3.3.2 Papers Published in UGC care List

Papers Published in UGC care List

S. No	Title of the Paper	Name of the Author	Department of the teacher	Name of the Journal
1.	A study on the effectiveness of online classes in the current pandemic scenario	Ms. Nisha Joseph, Ms. Medline Rozario	PG Department of Commerce	Journal of Education: Rabindra Bharati University (print only)
2	Ability with disability Digital Transformation	Ms. Vasudha A R	Department of English	Journal of Education: Rabindra Bharati University (print only)
3	Impact of Co-workers' support on work-life conflict of women employees in information technology industry	Dr. K. Venkatalakshmi	PG Department of Commerce	Journal of Education: Rabindra Bharati University (print only)
4	Work Related Burnout Among Women Academicians In the New Normal	Ms. Lily Regina Arthi S Dr. Hema Mary	Business Administration, St.Anne's College Department of Management & Research, AVS College, Salem	Journal of Education: Rabindra Bharati University (print only)
5.	The unforseen challenges of Women's Movement in the Digital Era	Ms. Vasantha Pillai, Dr. Manisha Dwivedi	Department of English	Journal of Education: Rabindra Bharati University (print only)
6	A study of Artificial Neural Network Algorithms and Architectures	Marina. B	Computer Application	Journal of Education: Rabindra Bharati University (print only)
7	Emotion Recognition: A Review	Neha Mantri	Computer Application	Journal of Education: Rabindra Bharati University (print only)
8	Green Banking: A study of customer's perspective in karnataka with special reference to Ramnagar District	Mr. Deepu. B and Mr. Subhash. N	Department of Commerce	Journal of Education: Rabindra Bharati University (print only)
9	Empowering Women Through Transferring Technology	Pradeepa M	Computer Application	Journal of Education: Rabindra Bharati University (print only)
10.	A study on E-learning Among the undrgraduate students During Covid-19 pandemic in Bangalore	Sr. Shiji Abraham	Department of Journalism	Journal of Education: Rabindra Bharati University (print only)
11.	Empowerment of Women in Employment through Traning in Leadership Skills and Personality Development	Ms.Sheetal G Dr. Shubha Chandra	Business Administration, St Annes College School of Commerce & Management, GCU	Journal of Education: Rabindra Bharati University (print only)

12.	A comparison study of Acquiring and adapting of technology between my mother and myself	Ms. DaljitKaur	Department of English	Journal of Education: Rabindra Bharati University (print only)
13.	A review on microscopy characterization of carbon nanotubes grown at different temperatures	Ms. Sindhu S	Department of Physics	Journal of Education: Rabindra Bharati University (print only)
14.	Academicians With Prior Corporate Experience: Implications for Knowledge Handling in Higher Education Institutions	Ms.Lily Regina Arthi S Dr.Hema Mary	Business Administration, St.Anne's College Department of Management & Research, AVS College, Salem	Journal of Oriental Research, Madras
15.	Knowledge Circulation and Handling, Psychological Capability and Culture in HEIs	Ms.Lily Regina Arthi S Dr.Hema Mary	Business Administration, St.Anne's College Department of Management & Research, AVS College, Salem	Wesleyan Journal of Research
16.	A study on Effect of Entrepreneurship on Entrepreneurial Intention: Focussing on ICT Majors	Ms.Sheetal G Dr. Shubha Chandra	Business Administration, St Annes College School of Commerce & Management, GCU	Sambodhi Journal (print only)
17.	Predicting the performance in learning and recommendation to improve hearing impaired students in special education.	Marina. B	Computer Application	Design Engineering
18.	Smart classroom behaviour management system	Neha Mantri	Computer Application	Analytical & Interdisciplinary Research (ICAIR-2021) (On-line)
19.	Emotion Detection In Classroom Teaching	Neha Mantri	Computer Application	Indian Journal of Natural sciences (IJONS)– indexed in Web of Science and UGC ISSN : 0976-0997

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A STUDY ON THE EFFECTIVENESS OF ONLINE CLASSES IN THE CURRENT PANDEMIC SCENARIO

Prof. NISHA JOSEPH
Research Scholar, Christ (Deemed) to be University
Principal, St. Anne's Degree College for Women

Asst. Prof. MEDLINE ROSARIO
PG Department of Commerce

ABSTRACT

Students today are more often online than they are offline with respect to academic classes and this change in teaching learning environment has exponentially grown due to the pandemic situation. The interactive relationship between teacher and student has also undergone a transformation. It is vital to gain more insights as to the various aspects of the shift from offline to online classes which has resulted in the disruption of a student's daily routine. Learning is best imparted through interactive classes and offering opportunities to students to indulge in their inquisitiveness and to explore, engage and connect with the world we live in makes students active participants in the teaching learning process. The study aims to provide valuable insight for online instructors about how best they can enhance the overall teaching and learning process and how student's ability to grasp the subject can be improved by adopting certain strategies.

Keywords: *Online teaching, Cognitive abilities, Interactive classes.*

INTRODUCTION

The COVID-19 pandemic has been life changing and has been reshaping the education system. It is a big opportunity to alter our perspective and think in a fresh way. There is speculation about the kind of world that will emerge in the post pandemic era and how this new world will be shaped by the unchartered times we are living in. With the rapid growth in online education there are concerns about how best to support student learning in the segment of university population. The purpose of this study was to investigate the impact of online teaching technology the quality of student work, the student level of understanding content and ability to give feedback and clarify doubts.

With this sudden shift away from the classroom in many parts of the globe, some are wondering whether the adoption of online learning will continue to persist post-pandemic, and how such a shift would impact the worldwide education market.

There are, however, challenges to overcome. Some students without reliable internet access and/or technology struggle to participate in digital learning. This gap is seen across colleges and between income brackets within college students.

REVIEWOF LITERATURE

We began this study with a review of past studies of the issues and trends in online teaching and learning in Higher Education.

The focus of this study is to seek understanding of how effective the online classes are on graduate student learning environment especially in terms of opportunity for interaction, adequacy to clarify doubts, affect on student mental health, ease of submission of assignments and coverage of syllabus.(Innes)

Design had a significant impact on the nature of the interaction and whether students approached learning in a deep and meaningful manner. Structure and leadership were found to be crucial for online learners to take a deep and meaningful approach to learning. An increase in the level of online interaction occurs with an improved level of social presence. This can be fostered by considering characteristics of the learners, by selecting the appropriate computer-mediated communication medium, and by applying appropriate instructional elements to course design.(McIsaac)

Teaching methods are many to one rather than one to one and we control rather than offer resources. Faculty has a major responsibility for what and how students learn. Changes in approach will make the learner actively engaged in the formation of ideas.(Laurillard, 2013)

Given the unexpected length and severity of the outbreak, the impact on college students level of anxiety has increased in terms of academics with the majority stemming from increased difficulty due to the precipitous transition and maintenance of online classes, distantly followed by increased concerns over assignment grades and delayed course completion.(X Wang, 2020)(Investigating Mental Health of US College Students During the COVID-19 Pandemic: Cross-Sectional Survey Study, 2020)

Using Internet resources to enhance learning experience has two principal advantages for students. First, these resources offer a new medium of interaction that complements classroom instruction and facilitates learning. Second, they offer students the opportunity to learn and use Internet technology and yield positive externalities for future academic and career paths.(E, 1998)

Individual differences in personality, motivation styles of perception and cognition and manner of information processing has an impact on learning of students.(Entwistle, 1983)

METHODOLOGY

Sample

The convenience sample for this study consisted of50students enrolled in undergraduate programs in various colleges. The participants consisted of both male and female students.

Measures

The scale items were identified using extensive literature reviews. Measures of other variables are adopted from previous studies that validated the respective scales.

Data Analysis

A questionnaire was prepared consisting of 10 questions relating to areas such as

- Instructiveness
- Duration
- Effectiveness of learning
- Ease in use of technology
- Ease in submission of assignments

Result and Discussion

This questionnaire was distributed amongst graduate studentswho were currently using different platforms to attend online classes in various courses due to the prevailing pandemic situation

The data was collected using Google Forms and the results were compiled. Analysis was undertaken using Chi Square Test and simple percentages. Conclusion was drawn based on the responses from the participants.

All responses were voluntary and participants were asked to complete the questionnaire with the assurance that confidentiality would be maintained.

DATA ANALYSIS AND INTERPRETATION

ANALYSIS USING CHI-SQUARE TEST-X^2

Chi-Square Test

Questions compared: Question number 3 and 4 from the questionnaire.

Analysis of opinion of respondents regarding online classes being interactive and it provided a good learning environment.

Table No: 1 Table of obtained frequencies (O)

Sl.No:	Interactive / Conducive Learning environment	Yes	No	Sometimes	Often	Total
1	Yes	2	1	2	0	5
2	No	8	3	10	1	22
3	Maybe	4	6	12	0	22
4	Has Pros and Cons	0	0	0	1	1
5	Total	14	10	24	2	50

NULL HYPOTHESIS (H0): There is no significant relationship between online classes being interactive and it provides a conducive learning environment.

RESEARCH HYPOTHESIS (H1): There is significant relationship between online classes being interactive and it provides a conducive learning environment.

Computation of Chi-Square $(x^2)\chi^2 = \frac{\sum (O-E)^2}{E}$

Table No: 2

Sl. No:	Observed frequency (O)	Expected frequency (E)	O-E	$(O-E)^2$	$\frac{(O-E)^2}{E}$
1	2	1.4	0.6	0.36	0.257143
2	8	6.16	1.84	3.3856	0.54961
3	4	6.16	(2.16)	4.6656	0.757403
4	0	0.28	(0.28)	0.0784	0.28
5	1	1	0	0	0
6	3	4.4	(1.4)	1.96	0.445455
7	6	4.4	1.6	2.56	0.581818
8	0	0.2	(0.2)	0.04	0.2
9	2	2.4	(0.4)	0.16	0.066667
10	10	10.56	(0.56)	0.3136	0.029697
11	12	10.56	1.44	2.0736	0.196364
12	0	0.48	(0.48)	0.2304	0.48
13	0	0.2	(0.2)	0.04	0.2
14	1	0.88	0.12	0.0144	0.016364
15	0	0.88	(0.88)	0.7744	0.88
16	1	0.04	0.96	0.9216	23.04
17	$\chi 2$ calculated = **27.98052**	**TOTAL**			27.98052

Computation of $\chi 2$ critical at 5% level of significance (α)(Gupta, Fundamentals of Statistics, 2011)

Degree of freedom (df) = (r-1) (c-1)

= (4-1) (4-1)

= (3) (3)

= 9

χ^2 critical (α, df) = χ^2 (α, df)

= χ^2 (0.05,9)

=16.916

Statistical conclusion

χ^2 calculated (**27.98052**) > χ^2 critical (16.916)

Hence, Null hypothesis is rejected.

CONCLUSION

At 5% level of significance and based on the data gathered, there is evidence of relationshipbetween the opinion of the respondents regarding online classes being interactive and it provided a conducive learning environment.

SUMMARY OF FINDINGS AND CONCLUSION

The purpose of the present study was to explore the impact of online learning on students and their views on the new mode of learning. The aim was to gain more knowledge about the opinions of students and their perspectives on online classes in order to help institutions, instructors and students themselves to enhance the teaching-learning experience.

The importance and relevance of this study is indeed very useful due to the current pandemic situation where most educational institutions are adopting and have adopted these platforms in order to continue their course work and complete syllabi.

From the testing of hypothesis (Chi-square test) it is found that there is significant relationship between online classes being interactive and it provides a conducive learning environment. With proper instructor feedback, and proper usage of technology, one can encourage students to perform at higher levels and keep them satisfied with learning from home.Some students are also of the opinion that online courses in which there is physical distance between the instructor and students makes them indifferent towards online classes. The duration was also found to be too long. Students also faced challenges while submitting classwork and assignments.

To encourage student participation in online classes, an opportunity can be provided by the instructor to communicate, by way of personal introduction, answering questions, making short presentations, quizzes, which will create a sense of belongingness to the class. A supportive teaching style can increase motivation in students, and peer mentoring can help in overcoming the problem of technology usage.

Providing short breaks between lectures and classes will enhance the learning experience.Peer mentoring can also diminish technology related fears by providing multiple sources from where students can receive assistance with technology issues.

The institutes can have help desks and instructors can mitigate anxiety amongst students by giving step by step instructions for tech use and platform use.Whenever possible, students can be given freedom to approach assignments from the perspective of their own goals and specific interests.

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ABILITY WITH DISABILITY DIGITAL TRANSFORMATION- TRANSFORMING LIVES OF DISABLED WOMEN OF GEN Z

VASUDHA A.R
Research Scholar School of Science Career Point University
Kota

ABSTRACT

This paper is trying to bring in the challenges, disparity, cultural isolation and psychological trauma faced by young women with disability - Digital Transformation has brought a silver lining - It also brings out the courage of the same women who were able to conquer all these challenges and live with dignity - The society's perception - the required support the internet has broughtin these women's lives is also discussed. This Research paper is believed to bring in a shift in the perception of disability, more so with disabled women specially the societies who have treated them differently.

Key words: *Disability, Cultural Disparity, Isolation. Feminism, Digital Transformation& Digital Senses.*

It is a universally accepted fact that Digital Transformation has made everyone's life easier. It is more so when it comes to differently abled people. It is much more when we talk about visually impaired. Digital transformation has transformed the way they look at the world and the world look at them. Few decades back the scenario was not the same. A disabled woman was considered a burden on the family. She was completely dependent on the family members for all her needs. She was not given basic amenities which all others in the family would get. The disabled child's mother was given a bad treatment and she would be taunted at every step of her life. This happens even now in the rural parts of India.

CULTURE & WOMEN:

Women and children are still considered to be dependents. Their views are not considered in any field. Man, of the family is the decision maker and his words are final. When the woman in the family raises her voice against anything, her voice is not taken rightly in the society. Society starts blaming the lady for being loud and cannot accept her boldness as a mark of progress but as an enemy of the norms of the society. Especially in the rural parts of India a man is free to beat his wife. When a woman takes the beating and continues to adjust with the family, she is considered to be an ideal and good wife. This is still considered normal. She is not looked at as a weak person, whereas when a woman beats her husband, the husband who has taken the beating is laughed at by the society and he is considered to be a weak man. Men of Indian society cannot accept this because right from the childhood they are taught to be superior to the

other gender. This disparity between a man and a woman is not considered as a disparity but as a normal way of leading life. The disparity is wider when a child, especially a girl child born with some sort of disability. This is considered to be a curse on the family. This child cannot become an affectionate member of the family. In turn it becomes an additional burden to the family. Disability by birth or acquired later for various reasons cannot be accepted easily.

Disability can be of different forms. It can be Physical or Mental. The challenge is the same. The family undergoes a lot of trauma. The Society starts looking at the child which has brought lot of misfortune to the family more so when it is a girl child. If the disability is because of genetics and if it is from the maternal side both the mother and the child undergo the humiliation, bickering, taunting etc., from its own family members.

Women are always considered as the Second Sex when it comes to Indian Society and more so when they are disabled. A disabled male child is still considered superior compared to a female child.

An attempt is made to do Research with the following objectives.

- To highlight the **Cultural Politics** and its **Dynamics** in the **Representation of Women with Disability**.
- To **Trace the changing trend**with the onset of Internet and the transformation which it has made in the lives of Gen Z women, in bringing about real-life problems of Women with disability with realities an effort to make people view disability as a part of life without any disparity in gender.
- To highlights the **Cultural mindset of the Traditional society** which is seeing a silver line in the days ahead.

Earlier disabled woman was treated as a burden on the family and the person who gets married to her is projected as making a very big sacrifice. But that was not the case with woman. She would happily agree to get married to a man with disability without begrudging it as her fate. Another fact was that she was more prone to sexual abuse.

Added to all the above challenges disabled women were not shown as normal or they were projected larger than life everywhere. In the recent move we witness the struggles of an ordinary disabled woman, her desires, ambitions and the challenges to achieve the same. This move itself is a ray of hope and that shift is what is important to be brought out in the Research to show it to the society to have a similar change in the attitude while they encounter a disabled woman.

It is evident that culturally there is a lot of disparity even in the projection of disabled women in Films. Culturally, disability of women is not given much importance as they are considered sexually not attractive which is the main attribute of most of the films and their problems are insignificant. Slowly this attribute is taking a shift and there is a gradual acceptance in the society though not at a larger scale. Not taking a step forward is a sign of regression. Though it is slow there is a hope of consideration and acceptance of women who are disabled and their problems are as big as a man's

AREAS OF TRANSFORMATION:

Women of Gen Z specially disabled women of Gen Z are far more fortunate when they are compared to the previous generation. In everyway these girls are given a better chance to expose their intelligence be it a talent which these girls posses or in the field of education. They are no less than an ordinary child. They have become equally competent, be it the other gender or the normal girl. This is possible only because they are now in the digital era. This was not the case two decades ago. If these girls wanted to move out to study, they would get snubbed and people around them would say why do you have to go? What is the big deal? You don't have to study, etc.,

EDUCATION:

Higher Education would remain a dream to these especiallydisabled women. It was next to impossible. The main reason being a disabled girl the parents were very reluctant to send them out of their protected environment. It is more so in the rural parts of our country. Leave alone going out to study, people would ask them to stay at home and question them as why they are going all around instead of being in the comfort of the house. But it is no longer the same.

It is much more challenging when it comes to a visually impaired person to pursue college education. If they had to study a news paper to know the current affairs for few days a person will read and then he would say he has some work and assign the same to someone else and this would continue. They had to depend on someone else to study even their day today portions covered in the class. Some of the teachers didn't even allow them to record their lectures which they could hear it again and again.

Apart from all these the visually impaired students had to depend on the scribes to write their exams. These blind students didn't know the ability of the scribe who is writing the exam for them. They didn't know whether they would arrive on time to write for them. They also didn't know whether they would write the correct spelling, good handwriting and their way of writing was presentable or not. The advent of Computers have made the lives of these students far more easy. Many Universities have started allowing these students to take exams on Computers. This gives them a lot of confidence that they can write the examination without depending on anyone and they can write what they have learnt genuinely.

E-MAIL:

This was the first one to venture to make things far more easy for the disabled girls of Gen Z. Letter writing was common among people till the advent of E-Mail. This has made the lives of people very easy. Now they are able to send personal letters through E-Mails without much hassle and at the same time confidentiality is maintained.

SMART PHONES:

Things have not remained the same. Smart Phones have changed the world for them. There are so many apps which reads everything for them including the News &pictures in them. 'Talkback' is one such app

which explains everything on the screen. It also reads everything on the Laptop. It explains even the pictures.Apart from all these just like us they are able to chat with their friends, video call them and talk to them, they meet up on various platforms, they share notes, audio clips, seek technical help from their friends. They are able to connect more with other disabled people rather than the ordinary ones hence they form their own groups and feel connected which could not be imagined a few decades ago.

YOUTUBE:

YouTube has been a great source of learning for them. Whatever they don't understand in the class they listen to the videos and learn from them. Apart from the academics they also learn to do any task through YouTube. The opportunities they have, the books which had to be read, latest technology which is helpful for them and its application all these are learnt easily without anyone's assistance. Most of the rural students are little poor in English Language. This is no longer a barrier because there are hundreds and thousands of videos in You Tube in the language the student seeks. Apart from all this they can have their own channel and help the others overcome the fear of exploring because women of this kind are able to associate themselves with others when can relate.

GOOGLE:

Google is a very big transforming factor in every field. Google Assistant - OK google makes all the impossible tasks possible for these girls. They can search anything and everything for them. Google meet has helped them connect with others, google classrooms have helped the visually impaired access notes, give tests on google forms making them not to depend on the scribes, google text books provide complete information on the subject they need to know. What else can be called a Transformation.

MOBILITY FOR VISUALLY IMPAIRED:

Google maps have made mobility easy for the visually impaired without getting lost because this was one of the greatest fear the visually impaired had. Be My Eyes is another app which connects with the volunteers through video call who guides them while they are walking giving every detail of what is there right in front of them giving every minute detail as they walk. Google glass is another devise which is very much in use in the west is slowly making an advancement into Indian market. This glass is connected to the mobile phone data and it keeps guiding the person informing what is there right in front of them and how far the person is from her destination. Smart canes are another device very much in use, they vibrate once or twice based on the object in front of them.

MONEY & BANKING:

Google pay has made banking very easy for visually impaired and other disabled people who can't manage to walk up to the bank or dumb and deaf people who can't interact with the people. Money transaction has become a cake walk for all the specially abled people as all the transactions have become digitalised.

Banking has become even more easy with mobile apps. These girls for whom mobility is difficult are able to do all types of transactions through mobile app of the Banks. They can check their balance, recharge their mobile phones, request for statements, change their address or do the stock trading through online mode.

SOCIAL MEDIA:

Disability had kept disabled people little away from social gatherings. They had very less opportunity to interact with people just like the way the ordinary ones do, Social Media is a big boon for these people. All the disabled girls of Gen Z are able to connect to people of their own kind or the type of disability. After schooling most of these girls disperse into different places but they are able to keep in touch with each other. Group calling or group video calling was unknown to the previous generation but the disabled girls of Gen Z have this facility and they share their good times and bad times with their friends. They enjoy pulling each other's legs and seen laughing heartily at stupid jokes makes anyone's heart melt with happiness. It was not the same few decades back. It looked as though they were born to live within the house and at the mercy of the family members. This is a big leap and a very big one when it comes to the disabled girls of Gen Z.

FACEBOOK:

Facebook is another big social media platform for the disabled women of Gen Z. It has cutdown the limitations of known to unknown. Through phone contact the disabled girls would get in touch only with their known people, but Facebook has brought the entire world into their phone. It brings people of some disability together not only from within the state but also from all across the country and all across the world on one stage. The new rules, benefits and opportunities for these girls are made known with one notification of a face book.

There are several Face Book pages concerned with various types of disabilities and people associated with the same. These organisations get together to bring an awareness programme, employment opportunities, opportunities for higher education, availability of training programmes for public service examinations, availability of scribes if needed be, availability of scholarships, availability of laptops, smartphones and many other facilities are given to them with just one notification. This is one of the biggest and the most fruitful benefit social media has given to our girls.

Instagram:

This is another social media platform which is just like facebook where in the disabled people can open an account, follow people of their choice. Apart from all these they can even display their talent, earn their living opening the market for them.

E-COMMERCE:

Just few years back if someone said that he/she bought something online people would look at that person in a strange way wondering how can you trust these online products but now the scene has changed

totally. This is one of the biggest boon for people with disability. Earlier if these girls had to buy anything they had to depend on others if she was unable to move from one place to another. Apart from that they had to compromise with the product because they didn't have the option to choose. Things are not the same now. It has made an immense change.

These girls can choose the colour they want, the price can be compared with two or more platforms and then order it. Be it books or a pair of ear rings the choice is theirs.

BOOKING:

Travelling has become far more easier for these girls be it Ola/Uber or to travel abroad. Online Booking has improved the mobility of these girls. The previous generation had to depend on others to travel from one place to another. It is not at all difficult now. Just at the click of a button they can move locally, nationally and internationally. They can book their own tickers, check for their prices, book from one place to another place and safety added which couldn't even be thought of few years before.

Book publication has become far more easy. Those of them who are interested in publishing are able to publish their content easily opening blogs and this has attracted a lot of people as they are able to relate to the stories of these disabled people. Apart from stories, their creativity gets a platform to exhibit.

The future of Technology has many more bonuses to give for these girls of Generation Z, with the advent of Artificial Intelligence and Internet of Things life hopes to become much easier. All kinds of things including, cooking, washing, even switching on and off of AC, Fridge, Water Heater and many other things are done through mobile apps. Those of them who are not able to type on mobile can give instructions through their voice. Artificial Intelligence will going to be the eyes for the eyeless, ears for the deaf and they become the voice for the voiceless. They will become the drivers for their cars and they need not depend even on Ola and Uber. They might even feed their pets in their absence and entertain them in their absence.

They will be able to lead a life of dignity, self-reliant and advance much more in their career as well. There is a silver lining in the lives of these young girls who need not stick to the traditional methods of life instead go out into this wide world and explore new avenues and lead a life which for many many generations of women were deprived of.

Women of the previous generation specially disabled women would not have thought of these benefits even in the wildest of their dreams. They might look at Generation Z and think how fortunate these girls are as they are deprived of so many things.

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IMPACT OF CO-WORKERS' SUPPORT ON WORK-LIFE CONFLICT OF WOMEN EMPLOYEES IN INFORMATION TECHNOLOGYINDUSTRY

Dr. K. VENKATALAKSHMI, M.com., M.Phil., Ph.D.,
Head, Post Graduate Department of Commerce,
St. Anne's Degree College for Women,
Halasuru, Bangalore.

ABSTRACT

The increasing demands in work has become challenging for women to effectively manage home and work. This has led to undesirable consequences for them in terms of higher family conflicts, more stress on the personal front and less job satisfaction, decreased organizational commitment, and absenteeism and high turnover intention at work.

There are many factors which contribute to work life conflict of women employees. The presence of peer support in an employee's need to achieve work/family balance, or "co-worker support," may benefit employee health. This initiates the current study to focus on the relation between co-worker support and women employee's work life conflict with special reference to Information Technology Industry.

INTRODUCTION

The term work-life conflict is referred to be the result of ineffective management of multiple responsibilities at work, at home, and in all the other aspects of life. This issue has become more important to both the organisation and the employees as well.

Since, the global employee's market has become more competitive, the employees are provoked to extend their working hours to meet the expectations of the employer and also to secure their jobs. Thus, the long hours culture and 24/7 life style has emanated to rule and lead the lives of the highly skilled and managerial professionals. In these days work has become more strenuous and arduous as the new technology instead of bringing relief and leisure; it has left the employees especially professionals with little time free from work. In fact, technology has distorted the line separating office form home and now employees especially in IT industry are expected to be available for office work, at any time even when at home. This has impacted the work life balance of individuals and has become very difficult to meet the family demands.

Another change is the entry of women in work force in a big way, while still continuing with their earlier role of a homemaker. In this competitive world woman has started to play the dual role of homemaker and breadwinner. WLC is a social contrast located within a particular period of time and originating in the western context. Research in this domain emerged at a time when the number of women entering the IT industry grew and resulted in a focus on working mothers and dual earner families.

There are many factors which contribute to work life conflict of women employees. The presence of a manager engaged in an employee's need to achieve work/family balance, or "co-worker support," may benefit employee health. This initiates the current study to focus on the relation between co-worker support and women employee's work life conflict with special reference to Information Technology Industry.

REVIEW OF LITERATURE

Michael J. Tews, John W. Michel and Jill E. Ellingson (2013) assessed the impact of co-worker instrumental support and co-worker emotional support on turnover. The results demonstrated that co-worker emotional support was negatively related to turnover. However, co-worker instrumental support was positively related to turnover, counter to the hypothesized relationship. This counter intuitive finding leads us to consider the role of co-worker support on turnover in a new light.

Hazrillzwar Ibrahim (2014) examined the relationship between co-worker supports, job stress and organization based self-esteem (OBSE). The independent variables are job stress and co-worker support, while organization-based self-esteem is the dependent variable. A survey was conducted on 190 respondents from different occupational background. The respondents were randomly selected from different employment background. The study revealed that only co-worker support was significant in predicting organization based self-esteem.

OBJECTIVES OF THE STUDY

- To study the work-life conflict experienced by women employees in Information Technology Industry.
- To study the impact of co-worker support on work-life conflict of women employees in Information Technology Industry.

RESEARCH METHODOLOGY

A structured questionnaire was prepared on the basis of the factors identified from the exploratory study of review of literature and primary data was collected from 244 women employees working in Information technology industry in Bengaluru. The collected data was analysed using Kruskal Wallis test to measure the impact of co-worker support on work life conflict based on the experience of employees.

ANALYSIS AND INTERPRETATION

Table:1H_0: There is no significant difference in the perception of respondents on team bonding across the cadre

Experience	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Total	Mean	SD	Kruskal-Wallis Test
0-6 years	-	136 (96.45)	5 (3.54)	-	-	141 (100)	3.96	0.14	0.000**
7-12 years	-	88 (100)	-	-	-	88 (100)	4.00	0.00	
Above 12 years	-	15 (100)	-	-	-	15 (100)	4.00	0.00	
Total	-	239	5	-	-	244 (100)	3.97	0.05	

Source: Computer generated primary data (Figures in Parenthesis represent Percentage)

Inference

Table 1 examines the perception of the respondents with respective of smooth and cordial interpersonal relationship with their teammates. Accordingly it is quite clear from the table that all the employees across the cadre are firm in the perception that the relationship with the team mates is smooth and cordial. However a minority of 5 (0-6 years)experiencedprofessional (3.54%) have reported strain relationship with the team members. The overall mean score of 3.97 testifies to obtaining smooth and cordial interpersonal relationship among the team members.

Table: 2H_0: There is no significant difference in the perception of respondents on the help ren dered by co-worker at times of problems.

Experience	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Total	Mean	SD	Kruskal-Wallis Test
0-6 years	-	79 (56.02)	54 (38.29)	8 (5.67)	-	141 (100)	3.5	0.69	0.000**
7-12 years	24 (27.27)	32 (36.36)	32 (36.36)	-	-	88 (100)	3.9	0.72	
Above 12 years	-	15 (100)	-	-	-	15 (100)	4.00	0.47	
Total	24	126	86	8	-	244 (100)	3.67	0.63	

Source: Computer generated primary data (Figures in Parenthesis represent Percentage)

Inference

Table 2 furnishes the details of the perception of respondents on the help rendered by the co-worker at times of problem faced by the member. According to (0-6 years) experience professionals numbering 79 (56.02%) and 24 (7-12 years) experienced professionals reflected by 27.27% have stated that their team members provide crucial support and 54 respondents in (0-6 years) experienced representing by 38.29% and 32 (7-12 years) experienced professionals in terms of 36.36% acknowledge that they get support from the co-workers in times of need only to a moderate extent. The mean scores of 3.5 in respect of (0-6 years) and 3.9 of (7-12 years) experienced professionals indicates near agreement of the statement implying more than moderate level of support rendered by the colleagues. As far (above 12 years) experienced professionals, they are one in their view that they get all support from the co-workers in times of.need. The mean score of 4 of (above 12 years) experienced professionals vindicates the intensity of support given by their colleagues

Table: 3 H_0: There is no significant difference in the perception of respondents on support given by co-workers when new work is assigned

Experience	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Total	Mean	SD	Kruskal-Wallis Test
0-6 years	5 (3.54)	99 (70.21)	29 (20.56)	8 (5.67)	-	141 (100)	3.71	0.53	0.000**
7-12 years	-	74 (84.09)	14 (15.9)	-	--	88 (100)	3.84	0.49	
Above 12 years	-	15 (100)	-	-	-	15 (100)	4.00	0.00	
Total	5	188	43	8	-	244 (100)	3.77	0.34	

Source: Computer generated primary data (Figures in Parenthesis represent Percentage)

Inference

Table 3 is structured to examine the perception of respondents in respect of getting support from their co-workers when a new work is assigned. The mean score of 3.71 in respect of (0-6 years) experienced employees and the mean score of 3.84 calculated for (7-12 years) experienced professionals point unmistakably to more than moderate level of support obtained by these categories from their co-workers when a new problem or a fresh challenge is encountered. So far as (above 12 years) experienced professionals are concerned the mean score of 4 signifies significant level of support rendered by the co-workers in addressing challenging situations. The null hypothesis framed has been rejected implying that employees across the level hold divergent views on the level of support acquired from their co-workers.

Table: $4H_0$: There is no significant difference in the perception of respondents on sharing the work to clear backlog

Experience	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Total	Mean	SD	Kruskal-Wallis Test
0-6 years	-	87 (61.70)	30 (21.27)	24 (17.02)	-	141 (100)	3.44	0.74	0.000**
7-12 years	-	32 (36.36)	42 (47.72)	14 (15.9)	-	88 (100)	3.2	0.72	
Above 12 years	-	15 (100)	-	-	-	15 (100)	4.00	0.47	
Total	-	134	72	38	-	244 (100)	3.39	0.64	

Source: Computer generated primary data (Figures in Parenthesis represent Percentage)

Inference

Table 4 is structured to measure the perception of respondents on the level of support given by the co-workers during the period of leave. 87 (0-6 years) experienced respondents (61.70%) and 32 (7-12 years) experienced employees forming 36.36 per cent agree that they get all out support from the co-workers in completing the work accumulated due to the leave of absence availed by them while 30(0-6 years) experienced professionals represented by 21.27 percent and 42 (7-12 years) experienced professionals representing 47.72 percent view the support extended by the colleagues in clearing the backlog of the work to be at a moderate level. On the other hand 24 (0-6 years) experienced professionals (17.02%) and 14 (7-12 years) experienced professionals (15.9%) are sore that the do not get any support from their colleagues in clearing the backlog of work resulted from the leave of absence. With respect of (above 12 years) experienced professionals all are uniform in responding that they get whole support from their team members in the matter of clearing the backlog if work resulting from availing the leave. The mean score of 4 implies the higher level of support received from the co-workers in addressing the backlog issue.

Table:$5H_0$: There is no significant difference in the perception of respondents on encouragement given by co-workers

Experience	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Total	Mean	SD	Kruskal-Wallis Test
0-6 years	-	99 (70.21)	34 (24.11)	8 (5.67)	-	141 (100)	3.64	0.55	0.000**
7-12 years	-	45 (51.13)	43 (48.86)	-	-	88 (100)	3.51	0.55	
Above 12 years	-	10 (66.67)	5 (33.33)	-	-	15 (100)	3.66	0.32	
Total	-	154	82	8	-	244 (100)	3.59	0.48	

Source: Computer generated primary data (Figures in Parenthesis represent Percentage)

Inference

The mean score exceeding 3 testifies to more than moderate level of inspiration given by the team leaders. However a miniscule minority of 8 (5.67%) respondents from (0-6 years) experience have reported that they did not get any sort of inspiration or encouragement from the co-workers. On the contrary none of the middle and higher level professionals has reported negatively about the co-worker on the inspiration front. The overall mean score of 3.59 underscores more than moderate level of inspiration infused by the co-workers.

Table: $6H_0$: There is no significant difference in the perception of respondents on emotional support given by the co-workers when managers find fault with the work.

Experience	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Total	Mean	SD	Kruskal-Wallis Test
0-6 years	-	94 (66.66)	39 (27.65)	8 (5.67)	-	141 (100)	3.60	0.72	0.000**
7-12 years	-	45 (51.13)	19 (21.59)	24 (27.27)	-	88 (100)	3.23	0.75	
Above 12 years	-	10 (66.67)	5 (33.33)	-	-	15 (100)	3.66	0.32	
Total	-	149	63	32	-	244 (100)	3.47	0.59	

Source: Computer generated primary

Inference

Table 6 is intended for investigating the perception of professionals across the category with respect to emotional support received from the team members. 94 (0-6 years) experienced professionals accounting for 66.66.percent and 45 (7-12 years) experienced professional (51.13%) and 10 (above 12 years) experienced professionals forming 66 percent have categorically stated they draw emotional support from their colleagues especially their work is criticized by the leaders concerned. Similarly 39 (0-6 years) experienced professionals (27.65%) 19 (7-12 years) experienced (21.59%) and 5 (above 12 years) experienced professionals (33.33%) have acknowledged that they have received moderate level of emotional support from the team members when they undergo mental agony arising from stinking criticism by their team leaders or managers. However 8 (0-6 years) experienced professionals (67%) and 24 (7-12 years) experienced professionals (27.27%) have lamented the lack of any emotional support from their team members when they have to face criticism in respect of the work executed by them in a project. Perhaps due to lack of smooth inter personal relationship among team members; they may not have secured the emotional support from the colleagues. As far as (above 12 years) experienced professionals are concerned there is no single voice decent on account of lack of emotional support from their team members. The overall mean score of 3.47 denotes more than moderate level of emotional support is given by their co-workers to professional across the level.

Table 7: Ranking of Co-workers' Support

Experience	0-6 years	Rank	7-12 years	Rank	Above 12 years	Rank
Team bonding	3.96	1	4.00	1	4.00	1
Help at the time of problem	3.5	5	3.9	2	4.00	1
Assistance on new assignment	3.71	2	3.84	3	4.00	1
Helps on backlog work	3.44	6	3.2	6	4.00	1
Encouragement by co-workers	3.64	3	3.51	4	3.66	2
Support against manager	3.60	4	3.23	5	3.66	2
Overall	3.64		3.61		4.00	
			R		Sig	
0-6 years & 7-12 years			0.655		0.526	
0-6 years&above 12 years			0.030		0.002	
0-6 years&above 12 years			0.381		0.031	

Co-workers' support scale

Theranking of the co-worker support has been given in table number 7. As regards (0-6 years) experienced employees the factors like team bonding, assistance on undertaking new assignment and encouragement from co-workers are the top three factors contributing significantly on the dimension of co-worker support. Similarly the factors like team bonding help from team members and help on undertaking new assignment are primary factors playing significant role on the dimension of co-worker support. In the case of (above 12 years) experienced professionals there are four factors namely team bonding, help from team members, help on undertaking new assignment and team help in completing backlog influencing equally co-worker support.

The comparison of the ranking pattern of (0-6 years) and (7-12 years) experienced professionals discloses the fact that the ranking pattern of these two categories of professionals is similar to the extent of 65.5 percent. Hence the hypothesis framed has been rejected with respect to comparison of these two cadres. As regards the comparison of (0-6 years) and (above 12 years) experienced professionals, there is no similarity in the ranking of various co-worker support factors. The r value 0.030 calculated signifies the absence of correlation between the ranking the mean scores of these two categories. Hence the hypothesis has been accepted with regard to comparison of ranking between (0-6 years) and (above 12 years) experienced professionals. The ranking pattern of (7-12 years) and (above 12 years) experienced professionals are similar only to the extent of 38.1 percent in terms of r value.

Conclusion

The study can be concluded by interpreting that co-workersupport is very prominent across the cadres of employees in Information Technology sector particularly in areas such as

- Team bonding
- Assistance on new assignment
- Encouragement by co-workers

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WORK RELATED BURNOUT AMONG WOMEN ACADEMICS IN THE NEW NORMAL

LILY REGINA ARTHI. S
Research Scholar, AVS College of Arts & Science, Salem
Asst. Professor, Department of Business Administration,
St. Anne's Degree College for Women, Bangalore.

ABSTRACT

Work Related Burnout has always been a real threat in academia. The Covid 19 pandemic had compelled almost all business offices to switch to remote working and the educational institutions are no exception. At this time, the faculty work related burnout has been intensifiedby the pandemic related stressors like accelerating work expectations, lack of resources andwork life conflicts.This paper attempts to study the relationship between work related burnout and its stressors among women working in private colleges during the new normal.

I INTRODUCTION

The higher education system has been facing an unprecedented change across the globe in the recent years. The demands on faculty members such as research, projects, publications and morehave be on the rise. The corona virus pandemic has added to the prevailing stressors without taking any old stressors away. In the new normal faculty members had to shift course content to online content in new platforms, learn new technologies which has led to a steep learning curve. Moreover, they must manage their health alongside dealing with their children's own distance learning. Some institutions also insist that faculty members come to the campus and conduct classes. This poses additional risks from travelling to using the common areas at the workplace. In addition, the burden of attending to children who were left at home with less or no supervision adds up to the stress.In a country like India where women contribute significantly more towards household tasks than men, this unprecedented situation causes a greater challenge for them.

II NEED FOR THE RESEARCH

Studies have brought to light that there exists a large gap in household work between women and men. In fact, the division of work in housework has not improved much, even with the increase of women working in professional jobs (Lachance-Grzela& Bouchard, 2010). In addition to this, thetime of pandemic calls faculty members for self-learning a new way of teaching, managing technology, emotionally connecting with students, and steering their capabilities which further adds to the burnout of women faculty.This necessitates a study on the factors affecting the work-related burnout

of women faculty members in higher education in the new normal drawing on the JD-R model (Bakker, 2011; Bakker & Demerouti, 2014).

Theoretical Framework

One of the leading models that predict the antecedents of burnout is the Job Demands -Resources model(The JD-R; Demerouti et al., 2001,). Burnout develops when individuals experience continuous job demands and have inadequate resources to address those demands(Demerouti et al., 2001, p. 499). Job Demands as the psychological, social, organizational or physical aspects of the job that require Continuous efforts or skills that is linked with the physiological and psychological cost. Job Resources are the work-related components that increase or minimize job demands or their negative impact(Demerouti et al. 2001, 501).

Researches strongly support the role of Job demands and job resources in predicting burnout. Thus,the JD-R model appears to be appropriate to analyze the effect of job demands and decreasing job resources in the context of the present scenario of higher education(see also Barkhuizen et al.,2014).

Objectives of the Research

The objective of the research is to ascertain the influence of Job Demands,Lack of Job Resources and Worklife Conflict on the work-related burnout of women faculty members in higher education.

III. REVIEW OF LITERATURE

Work related burnout is a condition of emotional and physical fatigue that includes a feeling of reduced accomplishment. It is experienced by faculty members once they are exposed to adverse effects of work demands that go beyond their coping ability. This study centers around the Job Demands-Resources (JD-R) model (Demerouti et al., 2001) which has received considerable attention from scholars. According to this theory, the job characteristics in all professions can be classified into job demands and job resources which through its interaction process influence the wellbeing and performance related outcomes such as burnout of employees. Job demands show the job's attributes that necessitate employees to make the effort,such as role conflict and work overload, strongly linked to physical and/or mental costs(Demerouti et al., 2001).Prior research shows that job demands and job resources are the key predictors ofjob burnout (Barkhuizen et al., 2014; Boyd et al., 2011).In the recent months' faculty members juggle between virtual classes and family and work responsibilities at home. This has created added pressure such as work life conflict. Work-life conflict arises when the work causes some impediments in the personal life of an individual.Work overload, work spillover and professional demands are some of the prominent demands at work leading to work life conflict and have adverse impact on employees like exhaustion and burnout (Gillespie and Melby, 2003;Wallace, 2005).Such spillover of demand on both the aspects of the continuum

is more intense especially in the case of women workforce. Following the discussion above, the overall objective of the paper is to examine the effect of the variables Workload, Lack of Job Resources and Work life Conflict from the JD-R model on Burnout of women faculty members.

IV. METHODOLOGY

Measures

Workload and Lack of Job Resources were measured using six items from the scale of Demerouti et al., (2001). Work–life conflict was measured through three item scale of Hill et al. (2001).Burnout was measured through six items fromCopenhagen burnout Inventory (Copenhagen burnout inventory, 2005).

Sampling

Convenience sampling method was used wherein 161 women faculty members were surveyedvia social media (LinkedIn) for the study.The sample of the study includes women faculty working in private colleges excluding professional colleges in Bangalore.

V. ANALYSIS AND DISCUSSION

Hypotheses

H_1: Workloadis positively related to work related burnout among women faculty members

H_2: (a)Lack of Job Resourcesis positively related to work related burnout among women faculty members (b) The association between Lack of Job resources and burnout will be weaker than that of other variables

H_3: Work Life Conflictis positively related to work related burnout among women faculty members

VI. LINEAR MULTIPLE REGRESSION

Dependent Variable: Work Related Burnout

Predictors:Workload,Lack of Job Resources and Work life conflict

Work Related Burnout (Y) was the dependent entity while Workload(X_1), Lack of Job Resources (X_2) andWork Life Conflict (X_3) were predictors. Tables 2 and 3 summarise the model inclusive of R value, its square and adjusted value besides F and p values.

Table 2: R Values

R	R Square	Adjusted R Square	Std. Error of the Estimate
.555[a]	.308	.286	2.07393

Table 3: ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	178.173	3	59.391	13.808	.000**
	Residual	400.012	93	4.301		
	Total	578.186	96			

Dependent Variable: Work Related Burnout

Predictors: (Constant), Workload, Lack of Job Resources and Work Life Conflict
**p value is significant below 1 percent.

Coefficients, t and p values are presented in Table 4.

Table 4: Regression Coefficients

Variables	B	Std. Beta	t	p
Constant	2.468		1.411	0.000**
X1	0.522	0.480	5.470	0.000**
X2	0.042	0.073	0.723	0.000**
X3	0.129	0.156	1.536	0.010**

** Denotes significance at / below 1 percent level.

$$Y = 2.468 + 0.522X_1 + 0.042X_2 + 0.129X_3$$

An increment of Workload would stimulate work related burnout to ascend by 0.522 units. An increment of Lack of Job Resourceswould stimulate work related burnout to ascend by 0.042 units. An increment of Work LifeConflictwould stimulate work related burnout to ascend by 0.129 units.

Practical Implications

The findings of the study have a significant implication for higher education that may alleviate burnout among women faculty. Given the significance of Workload, it is essential to make a clear distinction between academic and administrative roles in higher education. The administrative burdens on faculty that detract them from the vitalpurposeof excellence in research and teachingmust be reduced.The educational

institutions overloading the faculty will increase the level of fatigue which will impact the productivity of the faculty. Similar policies like that of other industries must be identified and implemented by the Management to reduce work life conflict. Further, there is no way the goal and objectives of an educational institution can be accomplished withoutputting in place the resources required for ensuring the success of such institutions.Modern facilities should replace the old ones and faculty members should be given adequate training in theirutilization.

CONCLUSION

The study shows that Workload, Lack of Job Resources and Work life conflict has a definite impact on burnout. Among these variables, Workload has the highest influence while Lack of Job Resources has the least influence. This indicates that if there is increased Workload it leads to increased fatigue.

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THE UNFORESEEN CHALLENGES OF WOMEN'S MOVEMENT IN THE DIGITAL ERA

VASANTHA PILLAI
Asst. Prof (Department of English)
St. Anne's degree collage for women
vasantha2012@yahoo.com

Dr. MANISHA DWIVEDI
Co - Author Head of Department (English)
C.V. Raman University (Kota)
manishadwivedi1234@gmail.com

ABSTRACT

Women in the Digital Era: Culture of silent suffering in the narratives of Sudha Murthy

After India got independence, we could see a lot of developments in the world in all kind of ways. Day by day changes has made us astonish and one of the major factor for the changes in wide is the proper education and awareness among the people. But at the same time this education sometimes becomes a big disadvantage in the relationship factor, when one doesn't look over the other due to abundant knowledge and greediness of money. Women and Men play a vital role in the daily life. The process of digitalisation has also been a major component for the world's era. This has made the work in progress so easy that while sitting in one place one can know what's happening in the world through the digital vision. But, this itself made some men to idealise in the work place where they leave the women to suffer in loneliness. But also there is another one crucial term gender inequality which is still followed and not been have changes much where it is a very silent to the world. Sudha Murthy who is the eminent social worker who makes the world familiar in her books of writing that still feminism are facing the hidden challenges in this digitalised world without any kind of solution to it . Let us see the deeper version of different types of women who face problems in the digital era.

Keywords: *Development - gender quality – eminent - education - digitalisation- greediness of money - silent world - feminism - challenges.*

INTRODUCTION

Sudha Murthy is a prolific writer and a philanthropist. She is born and brought up in the state of Karnataka. Most of her novels are based on stories of Karnataka region and it is very much in easy language to understand. She is very much patronised for the Indian tradition and unlikes on westernized tradition. Sudha Murthy's style is simple and elegant and creates a lasting impression in the minds of the readers.

She writes about feminism, the need for women empowerment. Her writings make most of the women overcome the societal problems in daily life. Her women characters in the story are the everlasting memories of the readers and she puts the readers of the book in an emotional trauma. Her one of her most heart touching novel is the "Gently falls the Bakula".

Sudha Murthy synonym to simplicity and intelligence, despite of achieving great height in social work, professional carrier as a writer. She is a writer who describes human emotion and behaviour in her writing. Her stories are based on real life experience and inspire. She writes stories of common people and their struggle. Her stories are motivational inspiring. Her books are not only inspired but, also increased self confidence. She writes in a very simple language and describes the behaviour and emotions of life. Sudha Murthy encourages women through her novel and motivates them to courageous in different situation. The main purpose of the novel "Gently Falls the Bakula" and "Mahaswetha" show the female characters rise and start a new life to fulfil the desire.

The women is always treated as a low gender when compared the men gender, where even today in the digitalised world, women are not paid equal to men in some places. This is one of the greatest problems faced by the feminism. According Sudha Murthy even in this 20th century women who are well educated live in a painful world who do not show the pain and carry forward their family with pride. The other side is she also shows women who move forward for the career when the life doesn't help her to come out from the pain. "**Mahaswetha**" a novel written by Sudha Murthy shows the heroine Anupama's unconditional love to her lover Dr.Anand who does not honour her love simply because of the fact she suffers from an incurable disease called Leukoderma after marriage. In this case even though there are so many medical invention in the digital era, we found her the women suffering the pain of both emotionally and mentally, where the dominance of Dr. Anand a male lover of Anupama, instead curing of the disease with the proper medication, he sends Anupama out of the relationship seeing the societal values such as prestige. In this story, Sudha Murthy expresses the feelings of the women Anupama who suffers the emotional pain in silence. The writer has listed various aspects of Indian society – arranged marriages, dominating mother-in-low, helpful friends, hypocrite relatives, a cursing stepmother and worried parents of a young Indian girl. People love and admire Anupama and respect her for her qualities and it is when she realizes that inner beauty is more important than anytime else. Men judges the women by her external beauty not by inner values, if this happens all the women in the world will not face any kind of cruelty from the men. Leukoderma in our country was a very dreaded disease not because it was not curable or contagious but because it mars the external beauty of a person and was mistaken as Leprosy. Anupama in the story was left without any moral or financial support to fend for her life and what an illustrious life she makes of it. And in the end when her husband realizes his mistake and wants her back in life she refuses to live with him. The Crucial time spent by Anupama in her life makes her to overcome all odds and finds peace in the work she has always loved to do.

In the other story of Sudha Murthy, there is a other story "**Gently falls the Bakula**". A Woman is depicted as a symbol of sacrifice. She asserts that women have to extricate themselves from their patriarch

ally constructed social ties. To reconstitute herself, she goes through a saga only to emanate as an individual. The story begins in an unassuming background in Hubli portraying the lives of Shrimathi and Shrikanth. In this case both the male and female are educated and they have a good understanding by themselves but the only things which make them break in the relationship is the technology and greediness for the money by the Shrikanth and his family. However here Sudha Murthy soundly tells that Westernization always leads to the grounds of destruction of life style. Shrikanth was career-oriented and dedicated. He joins an IT company and climbs the corporate ladder rapidly and gains success, leaving behind Shrimathi and her academic aspirations. Here again in the digital era the work enrolment of the office space is more when compared to the life, where people tend to forget the life space and loose the opportunity building their relationship rather than building the dreams with money and prestige's. Sudha Murthy portray here how a women is pushed to a lonely life by suffering say by day due to the improvement of the technological life . Shrimathi here not only faces the technological era but also the greediness of the mother-in-law and sister-in-law due to Shrikanth moving in a higher ladders for earning money. Whatever the technology develops in this digital era, the one soul which is being affected will be the poor female gender. In those days women was seen as a burden gender to their parents and after a burden to the husband and what not?. Even whatever the technology develops this kind of society will never understand the feelings of a woman who suffers in the silent darkness. Sudha Murthy mostly makes her novel on the basis of relationship like husband and wife, lovers, mother and son. The economic independence does not serve the purpose as either their earnings or their career growth do not offer any active role to play in the family. This Shrimathi and Shrikanth are basically from the village growing lovers who lose their life only due to technological up liftment in both their life. The only one mistake made by them is the life which leads in the form of westernisation. Dominant ideologies, increased responsibilities and change life styles have added oil to the fuel resulting marital values destabilized. The very meaning of stability in marriage has been triggered, as life-long stability is not achieved after each dream wedding. The different roles of female are acknowledged and at the same time the bondage between women and men is strengthened. Sudha Murthy speaks as clearly to female's own social and economic concerns as to her familial position for obtaining a larger role by any female in her personal and professional frontiers. The domesticity rendered as a universal ideal in practice has narrowed down the outlook of not only male but female also. When transferring domestic culture from household to public arena the differences between Shrimathi and Srikanth are more sharply drawn. For her transference of familial values and the conversion of individual roles and marital cooperation are put repeatedly to question than the transference of material goods who takes a decision to be more productive to advance the cause of change.

The other story of a beautiful young and enthusiastic lady Mridula who hails from a village in Karnataka. She meets Sanjay, an impoverished doctor, and they fall in love and decide to marry and settle in Bangalore Mridula starts to notice the selfish and materialistic world around her after her marriage. In the meanwhile, Sanjay decides to leave his current job for a private practice. This leads to corrupt practices and problems between the couple.

WOMEN EMPOWERMENT:

Empowerment is a process by which a specific destitute and discriminated class is being socially, economically, and politically uplifted. It is a multi-dimensional social procedure that assists individuals with overseeing their own lives. The empowerment of women is profoundly a colossal issue that needs to be redressed to length and breadth. The intellectuals and statesmen who have battled for the empowerment of women in India have worked a 'day in and day out' to present the reformation in this regard and the efforts are still being going on. The empowerment of women is a multi-dimensional viewpoint that requests for dynamic participation of different partners in a developing nation like India.

In the one of the beautiful novel named "**House of cards**" there is an women named Mridula who faces a saviour problem in her life due to the financial riches, which help to build physical infrastructure due to that reason she is facing the destruction of the close human relations in her life. Sudha Murthy, basically writes on the story relating to relationship issue in society. In this world Money is the one factor which makes a person rich in the society, but the same fact makes many people's life worstly suffer in loneliness incase of greediness. Here the character Mridula is shown as a innocent and intelligent girl who is among the top students in her class. Mridula is attracted to young Man Dr. Sanjay and gets married to him from the permission of their parents. Mridula was a teacher in a school and continued working even after marriage. In this we can see that women mostly are employed only in the service nature sector like teaching or nursing. This is because women are seen always as a soft and calm natured human being and where this kind of advantage is taken by the men in the case of Patriarchal rule. Now here Sanjay becomes a successful doctor and started his own nursing home. While Mridula was pushed in the family traditional bonding like any other women to work for their *family* members. Mridula is a person who was very much under for the affectionate bonding of family natured girl and she was totally annoying the factor of money in her life, when compared with Sanjay. In this world, money is the only factor, which makes the human beings to do anything in this world, whether it is a murder, rape or any kind of relationship cheating. Men are basically shown as a very strong and physically rough kind of nature, where they are very much selfish in natured when compared to a woman, who always takes into consideration of the entire member in the family. Whenever a women is working she is suppose to portray as a working women, who is never bothered of family life. And in the other side when Man working position is to be considered as a regular employee in the life of house. It is that the due to the traditional practises women is not let to work and pushed into a family bopnding of doing household chores and she is not allowed to go to work after marriage and the inlaw's have mostly the attitude that technological world, might push the women in search of money instead of looking after her husband. But in reality it is not as such as the imaging world, Men's are the once who take that opportunity to never care of wife instead of going behind the ladders of financial hike and the promotions of the good position in the office work. The same happens here in Sudha Murthy novel, where Sanjay started his own hospital which brought him unforeseen success in his field of knowledge. Sanjay was more concerned about gaining of more money, which made the feelings of Mridula alone. Sanjay is much more selfish, where he was not much more sharing money matters to Mridula, which was a great insult towards her in the relationship bonding. Mridula valued love, trust and truth above all gold and money, but Sanjay has valued only the money but not the love and affection

towards her, which broke her emotional trust very much badly. He was a simpleton to be easily beguiled by the hearsay stories. Once Mr. Keshav Rao, a co-passenger casually talked about thefts in the train compartments in Hubli. Sanjay took it so seriously that he kept his bag clutched to his heart throughout the remaining journey. The same Sanjay did not care about his wife later. He cooked stories, misguided Mridula on many accounts. Due to his unlooking of Mridula she often felt loneliness and when Mridula asked and felt emotional he even sent her to psychiatrist, but instead he didn't ever bothered look after her. This showed the undesirable and destructive effect of money on the otherwise plain minds. Success and money had corrupted his entire being. Now the love between mridual and Sanjay has totally lost and now it was a bad love marriage result. All this is because man forgets to see the relationship and humanity a when the improvement technology gives him increase in the standard of living and he looks only the condition of living with materialistic world and live suffocates the owmen who was back behind him with so much emotional affection. Where now it had lost the value and only the money gats the value in the developing era. Now Mirdula decides to laeave Sanjay now because of the Betrayal of the love with her, which was very pure when compared with gold. Whenever a women is felt the betray of he love she never falls down totally, she makes her mind very strong after the fall, she learns the very best lessons in her life. Its is fact that women might look soft in physical but emotionally she is very strong , so now Mridula proceed for the higher studies to make her strong in her independency with anyone. It is true that technology teaches not only the developing era but also the lessons to overcome the problem of women society in making her educate more and more to stand independent as Man. We are very sure that it is not just about Mridula, even Shrimathi who was betrayed by Shrikanth who learnt from Shrimathi that a woman can also stand independent with her education. Women are empowered when they are able to take up the opportunities to them without limitations and restrictions in the form of tradition household. In older days our parents were not know much on technology are development around them, but they lived in the era of whatever they had and grown in their socks. It is also true that there were not much of relationship betrays or the word divorce in their dictionaries. The most advantageous factor was they had a lot time spending habits towards each other where they know their feelings and emotional bonding each other and so take the stand on the concept of life called "Give and take policy". But now in this running world of era there is no such concepts found due to the no time found between each other because the time has been captured by the value of excess money. Sudha Murthy here puts the word that "Indian values are better than Westernised values".

CONCLUSION

The traditional wave has tied down the hands of a women to not express out the pain they are going through. Sudha Murthy is one of the lover of Indian tradition where she portrays the women pain gone through emotionally. She herself has faced so many stages of feminism and she has written books of her own experience too. The patriarchal society has not given equal status to women. Any kind of changes cannot bring about respect towards in the status of women in the country. The system of patriarchy is the major role played by the men is the establishment of male dominance. In most societies, women were traditionally confined to the home as daughters, wives and mothers, and we are often only aware

of women in history because of their relation to famous men. Of course many women throughout history did in fact play an important role in cultural and political life, but they tend to be invisible. An organised women's movement only really started in the 19th century, even though women activists and the struggle for equality have always been part of all human societies. Hereby we can conclude that money matters a lot for the human beings when compared to the factor of love and emotional bonding in the case of men in these novels of Sudha Murthy. It is not the women in the novels of Sudha Murthy who suffer the loneliness, other women who are still silent in the world with pain undergoes this technological mistakes in life, where Men lost their biological fitness by just development of technology and they forget to develop their own individuality which is the part of their life.

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A STUDY OF ARTIFICIAL NEURAL NETWORKS ALGORITHMS AND ARCHITECTURE

MARINA. B
Research Scholar, Alagappa University, Karaikudi, Tamilnadu
Asst. Prof. Head, Department of Computer Applications, St Anne's Degree College for women
reenajerald@gmail.com

Dr. A. SENTHILRAJAN
Research Supervisor, Professor and Director,
Department of Computational Logistics,
Alagappa University, Karaikudi,Tamilnadu

ABSTRACT

Artificial neural network is one of the most emerging field in the technology of Artificial intelligence. The working principle of Artificial neural network is very much similar to the working of human brain. It has brought a huge impact on many areas like self-driving car, cancer diagnosis, Image processing, speech recognition and many more. There are different types of neural networks are available. Depends on the problem, the different types of neural networks are implemented. There are many algorithms involved in the training of the neural network. This paper covers, various types of neural networks and algorithms used in the neural network and its architecture.

Keywords *Artificial neural network. Activation function, Feedforward neural network, Recurrent neural network, Gradient descent algorithm,*

1. INTRODUCTION

Artificial neural networks are referred to as non linear statistical data models that replicate the role of biological neural network(NNs)[1].Artificial neural network is a subfield of machine learning. It comprises of processing unit called Input layers, hidden layer, and the output layer. The neuron or nodes of one layer are connected to the adjacent layers. Each connection is assigned with a weight value. The inputs are multiplied by the respective weight and summed at each unit. The sum then undergoes a transformation based on the activation function [2]. The activation functions are used to determine the output of the neural network. The activation function is associated with each neuron and determines whether it should be activated or not. based on each neuron's input is relevant or not for the prediction of the model. There are several activation functions are used. Most commonly used ones are sigmoid, hyperbolic tangent, ReLu(Rectified linear unit), Softmax and swish. These activation functions are also used to flatten the input into a narrow output range between 0 and 1or between

-1 and 1.The result of the final output layer will be considered as the solution of the problem. Neural network can be used in various tasks like classification, clustering, pattern recognition, prediction, regression, Natural language processing.

The implementation of neural networks can be categorized as follows:

1. Split the data set intotraining and testing.
2. Training the network
3. Testing the network
4. Predicting the output using the test data.

2. TYPES OF NEURAL NETWORK

Based on the network architecture neural network is classified into several types.

1. Feedforward neural Network
2. Radial basis function neural network
3. Recurrent neural network
4. Kohonenself-organizing neural network
5. Convolutional neural network
6. Modular neural network

2.1 Feedforward neural network

Feedforward neural network allow the signals to travel one way from input to output. There are no feedback loops. The output of any layer does not affect any layer [3]. Figure 2a shows feed forward multi-layer neural network. Z is the weighted sum of each layer. and y is the activation function applied on z at each layer. W represents the weight between the two interconnected layer indicated by the subscripted letters. b represents the bias, which is used to adjust the output along with the weighted sum.It is a constant value added to the weighted sum.

2.2 Radial Basis function neural network

Radial basis function neural network is similar to feed forward neural network, except radial basis function is used as a activation function.

2.3 Recurrent neural network

Recurrent neural network forms a loop.The output of one layer becomes the input of the other layer. RNN remembers the information through time. Designed to work with sequence prediction analysis.

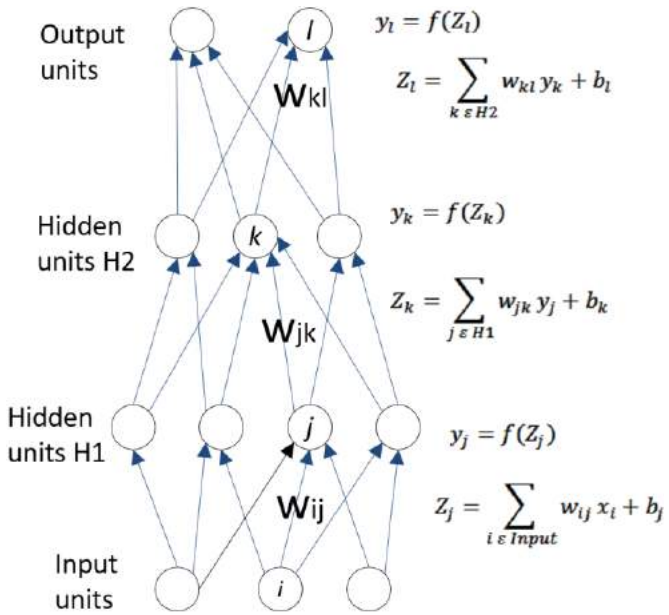
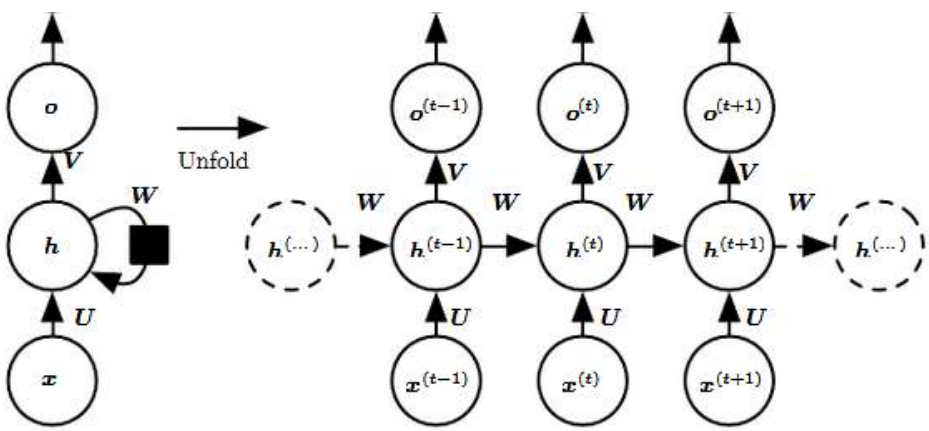


Figure:2a Feed forward network[2]

It's most implemented in time series data.The difference is that RNN has a memory.At time t1, the input is given to the Input layer, then it calculates its current state using set of current input and previous layers output. The current t becomes t-1 for the next time step.

The network can have as many time step according to the problem and join the information from all the previous states.once all the time steps are completed, the final output is calculated.The output is then compared with the actual output , and then error is calculated. Depends on the error rate, it's back propagated to the network to update weight and the network is trained. RNN remembers each and every information through time step. LSTM(Long short-term memory) is an implementation of RNN. The output of a particular layer can be calculated using the following formula,



$$O_1=f(x_1w_1+O_0w') \text{ .....(1)}$$

$Output_1$ is calculated by multiplying the input and weight and adding the previous layers output which is multiplied with the weight.

2.4 Kohonen self-organizing neural network

Kohonen self-organizing neural network is used for clustering, compression and visualization. SOM or Kohonenself-organizing maps is one of the basic typeof artificial neural network. Its architecture represents a two dimensional grid of connected neurons, which are multi-dimensional vectors [4].It's unsupervised neural network model that cluster high dimensional data. Initialize the weight to the input neuron, random values can be assumed.Find the Euclidean distance between neuron and the cluster. The minimum distance cluster will be recognized as a winning cluster. Alter the weights between the winning cluster and the neuron. This network can be used to uniquely identify the data and classifies them into different categories without knowing the details of the data. The Euclidean distance can be calculated using the following formula,

$$\sqrt{\sum_{i}^{n}(x_i-w_{ij})^2} \text{.....(2)}$$

2.5 Convolutional Neural network:

Convolutional neural network often called ConvNet. CNN is widely used in various domains, like image classification, speech recognition, object detection, topic classification, sentiment analysis, language translation.[5]

An image to be classified is provided to the input layer and output is the predicted class label computed using extracted features from image [9]. An individual neuron in the next layer is connected to some neurons in the previous layer, this local correlation is termed as receptive field [7]. The local features from the input image are extracted using receptive field.[10]. The receptive field of a neuron associated to particular region in previous layer forms a weight vector, which remains equal at all points on the plane, where plane refers to the neurons in the next layer [11]. As the neurons in plane share same weights, thus the similar features occurring at different locations in the input data can be detected [12].

Convolutional Neural Networks has hidden layers called convolutional layers. convolutional layers have number of filters. Filters are used to detect the pattern.The input features are taken in batch-wise like a filter. This will help the network to remember the images in parts and can compute the operations. These computations involve the conversion of the image from RGB or HSI scale to the Gray-scale. Once we have this, the changes in the pixel value will help to detect the edges and images can be classified into different categories.[13]

2.6 Modular Neural Network

Modular Neural Network has a collection of different networks working independently and contributing to the output. It is the integration of different types of a NN like Hopfield network, Recurrent neural network, multi-layer perceptron, etc, which are combined as a single module into the network to perform independent subtask of whole complete Neural Networks

3. ALGORITHMS USED IN TRAINING NEURAL NETWORK:

1. Gradient descent Algorithm
2. Stochastic gradient descent algorithm
3. Momentum algorithm

3.1 Gradient descent algorithm:

It is used in the supervised training model. Very simplest training algorithm. It will calculate difference or error between the actual output and target output.

Gradient descent is a way to minimize an objective function J(θ) parameterized by a model's parameters $\theta \in R$ d by updating the parameters in the opposite direction of the gradient of the objective function $\nabla\theta J(\theta)$ w.r.t. to the parameters. The learning rate η determines the size of the steps we take to reach a (local) minimum. In other words, we follow the direction of the slope of the surface created by the objective function downhill until we reach a valley[7].Since it takes all the samples to do a sindleupdate,it takes longer computational time to produce the optimum result.

3.2 Stochastic Gradient descent algorithm(SGD):

It's a variant of Gradient descent algorithm to optimize the neural network. The main difference between gradient descent and stochastic gradient is all the samples in the training dataset is run through to do a single update for a parameter in a Particular iteration in Gradient desent. But in the stochastic descent one sample or subset of training sample from the training set is used to do the update for a parameter in a particular iteration. If we use subset, it is called minibatch stochastic gradient Descent.

3.3 Momentum:

Momentum optimizer is also called as SGD with momentum (stochastic Gradient descent algorithm with momentum. It helps in accelerating gradient vectors in the right directions, which helps faster converging.In SGD learning rate is used as a fixed multiplier to update the weight, as a result it increases the potential minima, if the gradient is too steep, or delay the convergence if the gradient is too noisy. The momentum algorithm presents a velocity v variable that configured as an exponentially decreasing average of the gradient [8].

It does this by adding a fraction γγ of the update vector of the past time step to the current update vector:

$$vt=\gamma vt-1+\eta\nabla\theta J(\theta)$$

$$\theta=\theta-vt$$

The momentum increases for dimensions whose gradients point in the same directions and reduces updates for dimensions whose gradients change directions. As a result, we receive faster convergence and reduced oscillation.

4. CONCLUSIONS

In this paper the author provided the overview of Artificial Neural Networks and various types of Artificial Neural Network. There are supervised, unsupervised, reinforcement models. This paper also discusses

on in which scenario, the particular Architecture can be implemented.This paper also has thrown a light upon optimization algorithms used in the neural network. It also discusses about three major algorithms like gradient descent, stochastic gradient descent, SGD with momentum.These algorithms use cases, pros and cons were also discussed.

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EMOTION RECOGNITION:A REVIEW

NEHA MANTRI
Research Scholar Dept of Computer Science School of engineering and technology
Sangam university Bhilwara,(Raj),India
nnehamantri@gmail.com

Dr HARISH NAGAR
Dy. Dean
School of Basic and Applied Sciences (SOBAS)
Sangam university Bhilwara,(Raj),India
drharishngr@gmail.com

Dr SUNIL KUMAR
Dy. Dean and HOD
Associate Professor Computer Science and Engineering
Sangam university Bhilwara,(Raj),India
sunil.kumar@sangamuniversity.ac.in

ABSTRACT

Recognition of emotions is an order that has been in presence for quite a while thus a few models have been proposed up until this point. Accordingly it is of most extreme significance and use to have a paper that rundowns every one of the accessible models and expounds on the entirety of the models with legitimate delineation. Additionally for perceiving feelings, there are a few methods and sources of info that can be utilized. A concise depiction pretty much the entirety of the procedures alongside correlation of every one of them has been introduced here.

I. INTRODUCTION

The objective of this paper is to give an unmistakable thought about feelings and the manners by which they can perhaps be perceived by a framework. It isn't important to perceive feelings when PCs are utilized similarly as devices for a computational reason. In any case, it is turning out to be imperative to bestow to framework, the capacity of understanding the client. This can lessen the disappointment of the client, create applications and construct apparatuses to create social and emotional skills.

II. EMOTION

The word feeling, which means to work up or a development towards the outside, traces all the way back to 1579. Its birthplace is found in French word emouvoir and Latin word exmovere. The word reference characterizes feeling as an extreme, full of feeling state described by physical and mental unsettling influence,

which is viewed because of some boost. It tends to be significantly partitioned into two classes to be specific essential feelings and auxiliary feeling. As per Paul Ekman, an exploration researcher, the essential feelings are anger, disgust, fear, happiness, sadness and surprise. These feelings are called universal since they have all the earmarks of being all around perceived indeed, even in societies that are preliterate. Another analyst named Robert Plutchik added a couple more feelings to this rundown that could be considered essential, for example, anticipation and trust. A mix of these feelings thusly lead to auxiliary emotions

III. IDENTIFICATION OF EMOTIONS

Feeling acknowledgment is a functioning field of research that shapes a piece of emotional processing which manages the examination and improvement of frameworks and gadgets that can perceive, decipher and reenact human effects. Influence alludes to the experience of feeling. Picard characterized full of feeling figuring as —the registering that identifies with, emerges from and purposely impacts emotion when he presented it in 1995. It bestows information to the framework that it devises through fake intelligence. Emotion acknowledgment starts with the assignment of getting information from the human dependent on which feelings are to be perceived.

IV. VARIOUS THEORIES OF EMOTION

The work conducted by researchers in the recent decade was based on various theories of emotion stated by philosophers and psychologists. Charles Darwin proposed the theory of evolution and insisted that emotional expressions must be understood in terms of survival value. Walter B Cannon along with Philip Bard developed the Cannon Bard theory believing that the emotions come first and then the bodily reactions. James Lange theory proposed by William Jamea and Carl Lange states that an individual has a physiological response and then experiences an emotion. Joseph Le Doux states that the physiological reactions will be designed in the cerebrum and conscious emotions are irrelevant to them. Paul Ekman believed that there are 8 classes of emotion namely anger, fear, sadness, disgust, surprise, neutral, joy and contempt. All the other emotions are evolved from these 8 emotions. Paul Ekman also studied the relation between internal emotions, facial expressions and body language.

V. FER TECHNIQUE

(a Image preprocessing

Generally image will be having noise . Picture preprocessing can will help in the extraction of features. For different reasons, pictures are regularly polluted by some different signs. A few pictures may in any case have complex foundations, e.g., light power, impediment, and other obstruction factors, regardless of whether they are essentially liberated from commotion. Besides, numerous datasets are distinctive in size, and some are made out of shading pictures, while some are made out of grayscale pictures. Likewise, different shooting hardware can cause information variety. These target impedance factors should be preprocessed before acknowledgment.

i) *Noise reduction*
ii) Face detection
iii) Normalization
iv) Equalization of histogram

b) Feature extraction

Feature extraction is a cycle to remove helpful information or data from the picture, e.g., qualities, vectors, and images. These removed "non-picture" portrayals or depictions are highlights of the picture. Generally utilized element extraction strategies in FER frameworks for the most part incorporate Gabor highlight extraction, Local Binary Pattern (LBP), optical stream strategy, Haar-like element extraction, include point following, and so on

i. Gabor Feature extraction The Fourier Transform-based Gabor wavelet[1] bit work is proposed by consolidating the wavelet hypothesis with the Gabor highlight. Joined with other order techniques FER dependent on Gabor wavelets has huge benefits... Gabor wavelet has great power to multi-scale and multi-directional surface component change, and isn't delicate to enlightenment force.

ii. LBP- Local Binary Pattern[2] the LBP calculates the brightness relationship between each pixel contained in the image and its local neighborhood. The binary sequence is then encoded to form a local binary pattern. Finally, it uses a multi-region histogram as a feature description of the image,

iii. ASM/AAM -The Active Shape Model (ASM) proposed depends on measurable models and is for the most part used to extract feature points from expressions. This model essentially utilizes the worldwide shape model to coordinate with the underlying state of the human face, and afterward build up a nearby surface model to acquire the form highlights of the objective all the more precisely. The Active Appearance Model (AAM) is created based on ASM by fusing local texture features. Cristinacce wires PRFR (Pairwise Reinforcement of Feature Responses) with AAM to recognize highlight points of nearby edges like facial organs. Saatci [3] unpretentiously falls AAM with the SVM classifier to improve the acknowledgment rates. In spite of ASM is more effective than AAM, AAM can acquire higher acknowledgment rate than ASM as it can all the more likely fit surface highlights.

iv. Optical Flow Method [4] This is an example of evident movement brought about by the relative movement. The features of the consistent moving face picture image is extricated by utilizing Horn–Schunck (HS) optical stream to join the two-dimensional speed field and the grayscale. An optical stream based methodology is created and carried out to catch enthusiastic demeanor via consequently perceiving unobtrusive changes in outward appearances.

v. Haar-like Feature Extraction [5]-The Haar-like feature extraction method is the blend of edge, linear, diagonal and center features. Since these features all follow the progression work proposed by Alfred Haar, they are called Haar-like. The component layout is partitioned into two square shape districts, i.e., white and dark, and the format's element esteems are characterized as the contrasts between estimation of white square shape pixels and dark square shape pixels. The Haar eigenvalue mirrors the grayscale variety of the picture. At the point when the worldwide district brightening is steady, Haar can extricate more facial movement unit change data since it portrays the nearby grayscale variety of the face.

vi. Feature Point Tracking-[6]-The primary reason for including feature point following technique is to combine the information enthusiastic articulations as per the relocation of the feature points.

VI. EXPRESSION CLASSIFICATION

Another vital aspect for influencing the expression is the manner by which to choose the suitable classifier that can effectively anticipate the face appearances. Ordinarily utilized and broadly applied classifier in FER frameworks incorporate kNN (k-Nearest Neighbors), SVM (Support Vector Machine), Adaboost (Adaptive Boosting), Bayesian, SRC (Sparse Representation-based Classifier), and PNN (Probabilistic Neural Network). Their benefits [7], are as follows

i. The kNN classifier is straightforward and simple to infer. The preparation speed of the calculation is moderate in light of the fact that each additional new example should be contrasted and the preparation set. Another prominent trait of the kNN is that it is delicate to the neighborhood construction of the information. A similar load of each property may result in problematic and unsteady grouping exactness.

ii. The SVM can track down a decent bargaining arrangement on complex models by giving restricted example information data to acquire speculation capacity. It is likewise conceivable to plan straightly resolute information to higher measurements by bit capacities to change over the information into direct distinct. By presenting a part work, the PC can viably handle high-dimensional information.

iii. AdaBoost is sensitive to loud and peculiarity data. In certain issues, it tends to be less defenseless to the overfitting issue than other learning calculations. AdaBoost (with choice trees as the powerless students) is frequently alluded to as the best out-of-the-all classifier.

iv. Guileless Bayes classifier is profoundly adaptable, requiring straight boundaries for the quantity of factors in learning issues. One benefit is that solitary a modest quantity of preparing information is expected to assess the boundaries needed for characterization.

v. SRC has preferable acknowledgment impact over the conventional strategy, particularly when the example is exposed to irregular pixel debasement or arbitrary square impediment. Nonetheless, when taking care of information having a similar heading dispersion, SRC may not characterize the information, since the example vectors of various classes are appropriated on a similar vector course.

vi. As a classifier, PNN has quick preparing measure and a design of characteristically equal, to guarantee combination to the ideal classifier with the size of the delegate preparing set increments.

vii. The ordinary FER approaches is clearly less reliant on information and equipment contrasted with profound learning-based methodologies. In any case, include extraction and order must be planned physically and independently, which implies these two stages can't be advanced at the same time. The adequacy of ordinary FER techniques is limited by the presentation of every individual segment.

VII. FACIAL EXPRESSIONS

Facial Expressions are broadly utilized and acknowledged mode in feeling location as it is actuated immediately by the accomplished effect. Ekman and Friesen created FACS where in the facial developments are described by the activity units (AUs) [8]. Incited by the framework created, numerous analysts have consolidated facial expressions in their frameworks as one of the exceptionally effective modes in

understanding one's psychological state. In the recent days, various methodologies for outward appearance location and acknowledgment have been proposed. Automatic outward appearance acknowledgment system utilizing neural classifiers has effectively brought in good results [9], [10]. Frameworks were prepared with various pictures including assortment of facial gestures for improvement of testing precision. Neural classifiers includes computational burden in acknowledgment of emotion. Appearance and shape highlights extraction for outward appearance acknowledgment is proposed by the researchers [11] wherein the choice combination is done and the feeling is distinguished. Nearby descriptors are being utilized for the first time to upgrade the presentation. Dynamic facial moves were not made into account in the work. Approaches including facial components and muscle developments [12] addressing dynamic highlights have removed the impediments brought about by the methodologies utilizing static highlights prompting higher CRR (Correct Recognition Rate). Preparing time is viably diminished in this methodology relatively however again it isn't a video based methodology including multi outlines which is compulsory for constant applications. Dynamic surface recognition(combining appearance and movement highlights) utilizing Local Binary Patterns[13] which is straightforward and powerful as far as grayscale and revolution varieties, makes it truly competent for genuine time problems. Ramchand et al. have proposed a feeling characterization strategy dependent on Local double examples in person dependent and individual free mode in which individual dependent mode delivered more accurate results [14]. The level of formats to be framed in the individual dependent mode is more and it increments with the number of people to be considered. Video based methodologies have arisen in the midst of the static picture based methodologies with a center on developing frameworks to work continuously. Facial activity boundaries free of the head present in continuous videos are utilized in these techniques. Dornaika [15], rather than different methodologies including feature extraction and afterward choosing the articulation presents another methodology permitting the synchronous recovery of facial activities and articulation utilizing a molecule channel receiving multi-class elements. In the main stage, the 3Dhead posture is recovered utilizing a deterministic enrollment strategy based. In the subsequent stage, the facial actions as well as the outward appearance are all the while recovered utilizing a stochastic structure dependent on second-request Markov chains. In [16], dynamic distorting method utilized guarantees that the adjustments in the video rate or facial action duration don't impact the exactness of acknowledgment. Elements in the recordings are utilized to investigate the emotional condition of an individual by extricating nearby video. Manual Intervention for explanation of facial tourist spots is evaded without any prerequisites of the preprocessing steps which speeds up the system.

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GREEN BANKING: A STUDY OF CUSTOMERS PERSPECTIVE IN KARNATAKA WITH SPECIAL REFERENCE TO RAMANAGARA DISTRICT

DEEPU. B
Assistant professor, St Anne's degree college for women
Research Scholar, school of commerce and management
Garden CityUniversity

SUBHASH. N
Research Scholar, school of commerce and management
Garden City University

ABSTRACT

Green banking is a one of the banking activities which promote environmental friendly practices and which will helps to reduce carbon footprint from banking activities .green banking it has direct impact on the environment ,green banking it is part of CSR since most of the banks are giving more importance to CSR this paper has been made to study the level of customers awareness regarding green banking services ,the study was on selected public and private sector banks in Ramanagara district ,Karnataka. The study was conducted in 4 taluks of ramanagara distcict that is Magadi,ramanagara,Kanakapura andchannapatna and 4 banks were selected out of that 2 public sector banks(SBI,BOB) and 2 private sector banks (KOTAK,ICICI) total 128 customers were taken from 4 selected bank from 4 different areas of Ramanagara district.

Keywords: *Green banking, customer awareness, green products*

INTRODUCTION:

All banking industries nowadays are interested in implementing strategies (Green Banking) to help and address the environmental issues. This was the first time SBI chairman inaugurated the windmills set up at panapatti village, Coimbatore district, Tamil Nadu which would produce around 20 MW of power in 2010.

Green banking refers to the practice which considers social and environmental factors, with the objective to make effective use of IT and banking process with minimal impact on the environment. Green Banking will help to improve the asset and service quality of the banks. Green Banking encourages environmental friendly practices by reducing carbon from its activities in locating and opening bank account in the local area, the first green banking policy was adopted by State Bank of India and it is India's largest commercial banks.

Green bank initiatives include use of Automated Teller Machine (ATMs), Paper less banking for customers (Electronic Banking) and building of windmills in rural India for using clean energy.

Today ecology worldwide is facing three major issues i.e. Pollution in all forms, Climate change and Global warming , all these issues are caused by human activities to upgrade the standards of living and improve our economy.

In India due to lack of awareness of environmental issues and negligence amongst people, there is a negative impact on safeguarding of ecology and its coexistences. All these issues can be resolved through educating the citizens by co-ordinated efforts of the Government, Private sector and Environmentalists. Apart from all these efforts, the Financial Institutions and Banks can support and oversee the activities of creating a clean and green environment. Banks can provide greenery services to the customers, along with these services they can contribute to protect the society in order to safeguard the environment.

Green Banking is the only primafacie activity of the financial sector in order to protect the environment. The term Green Banking is not just an activity. It is a broad concept to create awareness and promotion of environment and society–friendly project and practices. Green Banking reduces the overall carbon footprint from its financing and non financing operations (in house). Through adoption of relevant strategies, banks can improve their own standards and also contribute effectively in demanding the same from its stakeholders.

Most of traditional banks did not practice Green Banking or eco-friendly activity but nowadays Green Banking strategies have become prevalent. These strategies are adopted on a large scale by local and foreign banks and these are now practised by other financial services industry like Insurance Companies, Asset Management Firms and Service Sector industries etc. These companies are compelled for increasing green products and services, for growth and sustainability.

REVIEW OF LITERATURE

1. According to **Jayabal and Soundarya**, green banking ensuresadherence to environment-friendly practices by banks. This eventually leads to reduction in internal and external carbon footprints(Jayabal & Soundarya, 2018). In India, the first bank to go green was the State Bank of India(SBI), India's largest commercial bank. SBI set high sustainability standards and took the first step in "green banking" when it commissioned its first wind farm project in Coimbatore, Tamilnadu. The green bank initiative embraces ATMs, paperless banking for customers and erection of wind mills in rural India. Green banking involves two aspects, the first one being the judicious use of all resources and energy leading to a reduction in carbon footprint. The second aspect involves incentivising and financing only environment-friendly investments. So green bankingalso has to do withdisbursementof environment-friendly of credit. The researchers focus on the banks'contribution in general, to sustainable development / green banking practices.
2. **Neeveditah and Nalini** attempt to gauge the level of customer awareness vis-à-vis green banking products and services marketed by Mauritius-basedcommercial banks (Neeveditah & Nalina,

2017). The researchers ascertained the view of customers vis-a-visgreen banking and evaluated the influence of the green banking initiatives on Mauritian bank customers. They collected primary data from 200 respondent customers for the purpose. They used the SPSS tool to generate descriptive statistical outputs. From the mean analysis concerning the influence of green banking productsand services on bank customers, they inferred that promoting e-statements, internet banking, and mobile banking, among other things,cut no ice with the customer respondents. However, a big chunk of the respondents rated the impact of green projects/CSR on bank customers,positively. Notably, most of the respondents made use of e-statements, as revealed by the mean score of 3.53 concerning the use of internet banking and mobile banking

3. The banking industry can play an important role in the economic growth and environmental protection of the country by promoting sustainable and socially responsible institutions(bankingfinance. in, 2017). Banking of this kind can be termed "green banking". Change is the need of the hour for survival . Banks can provide leadership role in economic innovation leading to creation of new opportunities in financing and investment policies. Green banking involves combining operational improvements,technologies and changing client habits in the banking business. Adoption of green banking practices will lead to greater operational efficiency for banks and reduced vulnerability to manual errors,fraud, and cost reductions in banking activities.

4. According to **MdShafiqul and Prahalled**, green banking activities involve two major approaches. They are green transformation of internal operations and environmentally-responsible financing(bankingfinance.in, 2017).Green banking through internal operations involves banks adopting green banking activities in their day-to-day operations. These include adopting appropriate ways to exploit renewable energy, to automate and to minimize the carbon footprint. In the past few years, all the banks have incorporated paperless technologies in their internal operations to help safeguard the environment and provide efficient and better servicesto customers. In their day-to-day operations, banks ordinarily generate carbon emissions through the use of paper, electricity, stationery, lighting, air conditioning and electronic equipment. Green-banking the internal operations involves on-line account opening, online-banking, mobile banking, net-banking and electronic fund transfer . Using ATM, cash and cheque deposit machines, entertaining credit and debit card-based transactions, issue of e-statements, SMS alerts and mini statements, are also activities that qualify as green banking activities. Green finance, on the other hand, refers to banks financing environmentally-responsible projects. The purpose is to provide financial assistance to green technology-based projects and pollution-reduction projects,leading to a reduction in external carbon emissions. Banks support industries that are resource-efficient , leading to a reduction in carbon footprint. Priority is given to financing eco-friendly business activities and energy-efficient industries. Examples of such industries are waste water treatment plants, waste disposal plants, bio-gas plants, renewable energy projects, hybrid car projects and so on.

5. **Janakiraman and Karthikeyan** recall that as part of promotion of green practices on its part, RBI has issued certain guidelines to banks. The guidelines advise banks to initiate proactive steps to raise the use of electronic payment systems and to eliminate the use of post- dated cheques. The

intention is to eliminate the use of cheques in the day-to-day transactions of banks(Janakiraman & Karthikeyan, 2016). Consequently, banks like NABARD, SIDBI and EXIM Bank will initiate proactive steps. Eventually, the quality of service delivery of banks will improve . Banks will gradually move towards fewer paper-based transactions.

6. Being one of the fastest-growing emerging market economies (EMEs) of the world, India has to ensure that development and growth are sustainable in nature. Any adverse impact of industry on ecology should not be permitted, assert Jayabal and Soundarya(Jayabal & Soundarya, GREEN BANKING: AS BANKS INITIATIVE FOR SUSTAINABLE DEVELOPMENT, 2016). The country accounts for six percent of the total global CO_2 emission with the metropolitan cities in turn accounting for the biggest chunk of greenhouse emission. Among the various polluting industries in India are primary metallurgical industries,associated with the production of metals like zinc, copper and steel. Industries which are into manufacture or production of paper and pulp, pesticides/ insecticides, fertilizers, sugar, textiles, chemicals/ pharmaceuticals, etc, also pollute the atmosphere. Tanneries are among the major polluters too. These industries leverage bank loans for funding their activities. Thus, the banks are in a position to arm-twist these industrial units into complying with green practices . The Reserve Bank of India (RBI) in its circular ofDec 2007, advised the banks to put in place institutional mechanisms to ensure that their constituents contributed their mite to sustainable projects. SIDBI, a prominent lender to the MSME sector, has incorporated Environmental and Social (E&S) aspects in its core business to promote sustainability.
7. An evolving consensus on the need for sustainable development promises to be eventful, assert the researchers, Sanjeev and Stuart. The researchers examine why tertiary sector businesses like banks are vocal about the indispensability of sustainable development even though their actions seldom match their words(Acahrya & Locke, 2016). Various green banking approaches, launched by India's public and private sector banks, generatean empirical dataset which can help analyse the impact of sustainable development on the financial health of these banks. The researchers find that banks,realising the significance of environmental protection, have added a few layers to procedures associated with their green banking approaches. Public sector banks are more active in taking the initiative than their private sector counterparts. Potentially, it is easy beinggreen when using taxpayer money, add the researchers tongue-in-cheek. It serves as another example of agency cost too! The researchers' sarcasm does not stop there. For good measure, they add to the sarcasm by stating that no real savings are achieved, no additional revenues are generated, and no innovation or productivity is witnessed. They infer that rent-seeking senior executives burden taxpayers for praise and honourby leveraging political principals!
8. Lately, there has been a growing awareness of widespread environmental degradation and it has left the current and future generationsof Indians sore, implies the researcher Jeena Gupta(Jeena, 2015). Environmentalism has been identified as "potentially the biggest business issue of the 1990s". The banking sector is one of the premier sectors of the country's economy, playing a vital role in the promotion of the economy. Like other sectors, the banking sector has to protect the environment. To shoulder this responsibility, the sector has adopted the concept of green banking. The concept is

relatively new. It represents paperless banking that seeks to reduce the environmental coststriggered by banking activities vis-à-vis the externalities. It also seeks to help in achieving environmental sustainability. Towards this end, it seeks to reduce the use of paper, power and energy. The researcher infers that the concept is new, and the customer will acquiesce in the practices over time. Green banking warrants the use of technology which entails investment on the part of banks. Ensuring data integrity is going to be a formidable challenge in the endeavour. Bank employees have to the adequately equipped to fulfil these tasks.

Objectives of the study

- To study and understand the concept of green banking
- To study various initiatives taken by selected public and private sector banks
- To study the customers awareness level of customers towards green banking services.
- To compare and evaluate the awareness level of customers regarding green banking services offered by selected public and private sector banks in study area.

Statement of problem

In the present banking industry to attract the customers and to provide easy access to the customer banks are opening up many branches. with the emerging huge competition in the banking sector , because of competition they are misusing the environment ,each and every new branch required lot of things to start a banking activities like, wood for furniture ,marble for flooring ,electricity, human resources and papers .in there day to day operation a carbon foot print Co2 increasing .apart from environmental effects there are so many disadvantages in the present banking system ex:- customers are visiting bank every day for small transactions , customers standing in front of banks for small work .so many new technology introduced by banks ,even dhow customer will get scare to use net banking ,online transfer because they prefer to go to the banks .and also now a days some banks are suffering with loss because there operational cost increasing . In order to reduces carbon footprint and climate change issues and increasing productivity. The county economists are recommended to the government to reward financial institutions which institutions helping to control climate change and developing a low carbon to economy and financial institutions provides financial assistance, new opportunities and investment policies well as portfolio management for the creation of a strategy and successful low carbon environment.

Green banking initiatives taken by selected public and private sector banks

CERTAIN MAJOR INITIATIVES OF SBI:

- State Bank Day was celebrated and the launched 'Green Channel Counter' (GCC) facility on 1st July 2010 at 57 selected branches spread across the country and the same was expanded to more than 14,981 branches in 2014. This shows how conscious SBI is in order to pioneer the concept which is eco-friendly and convenient to ecology.

- State Bank of India became the first bank in the country to venture into generation of green power by installing windmills for captive use in 2010. As part of its green banking initiative, SBI installed 10 windmills with an aggregate capacity of 15 MW in the states of Tamil Nadu, Maharashtra and Gujarat.
- SBI offers an interest discount of 10 basis points on all environment friendly projects. Moreover SBI is the largest deployed of solar ATMs in this country.
- SBI initiated the carbon disclosure projected in the financial sector in India, for the sake of environmental concern and safety by becoming a signatory to the Carbon Disclosure Project of World Wide Fund (WWF).
- The Bank has put in place SMART i.e. Specific, Measurable, Achievable, Realistic and Time bound Green Banking Goals.
- Launched Green channel counter facilities in the year 2010 in some of its branches and planning to extend it in more branches. An environmental friendly approach that helps to make paperless banking up to some extent.
- Collaboration with Suzlon Energy Ltd. to use wind power at the place of thermal power in its business operations and currently using wind power in its most of offices located in Gujarat, Tamil Nadu and Maharashtra.
- Initiated the carbon disclosure projected in the financial sector in India, for the sake of environmental concern and safety.
- SBI and Export- Import Bank of India (EXIM Bank) both jointly provide a long term loan (up to 14 years) to a Spain Based Companies Group- Solar Global SA and Aston Field Renewable Resources for building solar plant in India. Most of the financial institutions avoid giving long term loans to such projects because of their uncertainty and technological changes

GREEN BANKING INITIATIVES BY ICICI BANK:

- As an initiative towards more environment friendly way of life, ICICI Bank offers 50% waiver on Auto Loans‟ processing fee on car models which use alternate mode of energy. The models identified for the purpose are Maruti's LPG version of Maruti 800, Omni and Versa, Hyundai's Santro Eco, Civic Hybrid of Honda, Reva electric cars, Tata Indica CNG and Mahindra Logan CNG versions.
- ICICI Home Finance offers reduced processing fees to customers who purchase homes in Leadership in Energy and Environmental Design (LEED) certified buildings.
- ICICI Bank also works with various institutions to help them find alternative cleaner solutions for their general operations. For instance, in coal technologies, ICICI Bank introduced innovative concepts like deep beneficiation of coal (coal washeries) and coal bed methane. It also assisted a company develop a product that provides an eco-friendly air-conditioning alternative to conventional air conditioners (ACs).

- ICICI Bank has extensively capitalized on the existing internal media- statements, inserts, and Credit Card Charge slips- to reach out to the customers and seek their collaboration in the Go Green movement. ICICI Bank also initiated a programme to sensitise corporate bodies, institutions, banks and government agencies involved in project planning on issues like biodiversity, wildlife habitats and environmental laws.

Area of the study

The area of study includes study of customers awareness about greenbanking technology in Ramanagara district .the study was conducted in 4 banks which are state bank of India(SBI), bank of Baroda (BOB), industrial credit and investments corporation of India(ICICI) and kotak bank 2 public sector banks(SBI,BOB) and 2 private sector banks (ICICI ,Kotak)

Research methodology

The study was conducted which the objectives to find out the customers awareness level regarding green banking technology .both primary and secondary data were collected from the banks customers of Ramanagara district secondary data for the study were collected from journals ,magazines ,books and RBI reports

Sample size

In this study a sample of 128 customers taken from selected 4 banks (2 public and 2 private sector bank) from Ramanagara district further 20 customers were taken from each bank.

The sample size calculated in following table.

cities	Public sector Banks		Private sector Banks		Toatl
	SBI	BOB	ICICI	KOTAK	
Magadi	08	08	08	08	32
Ramanagara	08	08	08	08	32
Kanakapura	08	08	08	08	32
Channapatna	08	08	08	08	32

Data Analysis and discussion

Out of Total sample size of 128 respondents, questionnaire of only 120respondents were found to be fully complete and accurate the bifurcation as per banks as follows

Bank name	Total respondents	Accurate
SBI	32	32
BOB	32	29
ICICI	32	28
Kotak	32	31
Total	128	120

1. Awareness level regarding green banking service irrespective of age .

Total Respondents 120		Awareness level regarding green bank	
Age group	**Respondents**	**Aware**	**Not aware**
18-25	28(23%)	20(71%)	08(29%)
26-40	48(40%)	39(81%)	09(19%)
41-60	32(27%)	29(91%)	03(9%)
61-above	12(10%)	08(67%)	04(33%)

Interpretation :- out of 120respondents main portion of the respondents that is 48% fall under the age group 26-40 but 20% respondents under age group of 18-25 are aware about green banking service ,the age group 26-40 are having 81% aware level. Respondents falling under the age group of 61and above are not much aware about green banking.

2. Customers awareness level regarding green banking service

Bank name	Total respondents	Aware	Not aware
SBI	32	29(91%)	3(9%)
BOB	29	22(76%)	7(24%)
ICICI	28	25(89%)	3(11%)
Kotak	31	25(80%)	6(20%)

Discussion :- if banks are individual compare then awareness level is maximum in 2 banks that is SBI and ICICI that is 91% and 89%.

FINDING

- Customers between the age group of 18-25 and 26-40 are highly aware about green banking service
- Only SBI and ICICI banks customers are more aware of green banking service
- Only public sector banks are having more aware of green banking service then private sector banks
- Customers are more favour towards public sectors then private sectors.

CONCLUSION:

There is necessary to create awareness and adopt green banking technology in present business world of innovative technologies and to make our environment human friendly. Green banking technology adopted by Banks and Financial institutions will be huge financial burden for Indian banks but the authorities of bank including RBI and Indian government should play major role and formulate green policy. Green

Banking is one of the major tools to control global warming. Each bank will contribute to make environment and make earth better place to leave. Earlier all traditional banks did not follow green banking activity, but nowadays these strategies have become more prevalent in financial industries, insurance companies, co-operative banks coming forward to increase green products to reduce environment pollution. The concept of green banking definitely useful to the financial institutions and economy. Greening of banks and industries will improve quality and sustainability in future.

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EMPOWERING WOMEN THROUGH TRANSFERRING TECHNOLOGY

Ms M. AARTHI
Asst Prof of English
KPR College of Engineering and Technology (Autonomous), Arasur, Coimbatore
Email id: aarthima887@gmail.com
Mob No: 6383322380

Ms PRADEEPA. M
Asst Prof of Computer Applications
St Anne's Degree College for Women, Bangalore
Email:pradeepamca87@gmail.com
Mob No:9066316484

ABSTRACT

This paper deals with the study of Empowering Women through Technology Transformation in this digital world. Women empowerment plays a crucial role in all the fields. In this, 21st century women are the one who shows their best and prove themselves in the all the fields. They change and develop themselves according to the needs of their growth in the development of technology. When compare to men, women are the one who have succeed in their careers in over the fields. Women can easily change and adapt themselves in any new situation and that was their success to. There is a radical change in the field of employment though technology, but that also won by women in this digital world. Women employment is equal to men in all over India and globe. Technology plays a vital role in all our day to day activities and it has made a change in business, education, thinking, communicating, working environment, paying bills,etc. Technology and women freedom is very important for women empowerment. Technology must be a partner in economic development also. The primary objective of this paper is to study about women are very good at adapting to latest technology and should link women and technology up-gradation.

Women in Leadership; Women in Technology

Keywords: *Women, Empowerment, technology, careers, development, activities, freedom, adapting technologies .*

This paper examines the need for promotion in women empowerment strategies through transferring technology. Nowadays, technology offers a variety of opportunities for female empowerment. In this, 21st century India ranked as a player in advancing women's technology. India is still a patriarchal society with male monopolizing in accessing the technical advancement, mastering and controlling the technology. But, now the scenario changed. All those works are done by women easily and confidently. Since, this

paper tries to show that women empowerment in technology is developed, where it acts like a coin. A coin has two sides one is positive and another one is negative, in the same way this technology development in women's empowerment also has positive and negatives situations, where that negative situation changed into positive by women boldness and confidence itself.

Technology acts a tool in women empowerment for the promotion of gender equality. It acts a root for women's development and betterment. Technology plays a vital role in the schools and colleges through online teaching methodology during this pandemic situation. This technology is a pathway where women find new and easy sources to pay their bills. This updating technology saves their time and energy and it gives a root to make the women to learn new things. This up gradation in technology learning is happening almost every country on this earth. In this century, technology is living and vibrant by many woman. The inclusive of women in the advancement of technology has benefitted with economic, social and education etc.

Few methods of technical support for rural women are as follows:

- Community Radio
- E-calendar and E-Astrology
- Updating news through online
- Messaging
- Mobile phone
- Laptops / tabs / computer usage
- Tele communication
- Using smart phones
- Using digital cameras
- Using digital based tools
- Internet banking
- Using internet for health care and education purpose
- You tube for cooking and gain knowledge
- Video uploading
- Mailing

Technology is learned everywhere by everyone because women have found out that the technology is a passport for their better career, better payment, incentives, advancement of knowledge and for various fields in his entire world. Technology is a bound to expand its domains of usage everywhere. Nowadays, everyone are using android mobile phones, even that is also an advancement in technology development. It is widely proved that technology plays a crucial role in all the fields. During 19th and 20th century also there is a usage of technology but now it emerge and acts as a most important thing. Technology acts as a teacher and guider in many places.

This digital world proves that women's participation is equal to men in labor markets, financial markets, teaching, IT Professions, and Entrepreneur etc. This technology development helps the women to sort out this problems easily and quickly without anybody's help. At the same time this technology could help women to access new markets, work flexibility distantly and interaction with customers, receive training and [provide mentoring to improve their financial autonomy. The first equipment which makes the women to learn about technology was mobile phone. In olden days also we have technology but we didn't make use of it but now without technology we can't do anything. We cannot find a women without mobile phone. In previous days, we need someone help or we should go direct to pay our bills but now due to this technology we are paying all our bills with a second through mobile apps. This transformation of technology helps women in all aspects of works and make them to learn new things also. Due to this transformation there was a change in women routine works and activities. It develops their skills and confident level.

The world statistic report states that men are higher rates in technology due to this culture. But, this scenario changed into gender equality now. In many developing countries women follow their culture and customs in limitations, whereas this transformation in technology enrich their customs, lives, tradition and culture into different manner.

Technology plays a large part in cementing gender equality especially in developing countries. Before few years also there was technology but we didn't use in practice due to our hesitation and lack of knowledge. Due to difficult in technology there was a limitation in women's productivity. In this current 21st century women hit and showed their talents by working in multinational companies as a head and other dignitaries and proved that women are equal to men. Global efforts are being made to empower women and facilitate this activates.

Literature works showed that the impact of women in the workplace specifically women collaborating on teams and leadership roles. It demonstrates the need in women's empowerment through technology and showed a great gender diversity all over the world. The technology revolution of the 20th century minimized the importance of geographical, economic, social and political barriers and reduced transaction and information costs thus boosting productivity and growth, making governance more transparent and empowering 1 the citizen. It propelled not only democracy, but also the market economy. Its impact on social relations, especially on gender relations, was significant, with the commodification of labor, the disintegration of traditional family models, and the separation of the work and living spaces creating the distinction between productive and reproductive work and diminishing the socioeconomic status of women.

Nowadays modern technology plays a crucial role in education field. We find that so many schools they are using only smart boards, online teaching, and technical board in their class room for teaching. As per statics report when compare to men we find women working in teaching profession is higher than men. Nowadays teaches are not using board teaching for their subjects, instead of that they are using online and digital tools for making the session alive one. In this field also women proved themselves and they showed their talents by uploading their teaching through you tube channels. This improvement in technology

showed that we don't want place to work but we can upload our sessions through online where others can get benefit of it. This kind of teaching methods can be done by home itself in any time according to their convenience. All these happen only because of this technology transformation.

Hence there is a need to focus on technology driven schemes for women. It is necessary to make women own technical tools first and learn to operate them effectively with this various stakeholders. In today's developing environment usage Technology has become a day-to-day activity which has exposed women to the new technologies, and hence are not difficult to be trained on them. It is observed that women in general have good concentration power owing to their nature of work, and hence are easily trained to acquire any new skills. Government has also planned training course for women empowerment and their technical courses and they plan to establish a group to follow up this. The majority of women in the developing world don't know about technology due to variety of barriers as such the infrastructural, social, cultural and linguistic. Finally, I like to conclude that this transformation in technology helps women in all aspects and make their work simple also. Those who don't find place to work also can show their talents in their fields by uploading their videos and can create a channel also. Women siting in their home can also show their talents and creativity to all over the world by sitting in their home itself. This transformation help many women to do them online business where women can earn money also. Overall, technology make women to shine in their world without any deviation. It is an easy business pathway to may women's for their success in life.

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A STUDY ON E- LEARNING AMONG THE UNDERGRADUATE STUDENTS DURING COVID-19 PANDEMIC IN BANGALORE

Sr. SHIJI ABRAHAM
Assistant Professor
St. Annes Degree College for Women, #23, Cambridge Road Police Station Halasuru, Bengaluru. 56008

ABSTRACT

Due to the Covid-19 Pandemic, there is a shift from conventional learning to online platforms. The students are getting used with this new way of learning and share information through virtualclass rooms. Educational Institutions consider E-Learning as an alternative of learning during thispandemic. The aim of this study is to analyze the E- Learning habits, effectiveness and challengesfaced by the undergraduate students in Bangalore. An online survey was conducted from 14-18 October in order to collect the data. A questionnaire link was created via 'Google form' and send to the students through WhatsApp. Prior to sending a pilot study was carried out among twenty students. A sample of 200 college students was drawn convenience based from Bangalore colleges. The paper employs as analytical tools of frequency and percentage. The study revealed that majority of the students prefer conventional learning than E-Learning. An overwhelming majority of the students opined that E-learning causes Psychological and Physical discomfort, stress and anxiety.

Keywords *E-Learning, Covid-19, Undergraduate students*

INTRODUCTION

A brief background of COVID-19 situation

Corona Virus Disease 2019 (COVID 19) which is suspected to emerge in Wuhan City, China from animal to human has spread quickly to different part of the world. The virus causes respiratory infections and fever. WHO (World Health Organization) is coordinating to develop a vaccine to treat this insidious enemy. (WHO, 2019). It was in March 11, 2020 WHO declared Corona Virus as an outbreak of global pandemic as well as a global public emergency. (Cucinotta & Vanelli, 2020).

In India the outbreak of the Corona virus pandemic led to a nation-wide lockdown, from 24 March this year has disturbed our daily routines. The deadly march of the Corona virus across the planet has caused much harm to the economy. People lost their jobs and businesses, causing widespread poverty and hunger across the globe. The future became uncertain, and the pandemic keeps spreading beyond our calculations.

As of 13 October 2020 India has 83, 8729 active cases. 6227295 recovered cases, and 109856 death cases. 160,384 active cases, 194,324 recovered cases, and 12,237 death cases (MoHFW, 2020). Due to pandemic the educational institutions were closed and it affected the education ofthe millions of students. Pandemic has affected 978,503,100 learners, and 55.9% of total enrolledlearners also 131 country wide closures. (UNESCO, 2020).

E-Learning Education

Covid-19 Pandemic has changed the way we live and work. E-learning and use of Information and communication Technology (ICT) has become part and parcel of our lives. Online Education or E-Learning has brought a tremendous change in the education system.

E-Learning means online learning, web- based learning, virtual learning or use of information and communication technology in learning and teaching. The letter "E" in learning is from the word electronic". It includes audio- video conference, on-line discussions, group based learning and individual learning. (Naidu, 2006). The government of India has introduced various E-Learning platforms like SWAYAM, DIKSHA, e-PG Pathshala, SWAYAM PRABHA etc., to help the students inthe field of education.

The pandemic has not only affected the health of its citizens but also various industries. Educational Institutions were challenged to implement new way of learning through virtual studyculture. Due to online studies the students does not lose their classes. There is a paradigm shift from conventional learning to virtual learning. E-Learning assists the students to learn creatively.(Kumar, D. N. S. (2020).

Undergraduate Students

Undergraduate students are those who study degree courses in Arts, Sciences, Commerce, Social Sciences and other streams. In India it's a three year program after which the students attain a Degree certificate and those whish can apply for Post-Graduation. This study speciallyfocus on Undergraduate students, who are aged between 18 to 25.

Significance of the Study

There are number of studies have conducted on E-Learning but there seems to be no studies done on E-Learning habits, effectiveness and challenges of students in Bangalore. The study willassist to find out the E- Learning habits, effectiveness and challenges faced by the students. Thisstudy was done among the undergraduate students in Bangalore who are involved in E-Learning and online classes. It will help to understand the problems and benefits of E-Learning from a student perspective during this pandemic. It will help the teachers to understand the possibilitiesof E-Learning, knowing the pros and cons they will be able to help the student to improve their online teaching.

The reason for choosing this topic E-Learning among undergraduate students in Bangalore is thattoday especially due to Covid-19, the students and colleges are using online platforms for academic studies and learning hence this study is an attempt to analyze the E-Learning habits, effectiveness and challenges faced by the students.

There are several researchers have pointed out that E-learning assist students in their academic studies and gives them the freedom to learn at any time and any place. The following chapter titled "Review of Literature "will high light the contribution of such researches.

REVIEW OF LITERATURE

INTRODUCTION

This chapter focuses on the studies that are conducted previously by various researchers on E- Learning. Online learning helps the students to learn their lessons especially during this pandemic. In India lakhs of students is engaged in attending virtual classes, online courses, webinars and conferences'-Learning has become the new normal especially during this period ofCovid-19 Pandemic. The students are very positive about E-learning. The online learning gives them much opportunity to learn in their own convenience and comfort. At the same time there are number of them who do not wish for e-learning. They prefer face to face learning and traditional learning. (Mahalakshmi K. Radha R. Sathishkumar V. Saravanakumar, 2020).

Previous research found that E-Learning does not bring about desired result in underdeveloped countries because majority of the students does not have access to internet due to financial constrain and technical problems. Some of the disadvantages of E-learning is the lack of face-to face- interaction from the lectures and lack of socialization. (Adnan, M. & Anwar, K 2020).E- Learning is quick, time saving and one can work or study in their own convenient time. Majority of the students (95%) are engaged in E-Learning and it is very useful for students no matter fromwhatever the background the students come from. The learning outcome may be different fromone student to another but the effectiveness of the learning is the same. Those students who have a good knowledge on technology is able benefit more than the students who lack the knowledge. (Ali, M. Hossain, SM. Ahmed, T.2018).

To learn about the new technology E-learning is the best way. Learning about the new technologywill generate interest in students to search and upgrade their knowledge. The college should provide the facilities in campus so that the students can make use of the E-Learning facilities. Adaptation of E-Learning among the students can make the study more interesting. Today technology provides a lot of opportunities for the academicians and students, hence the concept of e-learning is wider. E-learning helps the students to upgrade their knowledge and skills. (Yacob,A & Kadir, AZ & Zurairah A. 2012).In another study it was also found that even though E- Learning helps the students to learn from any place and any time but it reduces face to face interaction with the friends. To help the students to learn effectively the instructors need to perform their duties and roles so that the learning process can be achieved. E-Learning is one ofthe effective way of learning today and the students are open to it in a great deal. (Luaran, J. Samsuri N. Nadzri, F. & Rom, K. 2013).

Self-directed e-learning is successful to advance the creativity of the students compared to conventional lecture method. It gives the students independence and freedom to choose for themselves than depending on teachers. The freedom to search, enables the students access a wide range of information available from scientific sources. (Zare, M. Sarikhani, R. Salari, M. & Mansouri, 2016).

The teaching materials for online education should match with the readiness and concentration of the students. The teaching speed must be controlled for the effectiveness of the online education. Participation of the

students in the class is important and the lecturers need to take some measures to improve the degree of participation. The implementation of online teaching is sudden, so the student's needs assistance and one needs to make sure that they actively involved in online teaching. (Bao W., 2020). Computer mediated communication (CMC) enables students to attend classes and pursue their studies while working full time, as CMC enables a person to attend classes from anytime and anywhere. Several universities are introducing onlinedegree programs as a consequence the student does not have the possibility of meeting each other face to face, they encounter in an informal Virtual Class Room. (Hiltz, SR. & Wellman, B.1997).

There are studies which showed that the comfort level of the students in using the virtual class room are much higher. In the online classroom live interaction with the peers and teachers are possible. The students use text, audio chat, polls and raise their hands to express themselves during a virtual class room. It was found that the virtual class room facilitated much more interaction of the students than conventional class rooms. (Martin, M. & Parker, AM. 2010).

METHODOLOGY

The purpose of the study is to examine E-Learning habits, effectiveness and challenges faced bythe students in Bangalore, who are currently pursuing their studies. Quantitative methodology isused to analyze the data. The questionnaire was prepared by using the Google forms and send tothe students via WhatsApp. The period of study is the month of October 14-18, 2020.

Survey approach is used for data collection. There are two types of surveys, descriptive survey and analytical survey. In descriptive survey the characteristic of a population is measured and in analytical survey the responses are tabulated in frequency form and converted into percentages (Singletary 1994). The analytical survey is used in this study in which the frequency and percentage for the each responses is considered. The information is obtained from the respondents about their various E-Learning habits, effectiveness and challenges.

Study Objectives

1. To analyze E- learning habits of the students
2. To know the effectiveness of E- Learning among the undergraduate students inBangalore
3. To study the challenges in online classes faced by undergraduate students.

Sampling Technique

The sampling method is used in this study is convenience sampling. It's a non-probabilitysampling, based on facts. This type of sampling technique is used to draw sample from part of the population close at hand, which is available or convenient. In this sampling some units of population has zero chance for selection (Bhattacherjee, 2012).

The total sample chosen for this study is 200, from eight colleges in Bangalore. Christ University, Koramangala, St.Paul's College, Neelasandra, St. Joseph's College of Commerce, Brigade Road, St. Josephs Evening College, Museum Road St. Joseph's Autonomous College, Langford Road. St.Anne's Degree College For women, Halasuru. Sacred Heart College, Jeevan Bima Nagar. Indian Institute of Research.

These reason for choosing these colleges because these colleges were convenient and the researcher had contacts to collect the data. A questionnaire link was created via 'Google form' and send to the students through WhatsApp. Prior to sending a pilot study was conducted among twenty students.

Study Procedure

As mentioned earlier, keeping the objectives in mind the survey method was adopted for the study focusing on the E- Learning habits, effectiveness and challenges faced by the undergraduate students.

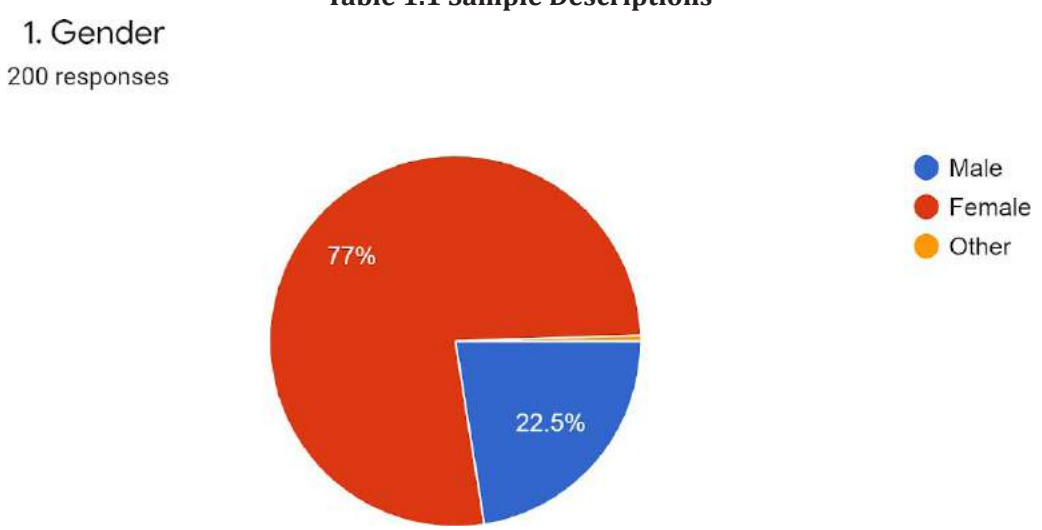
A questionnaire was designed to collect data. The questions were divided in to four parts. In the first section, the questions were dealt with demographic profile of the respondents. The second section dealt with various E-learning habits, third the effectiveness E-Learning and the fourth dealt with the challenges .For some questions Likert scale was used to test the variables. The questionnaire was tested by a pilot study on a group of 20 under graduate students. The purpose was to know whether the respondents could easily comprehend and answer the questions. Their comments and feedback were incorporated, and then it was distributed to 200 students among the colleges in Bangalore.

The next chapter will analyze the data of the survey conducted in Bangalore on newspaper reading habits among post graduate students.

ANALYSIS AND FINDINGS

Sample Description

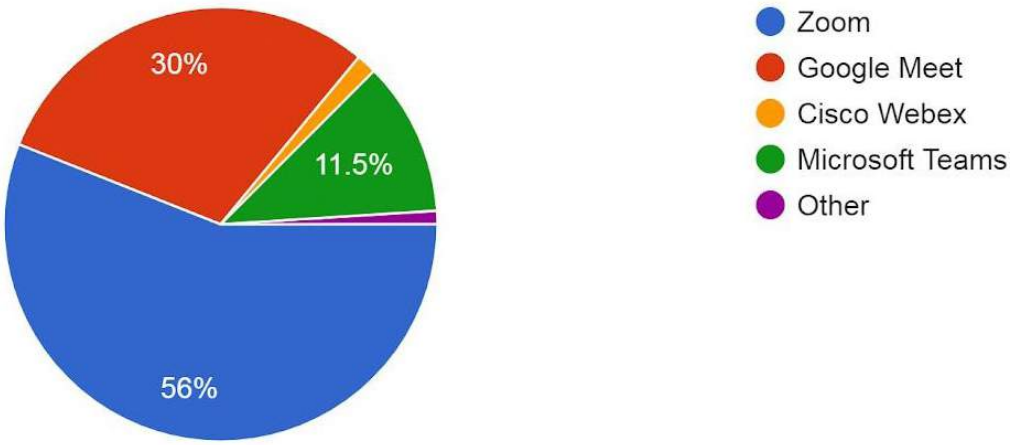
Table 1.1 Sample Descriptions



The distribution of respondents studying under graduation was not equally distributed in terms of gender as male were less in number compared to female students. As indicated in Table 1 there were only 42.2% of male students and 77% of female students.

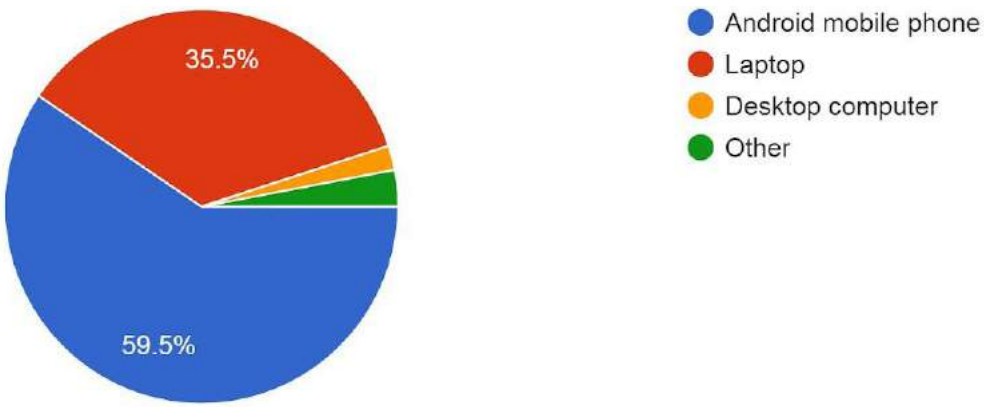
E-Learning Habits of the Students

2. Specify any one platform you use mostly for E-Learning session.



The study found that majority of the students 56 % of them use Zoom Platform, 30% use GoogleMeet and only 11.5% of the students use Microsoft Teams for E-Learning. The least used online platforms where Cisco WebEx and other online platforms. This reveals that zoom online platform

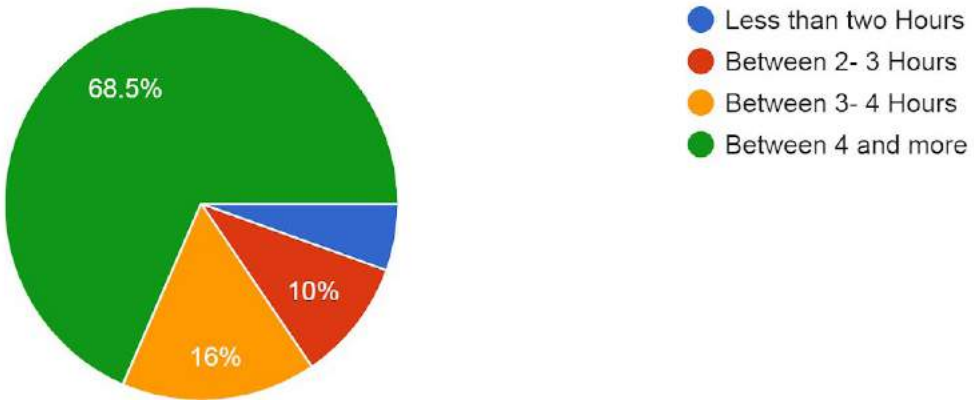
3. Which device do you use for E-Learning?



is preferred by the colleges who host the programs and the students are familiar with Zoom Platform and Google Meet.

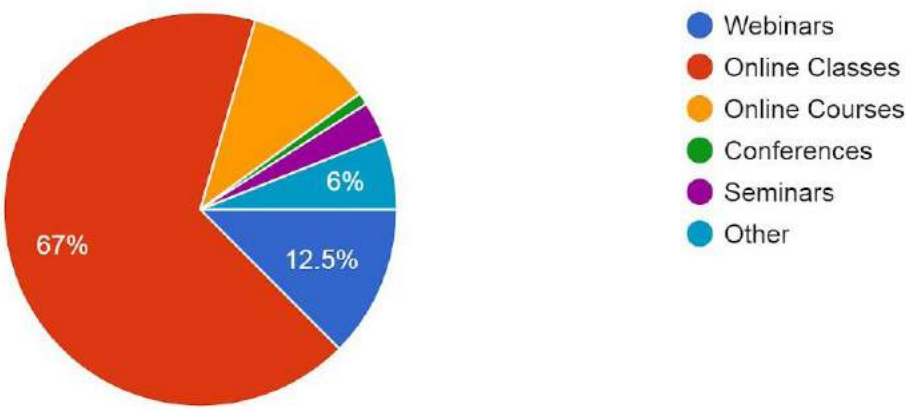
The data analyzed from the above chart revealed that majority of the students 59% of the total respondents said that they use Android Mobile Phone for E-Learning. The study also revealed that35.5% of the respondents used Laptops for E-Learning. Least of them used Desktop Computer andother gadgets.

4.How many hours in a day do you engage in E-Learning (Including online classes)



When asked how many hours in a day a student is engaged in E- learning, majority of them, that is 68.5% of the students responded between four and more. It is an interesting fact to know that students are engaged in more hours of learning through online platforms.16% of the responded said that they learn 3 to 4 hours and 10% said between two to three hours.

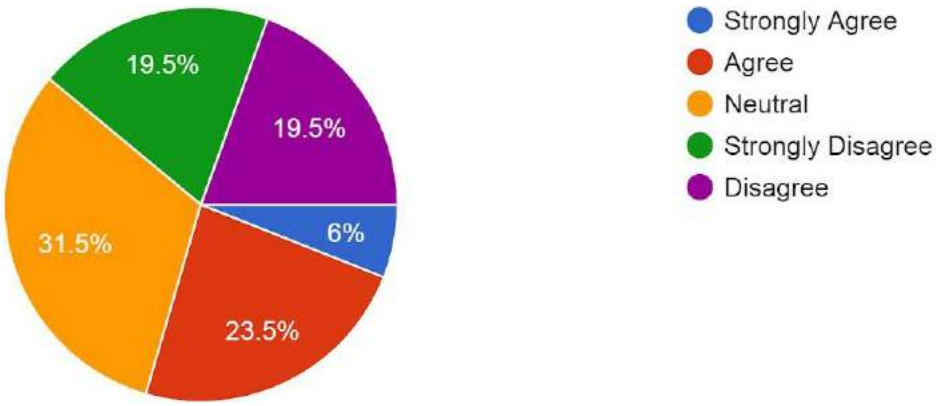
5. Specify any one of the E-Learning sessions which has helped you the most.



The data analyzed from chart 6 show that majority of the students 67 % engage in online classes. There were 12.5 % of the students who were engaged in webinars and then online courses. Rest ofthe respondents that is few of them engaged in conferences, seminars and other online activities.

EFFECTIVENESS OF E-LEARNING

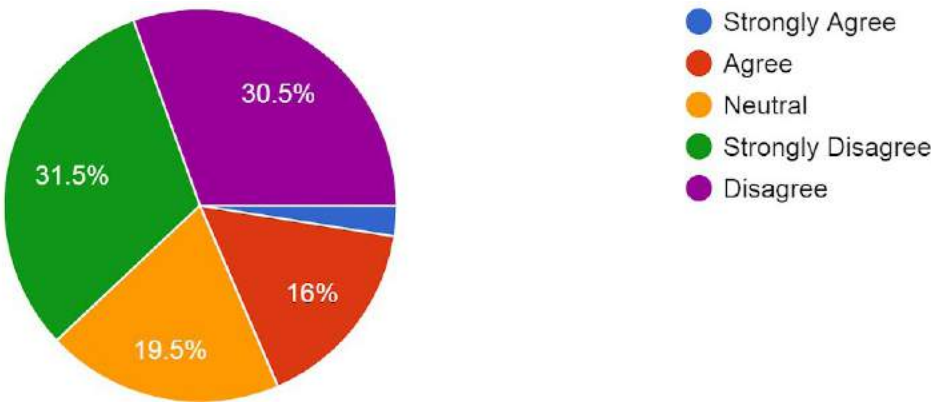
6. E- Learning is more beneficial than conventional Learning



The data shows that 31.5% of the students were neutral when asked if the E-Learning is morebeneficial than conventional learning. Number of them (19.5%) disagreed and others 19.5% strongly disagreed. Only 6% agreed to the above statement.

The major finding of the study is that the students find more beneficial in conventional learningthan E-Learning,

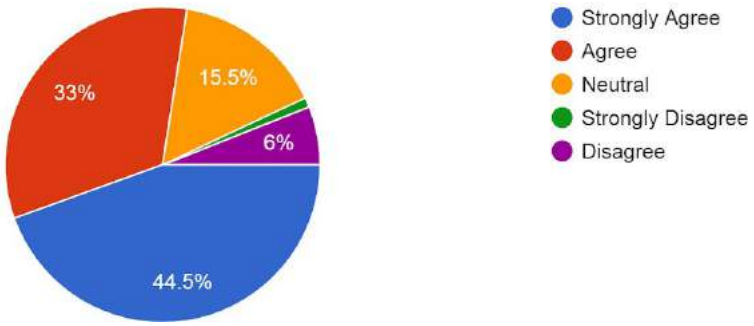
7. There is no difference between E-Learning and Conventional learning



The study revealed that majority of the students disagreed to the statement that there is no difference between E-Learning and conventional learning. 31% of the students strongly disagreedand 30.5% of the respondent disagreed. Only 16% of the students agreed that in saying E-learningand conventional learning does not make any difference.

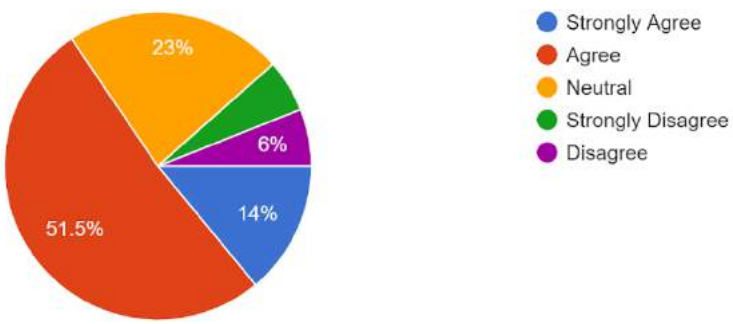
The second objective of the study was to find out the effectiveness E-Learning, The above chart shows that majority of the students were not that satisfied with E-Learning that shows they preferconventional learning.

8. Face -to – face contact with the speaker is essential for learning



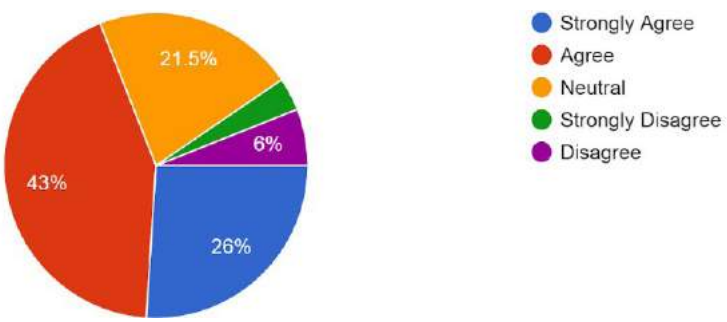
The students were asked to state weather face to face contact with the speaker is essential for learning. Majority of the students 44.5% of them strongly agreed to the fact that it is important face- to- face contact while learning with the speaker. 15.5% of them were neutral and 6% disagreed that they were in the opinion that it is not necessary to see the speaker face to face.

9. Covid-19 Pandemic has opened up a new space for learning.



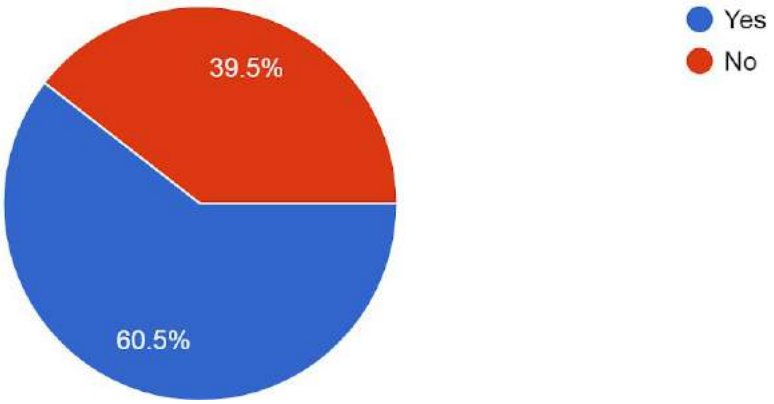
The data analyzed from the above chart shows that more than half of the students that is 51.5% agree that covid-19 Pandemic has opened up a new space for learning but 14% of them strongly agreed and 23% of them were neutral. Rest of them disagreed, therefore the above data reveal that the students do feel that the pandemic has opened up a new space of learning.

10. In an E-Learning session sharing of the content by the speaker (E-Text, Videos, Power points) is more beneficial.



From the above chart, it can be noted that majority of the students feel that sharing of the contentby the speaker in an E-Learning is session is more beneficial. 43% strongly agreed and 26% agreedwith the above statement. 21.5% of the students were neutral in their opinion. Least number of students 6% and below disagreed.

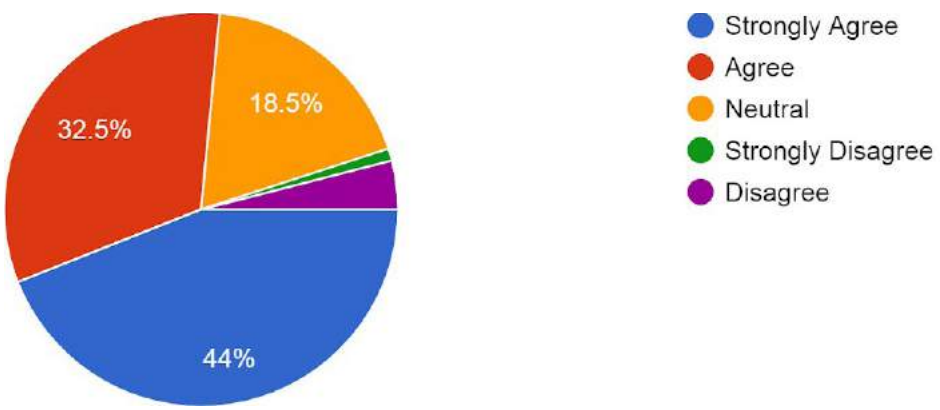
11. Have you taken part in any E-Learning and online quiz Competitions



This part of the questionnaire was to study the effectiveness of E-learning and it is interesting to note that the majority of the students 60.5% said that they have taken part in E-learning and quiz competitions. It shows that even though the students prefer conventional learning. They do make use of the chances offered by the online platforms. 39% of the respondents have admitted that they have not taken part in online competitions or quiz programs.

Challenges faced in E-Learning

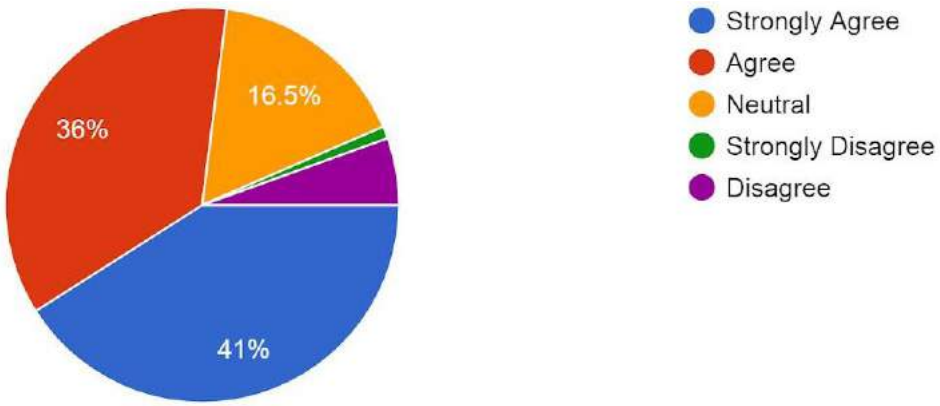
12. E-Learning causes Psychological and Physical discomfort, stress anxiety due to the excessive use of gadgets and increase of assignments.



The study found that an overwhelming majority of the students 44% strongly agreed and 32.5% agreed that E-learning causes Psychological and Physical discomfort, stress anxiety due to the excessive use of gadgets and increase in assignments.

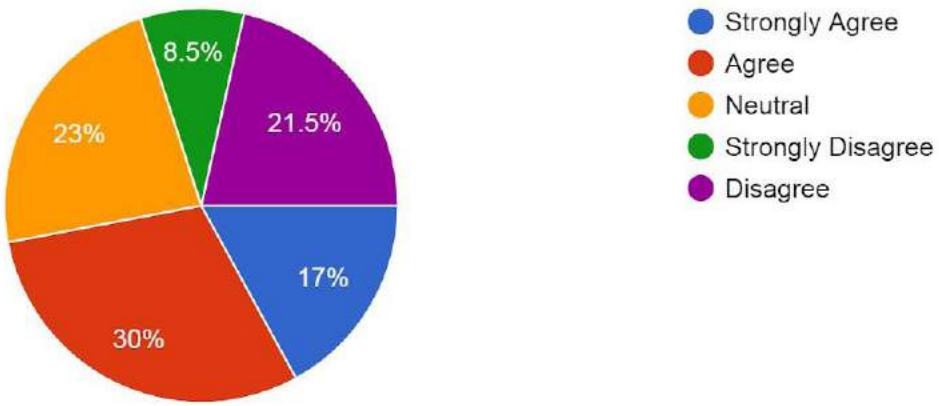
It is important to note that only few students disagreed on the view that E-learning causes discomfort stress and anxiety. 18.5% students were neutral in responding to this question.

13. Attention span is less in E-Learning than conventional learning



The students were asked to state whether their attention span is less in E-Learning than conventional learning. Majority of the students 41% of them strongly agreed to the fact that attention span is less in E-learning.36% agreed with the above statement. 16.5% were neutral andleast of them disagreed, that the attention span is less.

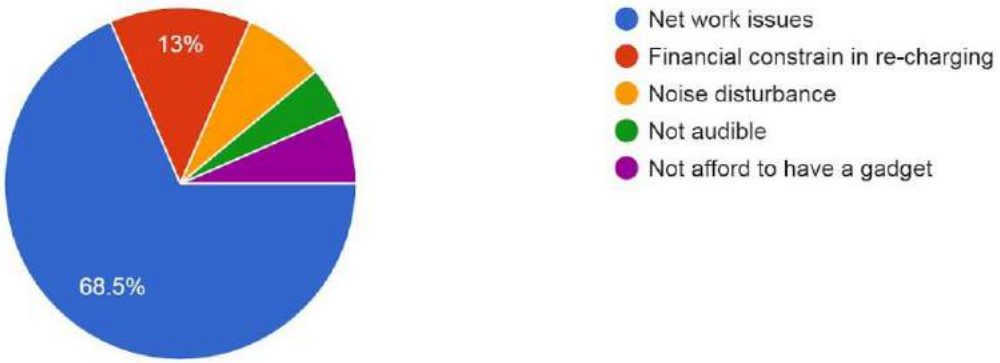
14. I engage in other activities while E-Learning session is going on?



When the students were asked if they engage in other activities while E-Learning session majority of them that is 30% of them agreed and 17% of them strongly agreed. This is one of the drawback of E-Learning session, the students are tempted to carry out other activities and that affects the full concentration of the students.

The others 23% of them were neutral that means occasionally they too engage in other activities.21% of the respondents disagreed to the statement and only8.5% of them strongly disagreed.

15. Specify any one major problem you face during E-Learning sessions



The last question was to know the major problem the students encounter during E-Learning session and it was interesting to note that majority of them 68.5% of them opined that they have networkissues.

The second problem they face was financial constrain in re-charging. Only few students said thatthey have the other issues like noise disturbance and not audible, but it is important to note that there are number of students who are not afford to have a gadget.

SUMMARY OF THE ANALYSIS

From above findings and analysis, it is clear that even though many researchers in their studies found that Adaptation of E-Learning among the students can make the study more interesting. (Yacob,A & Kadir, AZ & Zurairah A. 2012). In this study majority of the students prefer conventional learning than E-Learning. There is an overwhelming majority of the students 44% strongly agreed and 32.5% agreed that E-learning causes Psychological and Physical discomfort, stress anxiety due to the excessive use of gadgets and increase in assignments.

To the variable how many hours in a day a student engaged in E- learning, Majority of the studentsthat is 68.5% of them responded that engaged in E-Learning between four and more hours. The students are actively involved in E-learning majority of the students 60.5% have taken part in E- learning and quiz competitions. The students preferred face to face contact with lecture while session is going on.

CONCLUSION

Today due to the changing trends in learning, and the opportunity to access internet, students havemuch more opportunity to access information and to widen their knowledge. At times the use of online platforms can cause too many advantages and challenges.

In this scenario the aim of this quantitative study was to analyze E-learning habits, effectiveness and challenges face by the students in Bangalore. And to find out whether the students prefer e- Learning or conventional learning, majority of the students opined that they prefer conventional learning, but contrary to this in one of the study it was found the virtual class room facilitated much more interaction of the students than conventional class rooms. (Martin, M. & Parker, AM. 2010).

However the students are making use of the E-Learning platform during this time of pandemic.

The study showed that the majority of the respondents engaged in E-Learning session more than four hours and they also participated in online quizzes, classes, webinars and conferences.

The data of the present study was obtained from the college students of Bangalore urban district. According to data analysis it is also found that number of students using Zoom platform is higherthan the other apps. Majority of the student's attention span is less comparing to conventional classroom.

Analysis of the data on the basis that whether E-learning causes Psychological and Physical discomfort, stress anxiety due to the excessive use of gadgets and increase in assignments, majorityof them expressed that they are under pressure, stress and anxiety during the E-Learning sessions.

Even though the students were from Bangalore Urban, majority most of them face network issuesand the next problem they faced was that of financial constrain in re-charging. Majority of the students make use E-Learning platform for online classes than webinars and conferences.

When the students were asked if they engage in other activities while E-Learning session majorityof them that is 30% of them agreed and 17% of them strongly agreed. This is one of the drawbackof E-Learning session because of this students are not able to get maximum benefit from E- Learning.

LIMITATIONS

The study is limited by the sample and the reach. The researcher has taken only 200 samples and the questionnaire were distributed only in Bangalore. For further study it is suggested to take greater sampling for a better result. As the researcher could not get contact of various colleges in Bangalore who are perusing undergraduate studies, it was difficult to do a probability sampling. So the researcher could not generalize the study. The present study was based on convenient sampling which has a possibility of bias. The researcher also could have analyzed separately the response of male and female and found the level of difference by using chi-square value. It could have produced a significant result.

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EMPOWERMENT OF WOMEN IN EMPLOYMENT THROUGH TRAINING IN LEADERSHIP SKILLS AND PERSONALITY DEVELOPMENT

SHEETAL G
Research Scholar
Garden city University
Assistant Professor
Dept. of Business Administration
St. Anne's Degree College for Women

Dr. SHUBHA CHANDRA
Research Supervisor
Garden City University

ABSTRACT

This paper aims to study and analyse the impact of conducting training in leadership skills and personality development for empowering the women workforce in India.

In spite of the massive admittance of women into the workplace, and the increasing numbers of women holding mid-level managerial positions, top-level positions remain as elusive to women today as they were more than a decade ago. Working in a world dominated by male decision-makers and their established practices, women encounter a variety of barriers that impede their progress towards top positions in their careers. One widely accepted explanation for this small number of female executives is the persistence of negative stereotypes, discrimination and glass ceiling against women as managers. As for those women who succeed in reaching managerial positions, they are further subjected to comparisons with their male counterparts regarding their leadership skills. Accordingly, one wonders if gender has any direct effect in the pursuit of leadership.

In this paper a total of 400 respondents were surveyed from 5 leading IT Companies situated in of City of Bangalore. The survey used a multi-stage random sampling methodology. The study clear establishes a direct co relation in women who have taken up training in leadership skills and personality development who are able to perform better and take up key management positions of the company. The results of the Z test carried out to establish the significance of the growth in income of those women who have undergone training in leadership programs between 2015 and 2020 indicated that the absolute Z value of the difference between these two sample means was 15.16. The p value of 0.00 was statistically

significant. The rise in income of working women who have undergone various leadership programs was indeed impressive. A chi-square test carried out to establish women with better leadership skills led to greater decision making ability among working women, returned a chi-square value of 46.650 and p value of 0.0000, thereby proving that this was indeed the case. The conclusion is that women empowerment is positively affected by conducting programs in leadership skills and personality developmentin a company vis~a~vis their ability to take upopportunities and key management roles on par with men.

INTRODUCTION:

Empowerment of Women in a emerging workforce takes place when unbiased equal opportunities are provided to both men and women. Empowering women is fraught with numerous impediments and challenges, given the social settings in a country like Indiadominated by gender stereotyping and a patriarchal mind-set.India's economy is growing, with an increasing GDP and a working-age population expected to climb to over 800 million people by 2050.Despite this growth, less than one-quarter (20.3%) of women aged 15 and older participate in the labor force as of 2020. Women workforce must be moulded properly with leadership skills to meet the changes in trends, challenges of global markets and also be competent enough tosustain and strive for excellence in the completive corporate world. Hencethe need to improve women workforce in India and development of leadership skills and personality development among them is the need of the hour.

REVIEW OF LITERATURE:

Unni, Jeemol& Uma (2004) have observed that there is a need not only to bring change in status & image ofwomen but also in the attitude of society towards them. There is a demand to create awareness among the ruralwomen who are unemployed to gain self-esteem & confidence. **DhrubaHazarika (2011)** concluded thatwomen are future of country's development. Empowering women will be the right approach for growth in thiscompetitive world.

Vijaya&Lokhandha (2013) suggested that skill development will boost the women empowerment with highproductivity & earnings. Skills lead to confidence among them to be more innovative.

Kittur Praveen (2014) concluded that in order to encourage women entrepreneurship, a special training coursefor women entrepreneurs must be started to improve their skills.

MamtaMokta (2014) found that women need to find their own way in this male dominated society. Theyshould be motivated for growth & empowerment by self-help groups, NGOs, government policies & microfinance institutions.

Prasanna Kumar (2014) stated that it is our need to identify the areas where women are still facing problemsand are unable to access resources, institutional knowledge & basic education

OBJECTIVES AND HYPOTHESES:

The primary objective of the study is to examine women empowerment resulting from an increase in income generation ability of women workforce who undergone various leadership development programs and their corresponding decision-making ability.

For the limited purpose of this paper we classify women workforce who have undergone various leadership programs as Class -1 Women employees and women who have not undergone the leadership programs as Class-2 women employees.

The following additional objectives have been incorporated in the study:

1. To examine the Class -1 & Class 2 women workforce and their corresponding incomes, promotions, roles performed and attrition rate etc between 2015 and 2020
2. To study the impact of training programs in class-1 women employees between 2015 and 2020.

To meet the above objectives, the following hypotheses were formulated:

H1: Access to and use of various leadership training programs has significantly increased the income of women workforce.

H2: Use of various leadership programs has led to greater decision making ability and access to better job profiles & key management roles in the organisation.

METHODOLOGY:

The city of Bangalore also known as the Silicon Valley of India has substantial contribution of Women Workforce in the IT Sector. In FY 2017–2018, the IT and ITES sector employs 34 per cent women according to Ministry of Electronics & Information Technology.

The study was carried out in 5 leading IT Companies in Bangalore district in the State of Karnataka. The study involved a data collection of women workforce in the aforesaid IT Companies who have undergone various training programs rolled out by the company over the period 2015 to 2020 and its analyse with their increase in incomes and the resultant impact on women empowerment.

MEASUREMENT OF VARIABLES:

The independent variables of the study were: income, promotions and attrition rates of Class-1 & Class 2 women employees. The dependent variable of the study is women empowerment

DATA COLLECTION:

A multi-stage random sampling methodology was adopted. 5 IT companies were selected for the survey. A total of 762 respondents working during the period 2015 to 2020, again randomly selected,

were surveyed using a questionnaire comprising two parts: Part I consisting of 15 questions to collect the job profile, job description , income details of the women employees over the aforesaid period and Part II consisting of 20 questions. With a view to eliciting valid responses from respondents with respect to various personality development and leadership programs conducted by the company,job performance , promotions and appraisals . A mix bi-polar and open ended questions were used in the questionnaire.

ANALYSIS OF DATA:

With regard to quantitative analysis, SPSS software was used for data entry and for arriving at statistical output. Descriptive statistical tools like average, percentage, and variance were also used to analyze data. The results were then analyzed and interpreted. Inferential statistics like Chi-square test of independence and test of difference between two sample mean is used to test the stated hypotheses.

FINDINGS AND INTERPRETATION:

Table 1 below indicates the number of class 1 women employees workingbetween 2015 and 2020. 760 responses were received for 2015 and 762 for 2020. The modal value of class 1 women employees in 2015 is 2 representing the highest percentage (43.4%). The modal value during 2020 is 1 representing the highest percentage (42.9%). Considering both time periods, it can be concluded that the number of class 1 women employees is between 1 and 2.

Table 2 below indicates the number of class 2 women employees in 2015 and 2020. 760 responses were received for 2015 and 762 in 2020. The modal value of number of class 2 women employees in 2015 as well as 2020 is 1 representing the highest percentage (79.5%) in 2015 and (77.4%) in 2020.

From Table 3 below it may be seen that 62.00% of the class 1 women employees have got promotions and appraisals in 2015. This percentage increased substantially to 74% in 2020.

From Table 4 below it can be seen that there is an increase in frequency of class 1 women employees earning more than 30 lac from a mere 19.50% to in 2015 to 37.70%.The hypothesis of access to and use of various leadership training programs has significantly increased the income of women workforce was tested through Z test.

Table 4 below indicate incomes trends of both class 1 & class2 women employees in 2015 and 2020.

The average income of the women employees is INR 612590.84 with a standard deviation of 185280.21 and variance of 3432946870 in 2015. The average income of women employees is INR 1031490.60 with a standard deviation of 739460.14 and a variance of 54680327360 in 2020. Thus there is a significant difference in the average income of the women employees. Further, the number of class 1 women employees in the highest income bracket i.e., above INR 30 lac was only 149 in 2015. This increased to 287 in 2020. However, there is no increase in the modal value of either class 1 & class2 women employee members between 2015 and 2020. The standard error of the difference between

the two independent means is 27610.59. The absolute Z value of the difference between these two sample means is 15.15 and the p value of 0.00 is statistically significant. The hypothesis stated above, i.e. that there is an increase in the income of women employees who have undergone various leadership training programs is accepted.

This study has further analysed the promotion and appraisals of women employees in class 1 & class 2 in 2015 62% of class 1 women employees have got promotion and appraisal when compared to class 2 employees of mere 12%. This trend continues in 2020 wherein it seen there is substantial increase of 74% of class -1 women employees who have got promotion when compared 12.50% of class -2 women employees. This clearly indicates the benefits of various leadership programs taken up by class-1 women employees has directly resulted in they take-up better roles and challenges in the corporate sector. The hypothesis stated above i.e use of various leadership programs has led to greater decision-making ability and access to better job profiles & key management roles in the organisation is accepted.

Women Empowerment is presently the most discussed and encouraged concept all over the world to overcomeeconomic challenges. Women being the vital gender of the overall population have great capacity andpotential to be the contributor in the overall economic development of any nation. Therefore, programsand policies need to be customized to not just encourage employment to women but also enable and provide equal opportunities to them to scale up the ladder and take-up key management roles of the organization. The corporate sector and the companies have the potential to play the mostvital role in development by creating and highlighting all such platforms which can bringout the leadership skills ,creativity and innovation among the women and men to grow their career.

Table1: Details of number of Class 1 women employees in the company

	Number of Class 1 Women Employees in 2015		Number of Class 1 Women Employees in 2020	
	Frequency	Percent	Frequency	Percent
0	19	2.50%	18	2.40%
1	250	32.90%	327	42.90%
2	330	43.40%	311	40.80%
3	86	11.30%	79	10.40%
4	47	6.20%	22	2.90%
5	19	2.50%	5	0.60%
6	9	1.20%	0	0.00%
	760	100.00%	762	100.00%

Table2: Details of number of Class 2 women employees in the company

	Number of Class 2 Women Employees in 2015		Number of Class 2 Women Employees in 2020	
	Frequency	Percent	Frequency	Percent
0	53	7.00%	140	18.40%
1	604	79.50%	590	77.40%
2	90	11.80%	32	4.20%
3	13	1.70%	0	0.00%
	760	**100.00%**	**762**	**100.00%**

Table3: Details of Promotions and performance appraisal of women employees in the company

Particulars	2015		2020	
	Frequency	Percent	Frequency	Percent
Class -1 Women Employees	472	62.00%	564	74.00%
Class -2 Women Employees	91	12.00%	103	13.50%
None of the above	198	26.00%	95	12.50%
	762	**100.00%**	**762**	**100.00%**

Table4: Details of incomes of women employees of in the company

Particulars	2015		2020	
	Frequency	Percent	Frequency	Percent
Class 1 Women Employees				
< 12 lac	370	48.50%	194	25.40%
12 lac to 30 lac	244	32.00%	281	36.90%
>30 lac	149	19.50%	287	37.70%
	762	**100.00%**	**762**	**100.00%**
Class 2 Women Employees				
< 12 lac	595	78.08%	500	65.62%
12 lac to 30 lac	155	20.34%	165	21.65%
>30 lac	12	1.57%	97	12.73%
	762	**100.00%**	**762**	**100.00%**

Table5: Z Test for comparing Annual incomes

Particulars	2015	2016
Average (INR)	612590.84	1031490.6
Standard Deviation (INR)	185280.21	739460.14
Variance	3432946870	54680327360
no of observations	762	762
Std Error of the difference between the tw	27610.59	
Z	-15.15	
p	0.00	

CONCLUSION:

Generally speaking, corporate world has realized and is working on war footing to ensure equal opportunities are provided to both men and women and un-biased approach for the growth of employees in the company.

Independence brought promise of equality of opportunity in all sphere to the Indian women and lawsguaranteeing for their equal rights of participation in political process and equal opportunities and rightsin education and employment were enacted. But unfortunately, the corporate sector led leadership and development programs have benefited only a small section of working women. The large majority of them are still unaffected bychange and development activities have benefited only a small section of women i.e. the urban middleclass women.

Women are willing to take up employment and contribute to the nation‘s growth. Their role is beingrecognized and steps are taken to promote and take up key management roles and scale up the ladder.Skill development will be the key factor for empowering thewomen.

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A COMPARISON STUDY OF ACQUIRING AND ADAPTING OF TECHNOLOGY BETWEEN MY MOTHER AND MYSELF

DALJIT KAUR
Assistant Professor, Department of English, St' Anne's Degree College for Women, Bangalore,

ABSTRACT

"Whenever I am bored, I can always find something to do on my phone". I belong to the Generation Z, The generation which is surrounded with technology for the whole day I belong to a generation that only knows a world that is hyper-connected where by the tap of a Smartphone a pair of shoes can be delivered to the doorstep in less than an hour. To my generation, a phone will be broken if I cannot see the other person on the other end. It's a brave new world that I am growing up in. At the same time considering my mother's generation, she does not belong to the era where things used to happen at the tap of a device. It was never easy for that generation to get things delivered at the doorstep. They never had a device that would let them see the other person while on a call. At all the strands of life I and technology walk hand-in-hand. I am one of the first true digital natives. My life completely depends on gadgets, internet and social networking. For my educational purpose or my entertainment purpose I am totally depended on technology. But it was not the same case with my mother. This paper is comparison study of I and my mother have a difference in our lives because of Technology.

Keywords: *Generation Z, Technology, Different lifestyles, adapting of technology*

INTRODUCTION:

Generation Z is the first to be born into a time when that technology existed. Smartphone's, social media, virtual reality, artificial intelligence have turned the most important parts their lives. Gen Zers are the first digital natives, born between 1996 and 2012, into a world of vast technological advances and innovations. They are unlike other generations, who either grew up without or came into adulthood during the rise of social media, smart phones and instant accessibility of information. It gives me immense pleasure to be a part of the Generation Z. Coming to the life of my mother; it was not the same case with her. The people of her generation never enjoyed the advantages of technology. Today technology has changed the way we life. We are so used to technology today that we cannot imagine even a minute of our life without it. Today's things work with a tap or click on the screen. To my mother she never imagined that something would happen like it happens today. From entertainment, education to travel everything has changed in my life when compared to that to the life of my mother.

TECHNOLOGY BRINGS THE NEW ERA OF ENTERTAINMENT:

Advancement in technology has changed all the aspects of life. Entertainment being one of the biggest aspects of life.There has been many changes in a range of entertainment based industries thanks to

advancements in modern technology. In the years gone by, when my mother was as old as me they had a very pretty limited means of entertainment. Other than a few terrestrial channels on TV and radio, there was very little to do. My mother always said "There was only one hour of entertainment everyday in my life; Sundays were meant for Ramayana and Mahabharata". However for the people of my generation the situation has totally changed, the cable and satellite TV were a part of our child hood, which always helped us watch several channels on the television.

Today we have surpassed the era of cable and satellite television as well, with the emergence of high speed broad band and wireless internet the OTT (over-the-top) platforms have turned into the new platform of entertainment. Today I don't need to be available at 8:30pm to watch my favorite shows. I can watch it at the ease of my time. I don't need a Television set to watch my favorite show I can even watch it when I'm travelling with the help of my Smartphone.

In fact, over the recent years technology has resulted in huge changes in the world of entertainment. Today we enjoy all sorts of entertainment activities at home without spending the amount of money that we might spend when we go out. It is not only the cable and satellite television we have seen major changes in the field of gaming at well. In the olden days it was mostly the outdoor games that my mother and the people of her generation. She always narrates the tale of the games she played, "I spent most of my time playing outdoor or different board games. Playing games were never electronic for us." On the contrary my gaming from the very beginning was in door from the very beginning I spent most of the time playing different video game and today all thanks to technology that I play all the board games online with my friends from round the globe. The technology has helped me play all sorts of games comfortably at ease of my house.

"Watching movie at cinema was as rare as going on a trip overseas, we always waited for that one day when our parents would take us to cinema." My mother always tells this when I ask her about her experience of going to cinemas. My experience of watching movies has totally changed, for me Friday is a movie day, and today I thank the streaming movie website and speed broadband, I can sit at home and enjoy the latest movies. I can watch all the movies online free of cost. Not only watching movies listening to music as also become very easy, the people of my mother's generation used to buy CD's and Cassettes to listen to their favorite songs. For my generation the technology has become a boon there are a variety of music download sites and apps which help us download number of songs free of cost.

EDUCATION BEING IMPARTED THROUGH TECHNOLOGY:

Technology has impacted almost every aspect of live today, and education is no exception. In much ways, education seems much the same but there major changes that can be pointed out. For the people of my mother's generation books were the medium of studies. The teachers of her generation used to use the blackboard to lecture the students. Considering the same education today, we as a students are prone to the usage of gadgets. Instead of used the traditional books, we download the PDF of the books are read online. Our teachers also use mart ways to convey the lessons.

Not only this, technology has profoundly changed education in many other ways. One of it is technology has greatly expanded access to education. During my mother's generation, books were rare and only an elite few had access to educational opportunities. Individuals had to travel to centers of learning to get an education. My mom always told me that she used to travel 12 kilometers to reach school. Today, massive

amounts of information (books, audio, images, videos) are available at one's fingertips through the Internet, and opportunities for formal learning are available online worldwide through the MOOCs, podcasts, traditional online degree programs, and more. Access to learning opportunities today is unprecedented in scope thanks to technology.

With the help of technology opportunities for communication and collaboration have also expanded. Traditionally, classrooms were relatively isolated and collaborations were limited to other students in same school. Today, technology enables forms of communication and collaboration undreamt of in the past. I and my classmates sitting in the classroom, for example, can learn about the Arctic by following the expedition of a team of scientists in the region, read scientists' blog, view photos, e-mail questions to the scientists, and even talk live with the scientists via a videoconference. We can share what we are learning with our friends from other states who are tracking the same expedition. We can collaborate on group projects using technology-based tools such as wikis and Google docs. The walls of the classrooms are no longer a barrier as technology enables new ways of learning, communicating, and working collaboratively. All this was never possible for my mother and people of her generation.

Technology has also begun to change the roles of teachers and learners. In my mother's classroom, the teacher was the primary source of information, and the learners passively received it. This model of the teacher as the "sage on the stage" has been in education for a long time, and it is still very much in evidence today. However, because of the access to information and educational opportunity that technology has enabled, in my classroom today we see the teacher's role shifting to the "guide on the side" as we take more responsibility for our own learning using technology to gather relevant information. Schools and universities across the country are beginning to redesign learning spaces to enable this new model of education, foster more interaction and small group work, and use technology as an enabler.

TRAVELLING MADE EASY:

The world is on the move. Travelling has progressed leaps and bounds and so have travelers of Generation Z. The tourism industry is constantly transforming and enhancing itself in numerous ways with the help of technology.

Technology has changed the way we travel today. The travelers today are fortunate to have faster, better-quality, more comfortable travel experience. Smartphone, websites, travel apps have made travel easy in incalculable ways. During my mother's time travel was the most dangerous night mare for them. She always tell me, "Today it's just the tap and we travel it was not the same when I was your age, planning a vacation was not followed in all families. It was only a few elite ones who used to go for vacations. My parents were all ways busy and never had time for vacation."

It is common knowledge that what had kept customers pleased 10 years ago no longer works today. Internet and new technologies have wholly transformed consumption behaviors and the travel sector has advanced tremendously as a result of digital technologies. Today we as travelers demand for assistance with more immediacy, seamless experience and personalized content and services. Technology has become one of the blame for the customers' higher demands and changes in travel patterns.

.With the precious help of technology, travel has become a lot eco-friendlier. **Gone are the days where there was a need to print the airline ticket, boarding pass or hotel reservation.** Thanks to online

reservations, mobile check-ins and e-tickets we can save large amounts of paper and not worry about carrying numerous documents around. **This is a win-win situation**. Furthermore, **online reservations and bookings are time-savers**, as there is no need to stay in line to get a ticket. "I still remember we had planned for a vacation to Jammu and Kashmir. It was the most tedious memory of my live we had to book tickets 3 months before the travel and had to keep the tickets safe throughout the travel. Booking of accommodation was not as easy as today, technology has surely changed mine live to yours" says my mother when I ask her about any of her travel experience.

Nowadays**, technology is all about trying to squeeze the most functions and roles into one tiny gadget.** We no longer need an iPod to listen to music, all we need to have is an account on the leading music apps **and we will be able to stream music on the go.** The same thing goes for books; it is the end of worrying where to fit them inside our suitcases. **Amazon Kindles or Kobo (e-readers) save a ton of space** in our bags.

During my mother's time there was the need to carry a phrasebook in the language of the place they were going to travel. Today, all that is needed is a Smartphone and **with the support of apps like Google Translate or iTranslate, the times of struggle when interacting with locals have come to an end**. Google's Translate app even lets you use your Smartphone camera to translate signs or menus in real time.

Technology changed the way we book a flight, a room, access hotel services, are informed of daily events and seek advice to sightsee a city. **Chat bots have become the perfect travel companion**. Many hotels and flight companies already offer messaging options to their customers, either by giving the ability to text them through their own apps or establishing messaging channels like Facebook Messenger or WhatsApp**. But the real revolution is chat bots — they are becoming huge assets to this industry.** Chat bots allow a person to interact with either a human or artificial intelligence via a chat interface**. Bearing in mind that messaging apps are becoming the new social media, it only makes sense that companies start to integrate this type of services in their repertoire.**

Electronic Payments made travelling safer and easier. Pay TM, Phone pay or Google pay — **everything is so much easier with electronic payments.** Among the advantages of going cashless it is worth to highlight two of them**: the convenience** — there is no longer the need to carry a lot of cash, a couple of credit cards or even stay in the queue for ATM withdrawals. **And lower risk** — especially true while travelling abroad, where the loss of cash can cause a great inconvenience**.**

Technology has completely changed the experience of travelling. From those days to day the life of a traveler has changed leaps and bounds.

CONCLUSION:

Gen Z is one of the first groups to grow up with the formations of social media, which has altered the way we think and do everyday things. It has even become a major part of our lives. Technology is not just changing education and Gen Z. Technology has increased connectivity with the outside world but also increased communication, and changed how Gen Zers perceive themselves. Earlier generations did not have technology that delivered information and communication as immediately as it does today.

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A REVIEW ON MICROSCOPY CHARACTERIZATION OF CARBON NANOTUBES GROWN AT DIFFERENT TEMPERATURES

SINDHU. S
Assistant Professor
Department Of Physics St.anne's Degree College For Women

ABSTRACT

The carbon nanotubes represent one of the most unique inventions in the field of nanotechnology. CNTs have been studied closely over the last two decades by many researchers around the world due the great potential in different field. The most important aspects of CNTs are there light weight, smallsize, good tensile strength, and good conducting characteristics. Present review articles deals with thestructural and microscopy characterization of carbon nanotubes (CNTs) grown by the spray pyrolysis technique, using ferrocene as catalyzer and cyclohexanol as the carbon source, and synthetized in a temperature range of 750 to 1000°C. The structural morphology was observed using scanning electron microscopy (SEM) and transmission electron microscopy (TEM). The spectroscopy response was obtained by UV-Vis and Raman spectroscopy. They observed morphological changes and found that the product yield seems to increase with temperature.

KEY WORDS: *Carbon nanotubes, spray pyrolysis technique, scanning electron microscopy (SEM) and transmission electron microscopy (TEM), Raman spectroscopy*

INTRODUCTION

Carbon in its miscellaneous forms has been used in art and technology since prehistoric times [4,5] Charcoal, graphite and carbon black (a pure form of soot). Charcoal was used in this way right up to the eighteenth century, With the development of the electrical industry in the late nineteenth century, a demand developed for graphite. The American Edward Acheson is credited with producing the first synthetic graphite in 1896. Diamonds, like graphite, have been known since antiquity, but until quite recently were only used decoratively. The development of a commercial synthetic method at General Electric in the 1950s opened the way for the industrial use . Antoine Lavoisier, in a famous experiment in 1772, proved that diamonds are a form of carbon by demonstrating that they produce nothing but carbon dioxide on combustion diamonds. The structure of diamond was one of the first to be solved using X-ray diffraction, by William and Lawrence Bragg in 1913 [6], while nine years later John D. Bernal solved the structure of graphite[7].

Nowadays, the search for growth methods to obtain CNTs at low cost and with high quality is very important for their industrial applications [1]. This task can be accomplished by modifying the

parameters that affect growth such as temperature, carbon sources, metal seed source or catalyst, and growing time [2, 3].

Thermally decomposed hydrocarbon vapors at low temperatures (700–750°C), in conjunction with metal oxide catalyst particles as "seeds" for the CNT growth, have been frequently used as carbon source during chemical vapor deposition. The specific type of source used has a direct influence on the final product characteristics. For example, the use of alcohols yields few-wall carbon nanotube, and the number of carbons in aliphatic alcohols affects the CNT's microstructure [7]. Cyclohexanol has attracted the attention of several authors due to its cyclical structure and boiling temperature [7–10]. The effects of syntheses using cyclo- hexanol [11] as carbon source have been presented in some publications.In this work, we compared the morphological structure and the optical spectroscopic behavior of CNTs grown by the alternate method of spray pyrolysis using cyclohexanol as carbon source and ferrocene as catalyzer at a fixed ratio, varying only the synthesis temperature (750, 800, 850, 900, and 1000°C). This study allows us to find the most suitable temperature range for this technique, under thespecific synthesis parameters, in order to obtain CNTs with good structural morphology.

MATERIALS AND METHODS

Using the vapor pyrolysis technique [7],Acyclohexanol mix at a ratio of 0.20 g/20 ml introduced at a rate of 1 mL/min during 20 min; the obtained vapor was carried by argon flow at 0.32 L/min to a quartz tube (substrate) inside the furnace. Using the above parameters for all the experiments, we made syntheses at 750, 800, 850, 900, and 1000°C. The technique controls the reactant input, but it does not account for the characteristics of the residues that are expelled out as fumes. At the end of each synthesis, the obtained product was recollected by scraping the central part of the quartz tube, the yield was weighed, and then the samples were prepared for characterization.

Morphology and microstructural characterization of the CNTs were observed by scanning electron microscopy (SEM) in a JSM-7401F instrument operated at 3–5 kV and by high-resolution transmission electron microscopy (HRTEM) in a JEOL JEM-2100FS with beam Cs-corrector operated at 200 kV and spatial resolution close to 0.13 nm. The Raman spectra were acquired by the LabRam Horiba HR system using a He-Ne laser at 632.8 nm and 14.2 mW equipped with a CCD detector column at−75°C.

RESULT AND DISCUSSION

SEMcharacterization:

Figure (1) shows the variation of micro structural carbon nanotubes as a function of temperature. We can observe an important amount of iron nanoparticles of different sizes for the two lower temperatures of 750 and 800°C. CNTs obtained at 800°C seem to be short and with small diameter compared to those obtained at 850°C or higher temperatures. The images for 850 and 900°C show well-defined CNTs of different diameters, and at 900°C, significantly fewer iron nanoparticle impurities were present. Products at 1000°C show less CNTs formation and more graphitic carbon.

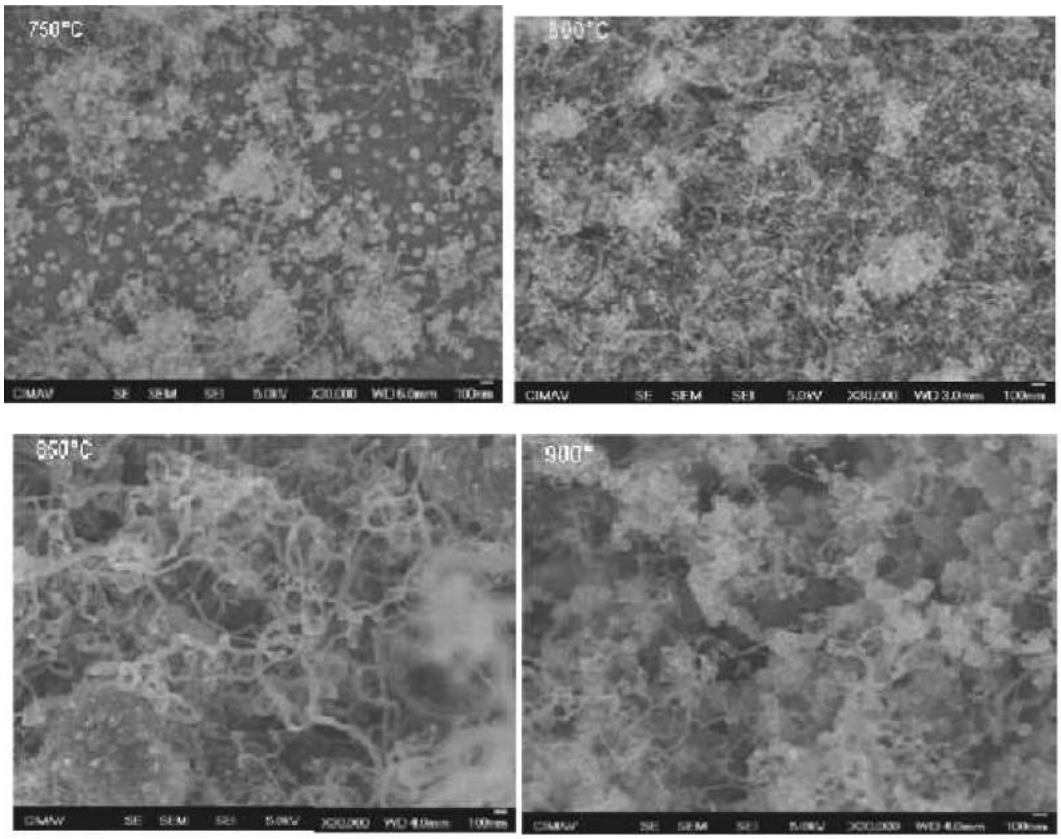

Figure 1 SEM images of CNTs (a) at 750°C, (b) at 800°C, (c) at 850°C, (d) at 900°C,

TEM Characterization:

Figures (2) show TEM images for the 750, 800, 900, and 1000°C cases. The TEM image of 750°C CNTs displays inhomogeneous structure and it was not possible to measure the diameter. Image for 800°C clearly displays how the iron nanoparticle promotes the graphite walls around it constituting the structure of the CNTs [13–15]. It was confirmed that the formed CNTs were present with a few walls (MWCNTs) and showed a homogeneous structure. For the lower and higher temperatures, the organization of the graphite walls is compromised, the sizes of the iron nanoparticle impurities increase, and the few-wall CNTs present high structural defects [15, 16]. This behavior can be contrasted to the use of aromatic compounds, where to the best of our knowledge, no one has reported the reason why they lead better product than al- cohols. One possibility is that the sp2 hybridization on the structure of aromatic sources makes it easier for the graphene to form cylindrical layers. The sp3 hybridization on aliphatic alcohols or cyclohexanol makes the formation of cylindrical graphene difficult and the restructuring of solid carbon leads to shortest, low wall number CNTs, with graphitic carbon formation. This circumstances affect the crystallinity.

Finally, the results from TEM analyses show an average distribution variety of external diameter (7 nm–12 nm) and a thickness range of the iron nanoparticles (9 nm–25 nm).

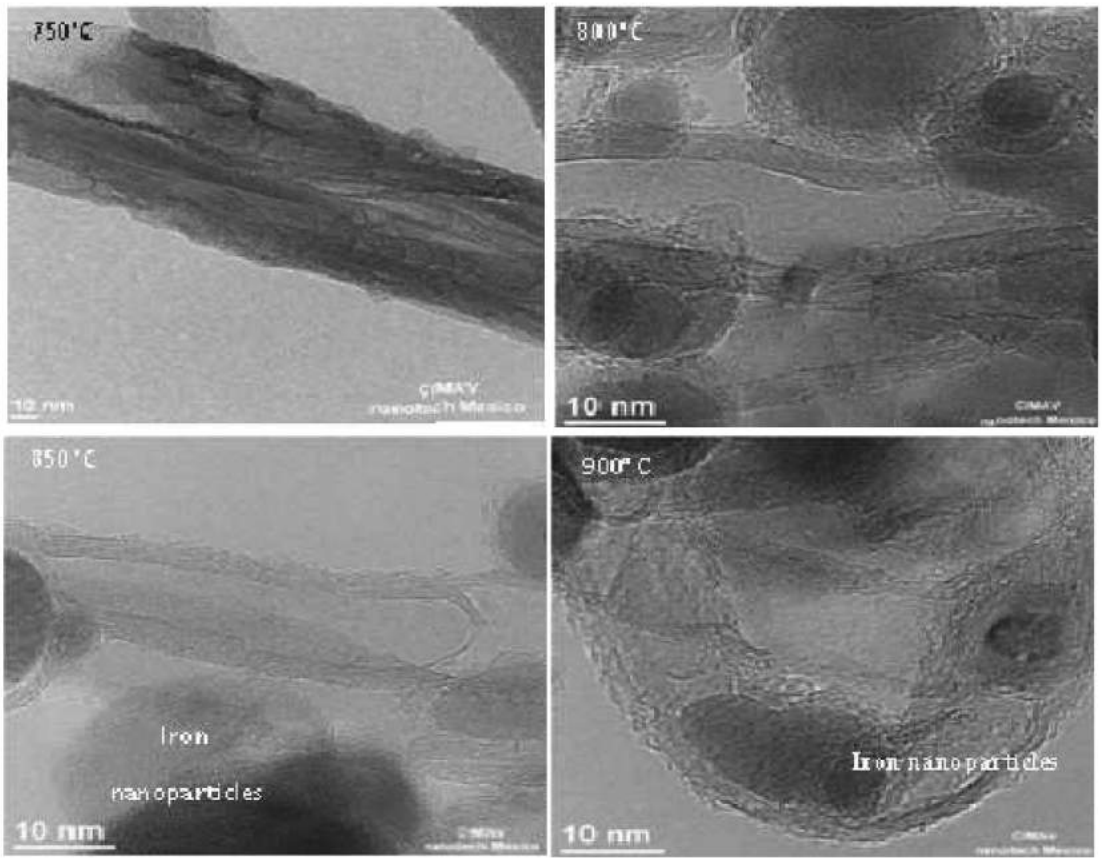

Figure 2: TEM images of CNTs.

Raman Characterization:

Figure (3) shows the Raman characterization of the samples. According to the literature, the peak at 1340 cm−1 is assigned to the poorly organized residual graphite [17, 18]. In this region, the peak is related to the so-called D band (band disorder) [19, 20]. The frequencies between 1500 cm−1 and 1600 cm−1 are related to the G band and are highly related to the characteristic of single- and multiple wall nanotubes. These frequencies correspond to a splitting of the graphite extension mode (stretching mode) [7, 13–16].

The results of the Raman spectrum present response from 500 to 3000 cm−1, in which the characteristic D band and G band peaks are observed. The D band lies between 1330 cm−1 to 1333

cm−1 and the G band between 1582 cm−1 and 1596 cm−1 for. For the 750 and 1000°C cases, the D peaks are higher than their G counterpart meaning that the sp2 bonds are broken [23], indicating there are more sp3 bonds and there is a presence of poorly organized graphite in our samples, as shown in the SEM and TEM characterization. The intensity ratio ID/IG, between0.83 and 0.84 for all cases, means that all the samples contain defects on their CNTs [23]. However, for the samples of 850 and 900°C, the intensity of the D band is lower than that of the samples of other temperatures, indicating the product with less structural defects.

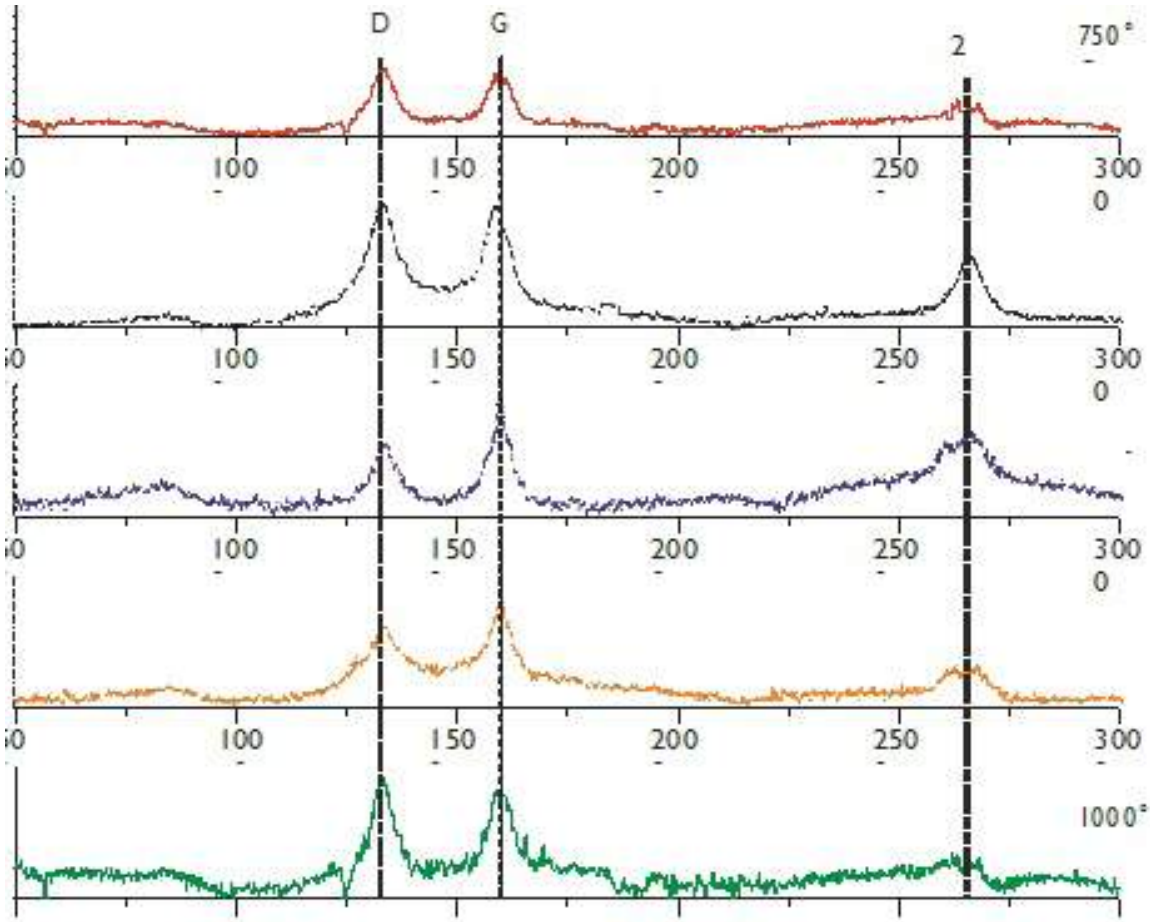

Figure 3: Raman spectra of CNTs.

CONCLUSION

We analyzed the CNTs synthetized through the spray pyrolysis technique using cyclohexanol as a feasible carbon source to grow carbon nanotubes, in a temperature range of 750 to 1000°C. We found a general product increase of 75% with temperature (from 750 to 900°C).

The SEM and TEM images quantitatively show that under our experimental parameters, the ideal temperature to obtain the best product CNTs lies between 800 and 850°C. Outside this temperature, we observe that the obtained CNTs present the appearance of iron impurities, more graphitic carbon and additional structural defects.

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ACADEMICIANS WITH PRIOR CORPORATE EXPERIENCE: IMPLICATIONS FOR KNOWLEDGE HANDLING IN HIGHER EDUCATION INSTITUTIONS*

BY

LILY REGINA ARTHI S.♣

Research Scholar, Dept. of Management & Research, A.V.S. College of Arts & Science, Salem and Assistant Professor, Dept. of Business Administration, St. Anne's Degree College for Women, Bengaluru, India

regimoses@yahoo.com

DR. M. HEMA MARY

Research Supervisor, Dept. of Management & Research, A.V.S. College of Arts & Science, Salem, India

ABSTRACT

Higher education institutions, in particular those offering management / business administration classes, are keen to address case studies involving firms in the manufacturing and service sectors. Students then attempt to decipher the factors that contributed to the success or failure of the firms. Often students extrapolate and propose methods that can be emulated in certain circumstances. Case studies, however, are not limited to corporate studies alone. Case studies often discuss social, cultural, individual and other concerns. This paper discusses how knowledge handling in higher education can encourage good practise with the goal of encouraging a sound teaching-learning process in addition to administrative performance.

KEYWORDS

Higher Education, Corporate, Knowledge.

1. Background

Knowledge continues to move between explicit and implicit knowledge across a number of sources, including formulas, equations, laws, books, databases, documents, patterns,

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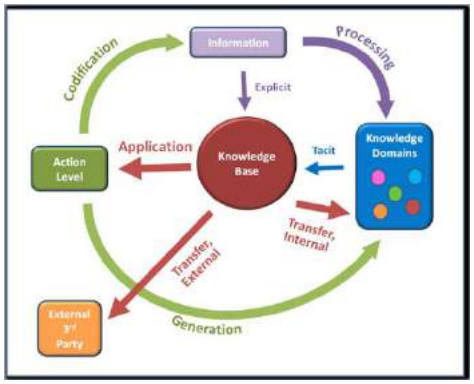
♣ Correspondence Author

mental models, attitudes, observations, tests, know-how, opinions, principles, abilities, craftsmanship, designs, blueprints, processes, strategies, goods, devices, and best practises. There are some knowledge-related activities (see Figure 1).

Figure 1: Knowledge Flow



Source: http://www.k-strategian.com/ (2020)

Corporate entities usually have knowledge assets such as intellectual property, stakeholder relationships; habits, standards and practises; human capital; ideology, principles, common views, community and networks; and physical infrastructure.

2. Need and Purpose

Higher education includes degrees that are related to business, economics and commerce. The curriculum, except for few subjects, predominantly discusses the practices and systems of companies in various sectors either through case studies or research. Many higher education institutions are increasingly preferring faculty that have some prior experience in the corporate world. The goal of this paper is to investigate what lessons higher education can learn from faculty who had earlier worked in Corporate. It also chronicles the initiatives in corporate firms that can be replicated in higher education resources.

3. Review of Literature

Company are deploying web messaging, video conferencing and remote partnerships to communicate with their globally-distributed employees. Offices nowadays do not need to provide physical branches across countries (**Davis et al., 2011**). There are countless aggregators in various realms that do not have any physical infrastructure but yet run solely distributed company around the globe.

Employee satisfaction is better enjoyed as they are rewarded (**Salah, 2016**) for their good jobs. Rewards, either tangible or otherwise, are a sure boost to virtue and a motivation to attain greater expectations and aims. Money is not necessarily exciting. Employees today seek leadership positions, extra power, and duties that encourage them to undertake new initiatives and highlight their talents in various domains. Often workers have a wide metropolitan region under their jurisdiction, which can include multiple towns, multiple states or even several nations. Business often holds displaying best photographs of workers on a monthly basis to remind and inspire all employees of the firm.

Administration within the firm aims for some simple items to be placed in effect from the very outset of the firm. Hierarchy and staff, vision, task, goals, policies, operating standards, operational rules, procedures and standards of ethics focused on cultural principles and common convictions must be planned and recorded (**Bratianu and Balanescu, 2008**). Policies related to the acquisition of services, including human capital, the utilisation of certain services, methodologies and methods, the distribution of information, the participation of stakeholders, decision-making, empowerment, jurisdiction, accountability and duties, must be comprehensible and enforceable. Manufacturing and distribution firms use flow maps (**Jenny et al., 2016**) and different forms of visuals to enhance visual effect and to minimise complexity. Firms include board members who meet on a daily basis to determine the position of the firm as well as to take decisions about the future. The instructions for protocol and practise are clearly recorded. They are audited on a daily basis, allowing firms to further enhance their internal functioning and efficacy.

Corporate preparation takes place on an ongoing basis. However, businesses are striving to assess the efficacy of training (**Mohanty et al., 2019**) in terms of skill growth and productivity. Firms includes a variety of divisions / departments or project teams. They need to communicate with each other in order to promote seamless practises. Firms have intranets that host firm-related information to direct employees either for their everyday work or for troubleshooting purposes. Many of these intranets or portals are also being replaced by bots that speed up internal requests and deliver information instantly to their employees. Machine learning and artificial intelligence are a constant pursuit to seamlessly combine various roles into an effective and productive enterprise.

Corporate schooling of their workers is on best practises, benchmarks to be reached, strategies that promote smart work and frameworks for personal and professional growth. Firms maintain employee performance reports (**Gomes, 2017**) and uses human resource dashboards to produce various forms of statistics. Human resource research has garnered a lot of buzz in recent times with the goal of seeking returns on investment in human capital. Firms have always adopted the tradition of the induction programme (**Vargas-Hernandez, 2016**). It is now referred to as an orientation programme that incorporates learning about the vision, purpose, strategies, priorities, achievements, norms, culture and expected actions of the firm. Firms often encourages their staff to be mindful of industry patterns, competition practises, sustainability and development strategies as well as cultivating creativity and innovation.

Firm social accountability (**Tamvada, 2020**) has become a key issue in the modern years. Firms have discovered that the simple production of revenues and the development of the business is not enough. They have an opportunity to offer something back to humanity in comparison to the goods and services. They ought to be informed of and collect information on the different problems concerning civil society, whether it is schooling, the climate, health and hygiene, or other shortcomings. In addition to legislative responsibilities in India, firm social accountability has increased the quality of life of many degraded societies and individuals. Firms are also heading

towards the advancement of everyday life, such as renewable energy and proper waste management. It is also a tension relief for workers who have been working long hours at the expense of a biological clock.

Through constant technical changes, how an enterprise works is defined by its digital footprint through the utilisation of digital tools (**Ablyazov, 2018**). Websites now cater to the complex needs of the company. Artificial intelligence, artificial learning and data analytics, coupled with stable convergence at the cloud level have helped firms to be nimble while collaborating or interacting with their staff. Which has helped to speed up the management of transition, the dissipation of knowledge (to the degree that firms often have to identify their documents and guarantee that the correct information is provided) and progress at any stage of operation. Cloud-based offerings became the order of the day that enable businesses to be scalable and internationally functional, while handling privacy and regulatory strictures.

Any firm wants to succeed in a dynamic environment where rivalry is witnessed. Market analysis as well as market research in all operating fields is a crucial practise that defines the firm's graph. Market analysis is not all about similar goods and services. It is got to move past that. A variety of market factors can have an effect on the sector. Customer expectations (**Almsalam, 2014**) and anticipations can be complex and uncertain. The economics of the country and the conglomeration of nations often have a direct or indirect effect. Governance laws, business trends, as well as local customs, can have an effect. Analysis can take a variety of forms when it comes to gathering information and knowledge from the external environment. Surveys can be common, but panel forums, consumer gatherings, mystery shopping, conferences, conclaves, guest speakers and social networking activities aim to encourage consumers and channel participants to come up with their opinions and recommendations. Internal analysis is often quite important for the operation of the firm. The efficiency of staff and other factors ought to be monitored. This may take the form of self-assessments, 360-degree assessments, polls on company-related problems, psychological profiling, as well as growth versus objective monitoring. Research on productivity-related problems,

sales chain problems, products procurement issues, production line issues and innovative product growth issues may also be conducted (**Chlebus and Werbinska-Wojciechowska, 2016**). Continued progress is the motto of the twenty-first century, in which progress is readily embraced and innovations are proprietary. Which means that businesses improve their profitability.

4. Methods

The survey approach was used by unstructured personal interviews with higher education faculty with prior experience in corporate besides a concise research instrument. Mixed Method research design was utilised wherein purposive sampling coupled with random sampling was used where only higher education institution faculty with prior exposure to corporate work were targeted. This was deliberately done to ensure that the participants in the study were exposed to both higher education and corporate environments. The actual sample size was 263 faculty.

5. Qualitative Analysis

Qualitative analysis that stemmed from information furnished during unstructured interviews is presented here.

Higher education has a resemblance to companies when prizes were offered to the best professors depending on the student's vote. However, acrimonious discussions follow. Few universities have compensated faculty for publishing papers in world-renowned journals, although it has now been more or less discontinued. Higher education has to follow the business approach under which it may establish metrics to provide a scientific process to obtain success in a semester or a year. This can be focused on weighing in a variety of thoughts, including instruction, education, co-curricular and extra-curricular participation, academic growth, inventions, inventions, common practises and the improvement of the curriculum. The internal forum that makes it easy for faculty and students to post their studies or exchange ideas will serve

as a validation of itself. Faculty chosen solely as specialists in a given sector is a recognition that symbolises dedication, perseverance and competence.

Higher education can use this concept and construct new learning opportunities. Students and companies should be willing to collaborate with students for conversation, skills sharing, mentoring and job advice. Corporate executives may even be required to advise a few students at a time during their research cycle or whenever programmes are feasible. Study at the business premises fosters a practical environment that may be entirely different from that of books and faculties.

Curriculum needs to be changed from time to time and it will be wise to assess the impact of the new curriculum on student awareness and placements / entrepreneurships. Curriculum needs to be designed in such a way that there is an acceptable design that integrates interdisciplinary expertise and experimentation. Higher education should have portals that can only be accessed by faculty and students to promote a repository of knowledge, current trends and opportunities. Each department must provide a registry of best practises, faculty pedagogy, student assessments, statistics on progress and research records. Student assessment of faculty as well as institution-related criteria must be posted for public viewing. Separate portals should be set up for new faculty and students to chronicle history, achievements, values, priorities, operating procedures and committee heads, as well as other administrative staff. Higher education must strive to develop a good relationship with the business, not only for job placements, but also to pursue their assistance in mentoring budding managers.

Higher education will benefit a lot from global best practises when it comes to operating an enterprise. HEIs must therefore have a powerful hierarchy of academics who have a passion for student growth, the advancement of information creation, analysis and propagation, as well as a passion for the creation of society. Policies need to be framed for various aspects, such as recruiting of faculties at different stages, running of divisions, acquisition and allocation of services, infrastructural needs,

teaching aids, assessment and appraisal processes, administrative rules, as well as long-term and short-term priorities of the university. The organisation would need to produce a manual for the staff and a prospectus for students that details all the knowledge and objectives needed. Policies still need to be created for students who could perform badly in their classes, and remedial steps need to be implemented to boost their academic success as well as their overall progress. Higher education would have a mentor's advisory board on practises, goals and disciplinary steps to guarantee that the institution continues in the best path towards competence and quality.

Studies may be conducted in a number of fields, including interdisciplinary subjects, and there is a strong chance of added benefit whether it is funded internally or externally. A separate study repository may discuss topics such as funding options, plans, procedures, strategies, accounting and reporting, negotiating criteria, analysis methods, resources needed, as well as the consequences of such analysis for organisations and the economy. Such analysis may take the form of a literature summary, a summary of existing results, systematic inquiries, surveys, reports, interviews and social network surveillance. Academicians should be motivated to continually think creatively, challenge the status quo or put out proposals, act on them through organised analysis processes to ensure that higher education provides effective candidates to the industry – a win-win for HEIs and corporates.

The bulk of the organisation tends to run stand-alone websites or locally managed domains that are not capable of communicating with multiple portals. Organisations need to harness cloud-based technologies, since this would enable organisations to maximise their capacity. Information on research / projects and milestones, as well as cooperation with local and global educational / business organisations, will be more noticeable. Investment is necessary not only for the establishment of technology-associated infrastructure, but also for real-time updates. This is needed by the complex evolution and advancement of technology. Higher education will reach a move forward if students had access to infrastructure on a par with corporate level that will improve the chance of job placement.

Higher education was designed to be a respectable career. However, there has been a lot of discussion on this topic, given the reality that many institutions are revenue-oriented rather than genuinely focused on offering quality education. The reliance on accreditation has increased the need for extension programmes aimed at expanding nearby areas. Usually, most public tend to join local college, such as private college, which allow staff to take courses in personal and career advancement, including computer science and information technology. A portion of workers is also involved in ecological projects, including monitoring gardening, promoting sustainable farming, cleaning up garbage and other waste. Employees also teach certain vocational skills, as well as popularising the philosophy of creativity, since they believe these concepts deserve to be nurtured at a young age. Initiatives that partner with local governments and government services can improve the brand value of the HEI as a nation builder.

6. Quantitative Analysis

Faculty were asked to rate questions that dwelt on the extent of applicability of knowledge gained during their corporate stint for curriculum and other academic activities. This construct comprised five scale items that were rated on a 5-point scale where 5 meant always and 1 meant never. One-way ANOVA was applied to assess the extent of knowledge applicability based on corporate experience.

Prior corporate experience of facility (see Table 1) witnessed 3 slabs.

Table 1: Corporate Experience

Corporate Experience (years)	Count	%
Up to 2	124	47.15

3 to 4	73	27.75
Greater than 4	66	25.10

Table 1 reveals that the greater part of the higher education faculty possessed up to two years of prior corporate experience while a quarter of the number of respondents possessed prior corporate experience of more than four years.

Hypothesis H_1: Perception of applicability of knowledge gained during prior corporate experience differs apropos higher education faculty groups with varying corporate experience.

Null Hypothesis H_{01}: Perception of applicability of knowledge gained during prior corporate experience does not differ apropos higher education faculty groups with varying corporate experience.

The results of one-way ANOVA and post-hoc are summarised in Tables 2 and 3 respectively.

Table 2: ANOVA

	Sum of Squares	**df**	**F**	**p**
Between Prior Corporate Experience Groups	41.560	2	20.780	0.042
Within Prior Corporate Experience Groups	1679.467	260	6.459	
Total	1721.027	262		

Table 3: Post-hoc Duncan Analysis

Corporate Experience (years)	N	Subset a	Subset b
Up to 2	124	12.67	
3 to 4	73	12.78	
Greater than 4	66		13.62

Table 2 revealed that p was significant (5%) and the null hypothesis was rebuffed. Post-hoc resulted in two subset groups: a (up to 2 years, and 3 to 5 years) and b (greater than 4 years).

7. Conclusion

Knowledge calculation and knowledge analysis are two essential objectives that all HEIs ought to pursue. Pursuits can be directed towards the measurement of the HEI's human resources. This may eventually result in the creation of indexes and ratios, and the estimation of the return on investment. Information mapping aims at gaining and retaining information arising from inside or beyond the institution and ensuring that it is disseminated in the correct way by the efficient usage of information technologies. Perception of applicability of knowledge gained during prior corporate experience differs apropos higher education faculty groups with varying corporate experience. Thus, more the prior corporate experience, better would be the applicability of knowledge gained during the corporate stint. This would make the course more beneficial to the students for getting themselves better equipped to face the corporate challenges down the line.

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Knowledge Circulation and Handling, Psychological Capability and Culture in HEIs

Lily Regina Arthi S.[1] and M. Hema Mary[2]

[1]Research Scholar, A.V.S. College of Arts & Science, Salem & Asst. Prof., St. Anne's Degree College for Women, Bengaluru, India.

[2]Research Supervisor, A.V.S. College of Arts & Science, Salem, India.

regimoses@yahoo.com

Abstract: The hot beds of knowledge are academic institutions that are instrumental in stimulating as well as distributing knowledge and related aspects, either in raw or processed form, to enable useful application for growth and development. Awareness for smooth travel needs the assistance of the organisation and its associates. The organisation's culture as well as its members' psychological capacity will influence the dissemination of knowledge or otherwise. A research was launched to explore issues such as organisational culture, psychological capability, knowledge circulation and knowledge handling in Karnataka arts and science higher education institutions, using regression, ANOVA and Duncan tests to evaluate 381 faculty perceptions.

Keywords: Organisational Culture, Psychological Capability, Knowledge.

Article History

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Corresponding author: Lily Regina Arthi S., Email id: regimoses@yahoo.com

1. Background

There was one thing in common among academic institutions which have stood the test of time. They have always focused on the continuous exploration of data and information by their institutional representatives for the purpose of providing quality and appropriate education. In addition to managing circumstances that involve rapid decision-making, the level of psychological capacity is essential to stimulating creativity and innovation, among other attributes. Information has to be disseminated to meet the expected participants and must be properly channelled.

2. Research Rationale

The manner in which information is handled depends on both individuals and the organisation. Knowledge management can only be optimised if internal and external synergies exist: internal synergies between institutional members and external synergies between the organisation and the stakeholders. Hence it is essential to research how individuals and the organisation contribute to the dissemination of knowledge and to what degree community, sophistication and level of dissemination have a role to play in the management of knowledge.

3. Research Objectives

- To determine the effect on information handling on organisational culture, psychological capability and level of information circulation.
- To explore the effect of job experience as well.

4. Literature Review

4.1 Knowledge Circulation and Handling

Obeso et al. (2020) sought to assess the individual imprint of different knowledge management practices (KMPs) on firm results. The goal was also to examine the organisational learning as an intermediary between each KMP and results. Repository of knowledge and accomplishment did not appear to have any link; however, the flow and genesis of knowledge foster accomplishments. Learning of the organisation plays an intermediary role between accomplishments and flow / genesis of knowledge. Secondly, in addition to the performance, managers should concentrate their attention on KG-related activities and implementation. Managers should commit to fostering a community that values an open mind, vision that is shared and plenty of confabulation.

Nair and Munusami (2019) examined information management activities in higher education institutions in Malaysia. The study emphasised that knowledge management is concerned with the development, capture, organisation, collection, sharing and application of knowledge. The study found that knowledge management would enable academic institutions to enhance instructional quality in terms of service and efficiency. Knowledge management also helps to achieve visionary leadership, an effective environment for knowledge creation, transition and sharing, as well as enhanced study and innovation. Knowledge management activities consisted of contact, networking and social relations. The results of the study disclosed that educational institutions should make successful plans to promote knowledge development

through knowledge development and sharing. It was concluded that information management could make it possible for faculty members to use this expertise in an enriched learning and teaching environment.

Knowledge handling in tertiary institutions in Nigeria was investigated by Ogunbanwo et al. (2019). The study explored the relationship between information, familiarity and existing knowledge handling status. The study found that there was a major difference in understanding of information handling between private and public universities. In addition, perception was also significantly different among academic faculty and students. The relationship between perception, present status and acquaintance was positive. The findings showed that the increase in the level of understanding improved both the current status and the level of acquaintance that is often responsible for the effectiveness of information handling. It was concluded that the importance of information handling to achieve creativity and success should be acknowledged by educational institutions. The study also indicated that among tertiary institutions, information handling should be constantly improved.

Alshahrani (2018) tried to examine the essential success factors required for knowledge management in universities. The research considered a variety of internal and external knowledge management variables. The internal factors for knowledge management were teamwork, preparation, infrastructure, leadership , organisational culture , structure, empowerment, strategy and knowledge structure. External factors were inconsistency, ambiguity, financial considerations, socio-cultural aspects and ethical concerns. Results have shown that knowledge creation and dissemination in educational institutions in both nations has not been an explicit practise and has never been a statistic system. Findings showed that there was a tendency for faculty members to share explicit information in the context of study, publication and policy in both countries. In conclusion, successful knowledge management strategies have been found to have a direct role to play in establishing sustainability and competitive advantage in higher education.

Ngoc-Tan and Gregar (2018) attempted to evaluate the effect of knowledge management on innovation in higher education institutions in Vietnam. The study showed that the knowledge management process consisted of knowledge creation, acquisition, distribution and usage. In addition , knowledge management activities included leadership , communication, learning process, rewards, preparation and performance assessment of faculty members. The results of the

study showed that administrative innovation and technological innovation were the result of information management on innovation. Findings have shown that there is no significant association between knowledge acquisition and administrative innovation. In addition, there was no major correlation between Information Circulation and administrative innovation. However, there has been a strong correlation between information management activities and technological innovation. It was concluded that knowledge management activities should be structured to improve administrative creativity in higher education institutions.

Omotayo and Salami (2018) conducted a study to track the use of social media for information sharing among students. The study stressed that social media has become a crucial information exchange platform for students. Students primarily use LinkedIn, WhatsApp, Facebook, YouTube and other social media networks to learn and exchange different knowledge. The study showed that attitudes and social impact were important factors that encouraged students to use social media to share information. Findings also showed that the higher the attitude to the use of social media for knowledge sharing, the higher the probability of knowledge sharing among students. It was concluded that students establish or enter academic knowledge sharing organisations in social media, which in turn disseminate new and novel information about their studies. The study suggested that institutions should build courses on social media and its knowledge sharing initiatives as an off-the-shelf lecturer-led discussion group to encourage knowledge sharing.

Mazhar and Akhtar (2018) investigated the relationship between knowledge management and innovation among private and public sector teachers in Pakistan. The study considered calculation, technology, community, leadership and method as aspects of knowledge management in addition to innovation. Results showed that there was a substantial correlation between dimensions of information handling such as measurement, technology, community, leadership and innovative processes. In addition, there was no substantial difference in skills, experience, nature of work and form of university. Yet there was a substantial gap in the age of the teachers in terms of information handling. Findings have suggested that there was no substantial difference in innovation in terms of age, university, gender, experience and nature of work. Differences were established with respect to the designation, qualifications and form of university. It was concluded that there was an important positive correlation between innovation and information management between private and public university teachers.

4.2 Psychological Capability

Karakus et al. (2019) planned to assess the attitudinal outcome of the psychological capital of the instructor. It also assessed the relationship between psychological capital and work satisfaction, organisational engagement, motivation and intention to leave. Results showed that teachers with high psychological resources had a favourable perception of events. In addition, they had a high degree of organisational engagement and job satisfaction and found work motivation. Findings showed that those with high psychological capital showed a higher dedication to work that resulted from happiness. Those people had fewer intention of leaving school. It was found that teachers with high psychological capital had strong psychological tools and were less prone to negative effects on their work experience. It was concluded that psychological capital had a positive impact on the motivation and engagement of teachers through the mediating effect of job satisfaction.

Demirtas and Kucuk (2019) sought to explore the psychological capital of teachers in Turkey. The study considered educational status, branch, professional seniority, marital status, and gender to be psychological capital perceptions. Results suggested that the psychological capital level of the instructor was found at a moderate level with an optimism component, but had a high level of hope, resilience and self-efficiency. It was investigated that psychological resources varied substantially in terms of optimism and dependency in favour of female teachers. The study found that there was a important association between the psychological understanding of capital and the marital status of teachers. Moreover, there was no substantial difference between psychological capital interpretation and educational level, professional seniority and the branch of work. It was concluded that the psychological resources of teachers varied with their personal qualities.

Abosaif (2018) looked at the role of quality of work life in the relationship between psychological capital and organisational commitment among faculty members. The study recognised that connectivity, general life, security, career development opportunities and wage justice were dimensions of quality of work life. Four forms of psychological capital and three dimensions of dedication have also been taken into account. Findings have shown that psychological capital plays a direct role in predicting the quality of the working life of faculty members. Results have shown that the quality of work life could be improved by an optimal workload, better policies on the workplace, performance evaluation and higher benefit for

workers. It has been found that the presence of a higher standard of working life among faculty members would increase their organisational commitment and commitment to work. It was concluded that the quality of work life had a mediating impact between psychological resources and the organisational engagement of teachers.

4.3 Organisational Culture

Naveena (2019) looked at the job satisfaction of academics in the higher education sector. Effective institutions have increasingly seen work satisfaction as the product of a successful organisational culture. Academicians' work satisfaction has been found to be primarily based on superior-subordinate relationships, job security, advancement, student feedback and remuneration. In addition, work-life balance, work climate and peer group support were directly related to the job satisfaction of academics. In addition, academics were supposed to be inspired and able to stay longer if they offered decent pay, elevation and a better work climate. Findings have shown that work life balance and an effective institutional culture are driven to improve the individual success of academics in the higher education sector. It was concluded that the work satisfaction of academics improved academics as well as the efficiency of the institution.

Batugal (2019) looked at the organisational culture, engagement and work satisfaction of faculty members in private higher education institutions. Organizational culture has been shown to promote beliefs and greatly enhance the organisational engagement of faculty members. Results have shown that happy faculty members have increased organisational loyalty and are likely to be positive about their institution, to help others and to go beyond reasonable anticipation in their work. Findings have showed that various dimensions of work satisfaction do not predict normative, consistency and affective engagement. As a result , a high level of organisational engagement was related to an efficient favourable organisational culture and a high level of work satisfaction. It was concluded that highly educated and skilled faculty members appeared to express higher levels of organisational commitment.

Indacochea et al. (2018) analysed the governance of organisational culture in public institutions in the education sector in Ecuador. Organizational culture has been diverse over the life of the organisation as a result of the engagement of participants. Organizational culture has been linked to numerous factors that have contributed to institutional strength. Studies have shown that corporate culture has had a profound effect on norms, practises, attitudes and beliefs that have helped to change employee behaviour. Findings also revealed that successful

management of organisational culture dictated the degree of cooperation and attention of faculty members in the performance of their duties. Moreover, while the positive interaction between the instructor and the student has been valued, it has largely depended on the proper management of the organisational culture. It was concluded that corporate culture management was aimed at delivering better services.

5. Methodology

Deliberate sampling ensured that 381 faculty in higher education employed in Karnataka answered queries with regard to organisational culture, psychological capability, knowledge circulation and knowledge handling in institutions offering science, arts and commerce courses. The level of influence that their job experience had on the chosen variables was also ascertained.

6. Analysis and Results

6.1 Regression

Dependent Variable: Knowledge Handling (Y).

Predictors: Knowledge Circulation (X_1), Organisational Culture (X_2), Psychological Capability (X_3), Correlation and F-ratio values are shown in Tables 1 and 2. Table 3 depicts the coefficient values.

Table 1: Correlation

R	R Square	Adjusted R Square	S.E. of Estimate
0.588	0.346	0.340	2.220

Table 2: F and p

	Sum of Squares	df	Mean Square	F	p
Regression	981.651	3	327.217	66.381	0.000**
Residual	1858.386	377	4.929		
Total	2840.037	380			

** p value is significant below 1 percent.

Table 3: Coefficients

Variables	B	S.E. of B	Std. Beta	t	p
Constant	4.301	0.843		5.102	0.000**

X_1	0.238	0.047	0.222	5.016	0.000**
X_2	0.348	0.032	0.526	10.953	0.000**
X_3	0.093	0.039	0.114	2.416	0.016*

* Denotes significance at 5 percent level; ** Denotes significance below 1 percent level.

$Y = 4.301 + 0.238X_1 + 0.348X_2 + 0.093X_3$

The unitary progress of the Knowledge Circulation would induce an improvement of 0.238 units in Knowledge Handling. The unitary development in Organisational Culture would promote an improvement in 0.348 units in Knowledge Handling. The unitary progress of Psychological Capability will induce Knowledge Handling to be increased by 0.093 units.

6.2 ANOVA (1-way)

H_1: Perceptions regarding psychological capability, knowledge circulation, organisational culture and knowledge handling vary across job experience classes.

H_{01}: Perceptions regarding psychological capability, knowledge circulation, organisational culture and knowledge handling do not vary across job experience classes.

Table 4: Job Experience and its Influence

		Sum of Squares	**df**	**Mean Square**	**F**	**p**
Psychological Capability	Between	27.886	2	13.943	1.265	0.283
	Within	4166.103	378	11.021		
	Total	4193.990	380			
Knowledge Circulation	Between	61.099	2	30.550	4.794	0.009**
	Within	2408.701	378	6.372		
	Total	2469.801	380			
Organisational Culture	Between	124.140	2	62.070	3.679	0.026*
	Within	6376.700	378	16.870		
	Total	6500.840	380			
Knowledge Handling	Between	53.153	2	26.577	3.605	0.028*
	Within	2786.884	378	7.373		
	Total	2840.037	380			

* significant at 5%; ** significant at 1%

Job experience (Table 4) appeared to have an effect on all variables except psychological capacity. Duncan test (Tables 5-7) was used to assess the homogeneity between sub-groups.

Table 5: Homogeneity Ascertainment for Knowledge Handling sub-groups

Job Experience (years)	**N**	**Alpha = 0.05**	
		1	**2**
3 to 8	193	11.85[d]	
Above 8	99		12.58[e]
Below 3	89		12.63[e]

d and e are sub-groups

Two sub-groups (Table 5) were observed: group d (3-8 years) and group e (up to 3 years, and above 8 years).

Table 6: Homogeneity Ascertainment for Organisational Culture sub-groups

Job Experience (years)	**N**	**Alpha = 0.05**	
		1	**2**
3 to 8	193	19.04[d]	
Below 3	89	19.62[d]	19.62[e]
Above 8	99		20.41[e]

d, e and de are sub-groups

Three sub-groups (Table 6) were observed: group d (3-8 years), group de (below 3 years) and group e (above 8 years).

Table 7: Homogeneity Ascertainment for Knowledge Circulation sub-groups

Job Experience (years)	**N**	**Alpha = 0.05**	
		1	**2**
3 to 8	193	12.56[d]	
Below 3	89	12.92[d]	12.92[e]
Above 8	99		13.53[e]

d, e and de are sub-groups

Three sub-groups (Table 7) were observed: group d (3-8 years), group de (below 3 years) and group e (above 8 years).

7. Conclusion

Organizational culture, psychological capability, and knowledge circulation had a beneficial relationship with knowledge handling. Organizational culture had a larger role to play in shaping the extent of knowledge handling, while psychologic capability had the least part to play.

This suggests that if institutions set up a strong culture, faculty will comply. Such a scenario may then, to a certain degree, neglect the individual capacity level of the faculty in the short term; such faculty can be prepared to upgrade on a continuous basis in order to potentially shape students' achievements.

Job experience has been shown to have an effect on all variables except psychological capability. To some degree this may be valid, since the higher the ladder, the more experience and skills one possesses. However, this could also be a misconception because, in the new century, there is no need for number of years of job experience to be equated with talent and ability to handle knowledge.

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A STUDY ON EFFECT OF ENTREPRENEURSHIP ON ENTREPRENEURIAL INTENTION: FOCUSING ON ICT MAJORS

Sheetal G

Asst. Professor, Department of Business Administration,Research Scholar- Garden City University
St. Anne's Degree College for Women, Bangalore.

Abstract

The purpose of this study is to show effect of entrepreneurship on entrepreneurial intention. Currently, the long-term global economic crisis is accelerating, and the concerns for future uncertainties are spreading throughout our society. The ICT majors in Busan region are no exception so that business start-up is being considered as a new alternative to survive and grow in such uncertain environments at home or abroad. That is, business start-ups and entrepreneurship are being emphasized as a strategy that individuals can change not only one's own life but also the fate of a region and even the destiny of a country.

1. Introduction

Currently, the concerns for uncertain future due to a long-term economic depression and global economic crisis are spreading throughout our society. Moreover, along with the trend in industrial scale downsizing and profit generation with a small manpower cost, concerns about the increase of youth unemployment due to jobless growth are deepening. According to National Statistical Office of Korea, the youth unemployment rate reached the highest record of 9.8 per cent in 2016. This was the value 0.6 per cent higher than the same rate in 2015. Many countries agree that the business start-ups are the solution for youth unemployment so that our government is also expending much effort in developing the policies to stop the increase in youth unemployment rate and create more jobs by instilling youth entrepreneurship and creating a positive atmosphere for business start-ups in this grave period of low economic growth. This method is important and also useful in maintaining steady economic and social growth. The young people at present are living in an era where a variety of new businesses are being continuously launched through internet media, and industries are developing according to the stretch of the imagination for contents and software. Thus, this study attempts to identify what factors of entrepreneurship affect innovative start-ups like ICT-based businesses that are quite effective in creating jobs.

2. Research background

2.1 Concept of entrepreneurship

Since the dawn of the twenty-first century, the importance of entrepreneurship started to be recognized as an element of promoting economic growth so that the researches for finding how entrepreneurship contributes to the growth have become active. The definitions mainly used for the studies related to entrepreneurship are as following: "Seizing an opportunity regardless of available resources" (Stevenson and Jarillo, 1986); "The way of inferring, thinking and behaving focusing on overall approach and specific leadership based on the importance of recognizing the opportunities" (Timmons, 1999); and "The spirit of challenge and adventure that commercializes the opportunities seized at risk" (Peter F. Drucker). Meanwhile, Hisrich and Peters (1998) described entrepreneurship as a discernment that an enterpriser considers necessary, rather than defining it as his/her psychological state. Song (2011) defines the term as an enterpriser's will to create a new business through management innovation by showing his/her challenging spirit. Park and Ahn (2016) explained to the young CEOs that entrepreneurship is an important factor in improving their business performances, and they need to expend the effort to cultivate their business competency. Although the definition of entrepreneurship varied depending on the situations which individual business, country or generation faced, the definition mainly used for recent studies is Miller's (1983) concept of definition which states that entrepreneurship is a behavior that re-combines or re-distributes resources with innovativeness, enterprising spirit and risk-taking mind to create a new

value. The core of entrepreneurship is a positive energy that challenges or changes existing conventions by acutely responding to the changing environments with an innovative and creative mind. Cultivating entrepreneurship for young people will be effective in solving the problems concerning youth unemployment, low and falling economic growth rates while contributing to Korean economic growth.

2.2 Elements of entrepreneurship

There are varied opinions about the elements of entrepreneurship among the scholars. Schumpeter (1939) defined entrepreneurship as the driving force of modernization having the characteristics such as innovation-seeking spirit, pro-activeness and risk-taking tendencies. Lassen *et al.* (2006) distinguished the characteristics of entrepreneurship as autonomy, adventurousness, innovativeness and future-orientation. Based on the recent detailed and systematic researches conducted for the nature of entrepreneurship, the definition of entrepreneurship by Miller (1983), who has claimed that the elements such as pro-activeness, innovativeness and risk-taking consist entrepreneurship, became the dominant view. Thus, this study also considers these three characteristics as core elements.

2.2.1 Innovativeness.

Van de Ven (1992) defined that innovativeness, which can be regarded as the most critical element of entrepreneurship, is an organizational and cultural management to recognize the necessity of new ideas and behaviors, while Lumpkin and Dess (1996) maintained that it is a crucial element for promoting new products and services, novel experience, technological leadership, R&Ds for new methods and creativeness. Meanwhile, Lee (1999) argued that innovativeness is one that an organization emphasizes the technological innovation or actively conducts product designing, market survey as well as product advertisement through product or market innovation based on process innovation and experimental management technique. Kang (2011) suggested that innovation is one of the elements of entrepreneurial strategies which can be an important means of promoting investments for consistent development of new technologies and improvement of products to gain a competitive advantage. Therefore, with all of these definitions and contentions, innovativeness should be considered as a critical element of entrepreneurship with which companies can adapt themselves to the rapidly changing environment in the age of forth industrial revolution.

2.2.2 Risk-taking.

Risk-taking is one's or organization's desire to actively capture and pursue opportunities in an uncertain environment accepting the risks involved. Jung (2015) defined this term as a risk preferring decision-making behavior in an uncertain environment.

While the entrepreneurs with low risk-taking tendency try to avoid risks or make decisions cautiously, ones with high risk-taking inclination tend to make decisions faster to capture opportunities (Bin and Park, 2002). Meanwhile, Sexton and Bowman-Upton (1986) maintained that risk-taking indicates the degree of entrepreneur's will or tendency to boldly challenge uncertainties or enjoy them. Risk-taking is meaningful only if an entrepreneur is proactive in seizing an opportunity, not just accepting the risks.

2.2.3 Pro-activeness.

Pro-activeness is a future-oriented disposition that allows an entrepreneur to forecast future when he is supposed to make a decision strategically. The entrepreneur takes active behaviors after forecasting future opportunity and market demands. Lumpkin and Dess (1996) maintain that pro-activeness means a company preoccupying the market opportunity or holding a predominant position in the market. Thus, with pro-activeness, companies develop new products and attempt to find new opportunities in a highly uncertain environment or actively endeavors to secure a leading/discriminative position in a newly created market (Kim, 2015). Covin and Slevin (1991) claimed that pro-active entrepreneurs compete more aggressively than the others. This means that they are not just simply counteracting their competitors but also consistently trying to introduce some new products/services development and management techniques into their companies. That is,

pro-activeness can be defined as a tendency or behavior of actively participating in the market changes one step ahead of their competitors (Kim, 1994).

2.3 Leadership

It is possible to say that leadership is an important element in many success factors for start-ups and their continuous growth, but it is not easy to define them with a few words and its definition varies depending on the approaches taken individual researchers. Bass (1990) considered leadership as an interaction process among the group members to structure or restructure their perceptions and expectations. Meanwhile, Northouse (2013) defined leadership as a process where an individual attempt to affect group members to achieve their common goal. However, Katz and Kahn (1978) defined it as one's influence that allows to produce more results than the results obtained from just carrying out everyday orders. A strong leadership that leads to harmonious and organized business activities is essential to achieve more than expected. This study attempts to analyze and substantiate the impact of a strong leadership on the entrepreneurial intentions and the success of start-ups.

2.4 Network

In a complex information-oriented society like present, it is not easy for small-scale companies to satisfy economic demands while maintaining their competitiveness just by themselves, as they often lack some of the necessary resources. Creative ideas and networks are essential for achieving a successful business performance.

Huggins and Johnston (2010) claimed that it is indispensable to use some of the external resources to surmount the difficulties in start-up businesses caused by the lack of internal resources. Similarly, Choi (2010) supported this by suggesting that start-ups will be able to optimize their performance by using the resources they lack by establishing some external networks. According to Jang (2013), the network activities that can be regarded as the personal and social activities of an entrepreneur refer to the behavior of using external resources for his/her start-up process depending on his/her internal capability. The importance of networks and their roles are being emphasized in many types of research conducted for start-ups. Thus, this study also attempts to identify how network establishment and their activities affect the entrepreneurial intention of ICT majors in Busan area.

2.5 Entrepreneurial intention

The concept most widely used to understand the phenomena associated with the establishment of a business is entrepreneurship. Analyzing the definition of entrepreneurship found in Morris's (1998) studies, it was possible to find that entrepreneurship has been often emphasized when one plans to establish a company. Yoon (2004) considered entrepreneurial intention as the first step in establishing one's business and a positive attitude and experience toward business start-up should be preceded prior to actually making a decision to start his/her business. Krueger *et al.* (2000) defined entrepreneurial intention as an individual's effort to start his/her business so that without it, one would not be able to proceed further. Considering that starting a business can be fulfilled through calculate and intentional activities, the first step, entrepreneurial intention, is essential for understanding overall phenomena involved in business start-up, as it is a key element in determining the early characteristics of start-ups (Bird, 1988; Katz and Garter, 1988). Shapero (1981) claimed that the roles of entrepreneurs with entrepreneurial intentions are important for the nation, region or organization to have their power of recuperation to ride out economic downturns and self-reforming traits. Therefore, it is important for our society to contribute to continuous economic growth by inculcating a positive perception in the minds of students with entrepreneurial intentions to promote and activate start-ups and let the ones with potentials to challenge and succeed.

3. Research method

To study the magnitude of influence factors of entrepreneurship of Busan-area ICT majors over their entrepreneurial intentions, we have randomly extracted the samples from the ICT majors in Busan area during the period from November 1, 2016 to February 15, 2017. A five-point scale was used for

the survey. A total of 250 questionnaires were distributed, and 147 (71.70 per cent) of them were collected eventually, excluding unreliable responses. For the empirical analysis of influence factors, the SPSS 23.0 program was used. Based on the study model shown in Figure 1, a series of hypotheses were developed to deduce the influence factors and put to verification afterward.

4. Result of empirical analysis

In this study, the effect of the independent variables, entrepreneurship, leadership and network promotion factors on entrepreneurial intention were analyzed using Pearson's correlation analysis. The result of the analysis shows that the correlation coefficient between network and entrepreneurial intention is very high, and overall, the measurement factor has a positive (+) relationship Table I.

A multiple regression analysis was used in this study to verify the effect of facilitating factors of entrepreneurship on the entrepreneurial intention (dependent variable). Here, independent variables were also included for analysis (i.e. simultaneous input).

From the results obtained from the multiple regression analyses performed against all the respondents, the applied regression equation was effective in explaining the dependent value, as the overall explanatory power for activation of entrepreneurial intention was 49.4 per cent, *F*-value of analysis model was 38.352 and *P*-value 0.000. Also, as the variance inflation factor (VIF) showed the maximum value of 1.616 while minimum tolerance was 0.619, it was determined that there was no multicollinearity problem. Specifically, the factors such as pro-activeness in entrepreneurship, leadership, and network were analyzed to the statistically significant variables at $P = 0.05$. However, innovativeness and risk-taking factors were excluded at this level. Observing the relative effect of each independent variable on entrepreneurial intention through a standardized regression coefficient, the pro-activeness in entrepreneurship was most influential (=0.603) from the positive (+) side Table II.

For the study, some hypotheses for the influential factors of entrepreneurship which should be considered to promote the entrepreneurial intentions of ICT majors in Busan area have been developed and put to empirical analysis using a statistical technique. First, as for the verification by regression analysis, *H1*, which assumes that entrepreneurship will give a positive influence on entrepreneurial intention was partially accepted compared to leadership which was fully accepted. Innovativeness and risk-taking in *H1-1* and *H1-3*, respectively, were rejected as they did not have a positive influence, whereas pro-activeness (*H1-2*) was accepted. Such results are quite the contrary to the results presented in Hwi-Yeol Choi's (2016) study where he concluded that innovativeness and risk-taking tendencies had a significant influence on entrepreneurial intention while pro-activeness did not. This may have resulted from the fact that his survey was conducted for the general college students rather than for the ICT majors. The difference is that this study has targeted the ICT majors who have sufficient knowledge and experience that the high-tech industries involving artificial intelligence, robotics or other cutting-edge technologies can lead to a social innovation after being internalized as a foundation of our current society. It is true that the knowledge associated with the 4th Industrial Revolution and in their potentials also contributes to such an innovation. Thus, this study has empirically proven that both innovativeness and risk-taking are not that influential, at least for the ICT majors in Busan area.

Meanwhile, *H1*-1 was accepted such that it is possible to determine that pro-activeness of entrepreneurship has a positive influence on entrepreneurial intention. This result is consistent with most other research results which concluded the same (Yoon, 2012b; Park and Kim, 2009; Yoon, 2012a; Kim, 2016). Pro-activeness can be considered as the tendency that actively solves problems by positively dealing with changes and pursues something distinctively novel to find new opportunities. The above result also means that pro-activeness is necessary for all the business founders for them to occupy a dominant position in a fluid and rapidly changing market on the threshold of the 4th Industrial Revolution.

Next, for the *H2*, the studies on correlations between leadership and entrepreneurial intention are quite insufficient in the ROK. Yoo (2014a, 2014b) and Kang and Ha (2015) are the typical

researchers who claim that leadership has a significant influence on entrepreneurial intentions. Likewise, this study accepted the hypothesis that assumes the same.

Finally, as for the *H3,* most of the researches conducted for entrepreneurial intention find that network(s) do have a positive influence on entrepreneurial intention (Burt, 1992; Yoo, 2012; Yoon, 2004) also maintains that the network environments are essential for producing a large number of start-ups. These researchers verified that various types of networks actually stimulate entrepreneurial intention. As these precedent studies, the hypothesis in this study which made the same assumption was accepted. This means that a practical and operational network(s) are vital to students' business success. It is also true that entrepreneurial intentions can be highly inspired when the student business founders themselves endeavor to understand and perceive various aspects of start-ups by actively participating in a variety of experimental environments or network/leadership activities with a positive mind and attitude (Table III).

5. Conclusion and policy proposal

Current young people in the Republic of Korea (ROK) are in the midst of the 4th Industrial Revolution which goes beyond the information-oriented society. This new era focuses on a variety of novel ideas including artificial intelligence and advanced robotics. The ROK government and most Korean universities should foster intelligence information industry to respond to the requirements of this era and enhance global competitiveness of start-ups by promoting an appropriate start-up ecosystem to create more jobs. Many developed countries around the world view creating quality jobs as the most important measurement for conflict resolution and income imbalance. Developed countries such as the EU, America, Japan and as well as emerging countries such as China are pursuing on the development of existing industries and the creation of new industries as core policies (Ministry of Science, ICT and Future Planning, 2014) based on ICT development. The Korean government also needs to make efforts, basing on ICT, to expand the employments and also the number of young entrepreneurs who have a proper entrepreneurship or a challenging spirit to contribute to the national economy. Thus, a study was conducted to determine what factors of entrepreneurship promote the entrepreneurial intention of ICT majors in Busan area. Also, an empirical analysis was performed by deducing the factors that need to be considered to activate the entrepreneurial intention in the universities. The existing factors that affected the entrepreneurial intention of university students were mostly structurally defined ones such as entrepreneurship education, support policies for start-ups and relevant educations which would drive the students to pursue start-up businesses. However, these factors, or impact categories, were often theoretical and indoctrinating that they were somehow ineffective as a base for creating jobs for college students or realizing the creative economy. For this reason, the importance of entrepreneurship which can give a positive impression to these people's entrepreneurial intentions has been studied and verified not only in prior treatises (ByongGeun, JO 2013, KIM, 2016 etc.) but also in this research paper.

In the study, pro-activeness of entrepreneurship was found to be most influential to students' entrepreneurial intentions. In Finland, innovative entrepreneurs are deliberately cultivated based on the saying, "entrepreneurs are not born but are trained through education". This means that without entrepreneurship education, students' entrepreneurial spirit cannot be cultivated (Park, 2010). This paper also considered that efforts to review the means to foster pro-activeness at the practical level and expanding them are critical to improving the entrepreneurial intentions of the students. It has been also verified that the substantive indirect experiences such as leadership and network activities are highly influential to the entrepreneurial intentions of ICT majors. Existing studies (Yoon, 2004; Yoo, 2012) showed that establishment of networks from which the students can receive help while they are preparing for their start-ups or afterward are significantly important to the improvement. This study also proves that, which is focused on ICT departments in Busan, the student with high pro-activity and enhanced leadership actually respond more effectively to the difficulties or the fluidal variables during their start-up preparations than those who received the lecture-oriented start-up education. Therefore, entrepreneurship education that will boost pro-activity

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and practical experience which can lead to actual start-ups are essential, in addition to well-trained leadership and well-organized networks. The government and relevant authorities should focus on providing more diverse educational programs to invigorate youth start-ups, and we expect that this study will be useful for that purpose.

Figures

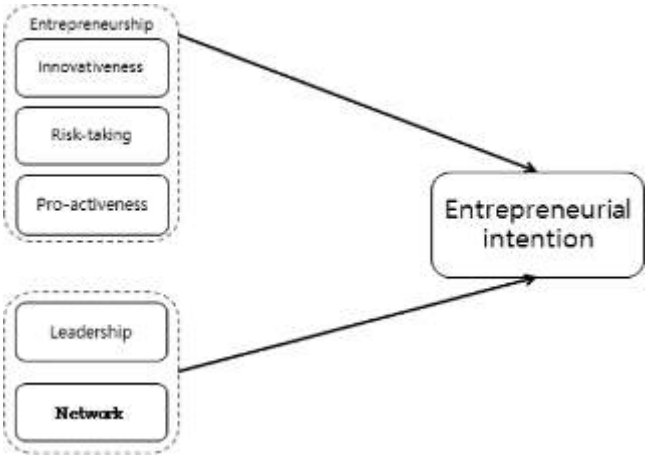

Figure 1.
The study model

Table I.
The correlation analysis for the effect of entrepreneurship over entrepreneurial intention

Measurement factors	**Innovativeness**	**Pro-activeness**	**Risk sensitivity**	**Leadership**	**Network**	**Ent**
Innovativeness						
Pearson correlation	1					
Significance probability (two tailed)						
N	147					
Pro-activeness						
Pearson correlation	0.528**	1				
Significance probability (two tailed)	0.000					
N	147	147				
Risk sensitivity						
Pearson correlation	0.150	0.396**	1			
Significance probability (two tailed)	0.070	0.000				
N	147	147	147			
Leadership						
Pearson correlation	0.306**	0.580**	0.340**	1		
Significance probability (two tailed)	0.000	0.000	0.000			
N	147	147	147	147		
Network						
Pearson correlation	0.240**	0.499**	0.255**	0.525**	1	
Significance probability	0.003	0.000	0.002	0.000		

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Measurement factors						
	Innovativeness	**Pro-activeness**	**Risk sensitivity**	**Leadership**	**Network**	**Ent**
(two tailed)						
N	147	147	147	147	147	
Entrepreneurial Innovativeness						
Pearson correlation	0.369**	0.646**	0.296**	0.530**	0.678**	1
Significance probability (two tailed)	0.000	0.000	0.000	0.000	0.000	
Pearson correlation	147	147	147	147	147	147

Note:
**The correlation is significant at 0.01 level (two tailed)

Table II.
The result of regression analysis for the influence factors on entrepreneurial intention

	Non-standardized coefficient		**Standardized coefficient**			**Multicolli**
Category	**B**	**Standard error**	**β**	***t***	**Significant**	**Tolerance**
Entrepreneurship						
Innovativeness	0.044	0.077	0.043	0.567	0.572	0.717
Pro-activeness	0.519	0.070	0.603	7.455	0.000	0.619
Risk-taking	0.036	0.049	0.051	0.735	0.464	0.839
Leadership	0.526	0.066	0.551	7.968	0.000	0.724
Network	0.227	0.065	0.241	3.480	0.001	0.724
R 0.708	R^2 0.501	Radi2 0.494		*F* 38.352		Significant

Table III.
Verification result of hypothetical influence factors of entrepreneurship on entrepreneurial intention

Hypothesis	**Accept/reject**
H1. Entrepreneurship will have a positive influence on entrepreneurial intention	Partially acceptable
H1-1. Innovativeness will have a positive influence on entrepreneurial intention	Rejected
H1-2. Pro-activeness will have a positive influence on entrepreneurial intention	Accepted
H1-3. Risk-taking will have a positive influence on entrepreneurial intention	Rejected
H2. Leadership will have a positive influence on entrepreneurial intention	Accepted
H3. Networks will have a positive influence on entrepreneurial intention	Accepted

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Predicting the Performance in Learning and Recommendations to Improve Hearing Impaired Students in Special Education

Ms. Marina. B [1], Dr. Senthilrajan. A[2]

[1]Research Scholar, Alagappa University, Karaikudi, Tamilnadu, India
E-mail: reenajerald@mail.com

[2]Research Supervisor, Professor and Director, Department of Computational Logistics, Alagappa University, Karaikudi, Tamilnadu. E-mail:directorccalu@gmail.com

ABSTRACT: Education was one of the fundamental need and rights for all people across the world. Every government formulates different schemes to ensure education for all as it results in the countries growth on various aspects. The people who are physically impaired (PI) are also included in these aspects. The performance of those students requires continuous monitoring to acknowledge their attention towards studies and to guide them towards better academic achievements. In this paper, the Recurrent Neural network (RNN) and Hybrid firefly – particle (HFP) algorithm based novel predictor is proposed to predict semester performance of the hearing-impaired students. The RNN algorithm predict the performance of the student and HFP is involved to optimize the prediction performance that may suffer from convergence error. The proposed model was evaluated for its accuracy at both the testing and training phase. The model was initially trained with 80% of data and tested with 20% of it. The proposed model was evaluated for its accuracy at both the testing and training phase. The outcome showed that the MSE loss in training is 0.05 with testing RMSE value of 0.24. The proposed model can be enhanced to predict the drop out probability for the PI students in future.

Keywords: accuracy, hearing impaired students, RNN-HFP, prediction model,

INTRODUCTION

Education is recognized as a dominant tool of social alteration and frequently starts ascending measure in the social structure, thus assisting to bond the gap among the different society [1]. Also, according to the report [2], requirements for handicapped education are an essential measure for the national education system, which was to be managed by the Department of Education. Conferring to official assessments from the Census of India (Government of India, [3]), there were nearly 26 million (2.1%) disabled people in the country. The Government has generated several strategies for special education since independence.

Besides, inclusive education is presented for all students. According to UNESCO report [4],

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inclusive education gives children the right to study with their peers in the schools around them, regardless of their abilities.

However, inclusive education may not fully meet the needs of hearing-impaired students in general schools without adapting instructions to their specific strengths and needs and incorporating the curriculum and school context whichare accessible to these students without imposing them into traditionally delivered curriculum [5]. Since, disabled students have educational needs which differ from those of other students, with both physical and mental disabilities causing difficulty in learning [6].

In addition, physically impaired students face particular challenges in higher education regarding the accommodation and adaptation of curriculum, teaching, assessment, and learning. These reasons become the criteria of eligibility to examine the higher education ability to comprise diverse learners [7]. Hence, for improving these students learning, researchers use technology-supported tools to adapt disabled students' learning environments with their learning performance. The use of applications like technology- supported special education has steadily increased during these days [8]. To improve their learning, students' understanding of their disability must be analysed, and how these create effect on their academic performance (self-awareness) and knowledge on requesting accommodations (self-advocacy) have interlinked without various results on higher education along with performance, persistence and satisfaction [9].

Moreover, people with disabilities seek post-secondary education and training for satisfying careers and stable incomes. Unfortunately, students with disabilities face various challenges can lead to lesser graduation desirable college which is lower rates than of students with no other disabilities. As a consequence of this disparity, there is growing interest in topics that assess the academic achievements of students with disabilities [10]. However, investigation and analysis in the application and development trends of the integration of technology in special education is still lacking.

Hence there is a clear need for the prediction system to forecast the performance of the physically impaired students through which the students can be encouraged to perform better and they can be provided the necessary supports for their improvement in higher education. The ANN (Artificial Neural Network) based model is presented for predicting the academic performance of engineering students [11]. Multi Adaptive Neuro-Fuzzy Inference System with Representative Sets based model is predicted student's future performance after entering into university education [12].From the earlier research, it was evident that the neural network provides enhanced prediction performance than other machine learning algorithms. However, the neural network suffers from the local solution or it does not provide perfect weight associations for the best solution. For this purpose, to predict the semester mark for the Hearing impaired students, the RNN and hybrid Firefly and Particle Swarm Optimization (HFPSO) Algorithm based novel prediction model is proposed in this paper. This novel predictor model is named as RNN-HFP. Here, HFPSO

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algorithm is used to optimize the process of feature selection process for enhancing the performance of proposed model.

The rest paper is organized as follows: Section II is reviewed the related research papers. Section III is discussed the research methodology of the paper. The outcomes and argument of the paper are discussed at Section IV. At last, the paper will be concluded at Section V.

I. LITERATURE SURVEY

In this section, the related literatures are reviewed. It is mainly focus on the education performance of hearing impaired students.

Cupples et al. [13] had analysed language and speech results on young children who are having hearing loss and additional disabilities. Direct assessment and caregiver report are used to analyze the accurate output of receptive and expressive language skills and speech. Entire participant cohort and analyzed the outcomes of children with hearing aids (HAs) versus cochlear implants (CIs). The population-based cohort nearly 146 children in the age of five with hearing loss and additional disabilities were examined. Overall participants, the multiple regressions witnessed that better language results are related to milder hearing loss, use of oral communication, higher levels of cognitive ability and maternal education and earlier device fitting. Speech output accuracy is related to the oral communication use. The outcomes of HA users took after entire cohort. The CI users are prominently related to the good language outputs with the help of oral communication and higher cognitive ability levels.

Chao, Pen-Chiang [14] had proposed the study that assesses the correlation and predictive relationship along with self-determination and betterment of disabled students' college life Subjects were 145 senior college students enlisted from northern Taiwan between the age of 22 and 25. Their disabilities may differ, like visual impairments, hearing impairments, speech/language impairments, physical impairments, specific learning disabilities, emotional and behavioral impairments, one or more disabilities, autism and health impairments. The correlation between SDSCS and WHOQOLBREF are assessed with the help of Pearson correlation and stepwise multiple regression analyses. Also, results assured positive correlations among self-determination and life betterment. Moreover, this research underlined not only about instant influence in the quality of disabled person's life, but also the long-term impact.

Cheng, Sanyin [15] had explored the study of the change in thinking styles of hearing-impaired students in art and design academic discipline. In the meantime of one academic year, Thinking Styles Inventory-Revised II had administered twice for 129 first-year students and 127 second-year students with hearing-impairements. The outcome exclaimed about Type I thinking styles (more creativity-generating, less structured, and complex) and Type II thinking styles (more norm-favouring, more structured, and simplistic) had been demonstrated to hearing impairment students with huge preference. Overall, changes in style may vary from university class levels to

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gender. Additionally, following interview assured that acculturation influence modifies the styles of hearing-impaired students modified. Also, it also discussed about contributions, limitations, and implications of recent study on inclusive/mainstreaming higher education.

Cheng, Sanyin, and Kuen-Fung Sin [16] had goals on exploring the problems of university self-efficacy in relation to the students' life betterment about 15 hearing impairment and hearing students mainly from China. The demographic sheet, the University Self-efficacy Scale, and the Quality of University Life Measure (QULM) administered 350 hearing impaired students and 463 hearing students. Multiple regression analyses were accomplished individually on every university quality 20 life scales, with all university self-efficacy scales acting as predictor variables on every analysis and controlling the relevant demographic variables. The results showed that university self-efficacy was an important and positive evaluation of the university life quality to all participants.

Amrieh et al. [17] suggested a students' performance prediction model through data mining approaches with selected features known as student's behavioural features. The proposed model was assessed in three diverse classifiers; Decision tree, Artificial Neural Network, and Naïve Bayes along with ensemble methodologies such as Bagging, Boosting, and Random Forest. The proposed model accomplished up to 25.8% accuracy after using the ensemble methods which was elevated than accuracy when features of behavior were removed.

Vandamme et al. [18] used neural networks, decision trees and linear discriminate analysis for making early academic predictions on students' success in their inaugural year at university. Yi et al. [19] suggested a supervised Deep Neural Network (DNN) model on estimating link based traffic flow conditions. A three-level model was used to provide 99% accuracy on estimating the congestion.

Bendangnuksung et al. [20] suggested a DNN model for predicting the students' performances. In the research, DNN has the ability to act greater on smaller amount of data with keen comprehension of the model with the accuracy of 84.3% dataset quality.

Agrawal et al. [21] utilized four various types of classification algorithms termed as Random forest, naïve Bayes, Rule induction and Decision tree which provided 90% accuracy along with Random forest with 85% accuracy. Naïve Bayes provides 84% accuracy with least stated accuracy of 82% using Rule induction.

Veeramuthu et al. [22] proposed classification techniques of prediction and analysis on students' academic presentation and clustering technique was freshly applied to group of students under cognitive style in e-Learning. A module was mainly suggested to instructors to differentiate students with academic strength from weakest students which help to give more focus on the weaklings.

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Yadav & Pal [23] executed Educational Data Mining Techniques to get the performance of prediction model of engineering student. ID3, CART and C4.5 algorithms of decision tree predicted performance on completing the examinations. This outcome can be employed to forecast on the students' performance next year. Originally 90 students' data with 13 variables are used in the study and attributes of final exam grades were used. The result showed that ID3, CART and C4.5 algorithms provided an acceptable accuracy level, C4.5 method outclassed rest about 67.7778% accuracy.

Student's performance examined with the help of NB classifier where classification methods identifies hidden data in the middle of subjects which impacts the performance students from Sijil Pelajaran Malaysia. Naïve Bayes algorithm used for students' performance classification at the intial stage of 2nd semester with 74% accuracy [23]. A recurrent neural network (RNN) approach was proposed for forecasting students' final grades with log information within education systems. Log information indicated students' learning activities who utilize LMS, electronic book system and electronic portfolio system. This study employed the very same approach on getting data from students and scrutinized the prediction accuracy [24]. RNNs had been employed for evaluating the results through game activity [25], and to forecast answers to queries of numerous skills with historical data [25]. From the study of related works, various data produces various results were found. In this study, HFIPO-DPNN method is predicted the student's dropout with the help of their previous marks and high school scores for the betterment of accurate prediction.

Student's performance examined using NB classifier which is one of the methods of classification to recognize the hidden data between subjects that influenced students' performance in Sijil Pelajaran Malaysia. The naïve Bayes algorithm can be employed for classification of performance of students in early stage of 2nd semester with 74%accuracy [23].A recurrent neural network (RNN) approach was proposed for forecasting students' final grades from the log information in education systems. The log information indicated the activities of learning of students who utilizes the LMS, the electronic book system and electronic portfolio system. This research used this approach to get data from students and investigated the prediction accuracy [24]. RNNs had been employed for evaluating the results through game activity [25], and to forecast answers to queries of numerous skills with historical data [25].From the study of related works, various data produces various results were found. In this study, HFIPO-DPNN method is used to predict the dropout of the student with the help of their previous marks and high school scores for the betterment of accurate prediction.

II. RESEARCH METHODOLOGY

The current work entails Recurrent Neural Network along with the hybrid Firefly and Particle Swarm Optimization Algorithm. The data on the students for the study was collected 210 samples. In the proposed methodology, the RNN was employed to update the weight and biases in the model and the hybrid HFP was employed to optimize the feature selection process. Initially, the

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proposed model is trained with 80% of the dataset. Subsequently, the trained model is then tested with the remainingdataset. The following sub-stages are implemented in the python software and are explained below;

A. Preprocessing

The pre-processing was the primary stage in any machine learning process, where the data gets transformed. The collected dataset may have some missing data and they are filled with the mean of the respective attributes. The categorical features, which depicts student's details are labelled numerically. Then the data is normalized using Min-Max Normalization technique.

B. Feature selection

The collected dataset consists of many features like name, age, Gender, marks and percentages achieved by the student in 10th and semesters. However, for predicting the future academic performance the features involving the mark is substantiate and those are need to be selected.The feature selection process is carried out through hybridized firefly and particle swarm optimization technique.

C. Feature selection and optimized Prediction

The expected marks of the student performance in their academics is conceded with the RNN and HFP algorithm that are given below:

1 Selecting the features

The selection of supervised features is mostly focused on the problem of labelling, and the significance between the function and the class category is used as its basic concept. Relevance evaluations may determine the significance of the features. This model aims to find an optimum function group for a training sample with characteristics and class labelling that provides the maximum accuracy of the model.

A general structure for selecting features is the Hilbert-Schmidt dependence criteria as seen in the equation, where J(S) tests the dependence of a data on C. The principle of this paradigm is that J(S) should be maximized by the key frame subset, which converts the choice of features into more of an optimization method.

$$D = \arg\max[J(S)] \qquad (1)$$

The filter method typically uses assessment criteria to increase the correlation between the function and the class labelling and to decrease the correlation between features. In addition, the association between features is often superseded by redundancy.

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Generally, rooted on the type of output, this method is divided into two, weighted ranking method and subset selection model [24]. Apart from this filter model (which considers the relation between features and output labels), wrapper model (takes the error rate or accuracy in the standard of evaluation) and embedded model (selecting features in the training model and generating output) is commonly used. Its performance is measured by machine learning model. Lasso method is commonly used to reduce the sum of squares of residuals if the regression coefficient is absolute.

2 Hybrid firefly and particle swarm algorithm

Yang, Xin-She [26] had proposed"Firefly" a Bio-Inspired algorithm, which was a metaheuristic in nature, imitating the behaviour pattern of the fireflies. By nature, the fireflies have a tendency to be attracted towards luminous substances. Initially, real fireflies illuminate in discrete forms, while the designed fireflies will be considered as always glowing. When relating the two fireflies' brightness, the fireflies' locations must be reflected. In the real time, when a firefly is examining for another, it can simply see so far. When the distant of another firefly is long, the less bright it will be for the first firefly due to the intensity of light decreasing under the inverse square law.

Particle Swarm Optimization (PSO) was firstly introduced by R.C. Eberhart and J. Kennedy in 1995 [27]. Particle swarm optimization is a nature-inspired algorithm which is based on the social behaviour of birds in the flock. PSO generates its performance after the flocking or swarming animal patterns. PSO has particles that generate its sample in the form of swarm. Every particle is basically moved from one point to another. This mutation is carried out in an effective manner; likewise, each particle is relocated from its preceding location to a fresh, better location.

In general, Firefly algorithm has high computational time, complexity and slow convergence. Therefore, the PSO is used to enhance the performance of the traditional firefly algorithm. Also, Fireflies had no memories of personal best position (pbest) and velocity (V) alike particles. When two algorithms are combined and hybridized, PSO performs the search globally and provides swift convergence. Additionally, Firefly performs the search locally, as it backs the fine-tuning in exploitation. The HFP algorithm is defined as follows,

$$w = w_i - \left(\frac{w_i - w_f}{iteration\ \max} \right) \times iteration \qquad (2)$$

$$f(i,t) = \left\{ \begin{matrix} false, if\ \ fitness\left(particle_i\, t\right) > gbest^{t-1} \\ true, if\ \ fitness\left(particle_i\, t\right) < gbest^{t-1} \end{matrix} \right\} \qquad (3)$$

$$A_i(t+1) = A_i(t) + Y_0 e^{-\gamma r_{ij}^2} \left(A_i(t) - gbest^{t-1} \right) + a \in_i \qquad (4)$$

$$V_i(t+1) = A_i(t+1) - A_{i\_temp} \qquad (5)$$

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3 Recurrent Neural Network

Basics: The RNN, the sub-class of neural networks, generated the long-range inherent correlation in the middle of data samples.Basic structure of RNN is shown in Figure 1.However the general NN withoutany information about temporal input data order, RNN solves theproblem onincorporating the time built notion idea into it. Compared to further NN architectures, RNNs with hidden layer will update them after every time-step process of the input.This confirms the input sequence temporal structure as valuable. Network nodesget input from recent data point x (t) as well as hidden state values of hidden layer in the earlier state h (t−1). Hence, inputs at time t have influence on network outputs to arrive in the future with the help of recurrent connections. Standard RNN with input vector $v=(v_1,...,v_T)$measures hidden vector $h=(h_1,...,h_T)$ and output vector $y=(y_1,...,y_T)$by iterating equations (6) and (7) over t = 1, … , T.

$$h(t)=Q(W_{(hx)}x^{(t)}+W_{(hh)}h^{(t-1)}+b_h) \qquad (6)$$

$$y^{(t)}=\sigma(W_{(yh)}h^{(t)}+b_y) \qquad (7)$$

Where: b_y and b_h as vectors of biases, $W_{(h,x)}$, $W_{(hh)}$ and $W_{(yh)}$ as weights matrices of input-hidden layer, hidden-output layer and recurrent connections separately. Q is an activation function.

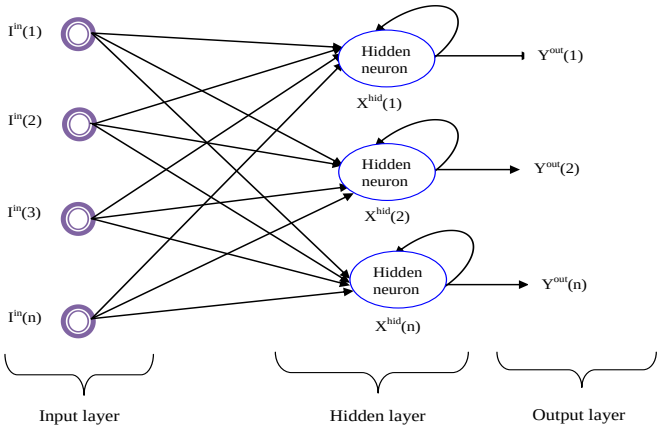

Figure 1: Basic structure of Recurrent Neural Network

Standard neural networks are instructed over numerous time steps using algorithm called backpropagation through time [28].

Bi--LSTM-RNN network model is used, which includes input layer, output layer, 3 hidden layers (including BiLSTM). This model is activated by sigmoid activation function and optimized using adam optimizer, which used the magnitude of the gradients and normalizes it.

$$I_l^t(t)=d_j^1(t-1) \qquad (8)$$

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$$I_m^t(t) = d_q^1(t-1) \qquad (9)$$

Where I- input layer, d- dense layer l, m are order of context layer j, g are order of hidden layer.

At first hidden layer,

$$d_j^1(t) = f\left(\sum_i^1 V_{ij}^1 x_i(t)\right) + f\left(\sum_i^{con^1} u_{ij}^1 I_l^t(t)\right) \qquad (9)$$

Where $f = \frac{1}{1+e^{-x}}$

The output layer is given as,

$$O_k(t) = f\sum_g^{D_2} W_{gk} d_g^2(t) \qquad (10)$$

Where W_{gk} means the connection in the middle of second hidden layer and output layer.

4. RNN-HFP Predictor model

In the phase of training, the proposed model has two sub phases; The HFP algorithm initializes the values for weight, biases and its variables in vector form. The HFP algorithm selects the features which as more impact to predict the semester. Initially the velocity and the position of the particle is assigned. During the iteration the particles update their velocity and position by itself. After finding the velocity and position of the particle it will calculate the global best position. From the given gbest position it will move to the firefly algorithm. In order to find the best feature element, the predefined threshold value is set to 0.50. Based on the threshold value the feature will be accepted or rejected. After finding the feature which has more impact on the mark prediction will be given to the Bi--LSTM- RNN . The data was sent into the RNN that process the data through the dense layer and the output is given in the output layer. The total error in predicted value (MSE) was evaluated. The training process is constant and procedure continues until the convergence is met. After the training process is completed, the testing process is executed for appraising the performance of the trained prediction model. In this testing phase or prediction phase, 20 % of data from the dataset are given as input to the trained prediction model for predicting the performance of the students.

5. Algorithm: RNN-HFP algorithm

The step-by-step process of proposed prediction model is discussed in Table 1,

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Table 1: Proposed RNN-HFP algorithm

Input: **Student's previous years Mark** **Output:** **predicted Next semester Mark**
(1). Start (2). Student's details and marks from previous semester is taken and stored in array of three dimension (N, W, F) Where, N is number of training dataset W is dataset length F is number of features in the dataset (3). Finding the features that have more impact on the upcoming semester mark prediction using HFP algorithm (4). Bi--LSTM-RNN is built which includes input layer, output layer, 3 hidden layers (including BiLSTM). This model is activated by sigmoid activation function and optimized using adam optimizer. (5). Assigning random weight and bias according to the dataset features (6). Train the constructed Bi—LSTM-RNN network on the dataset. (7). Use the output of the last layer's prediction of next number sequence. (8). Update the weight and bias based on MSE and set it for RNN (9). Repeat the above three steps until optimal solution is reached. (10). Obtain Prediction by providing test data as input to the network. (11). End.

IV. RESULT AND DISCUSSION

In this section, results and discussion of Bi--LSTM-RNN-HFP based proposed prediction model is discussed and analyzed. The data are collected from the ITI institution in Bangalore. The sample consists of 210 data that are preprocessed and subjected to feature selection through Python Jupyter environment. The model was initially trained with 80% of data and tested with 20% of it. On Implementing Hybridized Firefly and PSO, the total numbers of features get reduced from 15 to 8 and are given in Table 2.Here, the feature selection process is implemented using Jupyter.Also, the proposed prediction model is executed using python software. The impact

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percentage greater than 50% is selected and is trained using the Bi--LSTM-RNN model to predict the semester mark.

Table 2: Results from HFP algorithm

Features	% impact on Final Semester marks prediction
Sex	72.92368
Age	11.98001
Subject	28.59648
Medium of Instruction	0.833868
Month/year Appeared for 10th Exam	22.98286
Kannada	24.70796
Maths	76.20424
Science	48.12205
Social Science	57.42757
Total (425)	1.467815
Percentage	75.36456
Sem I	44.62953
per1	87.84088
Sem2	1.30197
per2	93.08649
Sem 3	87.22387
per3	90.7936

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The proposed model was evaluated both at the testing and training for its accuracy over the given dataset. Initially 167 data is utilized to train proposed model and then 43 data are used for testing purpose. The percentage obtained in semester 1, 2, and 3 and the achieved 10th percentage were employed to predict the semester mark through the proposed Bi--LSTM-RNN model during the process of training. After the completion of training process, the percentage obtained in 10^{th} std, semester 1, 2 and 3 are provided to the predictor model and the model is trained. The loss is calculated using the mean squared error, which estimates the difference between predicted and true value. Figure 2 represents the variation between predicted semester 3 percentage and actual semester 3 percentage.As shown in the figure, the proposed prediction model has effectively predicted the percentage. Since the actual semester 3 percentage and predicted semester 3 percentage are almost converged. Therefore, RNN-HFP based proposed prediction has been better performed.

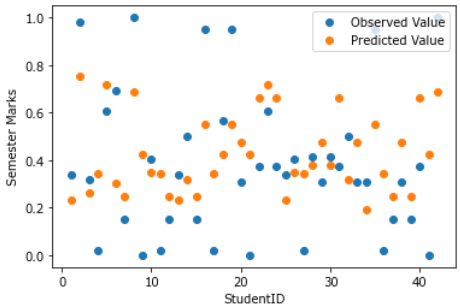

Figure 2. Predicted semester percentage compared to actual semester percentage. Blue: observed semester 3 percentage and Orange: predicted semester 3 percenta

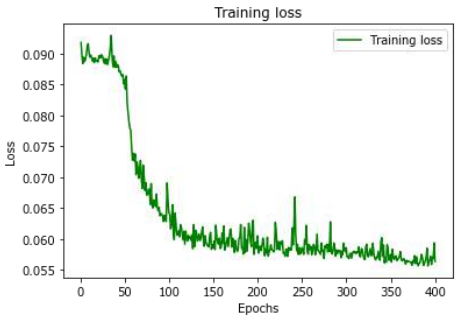

Figure 2 . Loss of the proposed model

The binary crossentropy loss of the proposed model was evaluated initially during the training phase and it showed the loss of about only 2%. Similarly, during the testing phase, the errors of the proposed model calculated using MSE was about 0.05, and using MAE (Mean absolute error) was about 0.13. The R square value of the predicted 3^{rd}semester marks shows 61%. Figure 2 shows the loss of the proposed model under training phase.

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V. CONCLUSION

In this paper, RNN-HFP algorithm is proposed to forecast 3rdsemester marks of hearing impaired ITI students in Bangalore city. The academic scores obtained by the students in10th std and the previous semester marks are used for forecasting the final semester performance of the students. The RNN LSTM algorithm predicts the mark of the student through the optimized features with the HFP algorithm. The dataset is splitted in the ratio of 80:20 for training and testing the proposed model. The R square value achieved is 63%. The loss of the proposed model was evaluated initially during the training phase and it showed the MSE error of about only 0.05. Similarly during the testing phase the loss of the present model calculated using RMSE error was about 0.24.

The future scope for the present work will emphasize on predicting the performance at earlier semesters. Additionally, being physically impaired the drop out cases from the education is more prevalent due to poor academic performance and family background. Hence the future work to predict the dropout chance of student earlier will benefit the student to endure the students to complete their education successfully and provide the necessary recommendation to guide them in their academics.

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Smart Classroom Behaviour Management System

Neha Mantri[1], Dr Harish Nagar[2] and Dr Sunil Kumar[3]

[1]Research Scholar, Dept of Computer Science, Sangam university, Bhilwara,(Raj), India

[2]Dy. Dean, School of Basic and Applied Sciences, Sangam university, Bhilwara,(Raj), India

[3]Dy. Dean and HOD, Associate Professor, CSE, Sangam university, Bhilwara,(Raj), India

[1]nnehamantri@gmail.com, [2]drharishngr@gmail.com, [3]sunil.kumar@sangamuniversity.ac.in

Abstract: Smart classroom behavior management system is advantageous, particularly while advancing appropriate innovation in the field of technology. It gives you a superior understanding into the adequacy of your systems, expanding your student's understanding towards teaching. A smart classroom behavior management system instructional method in training makes teacher understand his students in a better way. This extraordinary and imaginative utilization of innovation has changed how educators convey their exercises and how students learn. This technology brings tremendous achievement to the educators by showing them up how to engage student .This makes it simpler for educators to instruct and understudies to learn. This framework helps educators in establishing a favorable climate for their students. Furthermore, this assist educators with improving their understudies' conduct by giving progressed criticism. This can also be utilized by guardians. This permits educators to give guardians an outline of how their kid is performing in the class. Also, instructors can follow the understudy's advancement and check on the off chance that they have arrived at the objective, and report to their folks how their improvement is. This framework can work with the Learning Management System and Student Management System. This give guardians and educators a more extensive viewpoint on an understudy's advancement and conduct classes accordingly. Educators and students can utilize the framework for an amazing coordinated effort in distant and advanced study environment.

Keywords: Emotion Recognition, Image Processing, Student Learning.

Article History

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Corresponding author: Neha Mantri, Email id: nnehamantri@gmail.com

Introduction

Emotion word was originated in mid-16 century from Latin word emovere where e means 'out' and movere means 'move'. It also has its origin from French word emouvere which mean excite. Emotion is a sense of strong feeling. Emotions are different from feelings in the sense that they are event driven while feelings are learned behavior. According to science emotion is a facial expression which is easily visible on our face. Feelings arise when brain interprets emotion. Emotions are short lived so it is quite difficult to recognize emotions.

This is an interactive learning technology which enhances the teaching learning process. This work is useful for teachers and indirectly to students also. We can capture the emotions of the student and focus on the points dynamically according to their understanding. Teachers can identify the effectiveness of their teaching while the students will be benefitted as they will have a better understanding of the topic. This work is further enhanced by a questionnaire.

Literature Review

A survey on various research works is reviewed and discussed in table on last page.

Proposed system

OpenCV has various face recognizer classes due to which emotion recognition is a very easy process. The basic steps which applied are-

Gather the data –Capture images of student

Extract face from the gathered images.

Create the training set and classification set

Judge the learning capabilities of student based on their emotions.

Identifying student's emotion using OpenCV and Python-To identify the student's emotion and their learning capabilities we need the following software-

a) Numpy –It is a package which is used for mathematical and scientific calculations. It works well with python language and it easily integrates with other high level languages.

b) OpenCV-This software is required to work effectively with python and this is used for identifying the emotions of students. OpenCV has various face recognizer classifiers to identify

the face as well as emotion. We are using fisher face algorithm. Firstly digital image of students is captured and kept in the source images folder. Then the python code is executed and it sorts the images according to the emotions. In this proposed system we need a digital camera to capture images and a personal computer. We are going use python snippet and OpenCV. The advantage of python is that it works well with high level language. We have used fisher face algorithm for detecting emotions.

Implementation

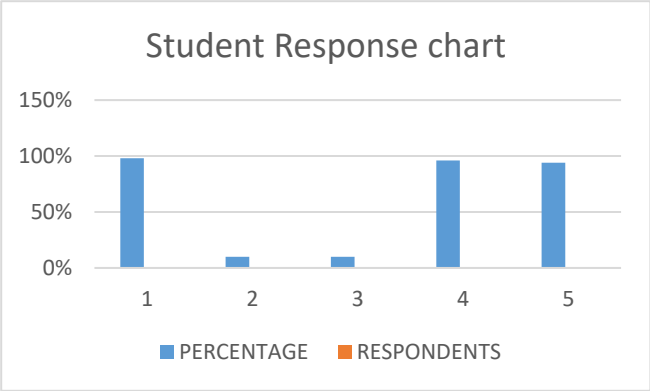
Firstly the images of students are collected and kept in a folder srcimage .A text file with encodings for the six basic emotions is stored. We gave each emotion an integer number like 1=sad, 2=happy, 3=neutral, 4=anger, 5=contempt, 6=disgust. This emotion file is stored in the srcemotion folder. Next empty folders for all the six emotions are made under the same directory and then we had run a python code which selects two mages of each student. With the help of HAAR filter, a face is identified from an image and again a python program is used to crop a face and convert it to grayscale. Again with another python program we will train our classifier to identify the emotions. At the end we will get images under respective emotion folder. With the help of these emotion images we can predict the e learning state of the student. According to the questionnaire, given to the students they will have a happy or contempt emotion if they are satisfied with the learning. The software will not be able to identify the comprehension level of students if the emotional state of students is neutral.

Results

A questionnaire was also distributed to all the 50 students after a 40 minutes lecture. They had 5 questions with yes /no option which was taken as 1 and 0.The 5 questions in the questionnaire were as follows:

1. Students understand and show by expression
2. Students are confused and are able to hide the emotions
3. Students don't understand and are able to hide the emotions
4. Students are confused and are not able to hide the emotions
5. Students don't understand and are not able to hide the emotions

The following graph was plotted with the help of the data collected from the students.



According to the survey in those 50 students, students show negative emotions if they –

a) Are in confused state.

b) Want the lecture to be repeat once again

c) If the topic is too difficult for their mental level.

d) Are not able to comprehend the topic because of the speed of the lecturer.

Students will show positive emotions if they

a) Understand the concepts

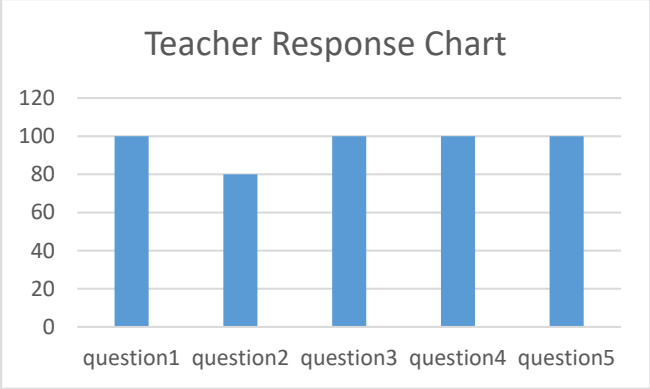
b) Satisfied and no confusion

c) Contempt with a happy emotion state.

Another questionnaire was given to 20 teachers to identify whether they are able to identify the understanding level of students from their expressions' in the class. The 5 questions in the questionnaire were as follows:

1. I have a good understanding of my student's emotions.
2. I always know my students understanding level from their behaviour.
3. I can judge my teaching efficiency by the behaviour of students in the class.
4. I can identify the students who are not interested in a class.
5. I can identify students who don't understand a certain topic

The following chart was plotted with the data collected from the teachers.



FUTURE WORK

This work can be further extended so as to identify the effectiveness of teaching with videos of the students. This can be later used for classroom attendance also. It can further be enhanced by writing a code such that it automatically identifies the emotions without checking the emotion folder.

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Author	Method	Techniques
Kivash Bahreini,wim van der vegt(2019)	Fuzzy logic model	Empirical mode decomposition
Bayezid Islam,Firoz Mahmud,Arfat Hossain(2018)	HOG (Histogram of oriented gradients) and LBP(Local binary pattern)	Artificial neural network
Priya M S ,Kadhar Nawaz GM (2017)	Modified Thermal Emotion Recognition	PCA SIFT and GICM Algorithm
Pawel Tarnowski,Marcin Kolodziej,Andrej Mjkowski,Remigiusz J Rek(2017)	Nearest neighbor Classifier and MLP classifier	Bck Propogation Algo and conjugate Gradient Method
Manasa B(2016)	Face Feature Extraction Method	Region Based Segmentation
Monika Dubey ,Lokesh Singh (2016)	Feature extraction method	Region based segmentation
Deepika Ishwar(2015)	Face Feature Extraction Method	Skin Color Region based Segmentation
A D Chitra(2015)	Canny Edge Detection Method	Edge Based Segmentation
Xioming Chen(2015)	Color Space Edge Detection Method	Edge based segmentation
Shen Xiangeng(2015)	Face Extraction Method, Morphology Operation	Erosion and Dilation
Rashmi S Deshpande(2014)	Gabor Filter,Local Feature based Matching Method	Filtering Technique
Prasad M (2014)	Facial feature ,Feature Extraction Method	Segmentation,Susan Threshold edge detection
Anuradha Savadi(2014)	Face detection	Face recognition techniques
Rohini Patil(2014)	Feature extraction method	Emotion classification based on eye, lip using network

Table: Literature Review

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RESEARCH ARTICLE

Emotion Detection in Classroom Teaching

Neha Mantri[1]* and Harish Nagar[2]

[1] Research Scholar, Sangam University, Bhilwara, Rajasthan, India.
[2] Dy. Dean SOBAS, Sangam University, Bhilwara, Rajasthan, India.

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***Address for Correspondence**
Neha Mantri
Research Scholar,
Sangam University,
Bhilwara, Rajasthan, India.
Email: nnehamantri@gmail.com

ABSTRACT

At present, the one-to-many teaching is quite popular and implemented in all classrooms. This strategy is yet embraced among the vast majority of the instructing classrooms in current colleges. Restricted by the assets of instructors, the quantity of students in some fundamental courses could be all the way into the hundreds. In such circumstances, it is hard for educators or lecturers to take input from all the students right away. This paper proposes a framework dependent on the cluster camera to get outward appearances; identify the emotions of the students, and judge the instructing impact of the teaching process. This framework can help the educator handle the learning state of the students powerfully, with the goal that the instructing techniques or progress can be acclimated to accomplish better educating impact.

Keywords: Emotion Detection, Classroom teaching, HAAR classifier, Python

INTRODUCTION

Intellectual brain science shows that psychological handling and feeling preparing are coordinated at different levels in cerebrum [1].For instance, some cortical structures (for example or bito frontal cortex) coordinate psychological and feeling data in learning progress by communicating with neural designs of emotional processing (for example amygdala) [2].Drugs can decrease or expand the ruinous impact of nervousness on learning [3]. Experiments on animals explore have shown that the learning of the mouse will be influenced on the off chance that the amygdala preparing the first nonpartisan tangible sign into an undeniable passionate sign with appalling data [4]. The significant job of enthusiastic involvement with learning illuminates us that: students can learn and see all the more adequately with a homeroom climate which can prompt for positive feelings.

To more readily incite students' positive feelings, educators may need to get a handle on the students' learning states precisely. Be that as it may, in current classroom, particularly the fundamental courses, students are frequently packed to a large numbers, that make it hard for instructors to screen students' emotion in learning environment thoroughly. In any case, with the improvement of PC vision as of late, the precision of emotions dependent on face location has been persistently improved. Along these lines, it gives an amazing assurance to us to assemble a continuous input arrangement of students' classroom learning feeling. In view of the enthusiastic group of learning feelings, this paper explains how a camera can be installed in a classroom to obtain pictures of students. Then these images can be fed to the classifier to perceive feelings; sum up distinguishing proof data to give factual outcome and present the emotions of the students to the lecturer.

Emotions and its Types: An overall meaning of emotion is: emotion is an intricate condition of feeling that outcomes in physical and mental changes which affect our mind and then our body. These progressions can likewise influence thought and practices in our day to day life. Emotions are classified in various categories. Paul Ekman first and foremost classified emotions into six fundamental categories: Anger, Disgust, Fear, Happy, Sadness, and Surprise [5]. He additionally extended different feelings like Shy, Satisfied, Pride, Pleasure, and so on [6] Robert Plutchik [7] summed up eight unique feelings and their relationship through wheel of feeling. He Wei [8] set up a student feeling model dependent on three-dimensional feeling model, and measured the six unequivocal emotions.

Procedure: Emotion Recognition is done with the help of Open cv and Python. Open CV has a lot of face recognizer classes. The process is as such -

- Capture images of student
- Extract face from the images.
- Creation of Training set and classification set
- Identify the emotions of students
- Judge whether student has learnt or understood the concept via the emotion captured.

We are installing Open CV and Python language along with numpy in our PC.

Numpy –This is a package which works well with all programming languages and is basically used for mathematical calculations..

OpenCV-This is a software which is used to identify emotions of a student and in the end to identify whether the student has interest in the class. Various face recognizer classes are present in Open CV which is used to identify the face and the emotions. Fisher face algorithm is used to identify the emotion. Firstly the digital image of students is captured and kept in the source images folder. Then the python code is executed and it sorts the images according to the emotions. In this proposed system we need a digital camera to capture images and a personal computer. We are going use python snippet and Open CV. The advantage of python is that it works well with high level language.

HAAR classifier is used to detect faces. This classifier is based on Paul Viola and Michael Jones machine learning based algorithm. This classifier is trained several times with a lot of images and thus it starts predicting the classification. This classifier is used to detect objects in an image.

The overall procedure uses Viola-Jones Haar-like classifier is used to distinguish faces just as eyes and mouths. Distinguished features are trimmed, resized, and mean deducted; at that point PCA is performed. Utilizing the reduced dimensionality preparing dataset Fisher LDA is performed to extricate Fisher faces on which we can project test information. Moreover during preparing, eye and mouths are recognized utilizing Haar-like feature. Based on whether students are able to understand, we set up three classifications of emotional states for learning which are positive, neutral and negative. Later after identifying the emotions of students a questionnaire is distributed to the students. This questionnaire helps in identifying whether the student has understood the concepts and whether the emotion is related to the understanding.

Camera Installation: To progressively distinguish every student's understanding state, it is needed to recognize every students' head picture data continuously and capture images. In light of the chose cameras' visual point, goal, size of diverse classroom, students' number, the ideal camera establishment area can be plan out.

RESULTS AND DISCUSSION

The dataset was for 350 students .A questionnaire was distributed to all the students and their images were also captured and fed into the python snippet. Various graphs were plotted to identify the relationship between the emotions and understanding level. It was observed that majority of the students express positive emotions like joy when they understand a topic and are not able to control impulsive feelings in a class. They also express boredom and interest in the class. Students also express surprise if they discover some new concepts in the class. So this graph in figure 2 clearly depicts those students emotions are related to their understanding level. Scatter plots figure 3 , 4, 5, 6 were plotted among student depicting joy emotion when he understands a topic, surprise when a new topic is understood and confused/disgust/anger when students don't understand a topic. Here we could conclude that most of the students show various kinds of emotion in the class according to their understanding level.

CONCLUSION

Lecturers can improve student's concentration and interest by utilizing a few positive measures like playing, experimentation, demonstration, posing questions, group discussions. This paper presents a multi-camera-based feeling identification framework in classroom environment. The framework can recognize and record changes in students' emotions, and report to the lecturer in considerable time. By contrasting the consequences of ideal and non-ideal feelings, it is shown that the aftereffect of this framework can accurately mirror the genuine circumstance. This motivates us that instructors can progressively change the teaching plan as indicated by the framework. Additionally it gives reference to making changes in encouraging arrangement when students' feelings change, with the goal that the teaching quality can be improved.

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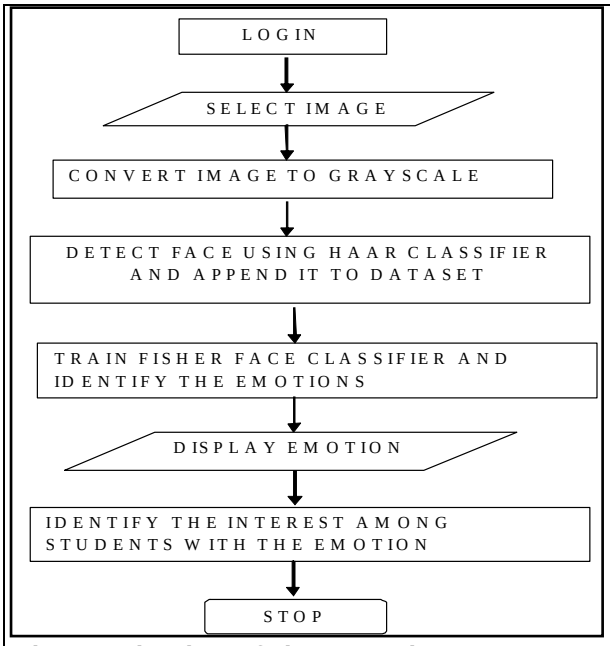

Figure 1 : Flowchart Of The Proposed System

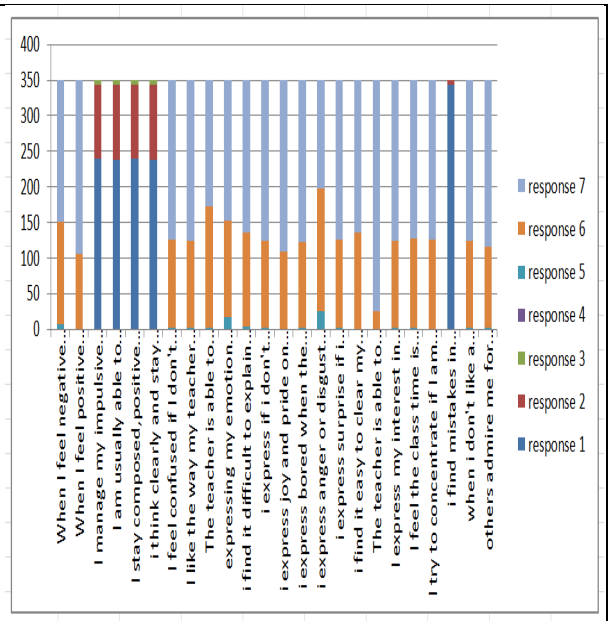

Figure 2: Graph Depicting Emotions And Self-Awareness Among Students

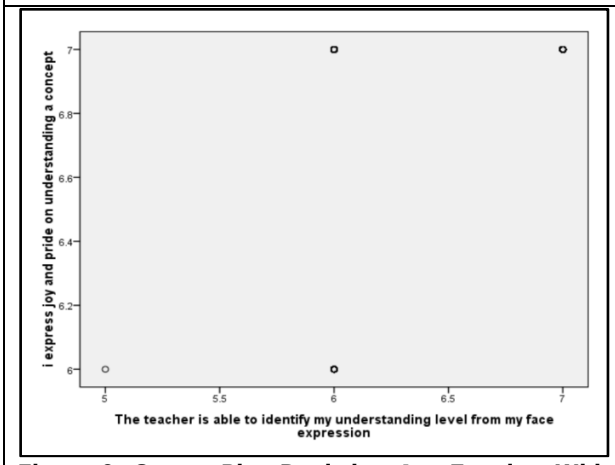

Figure 3: Scatter Plot Depicting Joy Emotion With Understanding

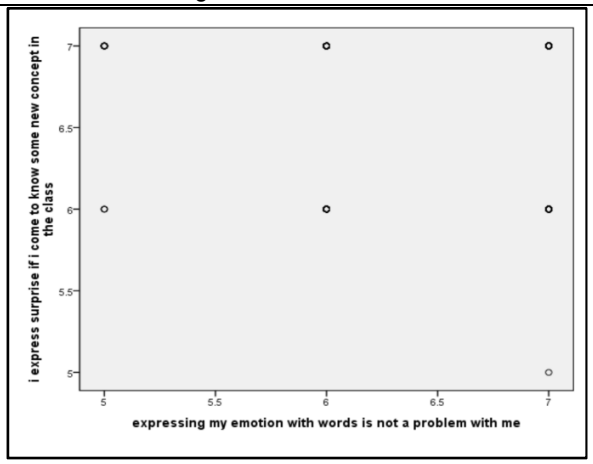

Figure 4: Scatter Plot Depicting Surprise Emotion On New Topic With Words Spoken

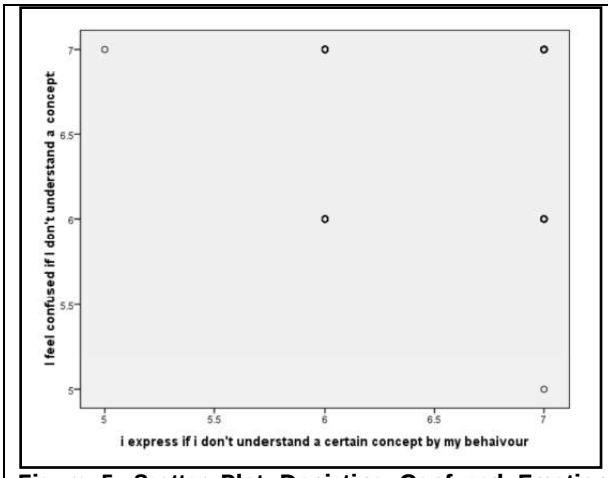

Figure 5: Scatter Plot Depicting Confused Emotion When Topic Is Not Understood

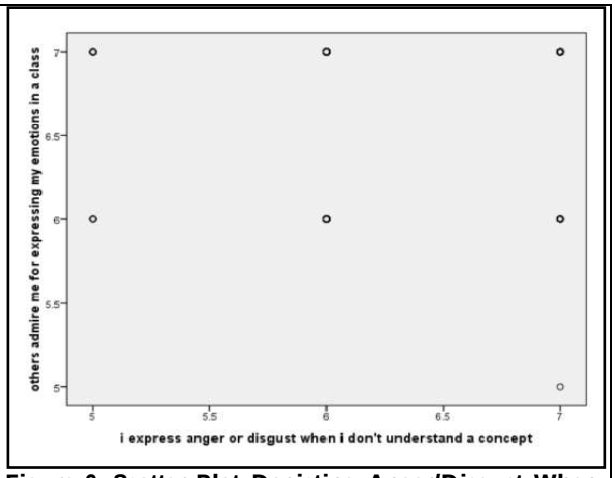

Figure 6: Scatter Plot Depicting Anger/Disgust When Topic Is Not Understood