are come under the category of Below S.S.L.C, 14% of respondents are come under the category of HSC, 16.7% of respondents are come under the category of UG, 15.8% of respondents are come under the category of PG, 22.3% of respondents are come under the category of ITI and 18.1% of respondents are come under the category of Professional.

The above table shows that 17.2% of respondents are come under the category of below Rs.10000, 17.7% of respondents are come under the category of Rs.10000- Rs.20000, 21.4% of respondents are come under the category of Rs.20000- Rs.30000, 22.8% of respondents are come under the category of above Rs.30000-40000 and 20.9% of respondents are come under the category of Above Rs.40000.

Table No.2
CHI-SQUARE ANALYSIS
Test of Dependency between Age and Perception regarding the service of the bank

			Perception regarding the service of the bank			
			Good	**Average**	**Poor**	**Total**
Age		20-30	25	15	3	43
		30-40	37	16	10	63
		40-50	23	18	5	46
		50-60	17	10	9	36
		Above 60	9	12	6	27
Total			111	71	33	215

Degrees of Freedom = (5-1) (3-1) = 8
Level of Significance = 5 %
Calculation Value (X2) = 11.511
Table Value (X2 0.05) = 15.507
Ay X2 > X2

Since, there is no significant difference between the Age of the respondents and Perception regarding the service of the bank of independent so the null hypothesis is accepted.

FINDINGS

- 56.3% of the respondents are male.
- 29.3% of the respondents are belonging to the age group of 30 – 40 years.
- 22.3% of the respondents are education qualification in ITI.
- 22.8% of the respondents are income is 30000-40000.

- Since, there is no significant difference between the Age of the respondents and Perception regarding the service of the bank of independent so the null hypothesis is accepted.

SUGGESTIONS

The customer's perception of service quality is lower in private sector banks. So it is suggested that private sector banks may take steps to improve their service quality, strategies, customer interaction management strategies customer retention management strategies.

CONCLUSION

1. The present study provides some guidelines for customer relationship management satisfied customers are loyal customer, their retention rate is much higher and so is their overall profitability for the bank. CRM offers the most holistic route for banks to enhance customer relationships.
2. Banks can enhance customer retention, profitability and loyalty and get an increased share of banks from their customers.
3. Banks need to embrace CRM as a principle and adopt a strategy for managing customer relationships that effectively addresses three key areas, customers, processes and technology.
4. Finally banks should take actions such as recognition and delegation of work, freedom to handle customer's grievances and management's approval to take decision according to the situations.

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AN INDELIBLE SENSE OF FEAR AND LOSS: AN ANALYSIS OF CULTURAL TRAUMA IN AMINATTA FORNA'S *The Memory of Love*

Arthi K
Department of English,
Sri Sarada College for Women (Autonomous), Tirunelveli - 627 011,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tamilnadu, India)
(Corresponding Author Mail ID: arthi120k@gmail.com)

ABSTRACT

Cultural trauma is a socially arbitrated process that arises when a group of people endures horrific events that forever change their consciousness and identity. *The Memory of Love* can be interpreted on the notion of this cultural trauma to portray the mind-set of the common people who are affected by the civil war in Sierra Leone. The main idea of cultural trauma is collective feelings towards a particular event or thing and this feeling is depicted vividly in this novel. The novel presents cultural trauma not from one perspective but from the perspective of several characters. Cultural trauma is not born but is made by society and in the novel it is obvious that it is created by the civil war. The civil war has affected both the private and the public life of the civilians and they are forced to live in a state of dejection as a result of it. Thus, the civil war has created an unstable life to the common people.

Keywords: Cultural Trauma

INTRODUCTION

Cultural trauma is one of the most important branches of the Trauma Studies. Cultural trauma is a socially arbitrated process that arises when a group of people endures horrific events that forever change their consciousness and identity. According to cultural sociologists, these traumas ascend out of shocks to the routine or the take for granted. Jeffery Alexander has provided one of the extensively used definitions of cultural trauma, "cultural trauma occur when the members of the collective feel they have been subjected to a horrendous event that leaves indelible marks upon their group of consciousness, marking their memories forever and changing their future identity in the fundamental and irrevocable way" (Alexander,2004, p. 1). It is generally agreed that "cultural trauma are not born but made, that is cultural trauma are socially mediated processed" (Smeler, 2004, p.37). In cultural trauma, the events are made to remember or must be remembered by the people who experience them. It means the particular event must be lingering within people even after so many years due to its effect. Civil war and colonization are some of the horrible events of cultural trauma that have been impacting people even today. The effects of these events are widespread for

a long time as it includes cultural upheaval, a collective loss of security, damaged and filtered identities, a communal sense of fear and terror of death or injury.

CONCEPTUAL FRAMEWORK

The Memory of Love published in 2010, is an intergenerational story of passion, obsession and betrayal by Aminatta Forna. The setting of the novel is exotic. The novel is set in Freetown in Sierra Leone soon after the government has declared an end to an eleven years civil war. It is about the story of three men, their life after war, memory and love in Sierra Leone. The novel weaves together two generations of African life to create a story of loss, absolution and the indelible effects of the past. It is a novel about thoughts and emotions- love, lust, sadness, grief rather than action. Moreover the novel presents the love of different generations. Love and loss are another interesting theme in the novel. No doubt, it is regarded as "a bold, deeply moving and accomplished novel" (Magen, 2010, para.12).

The Memory of Love can be interpreted on the notion of this cultural trauma to portray the mind-set of the common people who are affected by the civil war in Sierra Leone. The novel presents two cultural centric- Afrocentric and Eurocentric. The novel also presents the conflict between these two centric. This conflict is due to the result of the civil war in Sierra Leone. Most of the people in the novel suffer cultural trauma as a result of civil war in Sierra Leone. The characters in order to escape from their traumatic memory in that place travel from one centric to another centric to attain peace.

Western Therapy and its Rejection

The Memory of Love presents cultural trauma from several perspectives. The main idea of cultural trauma is collective feelings towards a particular event or thing and this feeling is depicted vividly in this novel. Sztompka says "collective traumas … appear only when people start to be aware of common plight" (Sztompka, 2000, p.11). In *The Memory of Love* the characters reject the western method of treatment. Because they feel that the British were the cause of the civil war in their country and their plight, they cannot provide treatment for their mind diseases. Other than Adrian, all the characters in the novel are Afrocentric. They feel that Adrian could not understand their situation. For instance, when Adrian told to Kai that he wanted to help Agnes to get rid of her mind disease, Kai replies in a rude manner to Adrian:

This is our country. He was rejecting Adrian's offer to help. It was this that had stung so much, the idea he was neither wanted nor needed. It had simply never occurred to him. … People here don't need therapy so much as hope. But the hope has to de real. … Westerners Adrian has met despise the fatalist. But perhaps it is the way people have found the way to survive. (Forna, 2011, p.320)

According to Kai the people who suffer from trauma due to civil war cannot be cured by adopting or by following the western ideas or therapies.

Because he feels that the people in Sierra Leone do not need medicine, instead they need hope. They need the only hope to lead a happy life in the future. Moreover Kai feels that westerners could not offer that hope to Sierra Leones. As the westerners are the cause for their plight, most of the natives of Sierra Leone believe that the civil war is the result of colonialism.

Attila, the chief nurse also feels the same way as Kai. She feels the westerner's method of treatment does not help the people of Sierra Leone. Adrian's practises as a psychologist prove inadequate while their visit to slum. Attila shows Adrian the condition of common people after the civil war. She says "This is their reality. And who is going to come and give the people who live *here* therapy to cope with this? ... You call it a disorder, my friend. We call it *life*" (Forna, 2011, p.319). On seeing the condition of the people in the slum Adrian is very much affected. Due to this Adrian is forced to acknowledge that the Sierra Leone people do not need western therapy or idea.

Moreover the novel also criticizes the western method of therapeutic in Sierra Leone. The people of Sierra Leone do not follow the therapy given by Adrian as he is a westerner and adopts western method of treatment. This is best described through the relationship between Attila and Adrian. As a head of the city's mental hospital, Attila has allowed Adrian to treat some of her patients. But she always kept a distance with him. Attila's key objection for western therapeutic method in Sierra Leone is that the westerners' idea of returning to normality.

The western method of treatment aims to bring normality in the life the people, who suffer from trauma, by psychotherapy for their recovery. Adrian explains this as "To return the men to normality, to some degree of normality. So they can live their lives. Achieve everything anyone else could expect to achieve. To hold down a job. To enjoy a relationship. To marry and have children" (Forna, 2011, p.318).

But Attila feels that the normality of westerners is completely different from that of the people in Sierra Leone. For Sierra Leones, normality is free from oppression, deprivation and upheaval to attain freedom, affluence and stability. On the other hand for westerners normality is "actually the expectation rather than rules" (Craps, 2014, p.53). Attila describes this concept of normality as:

When I ask you what you expect to achieve for these men, you say you want to return them to normality. So then I must ask you, whose normality? Yours? Mine? So they can put a suit and sit in an air – conditioned office? You think that will ever happen? (Forna, 2011, p.319)

The normality of both the countries is entirely different from each other. The people of one country cannot be treated by adopting the way of other country. Attila defines this difference to Adrian as "you call it a disorder…we call it *life"* (Forna, 2011, p.319). For westerners, trauma is only a momentary deviation from the normal course of their safe, valued and protected life. But for the people of Sierra Leone, it is constant in their venerable and unprotected life in such a place after the war. The psychic suffering of the people of Sierra Leone is impossible to

cure because of the circumstance around them. For the people of Sierra Leone, returning to normality after their treatment is like enduring the pain. Because their traumatic memory remains hidden deep inside their hearts, the circumstance around them will not allow them to forget the effect of civil war. Thus, the normality of the people could never be achieved. Therefore, Attila believes that the western method of treatment is not a right method to give treatment for the people of Sierra Leone.

Not only Kai and Attila, there are other characters in the novel, who feel in the same way. Because all these people have some traumatic memory in their mind due to civil war, they feel that the colonisers are the cause for the civil war in their country and they are not in need of western therapy. Instead they need real hope, which they feel that they cannot have by a westerner. All these characters share the same idea and aware of common plight.

Native Land and its Dearth of Opportunity

As a result of colonialism, the people of Africa start to educate and this education makes them feel that their native land lacks the opportunity for their education and they begin to seek opportunities outside their land. This naturally affected the relationship between individual and the community. Judith Herman in her *Trauma and Recovery* says, "traumatic events destroy the sustain bond between the individual and community" (Herman, 1992, p.154). This statement of Herman proves true with Kai and Tejani in the novel. Both these characters try to break their relationship with their community, as they feel that their education would be recognized only in the land, which is outside their native. They also consider their country as out dated while America as a modern city.

Tejani, who is the childhood friend of Kai, leaves Sierra Leone and lives in America. In America Tejani leads a luxurious life. Kai compares his lifestyle in Sierra Leone with Tejani's life style in America: In the computer age, they stick to this old form of correspondence. Tejani, he assumes, has a computer at home. But for him it is a mean of trek into town to an Internet Café, the long wait for a connection, the ponderous typing of his message – his fingers never having acquired the eligibility over the keys they possess when handling medical instruments – only to lose when the electricity cuts out. The blue aerogramme bears a date some two weeks prior. (Forna, 2011, p.92)

Kai mentions Sierra Leone as an old-fashioned country and he feels that he is sticking to the old style of Sierra Leone. He also considers America as a modern city. All these thoughts make him to have a passion for America. More over Tejani also forces him to leave Sierra Leone. Tejani writes to Kai as:

I tell you, you should be here. You've got the qualifications and they are crying out for people like you and me, man. I can give you any help you need, but the agency handles it all anyway. Don't worry about where to stay. This has a couch with your name on it. But seriously, if I get this job I (we) am going to buy a place and then you will be welcomed any time. (Forna, 2011, p.119)

This letter makes Kai to feel that his education would give him more opportunity in America than in Sierra Leone. Tejani also writes about the privileges in America that are lacking in Sierra Leone. Due to this Kai has planned to leave Sierra Leone. Tejani does not give enough time for Kai to think and make decisions. He is in an urge to meet Kai. In one of his letters to Kai, Tejani writes, "*When do you think you will get here? It seems to be taking a long time"* (Forna, 2011, p.396. This naturally created a kind of hatred in Kai's mind for his own country because of the traumatic memory that he had faced there. Thus trauma breaks the relationship between individual and community.

War and its Trauma

War and its aftermath have a foremost role in the novel. The novel illustrates trauma faced by the common people as a result civil war in the country. Moreover the novel is also set in the Sierra Leone's capital city Freetown, in 2001, in the aftermath of gruesome civil war. The Sierra Leone civil war is one of the bloodiest in Africa, it lasted for eleven years and left more than 50,000 people dead and an estimated 2.5 million people displaced and cause psychological disorder to most of the people in the country. The war has greatly damaged the civil society and this is clearly pictured in the novel.

Neil Smelser proclaims that "cultural trauma are not born but made, that is cultural trauma are socially mediated processed" (Smeler, 2004, p.37). Indeed it is made based on the past history and in the process of making it the events of the past are actively engaged. In the novel *The Memory of Love* the memory of the civil war as a collective tragedy did not emerge automatically or transmitted directly by witness. Rather it depends on the institutional depiction of the war that started emerged in the minds of common people.

Aminatta Forna has also presented displacement and psychological disorder faced by the common civilians after the war in her *The Memory of Love.* Almost all the characters are affected by the civil war either in a direct or by an indirect means. The civil war in particular has shaken the life of Kai completely. During the time of war he has undergone a horrible thing in his life. This makes him loss his control over life, as the event haunts him in his dream. He discusses his suffering from nightmares to Adrian as:

That other people don't suffer recurrent nightmares? Yes. I am sure. Though I am sure there are lots of people in this country who do, people who have survived trauma. It would be extraordinary if it was otherwise…

Yup, you're right. I dream. I dream about the same thing. I dream about something that happened. I could tell you, but it wouldn't make any difference. You can't undo it. And how could you ever understand? Unless you were here how would you ever understand? The truth is none of you wanted to be know then, so why you care now? Kai is not looking at Adrian but staring into the glass, swirling the liquid around and around. He stops, raises the glass to his lips and drinks, recommences the same circular movement. (Forna, 2011, p.423)

Kai says that his nightmare is because of his remembrance of a particular event, which he wishes to forget. He elucidates that Adrian could not understand or cure the problem of Kai. Moreover, he feels that only the people who live there in Sierra Leone could understand his problem, as they might have witnessed or undergone the same events in their life. Kai feels Adrian to be an outsider, who could never understand his problems. Thus, the civil war has created a devastating effect in the life of Kai.

Not only Kai there are other character in the novel like Cole, who has affected by the devastating effects of the war. In the case of Cole, the civil war has changed his life completely. He lost his true self and identity in the civil war. Cole has lost his sense for thrice in the novel. First time, in his extra-marital relation, he feels Saffia is the only woman in the world who could make him happy, and due to his guilt, he could not feel completeness in her. Secondly, after the death of Julius he changes his character. He was against the government before Julius' death but now he had joined hands with the police. He even shows the police, the students who are against the authority. Lastly in his confession to Adrian, he does not say about his true self to him. In an attempt to talk to his daughter, who is angry with him for his actions in the past he does this. Thus Cole loses his true self and identity due to his remorseful actions in the past.

The novel also presents the clear picture of the condition of people in Sierra Leone after the civil war. Attila once takes Adrian to the refugee camp to show the pathetic condition of the people after the civil war. Adrian could see a cramped, stinking shanty town built on a sewage dump on the outskirts of Freetown. Adrian feels the sweat on his shirt and the back of his thighs.

Now they were away from the grid of roads, the traffic moves more freely here; a light breeze enters the vehicle. Adrian might have been relieved, except a breeze carries with it a foul odour of the rotted fish and the high, sweet smell of sewage. The road leads sharply downhill. Tin huts reach out in either direction, an endless landscape of rusted tin. On the right is the sea. Not the green – blue sea visible from the campus, but the water colour of shit. (Forna, 2011, p.318- 319)

The people in the camp find hard to lead their daily life. On seeing their condition Adrian understood that "people here don't need therapy so much as hope. But the hope has to be real" (Forna, 2011, p.320). Adrian tries to give hope to the people there but he fails to do it. The people in Sierra Leone consider him as an alien to their life and culture.

Therefore, the novel presents a clear picture of the condition of the people in Sierra Leone after the civil war. The civil war has affected both the private and the public life of the civilians and they are forced to live in a state of dejection as a result of it. Thus, the civil war has created an unstable life to the common people.

CONCLUSION

The cultural trauma or collective trauma plays a major role in *The Memory of Love* as all the events of the novel are connected to it. The people in Sierra Leone lose their hope in westerners and their therapeutic method. Because

they feel that they are forced to live a life of poverty as result of colonialism. Thus, collective trauma or cultural trauma plays a vital role in *The Memory of Love*. To sum up, the novel gives a clear picture of people suffering from cultural trauma. The novel presents cultural trauma not from one perspective but from the perspective of several characters. Cultural trauma is not born but is made by society and in the novel it is obvious that it is created by the civil war.

The current study offers multiple scopes of extending the area of research in the field of trauma studies. The paper is written in standard APA style (7th edition) for its method and style. The novel can also studied from other concept of trauma studies. The novel can also be analysed by applying psychological trauma studies as the novel completely revolves around the trauma of the common people as a result of civil war.

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AN ANALYSIS OF JOB SATISFACTION IN POTHYS TEXTILES, TIRUNELVELI

R.Indira Devi and N.Lavanya
Department of Business Administration,
Sri Sarada College for Women (Autonomous), Tirunelveli-627 011,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli,
Tamilnadu, India)
(Corresponding Author Mail ID: *lavayasamy207@gmail.com)

INTRODUCTION

Employees are critical to the success of any organisation. Every company has a significant duty to keep its employees happy in order to maintain market share. Today's employees expect not just a respectable living, but also a happy existence. Employees' personal happiness is determined by their job satisfaction. A worker who works on the street is unable to do his or her job well. Many modern businesses confront major competitive disadvantages due to greater personnel turnover and job unhappiness.

The destiny of any company is inextricably linked to employee satisfaction. Workforce dissatisfaction leads to immediate issues. If problems are not addressed, they have a proclivity to spread to other businesses, industries, and even regions. As a result, it may develop over time.

REVIEW OF LITERATURE

The section reviews the relevant studies on job satisfaction carried out to find out the research gap. Reviewing the previous literature not only highlights the historical works in the areas but also helps to identify the niche in the areas.

Paulson (2008) investigated typical hospitality issues in order to find connections between them and the underlying issue. Poor training is linked to workplace issues, according to the study, and better training is likely to alleviate issues like understaffing and theft.

Brewer& clipped (2002) Burnout and work satisfaction among student support services employees were measured. The Job Satisfactions Scale was used to assess intrinsic, organisational, wage, and promotion-related job satisfaction. The findings revealed a significant negative relationship between personal accomplishment and total job satisfaction, as well as a significant overall relationship between personal accomplishment and total job satisfaction, as well as a significant overall relationship between the three components of burnout and total job satisfaction.

Lim (2008) Examines the job satisfaction of library information technology employees in relation to demographic and socioeconomic variables, as well as variables and work-related variables such as a sense of belonging, faith in

wanting to belong, a sense of acceptance, payment of dues, job autonomy, and promotion opportunities.

Janssen & Yearn (2004) hypothesized data from 170 employees of a Dutch firm showed that the qualities of leader –member exchange was hypothesized to mediate the effects of goal orientation on job performance and job satisfaction . The findings suggest that employees with stronger mastery orientation are more effective on the job because they tend to establish higher-qualities exchanges with their supervisors.

SIGNIFICANCE OF THE STUDY

Job happiness, obviously, has a big impact on staff productivity and morale. If a company takes the time to establish general individual attitudes in its employees that can successfully contribute to job happiness, it can reap significant benefits.

STAETMENT OF THE PROBLEM

Any organization's growth and development is determined by the people that work there. Employees that are happy with their jobs perform better in the workplace. Otherwise, low productivity, high labour turnover, absenteeism, and poor job performance would result. Fitting into a different atmosphere in the workplace appears to be a difficult undertaking for an individual. India's automotive sectors contribute a significant amount of manufacturing and services to the country's wealth.

OBJECTIVES OF THE STUDY

- To trace the significance of Job Satisfaction with its theoretical concepts.
- To measure the level of the job satisfaction and to examine the relationship between the Demographic Personal profiles of employees and level of job Satisfactions.
- To extract the important factors of job satisfaction of employees in different level.
- To analyse the features of the job and evaluate the perceived deficiency and the perceived importance of job characteristics.

HYPOTHESIS OF THE STUDY

- There is no association between different age groups of employees and level of Job Satisfaction
- There is no association between gender groups and level of Job Satisfaction.
- There is no relationship between marital status and level of job satisfaction.
- There is no association between educational qualifications between and the level of job satisfaction.

- There is no relationship between years of Experience and level of job satisfaction.

ANALYTICAL FRAMEWORK

In this study job satisfaction of employees is grouped into three categories, namely low level, medium level and high level for analytical purpose. The level of job satisfaction has been determined by the score value calculated for 30 statements, by adopting the scaling techniques. While score values greater than mean plus standard deviation and score values less than mean plus standard deviation have been classified respectively as high level of job satisfaction and low level of job satisfaction, the score value in between mean plus standard deviation and mean plus standard deviation have been classified as medium level of job satisfaction, mean and Standard Deviation being the arithmetic mean and standard deviation calculated from the score values of the 271 skilled and 59 unskilled employees. The calculated values of mean and S.D. are 106.14 and 7.72 respectively for skilled employees and 118.32 and 6.47 respectively for unskilled employees.

Therefore,

mean plus standard deviation = 114 and above => High level job satisfaction for skilled

mean plus standard deviation = 125 and above => High level job satisfaction for unskilled employees.

Therefore,

mean plus standard deviation =114 and above =>High level job satisfaction for skilled

mean plus standard deviation =125 and above =>High level job satisfaction for unskilled

mean minus standard deviation = 98 and below => Low level job satisfaction for skilled

mean minus standard deviation =112 and below =>Low level job satisfaction for unskilled

(-S.D)-(mean+S.D) = 98 to 114 => medium level job satisfaction for skilled

(-S.D)-(mean +S.D)=112 to 125 =>medium level job satisfaction for unskilled

For testing the relationship between employees' demographic and personal factors and their level job satisfaction, chi-square test has been calculated. For computing chi-square test the following formula has been used (3.1)

Chi-square = $\sum$ (O-E)\E with (r-1) (c-1) degree of freedom (3.1)

The calculated values of chi- square is measured with the table value the null hypothesis is accepted and otherwise it is rejected.

LEVEL OF JOB SATISFICATION

SI. No	Level of Job Satisfaction	Skilled employees		Unskilled employees	
		No of Respondents	Percentage	No of Respondents	Percentage
1	High	95	35.05	21	35.59
2	Medium	128	47.23	22	37.29
3	Low	48	17.72	16	27.12
	Total	271	100.00	59	100.00

It shows the level of job satisfaction of employees working in the automotive industries. It is clear from the table that out of 271 skilled employees 95(35.05) percentage come under the category of high level of job satisfaction and 128(47.23) percentage come under the category of medium level of job satisfaction and 48(17.72) percentage come under the category of low level of job satisfaction.

In the case of unskilled out of 59 employees, 21(35.59) percent were in under the category of high level of job satisfaction 22(37.29) percentage and 16(27.12) percentage were in the category of medium and low levels of job satisfaction respectively.

AGE AND LEVEL OF JOB SATISFICATION

Chi-square test

SI. No	Particular	Employees	
		Skilled	Unskilled
1	Calculated value	15.3288	4.925
2	Table values at 5 percent level	9.49	9.49
3	Degree of freedom	4	4
	Inference	Significant	Not significant

It shows that in the case of skilled employees, the calculated value is greater than the table value. Hence, the null hypothesis is rejected. Therefore, it could be inferred that the age does influence the job satisfaction of employees of automotive industries. In the case of unskilled employees the calculated value of chi-square is less than the table value, the null hypothesis is accepted. Hence, there exists no relationship between the age and the level of job satisfaction.

Marital Status and Level of Job Satisfaction

Level of Job satisfaction may also depend upon the marital status of the men. Hence, an attempt is made to study the relationship between the marital status and the level of job satisfaction of employees working as skilled and unskilled.

Marital status and level of job satisfaction of sample respondents

SI. NO	MARTIAL STATUS	SKILLED EMPLOYEES							
		Level of job satisfaction			Total	Level of job satisfaction			Total
		high	Medium	low		high	medium	low	
1	Married	85	99	37	221	17	18	12	47
2	Unmarried	10	29	11	50	4	4	4	12
	Total	95	128	48	271	21	22	16	59

Material status and level of job satisfaction

SI. No	Particulars	Employees	
		Skilled	Unskilled
1	Calculated values	6.013	0.089
2	Table value at 5 percent level	5.991	5.991
3	Degree of freedom	2	2
	Inference	Significant	Not significant

As the calculated chi-square values for unskilled category is less than the unskilled. Hence, there exists no relationship between marital status and level of job satisfaction of employees working in automotive industries. Where as in the case of skilled employees null hypothesis is rejected as evidenced by chi- square test. Hence there is a relationship between the marital status and the level of job satisfaction.

Type of Back Ground and level of job satisfaction of sample respondents

SI. No	Type of Background	Skilled employees				Unskilled employees			
		Level of job satisfaction			Total	Level of job satisfaction			Total
		high	medium	low		high	medium	low	
1	Rural	9	11	13	33	2	4	4	10
2	Semi- urban	18	37	11	66	8	5	5	18
3	Urban	68	80	24	172	11	13	7	31
	Total	95	128	48	271	21	22	16	59

Background level and level of job satisfaction

S.No	Particular	Employees	
		Skilled	Unskilled
1	Calculated value	15.0745	2.3636
2	Table value at 5 percent level	9.49	9,49
3	Degree of freedom	4	4
	Inference	Significant	Not significant

It shows that out of 45 skilled employees having high level of job satisfaction, 49(51.58) percent of them resided in their own houses and 46 (48.42) percent of them resided in their own houses. Out of 128 respondents having medium level of job satisfaction 77(60.16) percent of them resided in their own houses. Further it shows that out of the 48 respondents having low level of job satisfaction 24(50 percents) of them resided in rented houses and 24(50 percents) of them resided in their own houses.

In the case of unskilled employees out of the 21 respondents with high level of job satisfaction 5(23.81) percent of them resided in their own houses. Out of 22 respondents having medium level of job satisfaction 16 (76.19) percent of them resided in their own house. Out of 22 respondents having medium level of job satisfaction 5(22.73) percent of them resided in resent house and 17(77.27) percent of them resided in their own houses. Further it shows that out of the 16 respondents having low level of job satisfaction 4(25 percent) of them resided in rented houses and the remaining resided in town houses.

SUMMARY OF FINDINGS

The job satisfaction is achieved when actual rewards match with the perceived rewards of the employee. The perceived rewards are a reflection of their need and hence job satisfaction is a matter of degree of need satisfaction. High job satisfaction is associated with better performance whereas low job satisfaction is associated with poor performance and disciplinary problems. The analysis of relationship between job satisfaction of the employees and demographic personal factors reveals that out of the fourteen variables, seven variables namely age, marital status, type of family, family size, number of department, salary and rural/ urban background are significant with regards to skilled employees. In the case of unskilled employees only one variable namely type of family has significant influence on job satisfaction. The skilled employees perceived more job characteristics namely job security, modernization and job itself than the unskilled employees. Similarly, unskilled employees value more salary and allowances, work environment and interpersonal relationship.

The skill employees aspire more for the job security work, environment recognition and job it. In case of unskilled employees, they aspire more for salary and callowness advancement social values and job security. The Skilled employees attach greater importance to job characteristics like job security, work environment advancement and recognition that the unskilled employees. The less importance job characteristics for unskilled employees are work environment advancement and recognition.

SUGGESTION TO IMPROVE JOB SATISFICATION

Employee productivity and effectiveness are frequently limited by their demographic and personal qualities. Because these are outside of the formal organization's jurisdiction and are difficult to modify, management should focus

on the job characteristics that impact job satisfaction in shortfall areas. Another area where there is perceived deficit is the work environment. Management should take the required efforts to ensure a safe working environment.

Management should develop interpersonal relationships among employees, and superiors should provide adequate recognition based on fair performance appraisals, so that employees do not resort to work-to-rule. Finally, management may conduct 360-degree performance appraisals at appropriate intervals, allowing them to take necessary steps to boost employee work satisfaction.

CONCLUSION

Even though the scope of the study is confirmed to Madurai district the findings of the study are usually to the rest of the other areas, since the study mainly located the level of job satisfaction of employees working in automotive industries. Employee's job satisfaction results in increase in production and then it may also yield reduction in absenteeism and stress of the employees. Automotive industries should consider alternates managerial initiative techniques to attain employee job satisfaction.

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A STUDY ON CONSUMER BUYING BEHAVIOUR TOWARDS ONLINE SHOPPING IN THOOTHUKUDI TOWN

P.Ananthi and T.S.Subbulakshmi
*Research Scholar, Department of Commerce,
Sri Paramakalyani College, Alwarkurchi -627 412, Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli,
Tamilnadu, India)
(Corresponding Author Mail ID: subbulakshmits@gmail.com)

ABSTRACT

Today's world is based on information and technology The internet has been proven to be the most powerful media for the exchange of thoughts and knowledge about the world easily. Due to the easy access of internet facilities going of people to work. So they are selected for online shopping as it is convenient for us in many ways. Online shopping is the process of buying goods a services through the internet. This study identifies why using online shopping and analyzed the problem involved in online shopping and also understands the consumer buying behavior towards online shopping and their satisfaction. The result is conducted through the questionnaire of 120 respondents from Thoothukudi town. The researcher used the convenient sampling technique to select the respondents and the survey is collected from different age groups, students, workers, professional homemakers, etc. The data was analyzed and interpreted by using a percentage table, and chart.

Key Words: Consumer, Online shopping, Internet, Buying behavior

INTRODUCTION

Due to the world advanced towards the information and technology provided the gain through online shopping day by day. Today life is occupied with a lot of activities. There is little or no time for people to go to the store to create purchases this has made a person change their method of shopping. So the people prefer the online shopping to buy the goods. They are paying bills using credit or debit cards, phone pay, Google pays, etc., With e-commerce competition at an all-time high, online retailers need to move extremely fast. To outpace their competitors, it has become essential for these companies to rely on real-time data, which can inform their understanding of the market as well as their most important business decisions on a day-to-day basis.

Last year, e-commerce sales increased 32.4% year over year; that number is likely destined to continue growing. This fast growth process, catalyzed by the pandemic lockdowns, brought plenty of new challenges to retail companies, which have had to address quick strategy pivots and accelerated competition. Through holistic retail, retailers can access and manage all existing channels in one single platform, ensuring a far better experience for customers than with the previous,

now obsolete model — multichannel retail. However, that is not enough. Many e-commerce companies have also started relying on data-fuelled tools that help them gain full control over their digital shelf to monitor products, customer sentiment, and the general market landscape. These solutions heavily rely on the collection of e-commerce-related data — including product ratings and reviews, search data (to monitor the position of their products), and product data (to ensure that all product names, descriptions, and images are uniformly displayed).

LITERATURE REVIEW

Adnan (2014) established that perceived advantages and psychological factors had a positive impact on consumer attitudes and buying behavior in Pakistan. In Kenya, a previous study conducted in Nairobi County revealed that some of the reasons for the adoption of online shopping include a timesaving, easy comparison of alternative products, fairer prices of online goods, expert/user review of products, and access to a market without borders (Ngugi, 2014).

Lakshmi. S. (2016) performed a research study on "Consumer Buying Behaviour towards Online Shopping". The main objective of the research was to explain online shopping's importance and consumer buying Behaviour in online shopping. The author explained how online shopping and consumer Behaviour are important and closely bonded with each other. Also, the author explained the enjoyment. Online shopping will take over as the prime marketing and selling channel in India in near future.

Singhal & Patra (2018) in their study found that A preference measurement check was made to know the perception of the consumer regarding the top e-commerce website i.e. Flipkart, Amazon, Snapdeal, Jabong, Shopclues, and others. The major reason behind their perception was based on various discounts, easy payment facilities, easy return facilities, and timely and express delivery.

OBJECTIVES

1. To know the reasons for buying behaviour toward online shopping
2. To study the problem involved in online shopping
3. To understand consumer buying satisfaction with online shopping
4. To know the buyer's conduct by buying a product

STATEMENT OF THE PROBLEM

There is a Precedent change from the traditional method of purchase shopping towards online shopping in India. Consumers are giving importance while buying goods online. Every consumer likes to buy the product online and book every product. The buyer analyses requirement of the product goods and its higher price. The buying decision depends on the value and product brand.

Research Methodology

This study is based on both primary and secondary data. The data is mainly based on primary data collected from a particular area in Thoothukudi town.

Primary Data

The primary data were collected through a questionnaire method. The questions were multiple choices. The question is collected from the consumers in Thoothukudi town for this study.

Secondary Data

The Secondary data collected from already been collected by someone for some purpose and is available for the present study. Secondary data was collected from newspapers magazines and online sources such as websites

ANALYSIS AND INTERPRETATION OF DATA

Table 1: Demographic profile

Age Group	No of Respondents	Percentage of Respondents
Less than 15	32	26.7
16 – 25	22	18.3
26 – 35	25	20.8
36 – 45	22	18.3
Above 45	19	15.8
Educational Qualification		
School Level	56	46.7
Under Graduation	25	20.8
Post Graduation	30	25
Technical Level	3	2.5
Others	6	5
Marital Status		
Married	59	49.2
Unmarried	61	50.8
Annual Income		
Below 10000	33	27.5
10000-20000	20	16.7
20000-30000	26	21.7
30000-40000	9	7.5
Above 40000	32	26.7
Members in the family		
2	15	12.5
3	20	16.7
4	56	46.7
Above 4	29	24.2

Source: Primary Data

Table -1shows that out of 120 respondents most of the respondent's age group are under less than 15(26.7%), among them 46.7 respondents completed

their school-level education. 50.8 percentage respondents are unmarried. 27.5 percent of respondents' monthly income falls under the below 10000categories. 46.7 percentage respondents' family members are 4.

Table-2 : The reason behind refusing online purchase

The reason behind to refuse for online purchase	No of Respondents	percentage of Respondents
Fairness to buy	24	20
Economic Reason	53	44.2
Lack of usage	13	10.8
Online theft	9	7.5
Poor Connectivity	2	1.7
Others	19	15.8
Total	120	100

Source: Primary Data

Table-2shows that 44.2 percentage respondents refuse to use online purchases for the reason of economic conditions. 20 percent of the respondent's main reason is fear to buy the products online. 15.8 percentage respondents tell other reasons. 10.8 percentage respondents refuse to use the online purchase for the reason of lack of knowledge.

Table-3 Biggest problems faced by the respondents toward online shopping

Responses	No of Respondents	Percentage of Respondents
Poor Internet Connection	25	20.8
Breach of personal information	40	33.3
Breach of payment detail	55	45.8
Total	120	100

Source: Primary Data

Table- 3 Above clearly shows that 45.8 percent of the respondents faced problems with breach of payment detail,33.3 percent of the respondents were affected by the problem of breach of personal information, and 25 percent of the respondents have the problem of poor internet.

H_0: There is no significant difference between the age and problems faced by the respondents towards online shopping.

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.980[a]	8	.266
Likelihood Ratio	11.549	8	.173
Linear-by-Linear Association	.780	1	.377
N of Valid Cases	120		

From the above table, it is found that the calculated p-value (.266) is higher than the significance level at 0.05. Hence, it is stated that there is no significant relationship exists between the age and problems faced by the respondents towards online shopping.

Table-4 : Most preferred online shopping sites

Responses	No of Respondents	Percentage of Respondents
Flipkart	45	37.5
Amazon	40	33.3
Snapdeal	4	3.3
Meesho	21	17.5
Mundra	6	5
Others	4	3.3
Total	120	100

Source: Primary Data

Table 4 shows that 37.5 percent of the respondents prefer Flipkart for online shopping,33 percent of the respondents prefer amazon using to online shopping, 17.5 percent of the respondents prefer the Meesho for online shopping, and remaining of the respondents used snap deal and others for the online shopping.

Table -5 : Reason for online shopping

Responses	No of Respondents	Percentage of Respondents
Availability	27	22.5
Comfort	26	21.7
Offer	52	43.3
Variety	15	12.5
Total	120	100

Source: Primary Data

Table- 5 Clearly shows that 43.3percentage of the respondents prefer online purchases because avail of more offers, 22.5 percent of the respondents prefer online purchases because of availability, 21.5 percent of the respondents have feels comfortable and 12.5 percent of the respondents prefer online purchases reason of the varieties.

FINDINGS

Few reasons given people for adopting online shopping include a time-saving easy method of comparing other products and prices or user reviews of products

- 26.7 of the respondents belonging to the age group of less than 15
- Majority of the respondents (46.7 %) are school level
- 50.8 % of the respondents are unmarried
- 27.5 % of the respondents belong to Income below 10000

- Majority of the respondents (58.3 %) used advanced internet
- 45.8 % of respondents say fear the breach of payment details in online shopping
- 37.5 % of respondents are preferred the online shopping site is Flipkart
- Most of the respondents buy the necessary product online by shopping
- Most of the respondents (22.5%) is given reasons for online shopping is availability
- Most preferred payment mode is cash on delivery

SUGGESTIONS

- Providing more offers on the products can attract customers to online shopping
- Now given one most of security to online payment
- Online shopping through avoid duplicate product

CONCLUSION

The reason shows very useful to people. Through the internet, people can purchase anywhere, anything, and anytime with easy and safe payment of options cheapest and quality of online shopping. So that maximum consumers towards online shopping. Sometimes online shopping gives poor product-related information. Online shopping given choice to the consumers for return, cancel shopping and losing branch trust

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ACCULTURATION OF SLAVES: THE PRODUCT OF PERMANENT SERVITUDE

[*]M. Sumathy and [**]K. Hema
Department of English,
[*]Sri Sarada College for Women (Autonomous), Tirunelveli- 627 011,
Tamilnadu, India
[**]Sadakathullah Appa College, Tirunelveli – 627011,
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli,
Tamilnadu, India)
(Corresponding Author E-mail ID: msg2suma@gmail.com)

ABSTRACT

Early Anglo-American colonizers were unable to imagine systems of shared land tenure, governance with Indigenous polities. They perceived Indigenous people to admit themselves to the racialization, and the justification they provided for the strategies they utilized to eliminate, displace, acculturate and conceptually disappear American Indians. European settlers asserted an exclusive right to own the land based on their claims to be making it productive, which was in fact made so profitable by the bulk of the labour such as indentured, contracted, enslaved, or imprisoned. In the wake of the Civil War, it appeared that the racial hierarchy so closely associated with enslaved labour for it undergirded the settlers' claims to the land, their continued expansion of that land base, their ability to control the benefits of that occupation, and their presumed prerogative to govern every aspect of American life. As a result, they employed several strategies to create, expand, control and exclude a workforce of enslaved African American descendants from the opportunities that might facilitate their economic and political independence. This article frames that the acculturation of slaves and structures of racial subjugation not as the product of personal bias and prejudice but as the perceived needs of a settler-colonial society that has always used race to justify its occupation and appropriation of Indigenous lands and natural resources and its exploitation of the labour.

Keywords : Strategies, seasoning, acculturation, exploitation, outlandish, slave breeding

INTRODUCTION

The practice of slavery flourished on the Eastern Shore because of the existence of a plantation economy. The existence of large plantations on the Shore and their benefits to white merchant-planters helps to explain the vociferous opposition to attempts to empower or acquire more slaves. As Indigenous people disappeared in various ways, settlers turn to strategies of replacement, for putting appropriated lands and resources to productive use. This requires the active recruitment of a critical mass of settlers; the development of a unique cultural

identity; the formation of independent structures of governance and social control. Settlers also perceive a need for a readily available labour force that is not intended to share the benefits accruing to the settler class and, accordingly, develop strategies to acquire and control those workers. One of the strategies of assimilation was the acculturation of slaves.

The Seasoning

All procuring strategies include some form of seasoning. Seasoning inculcates dependence and indebtedness in the victim. The process used to coerce African slaves into slavery is also called as "seasoning." Seasoning is meant to break its victim's will, reduce their ego, and separate them from their previous life. In breaking down the victims, slave traders rely only on the dependency that results from taking their acquisition so far away from home that they cannot get back without money for transportation. Harsher methods like beating, rape, drugging and starvation involved before turning them out on the plantations. The purpose of seasoning is to inculcate in the victim behavioural and attitudinal changes desired by the controller. Therefore, the outcome of successful seasoning is perfect obedience in the newly procured land. As a result of this process, the owner gains complete authority over the slave.

Naming Africans

The Seasoning of the poor African Blacks is a technicality denoting their acclimating in America. It also refers to their subjection, initiation into hard treatment as a plantation labour. This was a very critical time for the owners, as usually many deaths ensued. Unfortunately, the sufferings of the slaves did not terminate with their voyage and preparation for market, it continued long after the cause that has produced them ceased. The mortality therefore during the seasoning was very great. One-fifth part or twenty percent was estimated to die during that time. This was the frequent fate of the women captives. The women sustained their bodily sufferings with more silent fortitude than the men.

In some societies, incoming Africans were identified ethnically, as Ibo or Coramantee for instance; whereas, in others, Whites simply grouped them together as "Guiney Negroes," or more vaguely as "outlandish." Naming of this kind varied from careless to deliberate, depending on how menacing the Africans were considered to be. Where whites saw them as dangerous, they ignored their ethnicity and cultures. Comprising an array of the west and central African people manifested original identities by tribal names, languages, ritual scars, and habits of mind. Some showed even more emphatic attitudes about who they were previously when as runaways, insurrectionists, or maroons while attempted to return home or to make an Africa in the American wilderness. These choices confounded Whites, who, in attempting to police and sell the new-comers, exposed their own attitudes about Africa and Africans in the sparse and prosaic notes, in newspapers and plantation records, principally, that trace the first

encounters between the two people. In this difficult process, domestic or household slaves were afterwards sent to the plantation. This was generally viewed and felt by the victims as a punishment, and being so it had a deleterious effect upon their hearts and minds. No other system than "the peculiar institution" knows anything more about such treatments.

Slave owners' perspective

Slave owners placed a premium on acquiring children and young adults as slaves who could more easily learn the language or dialect and accept the religious ideology of slaveholders which in turn justified enslaving them. Slave owners thought marriages between slaves were in their best interest, and enslaved people themselves desired this family structure. From the owner's perspective, the black family helped to produce the compliance needed to perpetuate the slave system. Having slave children raised in a family unit provided the acculturation and socialization needed to produce adult slaves. Slaves who were married or had blood relatives were less likely to run away, and the threat of selling a family member provided another means of social control. They often lived in single family dwellings where young children learned the gospel and folk beliefs and heard slave stories. Parents taught children the essential tasks they would need to know to survive as adults and navigate a white world.

The old female slaves transmitted local belief and value systems to their children. As their physical skills diminished and they could no longer perform rigorous manual labour, they were tasked with birthing and caring for children, providing domestic medicine, and teaching them survival techniques of a slave society. Also, many slave families were 'near nuclear,' with the father of the unit being the property of an owner from another plantation. As such, he was obliged to work on his owner's plantation and to see his family on approved days. Thus, women in slave homes had comparatively more power in family decision-making than their white counterparts, and played a vital role in perpetuating slavery.

Slave breeding

The demand for slaves at the lower South made slave breeding profitable in the border States, and creating an ever-increasing market. Slave breeding was the practice in slave states of the United States. System in which, the slave owners forced the reproduction of enslaved people to increase their profits. It included coerced sexual relations between enslaved men and women or girls, forced pregnancies of enslaved women, and favouring women or young girls who could produce a relatively large number of children. The objective was to increase the number of slaves without incurring the cost of purchase, and to fill labour shortages caused by the abolition of the Atlantic slave trade.

A master could stimulate growth in his workforce by buying young, fertile women and providing them with mates. He would have to relieve these women of

hard labour during the late stages of pregnancy and on through a recovery period after childbirth. He would have to provide mothers and children sufficient food, shelter, and medical attention to maintain health and vitality. Most slave children were born into slave families; few were sired by studs, bought or hired. Masters and traders never spoke of stud farms, but they did show enthusiasm for natural increase and so valued youths for their capacity for labour and reproduction. Slaves too, though subject to tyranny, had their say about reproduction. They could resist being made into breeders. Though masters generally did not coerce slaves into having children, they were partial to women who did give birth to many children.

Summation

The theft of land and the enslavement of Africans became the foundation of prosperity for many white families. The white aristocrats used the black labourers to build the elaborate mansions and estates throughout the Lower Eastern Shore. They used their position and power to maintain the residential segregation, and strict racial code to create an economic order that elevated the racial tension between whites and blacks. The racial tensions remained in place long after the aristocratic influence waned which helped them to preserve their luxurious life style and power.

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A SURVEY REPORT ON BIOMETRIC GAIT RECOGNITION AND HOLISTIC APPROACHES ON GAIT RECOGNITION

P.Subbulakshmi
Department of Information Technology,
Sri Sarada College for Women (Autonomous), Tirunelveli- 627 011,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli,
Tamilnadu, India)
(Corresponding Author E-mail ID: lakshmisubbu808@gmail.com)

ABSTRACT

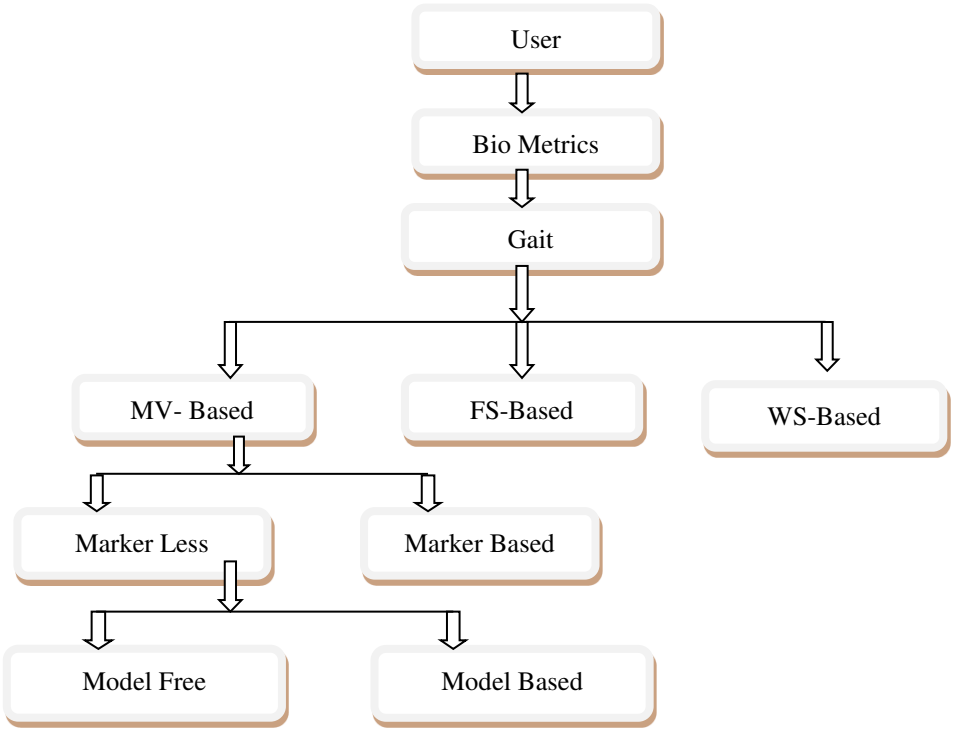
Biometric gait analysis is to gain biometric information such as identity, gender and age from people for different walking patterns. While gait has a number of eye-catching properties as a biometric, there are several confusing factors such as changes due to footwear, ground, drowsiness, injury, and passage of time. Biometric Gait is classified into three categories based on: machine vision, floor sensor and wearable sensor. There are two methods of marker less gait recognition, which are model based and model free approaches. Model Free approaches are also holistic approaches. This paper presents biometric user recognition based on gait and recent comprehensive survey of gait recognition approaches and various model free gait recognition modules and also Publicly available gait dataset are also discussed.

Keywords: Machine vision, Floor sensor, Wearable sensor Model Based, Model Free, Gait Dataset

INTRODUCTION

In this paper, Gait is a person's manner of walking. Human recognition placed on gait is relatively recent, compared to the traditional approaches such as fingerprint recognition. Each and every individual has a unique gait cycle pattern, which helps to identify a person based on his walking style. Biometric systems have been widely used in many applications and in different fields such as forensics for criminal identification, access control of electronic gadgets only by an authentic person, human activity recognition. Many research studies have been done on human gait recognition using machine vision (MV), floor sensors (FS) and wearable sensors (WS).

Figure 1. User Gait Authentication Approaches



Section1 describes user authentication approaches Section 2 provides various approaches for gait recognition techniques. Section 3 describes the modules of model-free gait recognition. Section 4 describes some publically available and recently introduced datasets are discussed. Section 5 concludes the paper.

I Biometric gait recognition

MV-based gait recognition

In this classification, gait is captured using a video-camera from distance. These techniques are occupied to extract gait features for recognition purposes. BenAbdelkader et al. [1] used walk and swing for person identification and verification. Johnson and Bobick [2] removed stagnant body boundaries such as the height, the distance between head and pelvis, the maximum distance between pelvis and feet, and the distance between feet, and used them for recognition. These gait recognition algorithms are based on the human silhouette [3,4,5]. If the image background is removed and the silhouette of the person is extracted and analyzed for recognition, see Figure 2.

Figure 2: An example of silhouette extraction from [10]

FS-based gait recognition

In FS-based approach, a set of sensors or force plates are installed on the floor [6,7,8]. See Figure 3.These sensors allow to extent gait related features, when a person walks on them. Orr and Abowd [6] collected 1680 footstep profiles from 15 subjects. Utilizing this data set, they gained 93% correct recognition rate [6]. Suutala and Roning [7] investigated 31 different features (e.g. max. time value of heel strike, max. amplitude value of the heel strike, etc.) for recognition. Around 200 gaits from 11 persons, they obtained 70.2% recognition rate [7]. Middleton et al. [8] used three features, stride length, stride cadence and time on toe to time on heel ratio for recognition. These features proved sufficient to achieve an 80% recognition rate based on data set from 15 individuals [8]. It is worth noting that in FS-based gait recognition, the performance was evaluated in the identification mode [6,7,8].

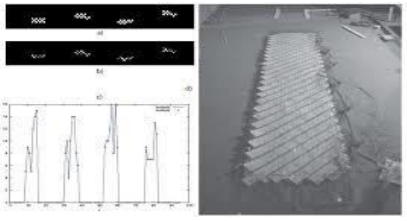


Figure 3: A prototype sensor mat from [14]

One of the main advantages of FS-based gait recognition is in its unobtrusive data .It can be deployed in access control application and is usually installed in front of doors in the building. This FS-based gait system can also indicate location information within a building [6].

WS-based gait recognition

In WS-based gait recognition, gait is collected using body weary motion recording (MR) sensors [9,10,11,12]. The MR sensors can be wearied at different locations on the human body. The boosting of gait, which is registered by the MR sensor, is implemented for authentication. The first WS-based gait recognition was explained by Morris [13]. He focus his work was basically on clinical aspects of the system [13]. Ailisto et al. [9] recommended WS-based gait recognition as a biometric confirmation. The MR sensor was connect to the midriff of the object. In [10], Figure 3:A prototype sensor mat from [14] the MR sensor was hook up to the strap of the objects, around the right hip as shown in Figure 4. In [11], the MR sensor was attached to the lower part of the leg as shown in Figure 5.

The MR sensor was transfer in the knickers pocket. Four different methods, namely absolute distance, correlation, histogram similarity and higher order moments were applied, and the EER of 7.3%, 9.2%, 14% and 20% were obtained, respectively [12]. In all these mentioned WS-based studies (except in [12]), performance was evaluated only in the verification mode. In [12], performance of WS-based approach was also evaluated in identification mode, and a recognition rate of 86.3% was achieved.

Figure 4: The MR sensor attached to the hip[23]

Figure 5: The MR sensor attached to the lower leg [24].

TABLE 1. PREVIOUS SURVEYS ON GAIT RECOGNITION IN BIOMETRIC SYSTEMS

Year	References	Focus
2001	[15]	Extracting relevant information from person's activity for gait recognition
2002	[16]	Used spatio-temporal parameters of a walking person for biometric identification and verification
2003	[17]	Proposed gait recognition algorithm extracted from statistical shape analysis
2004	[18]	Fused dynamic and static information of body at decision level for high gait recognition rate
2005	[19]	Analyze the factors affecting the gait recognition
2006	[20]	Study the effect of night on gait recognition via thermal infrared imagery
2007	[21]	Fusion of 2-D and 3-D features using Genetic Algorithm for gait recognition
2008	[22]	Formally study the factors effecting the gait dynamics
2009	[23]	Proposed a robust gait representation to suppress the incomplete information
2010	[24]	Presented gait analysis based on geometric information utilized in a probabilistic Framework
2011	[25]	Used hidden Markov models and accelerometer data for biometric gait recognition
2012	[26]	Gait recognition based on Microsoft Kinect
2013	[27]	Used the model-based approach for activity recognition using movements of legs only
2014	[28]	Address the limitation of conventional identification methods using gait metrics in the mobile device
2015	[29]	Feasibility of using smart-watches for gait recognition
2016	[30]	Extract gait kinematics for people tracking using non-intersecting un-calibrated camera stationary cameras
2017	[31]	Hybrid gait features is proposed for gait cycles with various walking directions
2018	[32]	Robust model-free gait recognition

II. HUMAN GAIT RECOGNITION TECHNIQUES

Most of the vision-based gait recognition algorithms are based on the human silhouette [33, 34]. See Fig.1.Image Vision based gait analysis can be classified into two categories; marker-based and marker less. Marker-less gait recognition techniques can be further classified into two main types. One is **model-based** method and another one is model-free[35]. Model-based methods are usually scale and view invariant. These methods are frequently need general computations to path and model the subject body. On the other hand, model-free approaches draw features clearly from gait sequences without assuming a structural model for the human motion. It suggests less computational complexity while providing the good recognition performance. These advantages have made model-free methods an agreeable choice for gait analysis in unconstrained scenarios.

III. MODULES OF MODEL-FREE APPROACHES

The general framework (Fig.6) for the model free approaches of gait recognition consists of motion segmentation, feature extraction, feature selection and classification. Moving objects are detected and tracked from the image sequences obtained from the video data. This is performed by widely used segmentation process of background subtraction, which separates foreground from background [36]. In this context, many issues such as shadows, illumination changes, dynamic scenes and camera jitter has arise due to which accuracy of segmentation method is compromised. Gait features are extracted from the sequence of silhouettes acquired from segmentation process. The silhouette does not provide the accurate results due to the presence of covariates such as shadows, carrying conditions (handbag, briefcase, backpack etc.) and clothing variations. These reasons have motivated the researchers to introduce novel feature representations to the model-free techniques.

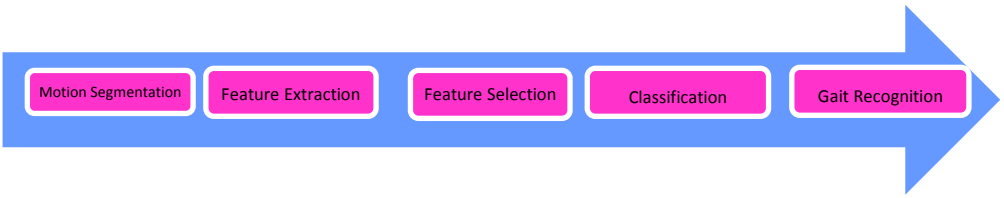


Fig.6.Framework of model-free Gait Recognition Approach

IV GAIT RECOGNITION APPROACHES

Gait Energy Image

There are many model free algorithms proposed in many papers, such as [46–49].Among them, gait energy image (GEI) [48] has been proved to be effective in these methods. Gait energy image using a single image to represents human motion, It reduce the storage and computational costs, GEI is less sensitive to the noise .Han et al [48] proposed the GEI method, the gait energy image can

reduce the influence of noise; But, GEI using an image to represents a gait video sequence, so, this method will lost some intrinsic static and dynamic characteristics.

Active Energy Image

Zhang [50] proposed a new method active energy image - AEI method. In this method the basic idea is to extract the difference between two adjacent silhouette images in a gait sequence. To the gait energy image-GEI, active energy image-AEI focuses on dynamic regions, and active energy image-AEI include more dynamic information to the gait sequences. Furthermore, active energy image- AEI is robust to the clothing variety, carrying object and low quality silhouettes .Wavelet transform is more useful, it can perform multi-resolution time frequency analysis. Wavelet transform is usually used in image edge's detection, image compression, and filter design, and image object recognition.

V PUBLICLY AVAILABLE GAIT DATASET

Research Group	Name	Variant	# of Subjects	Size	Variations
Philips et al.	NST-USF	MV-Based	122	1.2 TB	2 viewpoints, surface, shoe, carrying condition, time
Iwama et al.	OU-ISIR	MV-Based	4007	529MB (silhouettes only)	25 views, 32 clothing, 9 speeds, gait fluctuations
Tan et al.	CASIA	MV-Based	153	10GB	11 viewpoints, clothing, carrying condition
Hofmann et al	TUM-IITKGP	MV-Based	35	50GB	Backpack, shoes

Table 2 Gait Biometric Datasets.

This Table 2 provides some of the largest publically available Datasets. Size metric in this table is a reflection of their stand- alone datasets. These gait databases are needed to fairly compare and evaluate the performance of the gait recognition algorithm [37].

USF Dataset

University of South Florida has collected the USF Human ID gait dataset. This dataset consist of 1870 video clips taken from the 122 subjects. Each person walking around the elliptical path in front of the camera. There are up to Five

covariates are there for each person (View, Shoe, Surface, Carrying Condition and Time): two viewpoints that are left and right; two surface types grass and concrete; two shoe types; with or without surface; and two different weather conditions to test the performance [38] [39].

OU-ISIR Gait Dataset

The Institute of Scientific and Industrial Research (ISIR), Osaka University (OU) has collected this datasets. The OU-ISIR Large scale database contains the largest number of individuals, while within-subject variation is limited. Therefore it is useful for statistically reliable performance evaluation. There are two datasets treadmill and large population dataset. The First Treadmill dataset contains gait images of subjects on a treadmill with the largest range of view variations: (25 views, 9 Speed variations between 2 and 10 km/h), and clothing variations up to 32 combinations, and as such, it can be used to evaluate view invariant, speed-invariant and clothing invariant gait recognition. In addition, it is used to analyze gait features in gender and/or age-group classification. The Another Large Population Dataset consists of individuals walking on the ground. The ground is surrounded by the 2 cameras at 30 fps, 640 by 480 pixels [40]. The datasets contains silhouette sequences registered and size-normalized to 88 by 128 pixels size. This gait database includes 4007 subjects (2135 males and 1872 females) with ages ranging from 1 to 94 years. There are two subsets of this database that are A and B. Dataset A is a set of two sequences (gallery and probe sequences) per subject. Dataset B is a set of one sequences per subject and each of the main subsets is further divided into 5 subsets based on the observation angles, 55[deg], 65[deg], 75[deg], 85 [deg], and including all four angles. Dataset B is a set of one sequence per subject and it is used for identifying gait based gender classification [41] [42] [43] [44].

The CMU Motion of Body (MoBo) Database

These dataset was constructed by the Robotics institute, Carniegie Mellon University. In this dataset 25 individuals are walking on a treadmill. Around the treadmill, the six high resolution cameras have set to capture the images in different viewing angles. The provided database has four kinds of walking pattern which are slow, fast, incline walk and carrying a ball walk. Each subject walking pattern has six kind of view in different angles [45].

CASIA Gait Dataset

CASIA Gait database is provided by the Institute of Automation Chinese Academy of Sciences. In CASIA dataset there are 3 datasets A, B and C. Dataset B is a large multi-view dataset containing 124 individuals from 11 views.153 Individuals walked in four different conditions: normal walking, slow walking, fast walking and normal walking with a bag [39].

TUM-IITKGP Dataset

The TUMIITKGP Database is having 840 sequences of 35 individuals. Each individual is captured in six different configurations. Furthermore, each of the disposition is repeated two times (right-to-left motion, in a left-to-right motion), which results in a total of 840 sequences. There are six configurations for each person. Each person was primarily recorded in a regular walking configuration and three degenerated configurations including hands in pocket, backpack and gown, static and dynamic occlusion. The configurations are applied to evaluate recognition methods if different kinds of gait variations are present [40]

VI CONCLUSION

This paper has presented an extensive scrutiny of the modern developments in gait recognition and identification. Model-based features are extracted via modelling or tracking factors of human bodies, while model-free approaches place more importance on shapes of silhouettes or the whole motion of human bodies. Constitutionally, the model-based features are more view-invariant and scale-independent comparing to the model-free features. However, model-based methods expect high quality of gait consecutions to be captured and more computing time. In contrast, the model-free approaches are less sensitive to the quality of silhouettes and more efficient in computing. It's also save precious computing time to satisfy the requirement of real-time applications.

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A STUDY OF SOCIO-ECONOMIC CONDITIONS OF HANDLOOM WEAVERS AT PALAYAMKOTTAI

P.Anna Baby,
Department of Economics,
Sri Sarada College for Women (Autonomous), Tirunelveli- 627 011,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli,
Tamilnadu, India)
(Corresponding Author E-mail ID: drpannababynaran@gmail.com)

ABSTRACT

Handlooms have been known to India right from the historic ages. Basic needs of the human being are the food, clothes and shelter. This study explores the dynamics of local-level trade in plant-based handloom product in Palayamkottai of Tirunelveli District. The handloom weaving sector plays an important role in the economic development of the rural areas. It contributes significantly by generating more employment opportunities and providing bread to the rural poor. In the present study, we have analyzed the socio-economic profile handloom weavers in Palayamkottai of Tirunelveli District. This study is based on both primary and secondary data sources. The study results revealed that the situation of the weavers was worrying due to illiteracy, financial constraints, health problems, and poor Government support.

Keywords: handloom, socio-economic and financial constraints

INTRODUCTION

Handloom fabrics and handloom weavers form an integral part of the rich culture, heritage and tradition of India. Apart from providing one of the basic needs of human beings, along with a sizable contribution to GDP and export, this Industry provides direct and indirect employment to lakhs of people in the rural and urban areas. Handloom is one of the largest employment providers after agriculture in India. This sector provides employment to 43.31 lakh persons engaged on about 23.77 lakh handlooms, of which 10% are from scheduled castes, 18% belong to the scheduled tribes, and 45% belong to other backward classes. Production in the handloom sector recorded a figure of 7116 million sq. meters in the year 2013-14. During 2014-15, production in the handloom sector is reported to be 3547 million sq. Meters (April-September-2014).

Strength of sector

This sector contributes nearby 15% of the cloth production in the country and also contributes to the export earning of the country. Ninety five percent of the world's hand woven fabric comes from India. It has been sustained by transferring skills from one generation to another. The strength of the sector lies in its

uniqueness, flexibility of production, openness to innovations, adaptability to the suppliers' requirement and the wealth of its tradition.

However, handloom industry needs to reorient itself for meeting the challenges being posed by rapid economic, social and technological changes. Efforts are required to produce defect free high quality handloom fabrics according to contemporary consumer preferences, and also to ensure reasonable wages so that younger generation opts for this occupation. With a view to promote this industry on a sustainable basis, it is deemed necessary to produce quality fabrics with new design for winning the trust and confidence of the consumers. The scheme is voluntary.

"**India Handloom Brand**" is an endorsement to quality of the handloom products in terms of raw material, processing, embellishments, weaving design and other parameters besides social and environmental compliances for earning the trust of the consumers. Prime Minister Shri Narendra Modi launched the **India Handloom Brand** at Chennai on August 7, 2015 as part of the First ever National Handloom Day celebrations.

Objectives

- Ensure quality in designing and weaving and defect free product for safeguarding interest of the buyers.
- Ensure compliance with relevant social and environmental laws Conserve promote culture and tradition relating to handlooms, and
- Facilitate marketing of handloom products through e-commerce.

Plight of Handloom

Handloom is an age-old traditional industry beset with multi-furious problems. The industry, thus, requires a multi-pronged approach to infuse life and sustain its development. Handloom industry is providing one of the most basic needs of people and holds importance maintaining sustained growth for improving living standards of the weavers. Having studied the socio-economic conditions of the weavers, an attempt has been made in this section to offer a few suggestions for improving the plight of handloom weavers.

- Competition from power looms and mill sectors is obviously a major threat. This can be countered if the handloom sector produces high value, and distinctive products for foreign market.
- The Government shall take necessary measures to reorganize the defunct cooperative societies. If necessary, it has to initiate criminal proceedings against those responsible for mis-management.
- There is a need for a comprehensive legislation on occupational health and safety for the handloom sector. Key remedial measures need to focus on creating norms, raising awareness and providing capacity building services to help weavers to meet safety standards.

CONCLUSION

From the present study it is concluded that the Handloom weavers in Tirunelveli, mainly those who have inherited this occupation, are in a pitiable condition owing to the poor socio-economic conditions. The majority of them are wage weavers who earn minimal wages in spite of working for more than ten hours a day. It is interesting to note that the educational status among the weaver's community was not discouraging. Almost sixty-five per cent of the community belonged to Low income group, engaged with working under middlemen. The basic raw handloomerial required for the production of Handloom products was Handloom purchased largely from the local market but sometimes co-operative society or local dealers, on credit.

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A REVIEW OF PROGRESS AND STRUCTURE OF PEROVSKITES BASED SOLAR CELLS

E.S.Sowbakkiyavathi
Department of Physics,
Sri Sarada College for Women (Autonomous), Tirunelveli- 627 011,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli,
Tamilnadu, India)
(Corresponding Author E-mail ID: sowmiyaelindjeane@gmail.com)

Abstract

For the past few years, with the rapid raise of efficiency up to 22.1%, hybrid organic –inorganic metal halide perovskites solar cells (PSC) have become a research "hot spot" for many solar cell researchers. The materials used for preparing perovskites solar cells exhibit huge advantages like long carrier diffusion lengths, high light absorption potential with widely tunable band gap. The high power conversion efficiency together with low-cost fabrication method makes PSCs comparable with Silicon based solar cells. But, device instability, lead toxicity, and J-V hysteresis downs the future commercialization of PSCs. This review starts with the discussion of crystal and electronic structure of PSC on current research findings. Evolutions of PSCs are also analyzed with a greater detail of each component, device fabrication, device structure and the performance of PSCs acquired by each method. The crystal structure, electronic structure, and the device structure are reviewed to understand the basic structure of PSCs. Finally, this review provides a roadmap on the recent needs and future research directions to address the main issues of PSCs.

Keywords : *perovskites, crystal structure, electronic structure, device structure, photovoltaic studies.*

Introduction

The organic-inorganic metal halides PSCs have received a great attention of solar cell research community because of incredible device efficiency improvement from 3.8% to 22.1% since 2009. The pervoskite previouslygained much attention as a potential replacement of silicon PV devices, which is still occupied the most dominant position in the current PV market, with record efficiency of about 26% [1]. This small gap of solar cell efficiency attracted recent attention especially from the researchers with experience in dye-sensitized solar cells (DSSCs) or organic solar cells due to some materials can be utilized in both PSCs and organic solar cells [2-4]. The basic structure of PSCs also originates from the device structure of DSSCs. The materials of perovskites have been studied with largely tunable band gap (eg. CH3NH3PbX3 has a band gap from 1.5

eV to 2.3 eV and high light absorption coefficient (higher than 104 cm-1, which is similar to other thin film solar cell materials like CdTe and copper zinc tin sulphide (CZTS). Its low-cost and suitable fabrication techniques also provide as the promising advantages over silicon-based devices that require complicated and costly high-vacuum deposition methods [5-6]. The successful cell fabrication reports on flexible substrates indicated a greater possibility to the large-scale roll-to-roll manufacturing of PSCs that can be utilize in the industries. The meaning of "pervoskite" was about the crystal structure of calcium titanate, which was discovered in 1839 by the German mineralogist Gustav Rose and was named by the Russian mineralogist Lev Perovski. The terms "pervoskite" was defined to all compounds with the unique crystal structure as calcium titanate. The light absorption layer of pervoskite has a general formula of ABX3, where A is an organic cation (eg. Methyl ammonium CH3NH3+), B is a metal cation (eg. Pb2+) and X stands for the halide anion (eg. I-) [7-9].Only less than a decade ago, the first documentation of pervoskite-based solar cell efficiency was reported by Miyasaka. They reported an efficiency of 3.8% based on a DSSC structure. Due to the use of liquid electrolyte in the hole transporting material (HTM), the long-term stability of solar cell was very weak and didn't attract much attention. Similiar experiment was done by Park with the increased power efficiency of 6.5% but the stability was still the main issues due to the instability of HTM layer due to the liquid medium [10-12].

During the past few years, the use of solid-state HTM (2,2′,7,7′-tetrakis(*N*,*N*-di-pmethoxyphenylamine) -9,9′-spirobifluorene, i.e., Spiro-OMeTAD), rather than liquid HTM, onto the highly-crystallized perovskite layer has triggered the power conversion efficiency. In 2012, Lee et al. [13] reported a breakthrough device efficiency of 10.9% with the open-circuit voltage higher than 1.1 V. Wang et al. [14] studied graphene into PSCs and acquired an device efficiency of 15.6% in 2013 and the application of another perovskite material, formamidinium iodide (HC(NH) PbI) together with polytriarylamine (PTAA) as a new HTM brought a remarkable 20.1% efficiency in 2015 [15]. The recent record efficiency of PSCs was 22.1%, created in 2016 by SeongSik Shin et al. [16]. They also accomplished a long-term and stable efficiency of 21.2% in another work [17]. The perovskite-inserted tandem cell also reached a promising efficiency of 26.7% by combining with Si cells [18]. Figure 1 compared the efficiency progress of PSCs with other3rd generation photovoltaics up to date [19]. The rapid improvement of the efficiency of PSCs make perovskite being expected to be comparable with the stable performance of c-Si solar cells whereas all other kinds of non-silicon solar cells suffered great barriers in further improvements [20-23]. According to the theoretical calculation based on the well-known Shockley-Queisser limit, the perovskite devices, which have (CH NH PbI Cl), could achieve an efficiency around 25–27%. This result shows that there is still opportunity for the improvement of PSCs [24].

Though laboratory scale PSCs exhibited a great progress, pervoskite-based PVs still needs to overcome some barriers. In general, there are two major problems overcrowding the pathway of device performance and hysteresis of J-V (current density-voltage). Presently, long-term efficiency measurements (>1000 h) is not adequate for the commercialization of PSCs. The PSCs must exceed a series of testing under harsh conditions and environments for similar duration (>1000 h). Thus, it is very important to know the degradation mechanism of both perovskite materials and other device components such as hole transport medium (HTM) and electron transport medium (ETM). During cell testing, the J-V hysteresis was discovered when voltage sweeping routine changed. This phenomenon gives problems for standardizing the measurement protocol of PSCs. Also, the lead toxicity could be another issues during the manufacturing, using and recycling of perovskite [25]. Currently various trials on applying non-toxic alternative metal ions have been reported [26,27] but their device efficiency is still unsatisfactory. Future research outcomes of PSCs, except efforts on improving the stability and reducing J-V hysteresis of PSCs, could also be focus on the large-area fabrication of PSCs (even small module area) and efforts on replacement of lead with other non-toxic metal ions inside the perovskite. Bi-facial illumination could also be considered for PSCs due to its structural advantages. It has been clear that the perovskite could be the next candidate to replace Si due to its outstanding structural, electrical and optical properties. This review, therefore, would start with the discussion from micro-scale observations on the crystal and electrical structures of perovskite materials. The next part is the discussions on device-level investigations: the evolution of device structure, the fabrication methods of each device component and finally illustrate some suggestions for further directions of the perovskite research.

Figure 1. A comparison of perovskite efficiency with various types of photovoltaic (PV) devices.

2. Crystal Structure

The perovskite materials have a general crystal structure which was denoted as ABX , where “A” and “B” are cations with varying sizes and “X” is an anion. A typical unit cell structure of a basic perovskite is shown in Figure 2. Organometallic halide perovskites include an organic cation (e.g., methyl-ammonium CH NH , ethyl-ammonium CH CH NH , formamidinium NH CH=NH), a metal cation of carbon family (i.e., Ge , Sn , Pb) and a halogen anion (i.e., F , Cl , Br , I) [27]. Among them, methyl-ammonium-lead-iodide (MAPbI) is the most used perovskite light absorber.

Figure.2 A generic perovskite crystal structure of the form ABX.

Some studies also replaced lead with other metal ions due to the concern of lead toxicity during the fabrication of device, specially for the future large-scale production [26,28]. Additionally, many organic cations (CH NH and NH CH=NH), inorganic cations (Cs and Sn) and halide anions (Br, Cl and I) have

been used to raise the efficiency and stability [29,30]. Perovskite materials have several phases depending on the change of temperature. When temperature is lower than 100 K, the perovskite exhibits a stable orthorhombic (γ) phase. When temperature is raised to 160 K, the tetragonal (β) phase begins to appear and replace the original orthorhombic (γ) phase [31-32]. If the temperature is further increase to about 330 K, the tetragonal (β) phase started being replaced by another stable cubic (α) phase [33]. Figure 3 displayed all those three crystal structures. Figure.3 Comparison of (a) orthorhombic; (b) tetragonal and (c) cubic perovskite phases obtained from structural optimization of MAPbI . Top row: a-c-plane and bottom row: a-b-plane.

3. Electronic Structures

The electronic structure of perovskite, specially the typical MAPbI, wasevaluated by DFT (density functional theory) calculations. The calculated band gap had a good agreement with the measured band gap by absorption spectrum even after considering the spin orbit coupling and other interactions like van der Walls interaction. Zhou et al. [34] reported the band structure of both cubic and tetragonal MAPbI and the results were shown in Figure 4.Also, the unusual DOS (density of state) position of Pb and I exhibits the p-p optical transition, which was similar to the charge transition of an ionic material. On the valence band maximum (VBM), due to the s-p antibonding coupling, the valence band top tends to dispersion, which leads to a smaller effective mass (m).

Figure.4 (a–c) showed the band structure of cubic MAPbI optimized with lead relaxed, corresponding to 001 , 110 and 111 MAPbI , respectively. The relative results of tetragonal phase results are shown in (d–f).

According to other calculations [31-33], it is believed that MAPbI had an effective mass with the same magnitude of widely-used Si and GaAs. Thus, high carrier mobility could be expected. Although further investigation didn't match with the same magnitude, the evidence of low radiative recombination coefficient of MAPbI indicated the carrier mobility is high enough to overcome the radiative recombination. Besides, long carrier lifetime and suitable diffusion length of MAPbI were estimated. Compared with the long diffusion length of Si and GaAs (10 –10 μm) [35], a shorter diffusion length (<10 μm) of polycrystalline thin film perovskite were interpreted as due to the grain boundary effects. Thus, it could be concluded that the p-p transition is stronger than p-s transition in GaAs. The clear difference of DOS close to the conduction band minimum (CBM) led to the difference in joint density of states (JDOS) and therefore, generated the higher light absorption. Thus, the efficient charge generation and transition lead to a high photo-current and voltage with proper device structure.

4. Device Structure

The first reported perovskite device is totally based on the structure of DSSCs, where liquid electrolyte capped both mesoporous TiO particles and

perovskite material as the new “dye” molecules. Also, the perovskite device doesn’t have stable “dye” due to its quick dissolving in the liquid hole-transport layer. A previous research with similiar structure but thinner TiO layer (from 8–12 μm to 3 μm) and the efficiency increased to 6.5%. The perovskite was also proved a better light absorption than the dye molecules (N719); however, the corrosion appeared in liquid electrolyte and destroyed the device after 10 min [12]. To avoid this degradation, a solid-state hole-transport material was applied and the device performance was significantly increased. According to Lee et al. [13], this improvement combined both features from thin-film PVs and DSSCs and many other works were accomplished on increasing the efficiency. Solar cells were fabricated similar to thin-film PV, where perovskite served solely as the light absorber without TiO assistance. They finally acquired a planar PSC with a 1.8% efficiency [13]. They modified the growing condition of perovskite and boosted the efficiency to 11.4% but TiO was still the charge blocking layer. At present, both planar and mesoscopic structure-based cells have efficiency of 20.8% and 21.6% respectively. A schematic of both planar and mesoscopic structure could be found in Figure 6. The PCSs could be fabricated in both sequences rather than thin-film PV, whose device configuration was limited by the properties of absorber materials. Thus, there are four major types of PSCs: substrate/superstrate-configured mesoporous structure and substrate /superstrate-configured planar structure.

The most typical n-i-p mesoporous structure is the first demonstrated high-efficient structure for perovskite devices. Started with the TCO cathode (mostly fluorine-doped tin oxide, FTO), a thin compact blocking layer was applied to decrease shunting, a mesoporous metal oxide layer filled with highly crystalline perovskite absorber layer. A layer of HTM was applied and a metal contact layer was deposited on the top of the device. The mesoporous structure is originated from typical DSSCs. The reason for the weak performance of DSSC-based perovskite devices, except the corrosion due to liquid electrolyte mentioned above, was the excess mesoporous TiO part. The widely-spread TiO nano-particles inside the perovskite layer reduced the growth of perovskite crystals and also decreased the distance between separated free carriers, giving extra change for carrier recombination between TiO and HTM layer. Research results showed that the perovskite device acquired a higher efficiency with thinner mesoporous layer [12].

Figure.6 Schematic diagrams of (a) mesoscopic and (b) planar perovskite solar cells (PSCs).

Therefore, in n-i-p mesoporous structure of PSCs, the mesoporous layer was normally less than 300 nm. Such structure allows perovskite to form a capping layer on top of the mesoporous part, serving as a light-sensitive intrinsic layer while reducing the carrier recombination process. Currently mesoporous structure is one of the most popular structures in the fabrication of PSCs with power conversion efficiency (PCE) greater than 20%. Other materials such as AlO and ZrO have been also reported with great device efficiency. The planar PSC is

successful because it utilizes thin-film PV structure and excellent optical and electrical properties of perovskite. It is also an extreme case for mesoporous structure, where the thickness of mesoporous layer is zero and unlike the mesoporous structure, this type of structure could be fabricated without high-temperature process. This structure requires a better control of the formation of perovskite absorber and suitable choice of HTM/ETM layers. Research efforts demonstrated a PCE of 21.6% for this type of PSC. However, an ultra-thin mesoporous charge transport layer was always applied at the interface of perovskite and mesoporous TiO in order to enhance the carrier collection [15].

5. Conclusion

Perovskite, compared with other PV techniques (thin film, organic, dye-sensitized), could be the best alternative solar absorber. As efforts on better perovskite layer formation and longer device durability, even the lead-based PSCs could be able to share a certain part of PV market. Such trend couldinfluence further research and development (R&D) efforts towards higher-stable and non-toxic devices.

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A STUDY ON COMMUNICATION SITE - A REVIEW

S. Aswini, C. Pavithra, S.V. Sangeetha and V. Durga Jayanthi
Department of Computer Applications,
Sri Sarada College for Women (Autonomous), Tirunelveli - 627 011,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli)
(Corresponding Author E-mail ID: *durgajayanthiv97@gmail.com)

ABSTRACT

The study communication site is developed using Active Server Page.NET as Front end and MS SQL Server as back end. Communication site is useful for users to make friends with others, chats, pass news to others, and to make photo gallery. In this system, initially the user needs to register with their details through online and sending the request to their friends for communication through the communication site. Then the user's details are stored and authenticated. The administration process will view the request details, approved details, profile of an user, send from the users and sends the views to all. The users can login with their username and password. Then they give requests to their friends by searching their profile. This will give notification to their friends and once they accept their requests, they start communicating with one other. A user can make a photo gallery, make a friends with others, chat with new users and pass their views to friends.

Keywords: Chat, Photo gallery, communication.

I. INTRODUCTION

1.1 COMMUNICATION SITE

This communication site is developed for communication among the users in the organization through a site. Communication among long distance relationships was only through post and telegram till the end of 20th century. Information was shared through post and there was delay in time receiving the message. Later then, use of telephone increased; through which people started connecting with one other through which they can share their thoughts by communicating with them. Later on they were modernized and mobile phones entered market and was used by almost all of them which became even easier.

There was increase in technology for the benefit of people to share views and communication. For this, many sources were developed. Among them, the most important and unavoidable source would be internet which became part of our lives these days. Everyone can share their thoughts through internet with the help of computer, laptops, smart phones and other gadgets. Not only for sharing their views, but also for communicating with one other without any interruption, was the reason for everyone to be in thirst of internet. Here, we develop a site for

an organization through which employees can share their views and communicate among others in an effective manner.

1.2. ADVANTAGES

- Communication becomes easier.
- Both the sender and receiver share their thoughts and views in seconds.
- User could share their views through files, images and chat.
- Transfer of money is also easier through online net banking for which communication among the creditor and debtor is done easily.

It is hard to keep all the records safely if it is in the paper format. To reduce the manual calculation also we use this system, because there is a possibility to from mistakes. The calculation is very accurate. Both large and small business are feeling the necessity of developing business system in order to compute more successfully in today's market.

II. LITERATURE REVIEW

1. Communication site creates communication among users through internet which falls under social networking. These communication sites are used for advertising, sharing thoughts. Strategical marketing, etc..
2. Social networking or communication sites through online received its massive success between the year 2004 and 2006. The early stages of using the internet for sharing images or conducting discussions were done through e-mail. Later it was partially replaced by online communication sites which also maintain relationship among friends.
3. Online social networking sites help us keep in touch with our old and new friends, relatives, colleagues and persons known to us. This was used widely among college students and young people through which they could share their views among friends, Any how they should use it in an effective way for the benefit of their studies.

III. METHODOLOGY

3.1 OVERVIEW

Internal communications is a way to communicate the distinct story of a people. It includes the voices of each person who are connected to this site. This means of communication relies on all participants being open and transparent.

3.2 CREATE ACCOUNT

The users those who have not registered for the communication site to start communication among friends, they have to first create an account by clicking on sign up button in the login module.

3.3 LOGIN

The first step to get into a site or an account through internet is login form. Here the user login by entering their user name and password as security key for their security purpose.

3.4 REQUEST

In this page we will give a request to their friends using username and see the profile of the image.

3.5 ACCEPT

In this page the user can accept the friends request and they will able to chat , message, share post with them.

3.6 POST

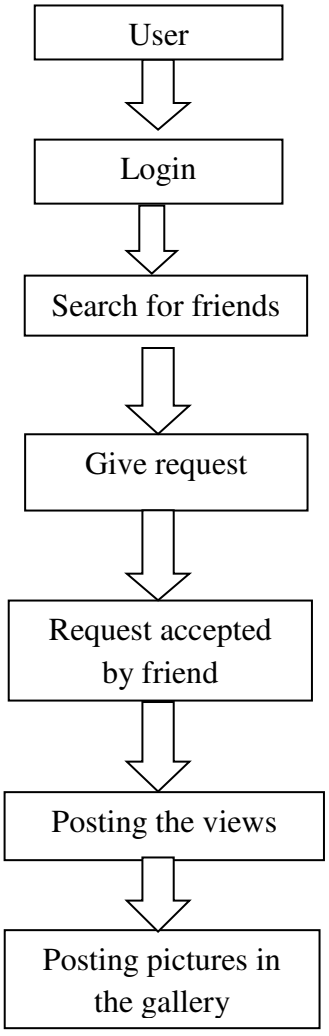
In this page, user will be able to post some news and advertisement to all the users.

3.7 MESSAGE

The users are able to send the message to friends and are able to send a file document also to the friends.

3.8 GALLERY

Sharing our images or our most favourite pictures with our friends gives us a special joy and if they respond to them in a positive way, we would be happier. For such experience, we have created gallery in this project.



IV.FUTURE ENHANCEMENT

There is scope for future development of this project. The world of computer fields is static; it is always subject to be dynamic. The technology which is famous today becomes outdate the very next day. Enhancements can be done in an efficient manner. This project is even update the same with further modification establishment and can be integrated with minimal modification. Thus the project is flexible and can be enhanced at anytime with more advanced features.

V. CONCLUSION

This system works well and satisfies the end users. The application is tested very well and errors are properly debugged. This system is user friendly so everyone can use easily. Proper documentation is provided. The end user can easily understand how the whole system is implemented by going through the documentation. The system is tested, implemented and the performance is found to be satisfactory. All necessary output is generated. Thus, the project is completed successfully.

Further enhancements can be made to the application, so that the application functions very attractive and useful manner than the present one.

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4. https://www.slideshare.net/RadhaSadolkar/farming-assistant-web-service-ppt-249578593
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9. https://agricoop.nic.in/sites/default/files/tamilnadu%202.ppt.

ON PRIME LABELLING OF GRAPHS

R. Jeya Jothi and K. Ramalakshmi
Department of Mathematics
Sri Sarada College for Women(Autonomous), Tirunelveli-627 011,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli,
Tamilnadu, India)
(Corresponding Author E-mail ID: *krams1983@gmail.com)

Abstract *– A graph labeling is the assignment of labels, traditionally represented by integers, to edges and/or vertices of a graph. A vertex labeling is a function of V to a set of labels, a graph with such a function is called vertex-labeled graph. Likewise edge labelling is a function of E to a set of labels, in this case the graph is called an edge-labeled graph.*

Keywords *– Labelling, Prime labelling, Graceful labelling, Prime Graceful labelling, 3-Prime Graceful labelling.*

1. INTRODUCTION

Let G= (V, E) be a finite undirected graph with neither loops nor multiple edges. Let G= ((V(G),(E(G)) be a graph with m vertices. A bijection f:V $\rightarrow$ {1,2,.....,m} is called a prime labeling if for each edge e=uv belong to E, gcd(f(u),f(v)) = 1. A graph which admits a prime labeling is called a ***Prime Graph***. A graceful labeling of a graph G is a vertex labeling f : V $\rightarrow$ [0, m] such that f is injective and the edge labelling fγ : E $\rightarrow$ [1, m] defined by fγ(uv) = |f(u) − f(v)| is also injective. If a graph G admits a graceful labeling, we say G is a ***Graceful Graph***. A graph G with m vertices and n edges , is said to be ***Prime Graceful Labeling***, if there is an injection Ø from the vertices of G to {1,2,.....k} where k=min{2m,2n} such that gcd((Ø(V_i), Ø(V_j))= 1 and the induced injective Ø* from the edges of G to {1,2,.....,k-1} defined by Ø*(v_iv_j)=$\left|Ø(v_i) - Ø(v_j)\right|$ the resulting edge labels are distinct. A graph G with n vertices and m edges is said to be ***3-Prime Graceful Labelling*** graph, if there is an injection ∅ from the vertices of G to {1,2,..,k} where k = min {3n,3m } such that gcd(∅(v_i),∅(v_j)) = 1 and the induced injective function from the edges of G to {1,2,…,k−1} defined $\emptyset * (v_iv_j) = \left|\emptyset(v_i) - \emptyset(v_j)\right|$ the resulting edge labels are distinct. Motivated by these results, prime labeling, prime graceful labeling and 3-prime graceful labeling of some special graphs were found in this paper.

The ***Friendship graph*** T_n is a set of n triangles having a common central vertex. The ***Jelly fish graph*** $J(m,n)$ is obtained from a 4-cycle v_1, v_2, v_3, v_4 by joining $v_1$and $v_3$with an edge and appending m pendant edges to v_2 and n pendant edges to v_4. The ***Jewel graph*** J_n is a graph with the vertex set $V(J_n) = \{u, v, x, y, u_i/1 \leq i \leq n\}$and the edge set $E(J_n) = \{ux, uy, xy, xv, uu_i, , vu_i/1 \leq$

$i \leq n\}$. A ***Fan graph*** obtained by joining all vertices of a path P_n to a further vertex, called the centre. Thus, F_n contains n+1 vertices say $\{c, v_1, v_2, v_3, \ldots, v_n\}$ and (2n-1) edges, say cv_i, $1 \leq i \leq n$, and vv_{i+1}, $1 \leq i \leq n-1$.

2. MAIN RESULTS

Proposition: 2.1

The star graph S_n admitsprime labeling.

Proof:

Let v be the apex vertex. Let V=$\{v_1, v_{2,\ldots\ldots\ldots}, v_{n+1}\}$ be the vertices. Label the vertices v and the remaining vertices are v_1, v_2, v_3, v_4. Label the vertices v by 1 and the remaining vertices $v_1, v_{2,\ldots\ldots\ldots}, v_{n+1}$ are labelled by 2,3,4,……, $n+1$. We have, GCD $(f(u), f(v))$=1. Then the resulting labeling is prime labeling. Hence the star graph is a prime graph.

Illustration: 2.2

Consider the star graph S_5. Label the apex vertex by 1 and the remaining four vertices by 2,3, 4 and 5. The above labeling gives prime labeling and hence the star graph S_5 is a prime graph.

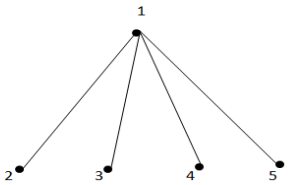

Figure 2.1

Proposition: 2.3

The fan graph $F_{1,n}$ is a prime graph.

Proof:

Consider the fan graph $F_{1,n}$. Label the apex vertex by 1 and the n vertices by 2 to n+1. The resulting assignment of labels is prime labeling and hence the fan graph$F_{1,n}$ is a prime graph.

Illustration: 2.4

Consider the fan graph$F_{1,4}$

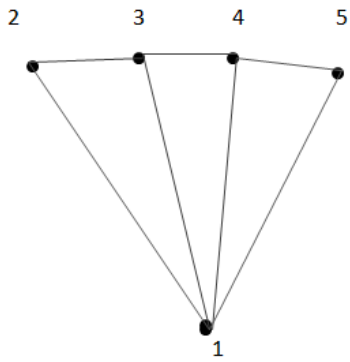

Figure 2.2

The apex vertex is labelled by 1 and the remaining 4 vertices are labelled by 2 to 5. The resulting labeling is a prime labeling.

∴ The Fan graph $F_{1,4}$ is a prime graph.

Proposition: 2.5

Jewel graphJ_n is a prime graph.

Proof:

Consider the graph J_n

Case (i): If n is odd

Let u and v be the vertices which are adjacent to all the u_i vertices. Label the two vertices u and v by 1 and the highest odd number in the vertex set V respectively. Then, label the remaining $u_i$vertices by 2, 3, 4,….., n-1 where n is odd. The resulting assignment of labels forms a prime labeling.

Case (ii): If n is even

Let u and v be the vertices which are adjacent to all u_i vertices. Label the two vertices u and v by 1 and the highest odd number in the vertex set v respectively. Label of remaining u_i vertices by 2, 3, 4,…, n-2, n where n is even. The resulting labels form a prime labeling and the graph is a prime graph.

Therefore, from the above two cases we get, J_n is a prime graph.

Illustration: 2.6

Consider the jewel graph J_5.

Label the vertices which are connected to the i vertices by 1 and the highest odd number, that is 5. Label the i vertices by 2,3 and 4. The resulting labeling is a prime labeling and the graph J_5 is a prime graph.

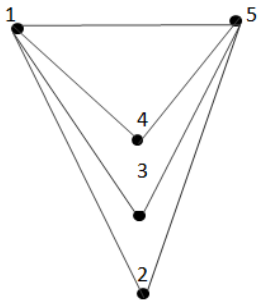

Figure 2.3

Consider the jewel graph J_6.

Label the vertices which are connected to the i vertices by 1 and the highest odd number, that is 5. Label the i vertices by 2, 3, 4 and 6. The resulting labeling is a prime labeling and the graph J_6 is a prime graph.

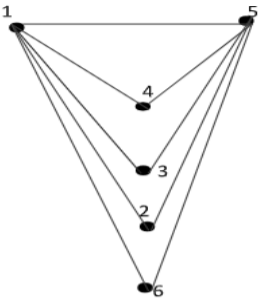

Figure 2.4

Proposition: 2.7

Jelly fish graph $J_{m,n}$ is a prime graph.

Proof:

Consider the jelly fish graph $J_{m,n}$.

The vertices in the cycle which are adjacent to each other are labelled by 1 and 4. Label the vertex which is connected with the m vertices by 5 and the vertex which is connected with the n vertices by 3. Then, label the m vertices by 6, 7, 9… m+n-2. Label the n vertices by 2, 8, 10, ..., m+n+4. The resulting labelling gives prime labeling and the graph $J_{m,n}$ is a prime graph.

Illustration: 2.8

Consider the jelly fish graph $J_{3,3}$.

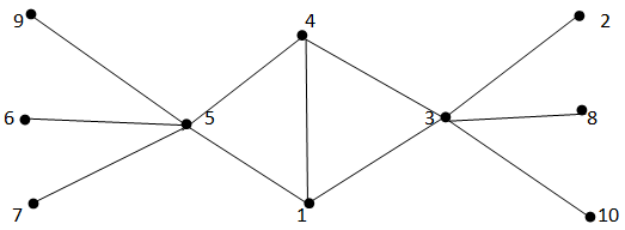

Figure 2.5

The vertices in the cycle which are adjacent to each other are labelled by 1 and 4. Label the vertices which is connected with the three vertices by 5 and 3. Then, label the three vertices which are adjacent to the vertex labelled by 5 by 6, 7, 9. Label the three vertices which are adjacent to the vertex labelled by 3 by 2, 8, 10. The resulting labelling gives prime labeling and the graph $J_{3,3}$ is a prime graph.

Proposition: 2.9

Jewel graph J_n admits prime graceful labeling.

Proof:

J_n consists n vertices and $2n-3$ edges. k = min{2n, 2(2$n-3$)} = 2n.

Let V(J_n)={u,v,$u_1, u_2, \ldots\ldots, u_{n-2}$}

Let the vertices u and v be labelled by 1 and the highest prime number in the set {2, 3,…,2n} respectively. Label the remaining n – 2 vertices, so that gcd of two consecutive vertices of each edge is 1 and the resulting edge labels are distinct. The resulting labels form a prime graceful labeling and the graph J_n is a prime graceful graph.

Illustration: 2.10

The Jewel graph $J_5$is a prime graceful graph.

The corresponding labels are given in the following figure.

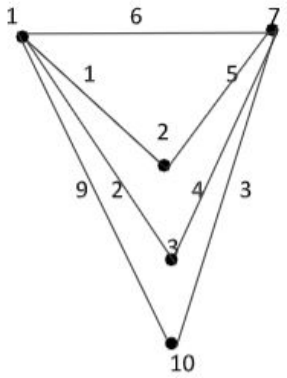

Figure 2.6

Proposition: 2.11

Jelly fish $J_{m,n}$ is a prime graceful graph**.**

Proof:

Let $J_{m,n}$ denote the jelly fish graph.

The graph contains (m+n+4) vertices and (m+n+5) edges.

k =min{2(m+n+4), 2(m+n+5)} =2(m+n+4)

The vertices of $J_{m,n}$ from the set {1, 2, 3……2(m+n+4)}, label the vertices so that gcd of two consecutive vertices of each edge is 1 and resulting edge labels are distinct.

The Jellyfish graph $J_{m,n}$ is a prime graceful labeling.

Illustration: 2.12

Consider the Jelly fish graph $J_{3,3}$. The corresponding labelling is given below**.**

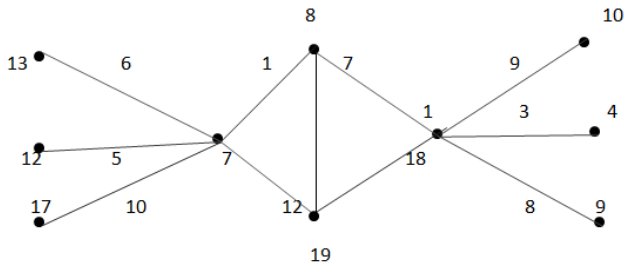

Figure 2.7

Proposition: 2.13

Fan graph $F_{1,n}$ is a prime graceful labeling.

Proof:

Fan graph $F_{1,n}$ has n vertices and $2n-3$ edges.

Let k = min {2n, 2(2n−3)} for n≥ 2 = min (2n, $4n-6$) = 2n

In $F_{1,n}$, one vertex is adjacent with remaining n vertices. Label the vertex of degree n with 1 and the remaining vertices with 2, 3, 4, ... n. The GCD of end vertices of each edge is 1. Label the n edges by $f(uv) = |f(u) - f(v)|$ in such a way that each edge label is distinct. Hence the Fan graph F_n is a prime graceful graph.

Illustration: 2.14

Consider the fan graph F_n and its prime graceful labeling is given below.

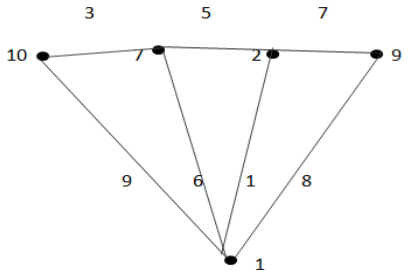

Figure 2.8

Proposition: 2.15

The Friendship graph F_n admits 3-prime graceful labeling.

Proof:

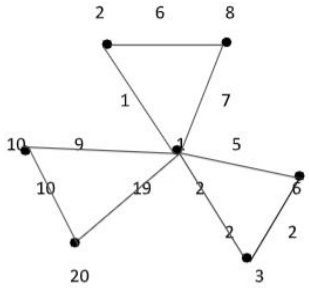

Figure 2.9

The Friendship graph F_n is a graph formed by connecting a single universal vertex to all vertices of a cycle. The Friendship graph F_n has (2n+1) vertices 3n edges.

Let k= min(3(2n+1) , 3(3n)) = min (6n+3 , 9n) = 6n+3

Let v be a apex vertex and $v_1, v_2, \ldots\ldots, v_n$ be remaining vertices which forms a cycle.The apex vertex has degree $n-1$ and $v_1, v_2, \ldots\ldots, v_n$ are the vertices of degree 2. Let v be adjacent to $v_1, v_2, \ldots\ldots, v_n$ which labeled as one. The vertices $v_1, v_2, \ldots\ldots, v_n$ are labeled from the set $\{2,3,4,\ldots.,6n+2,3n\}$ with the condition satisfies gcd(1,lab(v_i)) = 1 where i = 1,2,….,n, so that the resulting edge label are distinct. Therefore, Friendship graph F_n satisfies the condition of 3-prime graceful labeling.

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THE IMPACT OF MARKETING MIX ON CUSTOMER SATISFACTION TOWARDS LAPTOP INDUSTRY

P.Suganya
Department of Commerce (Corporate Secrearyship),
Sri Sarada College for Women (Autonomous), Tirunelveli-627 011,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli,
Tamilnadu, India)
(Corresponding Author E-mail ID: jayasugan.p@gmail.com)

ABSTRACT

The concept of marketing mix is an important element in the field of marketing. The steps taken by a business enterprise to improve sales is known as marketing effort. Therefore, marketing effort is not a single function but a combination of many different activities undertaken by a firm to market its products. The entire marketing efforts center around the consumer because the modern marketing is consumer oriented. For this the management should first select its market targets, identify the demand for its product, and collect basic information relating to consumer behaviour and the intensity of trade completion. Then it should develop a programme and decide upon the instruments and strategy for meeting the needs of the customers and the challenge of the competitors. To attain success in the marketing effort, the various components should be co-ordinate. The various components and instruments used in the marketing process constitute the marketing mix. The main objectives marketing mix influencing the laptop buyer. The study selected samples for 200 respondents. So it concludes that customer can more influence the purchase of laptop.

KEYWORDS: Marketing Mix, Customer, Laptop Brand

INTRODUCTION

The concept of marketing mix is an important element in the field of marketing. The steps taken by a business enterprise to improve sales is known as marketing effort. Therefore, marketing effort is not a single function but a combination of many different activities undertaken by a firm to market its products. The entire marketing efforts center around the consumer because the modern marketing is consumer oriented. For this the management should first select its market targets, identify the demand for its product, and collect basic information relating to consumer behavior and the intensity of trade completion. Then it should develop a programme and decide upon the instruments and strategy for meeting the needs of the customers and the challenge of the competitors. To attain success in the marketing effort, the various components should be co-ordinate. The various components and instruments used in the marketing process constitute the marketing mix. The selection of a target market serves as the basis

for creating a marketing mix to satisfy the needs of that market. The decisions made in creating a marketing mix are only as good as the organization`s understanding of its target market. This understanding typically comes from laptop, in depth research into the characteristics of the target market. This although demographic information is important, the organization should also analyse customer needs, preference and behaviors with respect to product design, pricing, distribution and promotion. Such is the case for Kimberly Clark its market research founder customer who buys varied needs so the company introduced a variety of package, and colors.

Marketing mix decisions should have two additional characteristics consistency and flexibility. All marketing mix decisions should be consistent with the business-unit and corporate strategies. Such consistency allows the organization to achieve its objectives on all three level of planning. Flexibility on the other hand, permits the organization to alter the marketing mix in response to changes in market conditions, competition and customer needs. Marketing strategy flexibility has a positive influence on organizational performance. Market orientation and strategies flexibility complement each other to develop the organization manage varying environmental conditions. At the marketing mix level, a company can detail how it will achieve competitive advantages. To gain an advantages, the company must do something better than the competition, in the other word its product must be considered with its product level of quality its distributions method must be efficient and cost as little as possible and it promotions must be more effective than the competitions. It is also important then the companies make these advantages sustainable. Marketing mix when facing uncertain competitive environment. The company's marketing mix reflects this broad marketing by offering the latest products, attractive prices, effective promotions and a websites the facilitates distribution.

REVIEW OF LITERATURE:

Ralf Thomas Kreutzer (1988) "Marketing-mix standardisation: an integrated approach in global marketing" this article shows the importance of marketing-mix standardisation within a global marketing concept.

Christian Gronroos (1994) "From marketing mix to relationship marketing: towards a paradigm shift in marketing" discusses the nature and sometimes negative consequences of the dominating marketing paradigm of today, marketing mix management, and furthermore discusses how modern research into, for example, industrial marketing and services marketing as well as customer relationship economics shows that another approach to marketing is required.

Mohammed Rafiq, Pervaiz K. Ahmed (1995), "Using the 7ps as a generic marketing mix: an exploratory survey of uk and european marketing academics" mccarthy's 4ps mix has increasingly come under attack with the result that different marketing mixes have been put forward for different marketing contexts

STATEMENT OF THE PROBLEM

In the present competitive environment consumers usually face a broad array of product and services that might satisfy a given need. How do they choose among these market offerings? Customers form expectations about the value and satisfaction that various market offerings will deliver and buy accordingly. Satisfied customers buy again and tell others about their good experiences. Dissatisfied customers often switch to competitors and disparage the products to others. So customer value and customer satisfaction are key building blocks for developing and managing customer relationship. So there should be a better understanding about the expectations of the customers and the satisfaction level of the customers. Here Marketing mix plays an important role as marketing mix is used to reinforce the advantages of product (Laptop) carefully, reflecting its core value and positioning. It confirms how and why it will be to interest to various segments of Laptop buying public. It is also found that there are certain difficulties in the understanding of various factors that influence consumer buying behavior in the Laptop sector. Considering that consumer needs, wants, taste and preference varies from one another many companies laptop Prices out different market research on consumer buying decision in great detail to answer questions about what consumers buy, how consumers buy, where consumers buy, when consumers buy and why Consumers buy to identify these needs and wants.

The results of these researches are sometimes biased, inaccurate, inadequate and misleading. So in this present competitive environment it is very crucial for every business firm to ensure satisfaction to its customer. As customer satisfaction is one of the single strongest predictors of customer retention. So in order to expand our knowledge base and to come up with a reasonable solution to the above discussed problem the project has been undertaken. This research will determine and focusing which marketing mixes competency influence on purchasing buying behavior among the laptop buyers. Marketing mixes competencies are such as price, product, promotion and placement. Besides that this study investigated the role of family members as a moderating variable to influence the relationship between independent and dependent variables. This study also interested to understand the level and pattern of laptop purchase by laptop buyers.

OBJECTIVES OF THE STUDY

- To investigate marketing mix competency such as product, price, promotion and place that influence laptop buyer's buying in Tirunelveli.
- To study the influence of various variables like sex, educational background, family income etc on the choice of laptop brand.
- To probe if the interactions between the above mentioned variables have any effects on the choice of laptop bought.

- To offer suggestions for the betterment of service offerings of the service providers of laptop company in the Sample area.

METHODOLOGY

The methodology part of the study consist of

- Selection of the Sample
- Formation of the Questionnaire
- Collection of Data
- Consolidation of Data
- Analysis of Data

In the primary stage, the selected Sample area was consumer behaviour of laptop in Tirunelveli. Convenience sampling method was adopted for the purpose of selection of Sample units by the researcher

Selection of the Sample

Out of the total population is infinite .So that I select 200respondent for taken in the sample area in Tirunelveli district.

Formation of the Questionnaire

The second stage of methodology is related to the formation of Questionnaire to obtain necessary particulars pertaining to the study. The set of interview schedule and Questionnaire has been-framed to collect information from the respondents consumer buying behaviour.

Collection of Data (methods of data collection)

With the aid of interview Schedule and structured Questionnaire both Primary and Secondary data are collected the consumer who having laptop, the researcher also collected necessary particulars from various documents and records which are maintained in various websites and journals. Academic performances of laptop have been directly collected from the consumers. Unstructured interviews were also conducted to gather informations for the study.

Consolidation of Data

The collected data has been consolidated in the form of schedules for the purpose of interpretation; tabulation and formation of master table for analysis purpose was the work done in this step. After the classification, the data have been processed (analysis) by using various statistical tools and diagrammatic illustration are given for easy understanding.

Analysis of Data

Observational designs and Ex-post-facto research design was followed in the study. The Following Tools were applied to analyse the data

a. **Simple percentage Analysis :** Helps to simplify the collected data, All the data collected through the Questionnaire and interview schedule was converted to percentage, one main reason is many of the tool in the statistics rely upon percentage and next when data is converted to percentage it is easy to understand and draw inference.

b. **Measures of central tendency (Mean):** was calculated to support for the calculation of Chi-Square, Spearman's ranking correlation and person's ranking technique.
c. **Measures of Dispersion (Standard Deviation):** this is similar to Mean was calculated to support for the calculation of Chi-Square, Spearman's ranking correlation and person's ranking technique.
d. **Chi-Square:** was employed to know whether the attributes are associated with each other. All the Five services in the study were associated with the results to know the relationship.
e. **Mean Score:** was used to find out the score for the factors and that score was helpful to calculate Chi-Square and other techniques.
f. **Statistical Diagrams:** For diagrammatical representation of Data this tool was adopted, even a layman can understand the data if it is presented diagrammatically.

ANALYSIS AND INTERPRETATION

LAPTOP USERS

Table 1
Classification of laptop user

S.No	Particular	No of Respondents	Percentage	Mean	S.D
1	Yes	40	95	1.0500	0.2185
2	No	10	5		
Total	**50**	**100**	**100**		

Table 2
Classification of laptop brand

S .No	Particular	No of Respondents	Percentage	Mean	S.D
1	HCL	15	35	2.2500	1.1375
2	HP	12	25		
3	DELL	10	20		
4	ACER	8	10		
5	Others	5	10		
Total		**50**	**100**		

Table 3
Influences of laptop

S .No	Particular	No of Respondents	Percentage	Mean	SD
1	Service	12	23	2.8650	1.2141
2	Battery back up	11	12		
3	Configuration	9	20.5		
4	Brand	18	44.5		
Total		**200**	**100**		

Table 4
Relationship between Brand and Price

Particulars	Brand	Price
Chi-Square	12000	48.760
df	3	3
Asymp.sig.	.007	.000
0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 50.0		

SUGGESTIONS

The following suggestions and recommendations are offered on the findings made from the study

- The laptop company to create awareness among the all consumers. They must provide advertisement through media like newspaper, magazine, television and internet.
- From the research it clearly revels that the laptop company have more prospective buyer.
- Laptop customers are not habitual buyer. They need to keep in continuous look for creating awareness and brand recall
- The laptop company should take necessary steps to improve the security of the laptop to reduce the misuse by stranger.
- Laptop Company should give more attention to the slogan brand ambassador, music and picturising.
- Laptop company awareness about buy-back scheme to increase the buying behaviour of the consumer.
- For retain the competitive market the laptop company should provide high quality, more service to their customer.
- To attract new customer the laptop company should provide many offer.
- Laptop advertisement should highlight the quality of the product.
- The laptop consumers are preferred the color, quality, style, company must take innovative steps for improving facilities in the laptop.

CONCLUSION

The study analysis the marketing mix influencing a purchase of laptop. Company is an important segment of the marketing mix. All the company to upgrade the popularity of their respective laptop by offering various products in the brand. Through they have done their best on the part; it cannot be meant that their consumers are absolutely satisfied unless they consider the needs, satisfaction and expectation of their customer.

Laptop has invested heavily in providing a range of products that enable people to communicate on the move. These products are supported by other elements of the marketing mix - the right price, in the right place, with appropriate

promotion. In a highly competitive market Laptop needs to regularly adjust this marketing mix in line with the changing requirements of millions of customers.

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NORDHAUS-GADDUM TYPE RELATIONS ON OPEN SUPPORT STRONG EFFICIENT DOMINATION NUMBER OF SOME STAR RELATED GRAPHS UNDER ADDITION AND MULTIPLICATION

N.Meena and K.Murugan,
Department of Mathematics,
The Madurai Diraviyam Thayumanavar Hindu College, Tirunelveli – 627 010,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli,
Tamilnadu, India)
(Corresponding Author E-mail ID: *meenamdt@gmail.com)

Abstract

Let G = (V, E) be a graph with p vertices and q edges. Let S be a γ_{se}- set of G. Let v ϵ S.An open support strong efficient domination number of v under addition is defined by $\sum_{u\epsilon N(v)} \deg(u)$and it is denoted by supp $\gamma_{se}^{+}(v)$. An open support strong efficient domination number of G under addition is defined by $\sum_{v\epsilon S} \text{supp}\, \gamma_{se}^{+}(v)$ and it is denoted by supp $\gamma_{se}^{+}(G)$. An open support strong efficient domination number of v under multiplication is defined by $\prod_{u\epsilon N(v)} \deg(u)$ and it is denoted by supp $\gamma_{se}^{\times}(v)$. An open support strong efficient domination number of G under multiplication is defined by $\prod_{v\epsilon S} \text{supp}\, \gamma_{se}^{\times}(v)$ and it is denoted by supp $\gamma_{se}^{\times}(G)$. In this paper, Nordhaus- Gaddum type relations on open support strong efficient domination number of some star related graphs under addition and multiplication are studied.

Keywords: Nordhaus-Gaddum type relations, Strong efficient dominating sets, Strong efficient domination number, Open support of a graph under addition, Open support of a graph under multiplication.

1. INTRODUCTION

Throughout this paper, only finite, undirected and simple graphs are considered. Let G = (V, E) be a graph with p vertices and q edges. The degree of any vertex u in G is the number of edges incident with u and is denoted by deg (u). A vertex of degree 0 in G is called an isolated vertex. The complement $\bar{G}$ of a graph *G* has V(G) as its vertex set and two vertices are adjacent in $\bar{G}$ if and only if they are not adjacent in *G*.

A subset S of V(G) of a graph G is called a dominating set of G if every vertex in V(G) \ S is adjacent to a vertex in S (see [6]). The concept of strong (weak) efficient domination in graphs was introduced by Meena et.al (see [10]) and further studied (see [8,9]). Nordhaus – Gaddum type relations on strong efficient dominating sets are studied in (see [12,13]). A subset S of V(G) is called a strong (weak) efficient dominating set of G if for every vertex $v \in V(G)$, we have $|N_s[v] \cap S| = 1$ ($|N_W[v] \cap S| = 1$), where $N_s(v) = \{u \in V(G); uv \in$

$E(G), \deg(u) \geq \deg(v)\}$ and $N_s[v] = N_s(v) \cup \{v\}$($N_w(v) = \{u \in V(G); uv \in E(G), \deg(u) \leq \deg(v)\}$ and $N_w[v] = N_w(v) \cup \{v\}$). The minimum cardinality of a strong (weak) efficient dominating set is called strong (weak) efficient domination number and is denoted by $\gamma_{se}(G)(\gamma_{we}(G))$. A graph G is strong efficient if there exists a strong efficient dominating set of G.

Balamurugan et.al introduced the concept of open support of a graph under addition (see [1]) and open support of a graph under multiplication (see [2]). Let G = (V, E) be a graph. An open support of a vertex, v under addition is defined by $\sum_{u\in N(v)} \deg(u)$ and it is denoted by$supp(v)$. An open support of a graph, G under addition is defined by $\sum_{v\in V(G)} \text{supp}(v)$ and it is denoted by $supp(G)$. An open support of a vertex, v under multiplication is defined by $\prod_{u\epsilon N(v)} \deg(u)$and it is denoted by mult(v). An open support of a graph, G under multiplication is defined by $\prod_{v\in V(G)} \text{mult}\ (v)$ and it is denoted by mult(G).

Murugan et.al introduced the concept of open support strong efficient domination number of a graph under addition and multiplication (see [11]). In this paper, Nordhaus- Gaddum type relations on open support strong efficient domination number of some star related graphs under addition and multiplication are studied.

For all graph theoretic terminologies and notations, Harary [5] is followed. The following definitions and results are necessary for the present study.

Definition1.1 (see [11]): Let G = (V, E) be a strong efficient graph. Let S be a γ_{se}- set of G. Let v ϵ S. An open support strong efficient domination number of v under addition is defined by $\sum_{u\epsilon N(v)} \deg(u)$ and it is denoted by supp $\gamma_{se}^{+}(v)$.

Definition 1.2(see [11]): Let G = (V, E) be a strong efficient graph. Let S be a γ_{se}- set of G. Let v ϵ S. An open support strong efficient domination number of G under addition is defined by $\sum_{v\epsilon S} \text{supp}\ \gamma_{se}^{+}(v)$and it is denoted by supp $\gamma_{se}^{+}(G)$.

Definition1.3 (see [11]): Let = G (V, E) be a strong efficient graph. Let S be a γ_{se}- set of G. Let v ϵ S. An open support strong efficient domination number of v under multiplication is defined by $\prod_{u\epsilon N(v)} \deg(u)$ and it is denoted by supp $\gamma_{se}^{\times}(v)$.

Definition 1.4 (see [11]): Let G = (V, E) be a strong efficient graph. Let S be a γ_{se}- set of G. Let v ϵ S. An open support strong efficient domination number of G under multiplication is defined by $\prod_{v\epsilon S} \text{supp}\ \gamma_{se}^{\times}(v)$ and it is denoted by supp $\gamma_{se}^{\times}(G)$.

Definition 1.5 (see [17]): The line graph L(G) of G is the graph whose vertex set is E(G) in which two vertices are adjacent if and only if they are adjacent in G.

Definition 1.6(see [3]): The jump graph J(G) of G is the graph whose vertex set is E(G) in which two vertices are adjacent if and only if they are nonadjacent in G.

Definition 1.7(see [13]): The paraline graph PL(G)is a line graph of the subdivision graph of G.

Definition 1.8(see [14]): The semi-total vertex graph $T_2(G)$ is the graph whose vertex set is V(G) ∪ E(G) where two vertices are adjacent if and only if

(i) they are adjacent vertices of G or
(ii) one is a vertex of G and the other is an edge of G incident with it.

Definition 1.9(see [14]): The semi-total line graph $T_1(G)$ is the graph whose vertex set is V(G) ∪ E(G) where two vertices are adjacent if and only if

(i) they are adjacent edges of G or
(ii) one is a vertex of G and the other is an edge of G incident with it.

Definition 1.10: The total graph T(G) is the graph whose vertex set is V(G) ∪ E(G) where two vertices are adjacent if and only if

(i) they are adjacent vertices of G or
(ii) they are adjacent edges of G or
(iii) one is a vertex of G and the other is an edge of G incident with it.

Definition 1.11 (see [15]): The quasi-total graph P(G) is the graph whose vertex set is V(G) ∪ E(G) where two vertices are adjacent if and only if

(i) they are nonadjacent vertices of G or
(ii) they are adjacent edges of G or
(iii) one is a vertex of G and the other is an edge of G incident with it.

Definition 1.12 (see [15]): The quasi-vertex total graph Q(G) is the graph whose vertex set is V(G) ∪ E(G) where two vertices are adjacent if and only if

(i) they are adjacent vertices of G or
(ii) they are nonadjacent vertices of G or
(iii) they are adjacent edges of G or
(iv) one is a vertex of G and the other is an edge of G incident with it.

Definition 1.13 (see[4]): Bistar $D_{m,n}$is the graph obtained from K_2 by joining m pendant edges to one end vertex of K_2 and n pendant edges to the other end of K_2. The edge K_2 is called the central edge of $D_{m,n}$ and the vertices of K_2 are called the central vertices of K_2

Definition 1.14 (see [16]):A vertex switching G_v of a graph G is obtained by taking a vertex v of G, removing all edges incident to v and adding edges joining v to every vertex which are not adjacent to v in G.

Definition1.15 (see [7]]: For a graph G, the complementary prism, denoted by $G\bar{G}$, is formed from a copy of G and a copy of $\bar{G}$ by adding a perfect matching between corresponding vertices.

Previous results1.16 (see [11,12]):

a. Let G = $P_{3n,}$ $n \in N$. Then

i. supp γ_{se}^{+}(G) = 4n – 2
ii. supp $\gamma_{se}^{\times}$(G) = 4^{n-1}

b. Let G = $P_{3n+1}, n \in N$. Then

i. supp γ_{se}^{+}(G) = 4n+ 1
ii. supp $\gamma_{se}^{\times}$(G)= 4^{n}

c. Let G = K_n, $n \in N$. Then

i. supp γ_{se}^{+}(G) = $(n-1)^2$
ii. supp $\gamma_{se}^{\times}$(G) = $(n-1)^{n-1}$

d. Let G = $K_{1,n}, n \in N$. Then

i. supp γ_{se}^{+}(G) = n

ii. supp $\gamma_{se}^{\times}$(G) =1

e. Let G = $D_{m,n}$, m, n ∈ N. Then

i. supp γ_{se}^{+}(G) = $m + (n+1)^2$, if m ≥ n

ii. supp $\gamma_{se}^{\times}$(G) = $(n+1)^{n+1}$, if m ≥ n

f. $D_{1,s[v]}$, s ≥ 1 is strong efficient.

g.$D_{1,s[u_1]}$, s ≥ 1 is strong efficient.

h.$D_{r,s[u,v]}$, r, s ≥ 1 is strong efficient.

Remark1.17: Let G = (V, E) be a strong efficient graph. If v is an isolated vertex, then supp $\gamma_{se}^{+}(v)$ = supp $\gamma_{se}^{\times}(v)$ = 0 and also supp $\gamma_{se}^{\times}(G)$ = 0. If G = $\overline{K_n}$, then supp $\gamma_{se}^{+}(G)$ = supp $\gamma_{se}^{\times}(G)$ = 0.

II. Main results

Theorem 2.1: Let G = $K_{1,n}$, n ∈ N and G' = L($K_{1,n}$) = K_n.Then

i. supp γ_{se}^{+}(G) + supp $\gamma_{se}^{+}(G')$ = n + $(n-1)^2$

ii. supp $\gamma_{se}^{\times}$(G) + supp $\gamma_{se}^{\times}(G')$ = 1 + $(n-1)^{n-1}$

Proof: The theorem follows immediately from the previous results1.16(c)& 1.16 (d)

Theorem 2.2: Let G = $K_{1,n}$ n ∈ N and G' = J($K_{1,n}$) =$\overline{K}_n$.Then

i. supp γ_{se}^{+}(G) + supp $\gamma_{se}^{+}(G')$ = n

ii. supp $\gamma_{se}^{\times}$(G) + supp $\gamma_{se}^{\times}(G')$ = 1

Proof: The theorem follows immediately from the previous result1.16 (d)& Remark 1.17

Theorem 2.3: Let G = $K_{1,n}$, n ∈ N and G' = PL($K_{1,n}$). Then

i. supp γ_{se}^{+}(G) + supp $\gamma_{se}^{+}(G')$ =$2n^2$– n + 1

ii. supp $\gamma_{se}^{\times}$(G) + supp $\gamma_{se}^{\times}(G')$ = 1 + $n^{2(n-1)}$、

Proof: Let G = $K_{1,n}$, n ∈ N.Let V(G) = $\{v, v_i$ / 1 ≤i≤ n $\}$and E(G) = $\{e_i$ / 1 ≤i≤ n$\}$ where $e_i = vv_i$.Let V(S(G)) = $\{v, u_i, v_i$ /1 ≤i≤n$\}$and E(G) =$\{e_i$ /1≤i≤2n$\}$where $e_i = vu_i$,1≤i≤n and $e_{n+i} = u_i v_i$, 1 ≤i≤n. LetG' = PL($K_{1,n}$).V(G') = $\{e_i$ /1 ≤i≤2n$\}$, deg (e_i) = n,1 ≤i≤n and deg (e_i) = 1, n + 1 ≤i≤2n. Then $S_i = \{e_i, e_{n+k}$/ 1≤ k ≤ n, k ≠i$\}$, 1 ≤i≤n are distinct γ_{se}- sets of G'(see [13]).

i. supp γ_{se}^{+}(G)= n. Consider $S_1$for G'(Proof is similar for other sets).

supp $\gamma_{se}^{+}(e_1)$ =$\sum_{v\in N(e_1)}$ deg (v) = $\sum_{i=2}^{n}$ deg(e_i) + deg (e_{n+1}) = (n – 1)n + 1.

For 2 ≤ k ≤ n, supp $\gamma_{se}^{+}(e_{n+k})$ = deg (e_k) = n. Therefore supp $\gamma_{se}^{+}(G')$ = $\sum_{v\in S_1}$ supp $\gamma_{se}^{+}(v)$ = supp $\gamma_{se}^{+}(e_1)$ + $\sum_{k=2}^{n}$ supp $\gamma_{se}^{+}(e_{n+k})$ = (n – 1)n + 1+(n – 1)n = 2n(n – 1) + 1.

Hence supp γ_{se}^{+}(G) + supp $\gamma_{se}^{+}(G')$ = n + 2n(n – 1) + 1 = $2n^2$– n + 1.

ii. supp $\gamma_{se}^{\times}$(G) = 1. Consider $S_1$for G'(Proof is similar for other sets).

supp $\gamma_{se}^{\times}(e_1)$ = $\prod_{v\in N(e_1)}$ deg (v) = $\prod_{i=2}^{n}$ deg(e_i) × deg (e_{n+1}) = $n^{(n-1)}$.

For 2 ≤ k ≤ n, supp $\gamma_{se}^{\times}(e_{n+k})$ = deg (e_k) = n.

Therefore supp $\gamma_{se}^{\times}$ (G') = $\prod_{v\in S_1}$ supp $\gamma_{se}^{\times}(v)$ = supp $\gamma_{se}^{\times}$ (e_1) × $\prod_{k=2}^{n}$ supp $\gamma_{se}^{\times}(e_{n+k})$ = $n^{(n-1)}$ × $n^{(n-1)}$= $n^{2(n-1)}$. Hence supp $\gamma_{se}^{\times}$(G) + supp $\gamma_{se}^{\times}(G')$ =1 + $n^{2(n-1)}$.

Theorem 2.4: Let G = $K_{1,n}$, n ∈N and $G' = T_2(K_{1,n})$. Then

i. supp γ_{se}^{+}(G) + supp $\gamma_{se}^{+}(G')$ = 5n.

ii. supp $\gamma_{se}^{\times}$(G) + supp $\gamma_{se}^{\times}(G')$ = 1 + 4^n.

Proof: Let G = $K_{1,n}$, n ∈ N.Let V(G) = $\{v, v_i$ / 1 ≤i≤ n $\}$and E(G) = $\{e_i$ / 1 ≤i≤n $\}$ where $e_i = vv_i$. Let$G'= T_2(K_{1,n})$. Then V(G') = $\{v, v_i,\ e_i$ / 1 ≤i≤n$\}$, deg (v) = 2n, deg (e_i) = deg (v_i) = 2, 1 ≤i≤n.

i. supp γ_{se}^{+}(G) = n.When n =1, $G'= K_3$. supp $\gamma_{se}^{+}(G')$ = 4. Suppose n ≥ 1. {v} is the unique γ_{se}- set of G'. supp $\gamma_{se}^{+}(G')$ = supp γ_{se}^{+}(v) = $\sum_{u\in N(v)}$ deg (u) = $\sum_{i=1}^{n}$[deg (e_i) + deg (v_i)] = 4n. Hence supp γ_{se}^{+}(G) + supp $\gamma_{se}^{+}(G')$ = 5n.

ii. supp $\gamma_{se}^{\times}$(G) = 1. When n =1, $G'= K_3$. supp $\gamma_{se}^{\times}(G')$=4. Suppose n ≥ 1. {v} is the unique γ_{se}- set of G'(see[13]). supp$\gamma_{se}^{\times}(G')$ = supp $\gamma_{se}^{\times}$(v) =$\prod_{u\in N(v)}$ deg (u) = $\prod_{i=1}^{n}$[deg (e_i) × deg (v_i)] = 4^n. Hence supp $\gamma_{se}^{\times}$(G) + supp $\gamma_{se}^{\times}(G')$ = 1 + 4^n.

Theorem 2.5: Let G = $K_{1,n}$, n ∈N and $G' = T_1(K_{1,n})$. Then

i. supp γ_{se}^{+}(G) + supp $\gamma_{se}^{+}(G')$ = $2n^2$+ 2n – 1

ii. supp $\gamma_{se}^{\times}$(G) + supp $\gamma_{se}^{\times}(G')$ = 1 + n$(n+1)^{2(n-1)}$

Proof: Let G = $K_{1,n}$, n ∈ N.Let V(G) = $\{v, v_i$ / 1 ≤i≤n $\}$and E(G) = $\{e_i$ / 1 ≤i≤n $\}$ where $e_i = vv_i$. Let $G'= T_1(K_{1,n})$. Then V(G') = $\{v, v_i,\ e_i$/ 1 ≤i≤ n$\}$,deg (v) = n, deg (e_i) = n + 1 and

deg (v_i) = 1, 1 ≤i≤ n. Then S_i = { e_i, v_j/1 ≤ j ≤ n and j ≠i}, 1 ≤i≤ n are γ_{se}- sets of G'(see[13]).

i. supp γ_{se}^{+}(G) = n. Consider S_1 for G'(Proof is similar for other sets). supp $\gamma_{se}^{+}(e_1)$ = $\sum_{v\in N(e_1)}$ deg (v) = $\sum_{i=2}^{n}$ deg(e_i) + deg (v) + deg (v_1) = (n – 1) (n + 1) + n + 1 = n(n + 1). supp$\gamma_{se}^{+}(v_i)$ = deg (e_i) = n + 1, 2 ≤i≤ n. Therefore supp$\gamma_{se}^{+}(G')$ = supp$\gamma_{se}^{+}(e_1)$ + $\sum_{i=2}^{n}$ supp $\gamma_{se}^{+}(v_i)$ = n(n + 1) + (n – 1)(n + 1) = $2n^2$+ n – 1.

Hence supp γ_{se}^{+}(G) + supp $\gamma_{se}^{+}(G')$ = $2n^2$+ 2n – 1.

ii. supp $\gamma_{se}^{\times}$(G) = 1. Consider S_1 for G' (Proof is similar for other sets). supp $\gamma_{se}^{\times}(e_1)$ = $\prod_{v\in N(e_1)}$ deg (v) = $\prod_{i=2}^{n}$ deg(e_i) × deg (v) × deg (v_1) = $(n+1)^{n-1}$ × n × 1 = n$(n+1)^{n-1}$.

supp$\gamma_{se}^{\times}(v_i)$ = deg (e_i) = n + 1, 2 ≤i≤ n. Therefore supp$\gamma_{se}^{\times}(G')$ = supp$\gamma_{se}^{\times}(e_1)$ ×$\prod_{i=2}^{n}$ supp $\gamma_{se}^{+}(v_i)$ = n$(n+1)^{n-1}$ × $(n+1)^{n-1}$ = n$(n+1)^{2(n-1)}$.

Hence supp $\gamma_{se}^{\times}$(G) + supp $\gamma_{se}^{\times}(G')$ = 1 + n$(n+1)^{2(n-1)}$.

Theorem 2.6: Let G = $K_{1,n}$,n ∈N and G' = T($K_{1,n}$). Then

i. supp γ_{se}^{+}(G) + supp $\gamma_{se}^{+}(G')$ = n(n + 4).

ii. supp $\gamma_{se}^{\times}$(G) + supp $\gamma_{se}^{\times}(G')$ = 1 + $[2(n\ +\ 1)]^n$

Proof: Let G = $K_{1,n}$, n ∈ N. Let V(G) = {v, v_i / 1 ≤i≤ n}and E(G) = {e_i / 1 ≤i≤n } where $e_i = vv_i$. Let G' = T($K_{1,n}$). Then V(G') = {v, v_i, e_i/ 1 ≤i≤ n}.deg (v) = 2n, deg (e_i) = n + 1,1 ≤i≤ n and deg (v_i) = 2, 1 ≤i≤ n.

i. suppγ_{se}^{+}(G) = n. When n =1, G'= K_3. supp $\gamma_{se}^{+}(G')$ = 4. Suppose n ≥ 1. S = {v} is the unique γ_{se}- set of G'(see[13]). Therefore supp $\gamma_{se}^{+}(G')$ = supp $\gamma_{se}^{+}(v)$ = $\sum_{u\in N(v)} \deg(u) = \sum_{i=1}^{n} \deg(e_i) + \sum_{i=1}^{n} \deg(v_i)$ = n(n + 3). Hence supp γ_{se}^{+}(G) + supp $\gamma_{se}^{+}(G')$ = n(n + 4).

ii. supp $\gamma_{se}^{\times}$(G) = 1. When n =1, G'= K_3. supp $\gamma_{se}^{\times}(G')$= 4. Suppose n ≥ 1. S ={v} is the unique γ_{se}- set of G'. supp $\gamma_{se}^{\times}(G')$ = supp $\gamma_{se}^{\times}$(v) =$\prod_{u\in N(v)} \deg(u)$ = $\prod_{i=1}^{n}[\deg(v_i) \times \deg(e_i)] = [2(n + 1)]^n$. Hence supp $\gamma_{se}^{\times}$(G) + supp $\gamma_{se}^{\times}(G')$ = 1 + $[2(n + 1)]^n$.

Remark 2.7: Let G = $K_{1,n}$, n = 1and G' = P($K_{1,n}$) = P_3 Then supp γ_{se}^{+}(G) + supp $\gamma_{se}^{+}(G')$ = 3 and supp $\gamma_{se}^{\times}$(G) + supp $\gamma_{se}^{\times}(G')$ = 2.

Theorem 2.8: Let G = $K_{1,n}$, n ∈N and G' = Q($K_{1,n}$). Then

i. supp γ_{se}^{+}(G) + supp $\gamma_{se}^{+}(G')$ = n(2n + 3) .

ii. supp $\gamma_{se}^{\times}$(G) + supp $\gamma_{se}^{\times}(G')$ = 1 + $(n + 1)^{2n}$.

Proof: Let G = $K_{1,n}$, n ∈ N. Let V(G) = {v, v_i / 1 ≤i≤ n}and E(G) = {e_i / 1 ≤i≤ n } where $e_i = vv_i$. Let G' = Q($K_{1,n}$). Then V(G') = {v, v_i, e_i/ 1 ≤i≤ n}. deg (v) = 2n, deg (e_i) = deg (v_i) =
n + 1,1 ≤i≤ n.

i. supp γ_{se}^{+}(G) = n. When n =1, G'= K_3. supp $\gamma_{se}^{+}(G')$ = 4. Suppose n ≥ 1. {v} is the unique γ_{se}- set of G'(see[13]). Therefore supp $\gamma_{se}^{+}(G')$ = supp $\gamma_{se}^{+}(v)$ = $\sum_{u\in N(v)} \deg(u) = \sum_{i=1}^{n} \deg(e_i) + \sum_{i=1}^{n} \deg(v_i)$ = n(n + 1) + n(n + 1) = $2(n^2 + n)$.

Hence supp γ_{se}^{+}(G) + supp $\gamma_{se}^{+}(G')$ = $2n^2$ + 3n = n(2n + 3).

ii. supp $\gamma_{se}^{\times}$(G) = 1. When n =1, G'= K_3. supp $\gamma_{se}^{\times}(G')$= 4. Suppose n ≥ 1. {v} is the unique γ_{se}- set of G'. supp $\gamma_{se}^{\times}(G')$ = supp $\gamma_{se}^{\times}$(v) =$\prod_{u\in N(v)} \deg(u)$ = $\prod_{i=1}^{n}[\deg(v_i) \times \deg(e_i)] = (n + 1)^n \times (n + 1)^n = (n + 1)^{2n}$.

Hence supp $\gamma_{se}^{\times}$(G) +supp $\gamma_{se}^{\times}(G')$ = 1 +$(n + 1)^{2n}$.

Remark 2.9: Let G = $K_{1,n}$, n = 1.G' =$G\bar{G} = K_{1,n}\overline{K}_{1,n} = P_4$. Then supp γ_{se}^{+}(G) + supp $\gamma_{se}^{+}(G')$ = 5 and supp $\gamma_{se}^{\times}$(G) + supp $\gamma_{se}^{\times}(G')$ = 3

Theorem 2.10: Let G = $D_{1,s}$, s∈ N and G' = $D_{1,s[v]}$ be the graph obtained by switching the vertex vof the bistar $D_{r,s}$.Then

i. supp γ_{se}^{+}(G) + supp $\gamma_{se}^{+}(G')$ = s + 6

ii. supp $\gamma_{se}^{\times}$(G) + supp $\gamma_{se}^{\times}(G')$ = 4

Proof: Let G = $D_{1,s}$, s∈ N. Let V(G) = {u, v, u_1, v_i / 1 ≤i≤ s}. Let G' = $D_{1,s[v]}$= $P_3 \cup sK_1$. Then V(G') =V(G),deg (u) = deg (v) = 1, deg (u_1) = 2 and deg (v_i) = 0, 1 ≤i≤ s. S = {u_1, v_i / 1 ≤i≤ s} is the unique γ_{se}- set of G'(see[12])

i. supp γ_{se}^{+}(G) = s + 4. Consider S of G'. supp $\gamma_{se}^{+}(u_1)$ = deg (u) + deg (v) = 2 and supp $\gamma_{se}^{+}(v_i)$ = 0, 1 ≤i≤ s. Therefore supp $\gamma_{se}^{+}(G')$ = supp $\gamma_{se}^{+}(u_1)$ + $\sum_{i=1}^{s}$ supp $\gamma_{se}^{+}(v_i)$ = 2. Hence supp γ_{se}^{+}(G) + supp $\gamma_{se}^{+}(G')$ = s + 6.

ii. supp $\gamma_{se}^{\times}$(G) = 4 and supp $\gamma_{se}^{\times}(G')$ = 0. Hence supp $\gamma_{se}^{\times}$(G) + supp $\gamma_{se}^{\times}(G')$ = 4

Theorem 2.11: Let G = $D_{1,s}$, s ∈ N and G' = $D_{1,s[u_1]}$ be the graph obtained by switching the vertex u_1 of the bistar $D_{r,s}$.Then

i. supp γ_{se}^{+}(G) + supp $\gamma_{se}^{+}(G')$ = 4s + 6.

ii. supp $\gamma_{se}^{\times}$(G) + supp $\gamma_{se}^{\times}(G')$ = 4 + (s + 1)2^s.

Proof: Let G = $D_{1,s}$, s ∈ N. Let V(G) = $\{u, v, u_1, v_i$ / 1 ≤i≤s$\}$. Let G'= $D_{1,s[u_1]}$. Then V(G') = V(G), deg (u) = 1, deg (v) = s + 2, deg (u_1) = s + 1 and deg (v_i) = 2, 1 ≤i≤s. S = {v} is the unique γ_{se}- set of G'(see[12]).

i. supp γ_{se}^{+}(G) = s + 4. supp $\gamma_{se}^{+}(G')$ = supp $\gamma_{se}^{+}(v)$ = $\sum_{u\in N(v)}$ deg(u) = deg (u) +
deg (u_1) + $\sum_{i=1}^{s}$ deg(v_i) = 1 + (s + 1) + 2s = 3s + 2.
Hence supp γ_{se}^{+}(G) + supp $\gamma_{se}^{+}(G')$ = 4s+6.

iii. supp $\gamma_{se}^{\times}$(G) = 4. supp $\gamma_{se}^{\times}(G')$ = supp $\gamma_{se}^{\times}(v)$ = $\prod_{u\in N(v)}$ deg(u) = deg (u) × deg (u_1) × $\prod_{i=1}^{s}$ deg(v_i) = (s + 1)2^s. Hence supp $\gamma_{se}^{\times}$(G) + supp $\gamma_{se}^{\times}(G')$ = 4 + (s + 1)2^s.

Theorem 2.12: Let G = $D_{r,s}$, r, s∈ N and G' = $D_{r,s[u,v]}$ be the graph obtained by switching both the central vertices u and v of the bistar $D_{r,s}$.Then

i. supp γ_{se}^{+}(G) + supp $\gamma_{se}^{+}(G')$ =$(r + 1)^2$ + 2s + r.

ii. supp $\gamma_{se}^{\times}$(G) + supp $\gamma_{se}^{\times}(G')$ = (r + 1)$^{r+1}$ + 1.

Proof: Let G = $D_{r,s}$, r, s∈N. Let V(G) = $\{u, v, u_i, v_j$ / 1 ≤i≤r and 1 ≤ j ≤ s$\}$.Let G' = $D_{r,s[u,v]}$= $K_{1,r} \cup K_{1,s}$. Then V(G') =V(G). deg (u) = s, deg (v) = r, deg (u_i) = deg (v_j) = 1,1 ≤i≤r and 1 ≤ j ≤ s . $\{u, v\}$is the unique γ_{se}- set of G'(see[12]).

i. supp γ_{se}^{+}(G) = $(r + 1)^2$ + s. supp $\gamma_{se}^{+}(G')$ = supp γ_{se}^{+}(u) + supp γ_{se}^{+}(v) = $\sum_{j=1}^{s}$ deg (v_j) + $\sum_{i=1}^{r}$ deg (u_i) = s + r. Hence supp γ_{se}^{+}(G) + supp $\gamma_{se}^{+}(G')$ = $(r + 1)^2$ + 2s + r.

ii. supp $\gamma_{se}^{\times}$(G) = (r + 1)$^{r+1}$. supp $\gamma_{se}^{\times}(G')$ =$\prod_{j=1}^{s}$ deg (v_j)×$\prod_{i=1}^{r}$ deg (u_i) = 1.

Hence supp $\gamma_{se}^{\times}$(G) + supp $\gamma_{se}^{\times}(G')$ = (r + 1)$^{r+1}$ + 1.

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ROBLEMS OF WOMEN ENTREPRENEURS - AN OVERVIEW

R.Kavitha,
Department of Commerce,
Sri Sarada College for Women (Autonomous), Tirunelveli- 627 011,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli,
Tamilnadu, India)
(Corresponding Author E-mail ID: kavithabsankar@gmail.com)

ABSTRACT:

Women entrepreneurs are people who take on difficult roles in order to fulfill their own requirements and achieve financial independence. Many women possess this trait, but because they were never given the chance to show off their skills, they are unaware of their true potential. In India, women are increasingly in charge of raising children and taking care of their homes better. Women are responsible for carrying out the job of effectively coordinating various family activities without experiencing any inconveniences. The issues and difficulties that women business owners in India experience are the main topics of this essay. Despite their equal economic acumen, women still lag behind. Despite the country's efforts to empower women, social, cultural, and economic barriers still stand in the way of women's entrepreneurship, with a dearth of an entrepreneurial climate being the main issue. Women are denied chances, information, and instruction despite their potential and talent. Family responsibilities for women, gender inequality, money issues, a low risk tolerance, and male-female competition are a few of the main issues mentioned. By receiving the right training, rewards, encouragement, and motivation, as well as societal acceptance of their entrepreneurial skills and emotional support from their families, problems faced by women entrepreneurs can be eliminated.

Keywords: Women entrepreneurs, business owners, entrepreneurial climate.

INTRODUCTION:

Women entrepreneurs are described as individuals or a group of individuals who start, plan, and run a business. According to the Indian government, a woman must own and manage a business with a minimum financial interest of 51% of the capital and provide at least 51% of the jobs created by the business to women. A woman entrepreneur performs a variety of tasks, just like a guy. They should look into the possibilities of

beginning a new business, take risks, introduce new innovations, coordinate the administration and control of the company, and exercise effective leadership in all areas of the company. Policymakers must look into the situation of women businesses in India.

PROBLEMS OF WOMEN ENTREPRENEURS:

Women in India are faced many problems to get ahead their life in business. A few problems can be detailed as:

1. The greatest deterrent to women entrepreneurs is that they are women. A kind of patriarchal – male dominant social order is the building block to them in their way towards business success. Male members think it a big risk financing the ventures run by women.
2. The financial institutions are skeptical about the entrepreneurial abilities of women. The bankers consider women loonies as higher risk than men loonies.
3. Entrepreneurs usually require financial assistance of some kind to launch their ventures - be it a formal bank loan or money from a savings account. Women in developing nations have little access to funds, due to the fact that they are concentrated in poor rural communities with few opportunities to borrow money. The women entrepreneurs are suffering from inadequate financial resources and working capital. The women entrepreneurs lack access to external funds due to their inability to provide tangible security. Very few women have the tangible property in hand.
4. The financial institutions are discouraging women entrepreneurs on the belief that they may leave their business and become housewives again. The result is that they are forced to rely on their own savings, and loan from relatives and family friends.
5. Indian women give more emphasis to family ties and relationships. Married women have to make a fine balance between business and home.
6. Moreover, the business success is depending on the support the family members extended to women in the business process and management. The interest of the family members is a determinant factor in the realization of women folk business aspirations.
7. Another argument is that women entrepreneurs have low-level management skills. They have to depend on office staffs and intermediaries, to get things done, especially, the marketing and

sales side of business. Here there is more probability for business fallacies like the intermediaries take major part of the surplus or profit. Marketing means mobility and confidence in dealing with the external world, both of which women have been discouraged from developing by social conditioning. Even when they are otherwise in control of an enterprise, they often depend on male members of the family in this area.

8. The male - female competition is another factor, which develop hurdles to women entrepreneurs in the business management process. Despite the fact that women entrepreneurs are good in keeping their service prompt and delivery in time, due to lack of organisational skills compared to male entrepreneurs' women have to face constraints from competition. The confidence to travel across day and night and even different regions and states are less found in women compared to male entrepreneurs. This shows the low-level freedom of expression and freedom of mobility of the women entrepreneurs.
9. Knowledge of alternative source of raw materials availability and high negotiation skills are the basic requirement to run a business. Getting the raw materials from different souse with discount prices is the factor that determines the profit margin. Lack of knowledge of availability of the raw materials and low-level negotiation and bargaining skills are the factors, which affect women entrepreneur's business adventures.
10. Knowledge of latest technological changes, know how, and education level of the person are significant factor that affect business. The literacy rate of women in India is found at low level compared to male population. Many women in developing nations lack the education needed to spur successful entrepreneurship.
11. Low-level risk-taking attitude is another factor affecting women folk decision to get into business. Low-level education provides low-level self confidence and self-reliance to the women folk to engage in business, which is continuous risk taking and strategic cession making profession. Investing money, maintaining the operations and ploughing back money for surplus generation requires high risk-taking attitude, courage and confidence.
12. Achievement motivation of the women folk found less compared to male members. The low level of education and confidence leads to low level achievement and advancement motivation among women

folk to engage in business operations and running a business concern.

13. Finally, high production cost of some business operations adversely affects the development of women entrepreneurs. The installation of new machineries during expansion of the productive capacity and like similar factors dissuades the women entrepreneurs from venturing into new areas.

DEVELOPMENT OF WOMEN ENTREPRENEURS

Right efforts on from all areas are required in the development of women entrepreneurs and their greater participation in the entrepreneurial activities. Following efforts can be considered for effective development of women entrepreneurs.

1. Consider women as specific target group for all developmental programmers.
2. Better educational facilities and schemes should be extended to women folk from government part. 3. Adequate training programmer on management skills to be provided to women community.
3. Encourage women's participation in decision-making.
4. Vocational training to be extended to women community that enables them to understand the production process and production management.
5. Skill development to be done in women's polytechnics and industrial training institutes. Skills are put to work in training-cum-production workshops.
6. Training on professional competence and leadership skill to be extended to women entrepreneurs.
7. Training and counseling on a large scale of existing women entrepreneurs to remove psychological causes like lack of self-confidence and fear of success.
8. Counseling through the aid of committed NGOs, psychologists, managerial experts and technical personnel should be provided to existing and emerging women entrepreneurs.
9. Continuous monitoring and improvement of training programmers.
10. Activities in which women are trained should focus on their marketability and profitability.
11. Making provision of marketing and sales assistance from government part.

12. To encourage more passive women entrepreneurs the Women training programmer should be organised that taught to recognize her own psychological needs and express them.
13. State finance corporations and financing institutions should permit by statute to extend purely trade related finance to women entrepreneurs.
14. Women's development corporations have to gain access to open-ended financing.
15. The financial institutions should provide more working capital assistance both for small scale venture and large-scale ventures.
16. Making provision of micro credit system and enterprise credit system to the women entrepreneurs at local level.
17. Vocational training to be extended to women community that enables them to understand the production process and production management.
18. Skill development to be done in women's polytechnics and industrial training institutes. Skills are put to work in training-cum-production workshops.
19. Training on professional competence and leadership skill to be extended to women entrepreneurs.
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29. Making provision of micro credit system and enterprise credit system tothe women entrepreneurs at local level.
30. Repeated gender sensitization programmers should be held to train financiers to treat women with dignity and respect as persons in their own right.
31. Infrastructure, in the form of industrial plots and sheds, to set up industries is to be provided by state run agencies.
32. Industrial estates could also provide marketing outlets for the display and sale of products made by women.
33. A Women Entrepreneur's Guidance Cell set up to handle the various problems of women entrepreneurs all over the state.
34. District Industries Centers and Single Window Agencies should make use of assisting women in their trade and business guidance.
35. Programmers for encouraging entrepreneurship among women are to be extended at local level.
36. Training in entrepreneurial attitudes should start at the high school level through well-designed courses, which build confidence through behavioral games.
37. More governmental schemes to motivate women entrepreneurs to engage in small scale and large-scale business ventures.
38. Involvement of Non-Governmental Organizations in women entrepreneurial training programmers and counseling.

CONCLUSION:

The promise of equality of chance in every sphere was fulfilled for Indian women after independence, and laws guaranteeing their equal participation in governmental processes, as well as equal opportunities and rights in education and employment, were passed. But regrettably, only a small group of women have profited from government-sponsored development initiatives. The majority of them are still unaffected by change, and only a tiny roup of urban middle-class women have benefited from development efforts of them are still untouched by any developments or changes. The discussion section of this piece does a good job of explaining the motives. It is hoped that the recommendations made in the essay will assist policymakers and entrepreneurs alike in examining this issue and coming up with better plans, programs, and chances for women to engage in more entrepreneurial endeavors.

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STOCHASTIC MODEL FOR DETECTING THE BOUNDARY OF THE FEATURES IN REAL TIME

P.Priya and P.Logambal,
Department of Computer Applications,
Sri Sarada College for Women (Autonomous), Tirunelveli-627 011,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli.)
(Corresponding Author E-mail ID: *logambalp@gmail.com)

ABSTRACT

In this study, the boundary of object is detected using the pre-processed methods. There are so many software's like Adobe Fresco, Astro pad, Adobe Photoshop sketch which can be used to work as a pre-processed way to detect the boundary. The boundaries of the image were detected using a live cam method. The Canny Edge Algorithm is used in this study which is best and most effective method. In this study, cvt color, Gaussian blur, Threshold techniques are used to remove the noise in the images that are taken real time. These techniques are used in a pre-processing method. Edge Detection is nothing but it is for finding the boundaries of objects within images. It is mainly used for image segmentation and data extraction. The Real Time Edge Detection consist of the TMS320DM6437 DSP (Digital Signal Processor) and Canny Edge Detection algorithm. The Edge Detection in computer vision will give meaningful information about the images and the main goal of this application is to give thin edges and the location of object or image in exact shape and size. However, the manual sketching will draw boundaries of the particular images, whereas in this study the web cam will show the edges which the web cam identified. Here the edges are calculated in a live method in a easy way. Drawing is achieved by tracking the real time environment and displays the edges and boundaries. The goal of this work is to accurately detect and localize boundaries in natural scenes. The boundaries of images were detected using a live cam method. The live cam program starts by calculating all gradient direction and draws the boundary of the object. It works in two-dimension method, according with its x, y position. Drawing or Sketching using hand takes more time. Using this techniques time is saved and reduces the man power. It can be used in all fields for structural design. The result is automatic detection of the outline of the object or image or humans. When edge detection was performed on the original real time image of 276KB using Canny edge detection algorithm, edge size detected was 22,7 KB. This is considerably more accurate and faster compared to manual sketching by untrained users and has a time management. Finally compare with the man power and computer vision. The Computer Vision by the edge detection is best to identify the boundaries of the image or object.

Keywords: Canny Edge Detection, Sketching and Threshold

ENHANCEMENT OF THE IMAGE TO EXTRACT THE SPECTRAL AND SPACIAL METRICE

V. Sathya Priya and M.Malini
Department of Computer Applications
Sri Sarada College for Women (Autonomous), Tirunelveli-627 011,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli,
Tamilnadu, India)
(Corresponding Author Mail ID: *2020pca10.pri@gmail.com)

ABSTRACT

The enhancement technique in image processing is to improve the quality of the image. The edge detection plays main role in image processing and also mostly suitable to detect the boundaries or edges, of the objects and also to determine the height of the DEM data .Using the satellite images boundaries of states, district, regions can detected. In this study the Laplacian enhancement technique is to minimize the noise from the images. There are several types of algorithm to detect the edges. There are Prewitt, high pass, Canny and Roberts used in previous research. It is experimentally observed that Laplacian edge detector can be worked well than other enhancement techniques to detect the edges of the object because of working with double derivative logic. It helps us to solve Differential Equation of higher order derivatives. Laplacian technique can avoid the problems with noise amplification. For detection of the affected area in corona, the scanned image is the input of this study. While the scanning the images the noises may be occurred due to the atmospheric factors. The proposed method of Laplacian filter can remove the noises and also detect the boundary of the affected area in the images. The software for Laplacian filter technique has been developed in python to detect the edge of the objects in the image. Using the satellite images, the Laplacian technique can detect the boundary of the feature which can be useful to create political map state map, river map, drainage map, map and also seashore boundary detection. Using the medical image, the output of the image shows the affected and non-affected areas due to the specific disease from the given image. The result of proposed method proves that, the complete boundary can be detected without gap in the edges of the object. Thus the method provided the result with high accuracy.

Keywords: Laplacian, DEM data, derivative logic and Differential Equation

COMPARATIVE ANALYSIS OF EDGE DETECTION ALGORITHMS

G. Muthulakshmi and V.Durga Jayanthi
Department of Computer Applications
Sri Sarada College for Women (Autonomous), Tirunelveli-627 011,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli,
Tamilnadu, India)
(Corresponding Author Mail ID: *durgajayathiv97@gmail.com)

ABSTRACT

Edge detection is the fundamental process in image processing for finding the boundaries of an object in an image. Edge detection is a method of segmenting an image of discontinuities. The edges give message about the locations of the objects, their shapes, sizes and their texture. Input image of the study is collected from the NRSC (National Remote Sensing Center). This proposed technique more suitable for further applications such as boundary detection, image segmentation, motion detection, texture analysis, object identification and so on. The proposed method of this study is to proves that the Canny is the best edge detection algorithm other than Sobel and Prewitt. The Prewitt Edge detection algorithm used two kernel windows by giving the weightage, one for detecting edges in horizontal direction and another for detecting edges in vertical direction. The Sobel also used two difference kernel window for the convolution process one to identify the gradients in the x-orientation and the other one to estimates gradients in the y–orientation. The Gradient method is used in Prewitt and Sobel edge detection. The Canny edge detection algorithm is a Multi Stage Algorithm and it comes under Gaussian method which computed the result by using Second-order derivations. The final results of this study is to state that the canny Edge Detection algorithm provides best result when compared to Sobel and Prewitt Edge Detection algorithm.

Keywords : Sobel, Prewitt Edge Detection, Sensing and segmentation

PLANT LEAF DISEASES IDENTIFICATION AND CLASSIFICATION USING MACHINE LEARNING

M. Aarthy and S. Ramalakshmi
Department of Computer Applications
Sri Sarada College for Women (Autonomous), Tirunelveli-627 011,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli,
Tamilnadu, India)
(Corresponding Author Mail ID: *2020pca01.aar@gmail.com)

ABSTRACT

The identification of crop diseases plays a main role in the yield of agriculture productivity. Due to the changes of climate, there are many crops affected with different diseases. In the previous study, there are many researches that had given results related to agriculture field to identify the diseases. The propose method of this study is support vector machines (SVM) algorithm that can be used for classifying the diseases in the leaves from the given input image. Support vector machines(SVM) is suitable to identify the diseases because, support vector machines(SVM) can be classify the features in the given image as affected leaves with diseases and not affected leaves. Compare to previous research support vector machines (SVM) better than requires huge amount of work an also need the excessive processing time, therefore image processing is use for the classification of leaf diseases. Histogram equalization is an image enhanced of the effected part of leaf is usable for close enhance values for this leaf image. The output images of the support vector machines (classification image) shows to support the accurate object to this leaf image suitable for this image processing techniques.

Key words: support vector machines, Histogram and equalization

RECOGNITION OF OBJECTS FROM THE DRONE IMAGE AND DETERMINATION OF AREA COVERED BY OBJECTS USING MACHINE LEARNING ALGORITHM

Y. Ezhil Dharani and S. Ramalakshmi
Department of Computer Applications
Sri Sarada College for Women (Autonomous), Tirunelveli-627 011,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli,
Tamilnadu, India)
(Corresponding Author Mail ID: *2020pca02.ezh@gmail.com)

ABSTRACT

In this study, the features are identified by the classification of land use/land cover for determining the area covered by each feature in the drone image using remote sensing technique and machine learning algorithm. The input image of this study was drone image of Reddiarpatti in Tirunelveli Taluk for the year of 2021. This study was being selected to recognize and determine the area covered by the individual object. These unique earth object prediction were used to help with advantages of manual power reduction and for extraction of each feature form classification of land use/land cover. The proposed algorithm was K-Means clustering algorithm which comes under category of unsupervised learning algorithm in machine learning. Thus, it was most suitable for the prediction of each feature in drone image and also determines the area covered by each feature using histogram technique. The purpose of this technique was to count the total number of pixel covered by each feature. The K-Means clustering algorithm and HSV histogram technique have been developed in python. The output of technique plot different regions using the color represented by the centroid of the clusters with the statistical analysis of total pixels of each feature are scrub land with 171306, barren land with 264101, rock with 294386, road with 153574 and sand with 76633.The area covered by scrub land feature was 1689008.64 sq.m, barren land feature was 2603930.22 sq.m, rock feature was 2899718.22 sq.m, road feature was 1514178.21 sq.m and sand feature was 755570.73 sq.m.

Keywords : machine learning, pixels and barren land

RECOGNITION OF FACE TO IDENTIFY THE AGE AND GENDER OF PERSON FROM THE IMAGE USING CONVOLUTIONAL NEURAL NETWORK ALGORITHM

M.Maheshwari and S.Vimala
Department of Computer Applications
Sri Sarada College for Women (Autonomous), Tirunelveli-627 011,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli,
Tamilnadu, India)
(Corresponding Author Mail ID: *vimala2015@gmail.com)

ABSTRACT

In this study, age and gender classification that recognition the face to detect the age and gender. The age and gender of the person from the input image \video. It plays in the main role in the department of police to identify. There are used to previous research for support vector machines (SVMs), K means algorithm, Active Appearance Model (AAM), Spatially Flexible Patches (SFP), Local Binary Patterns (LBP).The proposed method of this study is Convolutional neural network algorithm. It's most suitable for recognition of face. The input of Convolutional neural network algorithm for image or video of the person. This used to supervised learning Based on the recognition of feature of skin different between the male and female can be prominently attributes to factors are skin color, hair existence of beards and thinness of eyebrows it's for gender identification. The number and size of wrinkles and dark spot on faces increase as a person's ages. This the gender of the person have been recognized occurred the persons features of skin hair and also age the identify hand on the software for declaration age and gender this is developed in python. The output of identify the group of persons male and female in specify age group.

Keywords: Convolutional, Prominently, Active Appearance Model and Spatially Flexible Patches

IDENTIFICATION OF OBJECTS FROM DRONE IMAGE USING MACHINE LEARNING

S. Jeyalakshmi and S. Dhivyabharkavi
Department of Computer Applications
Sri Sarada College for Women (Autonomous), Tirunelveli-627 011,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli,
Tamilnadu, India)
(Corresponding Author Mail ID: *divya.bharu20@gmail.com)

ABSTRACT

The segmentation is one of the processes in image processing. It is the process of clustering in which the group of the pixels that are having homogeneous values. In this study the segmentation plays a main role of two cluster the data from the image. In previous research there are many neural network classifiers, K-Means algorithm implemented, but proposed method of this study is Expectation Maximization algorithm. It is one of the Machine Learning techniques and it is an unsupervised learning algorithm for discovering latent variable from observed data, and it mostly suitable for clustering the data, because of the algorithm is working with probability distribution concept. The input image of this study is the drone image covered with the area of Rettiyarpetti in the year of 2021. The noises are minimized from the raw image using the Median filter techniques. The images are segmented using expectation maximization algorithm in machine learning with the help of the probability value, the maximum value of probability have been estimated and easily discovering latent variable. According to this segmentation was formed in the given image. The menus have been created using the Graphical User Interface (GUI) concept in python. The software also have been developed for median filter and expectation maximization in python. The output of the image is shown the segmented the features of the drone image.

Key words: cluster, Graphical User Interface and latent

EXTRACTION OF FEATURES FROM THE MEDICAL IMAGES TO RECOLLECT SPECTRAL INFORMATION

M.Sankara Sundari and M.Malini
Department of Computer Applications
Sri Sarada College for Women (Autonomous), Tirunelveli-627 011,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli,
Tamilnadu, India)
(Corresponding Author Mail ID: *malini.laks@gmail.com)

ABSTRACT

The segmentation is one of the image processing it is the process of clustering the group of pixels that have homogenous values. In this study, segmentation plays a main role to detect cardiac disease and breast cancer and to delineate tumour volumes. There were so many segmentation techniques implement in the previous research. The proposed method of this study is region growing algorithm which is clustered the pixels based on the value of seed points. The input of study is the medical images to delineate the diseases. In the first stage, the image can be raw image with noises. Thus the enhancement techniques can be median filter in this study to minimize the salt and pepper noises. The region growing method can be working based on the minimum intensity value of pixel as a seed points. The clusters are formed as region from the images. The process of region growing can be performed is according to the nearest neighbour relationship concept. After randomly formed the regions, the process can be illustrated until getting the proper cluster formation according to the splitting and merging concepts. The software for median filter and region growing have been developed in python. The software is also developed for menu creation in python. There are three menus such as open, median, region. The output image of the region growing shows the delineate of objects. Region growing method was more suitable to detect the boundary of the spreading level the diseases.

Keywords: Segmentation, Intensity and Region growing method

FACE MASK RECOGNITION USING DEEP LEARNING

K. Rathna and P. Logambal
Department of Computer Applications
Sri Sarada College for Women (Autonomous), Tirunelveli-627 011,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli,
Tamilnadu, India)
(Corresponding Author Mail ID: *2020pca11.rat@gmail.com)

ABSTRACT

In this study of COVID-19 pandemic, the World Health Organization (WHO) declared the use of face mask as a mandatory biosafety measure. This current facial recognition system, motivating the development of this study. This study described the development of the system for recognizing people, whether the face mask is wearing or not from the video stream in real time. The proposed algorithm in this model is convolutional neural network (CNN) which comes under the category of supervised learning algorithm in deep learning. This model was based on the MobileNetV2 architecture. The input taken in this model is static and live video stream. This model is used to detect the presence of a face mask on human faces on live video stream. This study is developed by using deep learning to develop the face detector model. The architecture used for the object detection is Single Shot Detector (SSD) because of its good performance, accuracy and high speed. Alongside this, the transfer learning in neural networks was used to produce the final output that is the presence or absence of a face mask in the live video stream. This model proposes a method to detect the level of face mask weared using the bounding box with labelling. This model can be implemented in offices, school and colleges, hospital and railway station etc. This model shows the experimental results in two ways which are either positive or negative, this model shows the high accuracy of 98.65%. This model produces the accuracy depends on the level of the face mask was weared. This model can be applied in various area like airports, malls and other crowded places as a preventive measure.

Keywords: Convolutional neural network, Single Shot Detector and neural networks

IDENTIFICATION OF MOVING OBJECTS USING MOTION DETECTION TECHNIQUES

A.Pavithra and V.Durga Jayanthi
Department of Computer Applications
Sri Sarada College for Women (Autonomous), Tirunelveli-627 011,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli,
Tamilnadu, India)
(Corresponding Author Mail ID: *durgajayathiv97@gmail.com)

ABSTRACT

Motion detection is the process of detecting a change in the position of an object relative to its surroundings or a change in the surrounding relative to an object. It is used for detecting moving object. The moments of objects are identified as motion detection. The pre-recorded video as an input to identify the moment object. `Video stream is the input image of the motion techniques. The motion of the object is detected using the motion detection techniques; it is used for military and security department. At first, the input video stream is converted into gray scale from the RGB color image. The proposed method of this study is Gaussian blur filter which reduce the noises in the video. By setting the threshold value in the enhanced image, frame of the object has been detected. The software of the model is developed using python. A motion detection software system that enables us to see the movement around an object or a visual area. The output of the video is show the identification of moving object detection.

Keywords: motion detection, Gaussian blur and threshold

GRADIENT DESCENT ALGORITHM USINGM OPTIMAL SOLUTION OF FILTERING THE IMAGE

K.Mahalakshmi and S.Vimala
Department of Computer Applications
Sri Sarada College for Women (Autonomous), Tirunelveli-627 011,
Tamilnadu, India
(Affiliated to Manonmaniam Sundaranar University, Tirunelveli,
Tamilnadu, India)
(Corresponding Author Mail ID: vimala2015@gmail.com)

ABSTRACT

In this study of Image process is one of the foremost immerging and wide growing technique creating it a dynamic. One all told the most interesting application of image process is image filtering. Image process is that the approach to convert the image into digital form and perform various operations on it likes enhancing the image or extracting wide-ranging. The propose method of various image filtering techniques and its wide applications. Filter is that the method of commutation a component with a worth supported some operation and performance. Image filtering could also be a way accustomed tweak the images in terms of size, shape, colour, depth, smoothness .It alters the pixels of the image to transform it into desired kind using different styles of graphical section of writing ways through a graphic design and part of writing package. It's wont to suppress the high frequencies on the images and suppress the low frequencies on the image. Filtering a method area unit used for modifying or enhancing a picture. Image filtering is embody the smoothing, sharpening and increased the image. In the application of used an graphics filter. The necessity of image sweetening is there because of disturbances in a picture which ends up into poor quality image. To improve the standard of pictures, noise reduction strategies area unit used. This noise reduction strategies area unit known as filters within the field of image process. Wide selection of filters area unit there in literature varies as per there quality. The noise is largely be additive, increasing or mixed noise. Additive noise means that the noise additional to a picture elements and results into alteration of picture element values whereas increasing noise may be a noise increased with pixel values and mixed noise could also be a mix of each additive and increasing noise.

Keywords: strategies, Image filtering and noise reduction.