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Retention and Turnover of Teaching Fraternity in Educational Sector with Special Reference to Degree Colleges in Bangalore

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Abstract: *The study aims the intension of understanding the employee turnover and their retention strategies that can be practised. There exists a highExcellence education imparted in Indian educational institutions but at present there is a shortage of excellence teaching fraternity, which is a predicament situation. Hence the [illegible] is high in education sector and the functioning of the teaching fraternitydiffers from other professions. This study will show the comparison of the turnover and retention issues. This research is conducted in a degree educational institution in Bangalore on teaching fraternity by using qualitative method of data collection. The qualitative research methodology would be used to gather data from the Respondents. Responses will be collected with open-ended questionnaires as well structured interviews will be conducted to gain knowledge about turnover issues..*

Index Terms: *About four key words or phrases in alphabetical order, separated by commas.*

I. INTRODUCTION

The high Turnover of teaching fraternity in educational institutions is unhealthy for the smooth running of institution since it impacts the growth and student progression. But some teaching fraternity leave and being replaced as expected in the education field. Teaching fraternity are the backbone of any educational institution. They should be protected properly in the interest of institution in an ambience which widens the employee commitment, and contributes to the growth of the institution. Teaching fraternity in an educational institution are the reasons for any success and therefore they need to be motivated and maintained in organisation at any cost to ensure the organisation to be locally, nationally and globally competitive in Retention managements of providing best rated qualitative education to the students. Turnover in an education institution becomes common only because of bad management strategy towards the teaching community. Many educational institutions finds it difficult to retain the qualitative workforce and heavy turnover can significantly impact the educational institutions performance and Retention management. The demand for good teaching fraternity is day by day increasing and some reputed institutions provide better pay, infrastructure facilities and keep the morale of teachers at an higher rate.

II. OBJECTIVES OF THE STUDY

1. To study demographic profile of teacher respondents
2. To analyse the main reasons of employee turnover
3. To understand the motivating factors for retaining the Teaching fraternity in the same institution.
4. How do the perceptions of the top management and the Teachingfraternity differ in regard to turnover?.

III. STATEMENT OF THE PROBLEM

The success or failure of the organisation depends on the quality of employees which commonly applicable for educational institution also. The employees of educational institutions would lead the organisation towards success and nurturing the young minds to create better society. The students success will go hand in hand with the effective teachers and ongoing interactions. In this context the employee turnover in educational institutions would be more important than manufacturing organisations. Because employee turnover in corporate lead to loss in income whereas the employee turnover in education could affect economically as well as future skills of the country.

IV. REVIEW OF LITERATURE

While listing the main factor leading to employee turnover, we can see that recognition; career advancement, training and development, conflicts with top management, decision making power and talent management are the major factors, which were also found in the India Employee Retention Survey Research Report (Yiu & Saner, 2008).

ARetention management, Strong (2011) states that the prospects of getting higher pay elsewhere is one of the most obvious driver of turnover. Further, the researcher reveals that this practice can be noticed at all level of economic ladder from executives and generously paid professionals in high stress positions to entry level workers.

Ng'ethe, J. et al. (2012) statesthat the employee retention refers to policies followed by the institutions that help to prevent valuable employees from leaving their present job. The

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authors reveals that hiring knowledgeable people for the job is essential for an employer and retention of employees in professional colleges which includes Engineering, Architecture, Management, Medical etc., is a serious concern.

Abdul et al. (2014) reported that pay more to the employees than the compensation to solve the problem of turnover.

V. Need and Scope of the Study

The proposed study focuses on turnover and retention of teachingfraternity and since turnover is a global phenomenon, various issues are being focused upon by the study. Teaching fraternityis affected by different aspects that not only affect the teaching fraternity but also top level management. Organization is being helped by this research in order to analyse the need for change in the process that would result in not only retaining the teaching fraternity but also attracting them. ...here are many reasons associated with turnover, the main causes of turnover of the teachingfraternity in an educational sector will be analysed along with the reasons and how the management can take steps to prevent such outcomes in the future. The study would also realize the causes and effects of high turnover rates and at the end provides certain recommendations that would help in creation of effective retention strategies in the Indian education system with special reference to Bangalore context

VI. Research Methodology

This chapter concentrates on explaining the researcher plan of research. The study focuses on identifying the reasons behind high attrition rate in degree educational institutions in Bangalore. The study has made attempt to find the reasons for attrition rate from employee perspective and findings could vary based on sample difference and timing of the research.

Collection of Data

The data has been collected using structured questionnaire and self monitored to enhance the effectiveness of the research.

Sample size: The sample has been chosen based on convenience sampling and selected 60 respondents for the study purpose due to time constraint.

Sources of Data

Primary Source: The data has been collected from the degree college's faculty members at Bangalore area.

Secondary sources: The secondary data has been collected through various websites, books and published articles.

Plan of Analysis:The data has been analysed using tabular method.

Limitations

The study will have many limitations. Firstly, the study conducted in Bangalore, which will make it difficult to cover all the colleges and will be time-consuming. Secondly, the small sample size might also act as a negative factor in analysing the data on turnover, as only few responses will be used in the findings. Thirdly, the research focuses only on particular educational institution, hence not giving an overview of the issue of turnover in the entire Indian education sector. Fourthly data, the research findings may not applicable uniquely to Indian education system due to area restriction.

Analysis Of Findings and Interpretation

Q1:Gender

Particulars	No. Of Respondents	Percentage
Male	26	43.33
Female	34	56.67
Total	**60**	**100**

The sample population was equally divided among both the genders and there was no particular gender which has dominated. This fact is shown by the fact that there were 26 male respondents which accounted for 43.33% of total valid sample population. On the other hand there were 34 female candidates which were 56.67% of total valid sample population. This shows that the data has been collected with no biasness and its analysis would not be based on any biasness.

Q2. Age

Age group	No. Of Respondents	Percentage
Below 25	4	7%
25 – 35	14	23.33%
35 – 45	28	46.67%
45 – 55	12	20%
55 and Above	2	3%
Total	**60**	**100**

It was found that out of total 60 valid respondents, 7% belonged to age group of less than 25 years old, which means they were newly employed. 23.33% respondents were among the age group of 25-35 years and there were 46.67% respondents that belonged to the age group of 35-45 years. In the age group of 45-55 years, there were 20% respondents. In the age group of 55 & above, there were 3% respondents. This shows that there was 35 to 45 age group is more comparatively than other age group.

Q3: How long have been working in the same organisation?

Experience (No. Of Years)	No. Of Respondents	Percentage
0 – 2	23	38.33%
2 – 5	18	30%
5 – 10	12	20%
10 – 15	4	7%
15 and Above	3	4.67%
Total	**60**	**100**

It was found that there were newly recruited people along with people having 15 years

and above of experience. In the research, there were 38.33% respondents that were having experience less than 2 years. On the other hand, there were 4.67% people which had experience of more than 15 years also. Talking about the people having experience of 2-5 years in education sector in India, there were 30% respondents that belonged to the same category. In the category of 5-10 years of experience, there were 20% respondents. However there were 7% respondents that had experience more than 10 years but less than 15 years. This shows that the responses were gathered from people with all sorts of experiences.

Q4: Reasons that will cause you to consider for turnover from the institution ?

Reason for Turnover	No. Of Respondents	Percentage
Insufficient Payment	24	40%
Lack of career advancement	10	16.67%
Work Load	6	10%
Working conditions	12	20%
Extra Benefits	5	8.33%
Alternative job opportunities	3	5%
Others	0	0%
Total	**60**	**100**

Major respondents mentioned the insufficient payment was the reason for leaving the job according to 40% of the respondents. Second major reason was working condition as per 20%, Along with that 16.67% others went for the reason i.e. lack of career advancement as an important factor for leaving the organization. In the last spot there were three reasons that were chosen by respondents. These were,workload (10%), Extra benefits (8.33%) and Alternative job opportunities (5%) and other reasons were nil as per the respondents. Knowing all the striking factors would help the researcher to recommend sound retention policies based on these factors.

Q5: What are your reasons for staying with this organisation? (Any three)

Pay system	**Flexible working hours**	**Career development**	**Leadership Management**
Holidays/ Vacancy	**Work-life balance**	**Training**	**Annual bonus**
Job profile	**Talent Management**		

Options	No. of Respondents	Percentage
Option 1(A,B&C)	26	43%
Option 2 (A,F &G)	24	40%
Option 3 (B,J & I)	5	8.3%
Option 4 (C,G & H)	5	8.7%
Total	**60**	**100**

The options were categorised based on the opinion provided for the purpose of analysis and most number of respondents i.e. 43% were of the opinion that pay system, flexible hours and career development is the factor they are staying. There were 40%of respondents that considered pay system, work life balance and training as an important factor while the other two options i.e. flexible working hours, leadership management, job profile, career development, training and annual bonus as equal factors for retaining in the same organisation.

Q6: Management is really interested in motivating the teaching fraternity?

Opinions	No. Of Respondents	Percentage
Strongly Agree	8	13.33%
Agree	17	28.33%
Neutral	24	40%
Disagree	6	10%
Strongly Disagree	5	8.34%
Total	**60**	**100**

It was found that major of the valid sample population i.e.40%of respondents neutral with this fact. There were 28.33% respondents who agree to fact that their management actively motivates their Teaching fraternity. 13.33% respondents out of this total were those were strongly agreed for the statement. There were 10% respondents that disagreed to the fact of their management doing something to motivate them. There was 8.34% respondent felt that strongly disagreed to the fact their management lays any emphasis on motivating teaching fraternity.

Q7: My expectations have been met after I joined the organisation?

Opinions	No. Of Respondents	Percentage
Strongly Agree	12	20%
Agree	26	43.33%
Neutral	12	20%
Disagree	10	16.67%
Strongly Disagree	0	0
Total	**60**	**100**

It was found that 43.33% respondents agreeing to the

meeting of their expectations and 20% person had agreed strongly. 20% respondentshad gone towards being neutral towards meeting their expectations. However, there were 16.57% respondents that disagreed to the fact that their expectations have been met after joining the organization. 0% respondents strongly disagreed to the same fact.

Q8: The working condition is satisfactory for the teaching fraternity in your organisation?

Opinions	No. Of Respondents	Percentage
Strongly Agree	14	23.33%
Agree	26	43.33%
Neutral	16	26.67%
Disagree	4	6.67%
Strongly Disagree	0	0
Total	**60**	**100**

Major respondent's i.e.66.66% respondents felt that the working conditions in their organization being satisfactory. However, there were 26.67% respondents those are neutral in this regard. On the other hand it was found that 6.67% of the sample population were not satisfied with the working conditions of their respective organizations.

Q9: How often have you been involved in training and development activity in you work place?

Frequency	No. Of Respondents	Percentage
Weekly	2	3.33%
Monthly	6	10%
Quarterly	38	63.33%
Yearly	14	23.34%
Total	**60**	**100**

It was found that majority of responses i.e. 63.33% were involved in quarterly training and development. This means that in every three months, the teaching fraternity were given training and development. 23.34% responses went through yearly training and development and 10% respondents found them involved in monthly training and development. However, there were only 3.33% respondents that were engaged in weekly training and development programme. Continuous training and development ensures continuous updation among teaching fraternity.

Q10: Choose the factors on which the management can improve?

Factors	No. Of Respondents	Percentage
High Pay Scale	20	33.33%
Career Growth	18	30%
Flexible Working Hours	10	16.67%
Job Security	12	20%
Total	**60**	**100**

The above table shows that highest respondents have felt that high pay scale could be resolving measure to turnover, 30% of respondents expressed that career growth assurance could reduce the turnover. However 20% of respondents feels providing job security and 16.67% respondents voted for flexible working hours as an effective tool to reduce turnover.

Q11. What do you think the management can do to reduce stress levels for the teaching fraternity?

Measures	No. Of Respondents	Percentage
High Pay Scale	2	3.33%
Employee Motivation	12	20%
Effective Leadership	15	25%
Work Life Balance	28	46.67%
Benefits	3	5%
Total	**60**	**100**

It was found that 46.67%of respondents expressed that following work life balance could reduce the stress among teaching fraternity. There were 25% others that considered effective leadership as an important factor for reduction of stress. Employee motivationwas chosen by 20% respondents. The remaining factors i.e. high pay scale and benefits were chosen by 5% and 3.33% respondent each. The reason behind asking this question was to know the factor that affects employee stress in education institutions.

Suggestions

The organization should identify the crucial talent initiative to attract and retain the employee. They should know which talent management elements can have the greatest impact on the business and therefore provide a better basis for prioritization and implementation.

- To create a sophisticated talent management enviro nment, organizations must:
- Define a clear vision for talent management.
- Develop a roadmap for technology and process integration.
- Integrate and optimize processes.
- Apply robust technology to enable processes.
- Prepare the workforce for changes associated with the new environment.

VII. CONCLUSION

However Talent management processes must create a comprehensive profile of their talent. They must be able to track meaningful talent related

information Retention Management about all of their people - Teaching fratarnity, contractors, or candidates.

And The working culture of the organization should be improved and maintained to retain talent in long run.

More certified training should be given to the employee to boost their effectiveness and efficiency. It should be used as a tool of motivation. The organizations should have prefixed criteria to define the skills set a person must have in order to be declared as a highly skilled employee. Also, in this particular industry sector, the systems should be competitive enough. But in order to retain the Teaching fraternity, only developing a good system will not help, but the Institution have to do much more than that.

REFERENCES

1. Confederation of Indian Industry, 2008. Indin Employee Turnover Study Research Report. Indian: Centre for Socio-Eco-Nomic Development.
2. Ed. Shubha Tiwari (2005). Education in India. India: Atlantic Publishers & Dist. p200-250.
3. William J. Wasmuth and Stanley W. Davis, (1983). Managing employee turnover. Cornell Hotel and Restaurant administration quarterly. 1 (1), 15-20.
4. Gretchen Rhines Cheney, Betsy Brown Ruzzi and Karthik Muralidharan. (November 2005). A Profile of the Indian Education System. National Center on Education and the Economy. 1 (1), 1-29.
5. Rashmi ShaRetention managementa. (Feb 2, 2012). Teachers on the Move: International Migration of School Teachers From India. Journal of Studies in International Education. 1 (1), 1-23.
6. James M. Vardaman, David G. Allen, Robert W. Renn and Karen R. Moffitt. (Oct 10, 2008). Should I stay or should I go? The role of risk in employee turnover decisions. Human Relations. 61 (11), 1-34.
7. Henry Ongori. (22, May 2007). A review of the literature on employee turnover. African Journal of Business Management . 1 (1), 01-06.
8. Pawan S. Budhwar, Anup VaRetention managementa, Neeru Malhotra, Avinandan Mukherjee, (2009) "Insights into the Indian call centre industry: can internal marketing help tackle high employee turnover?", Journal of Services Marketing, Vol. 23 Iss: 5, pp.351 – 362
9. Zheng WeiBo1*, Sharan Kaur2 and Tao Zhi3. (2010). A critical review of employee turnover model (1938- 2009) and development in perspective of perfoRetention managementance. African Journal of Business Management. 4 (19), 1-13.

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Paper No : 2

Impact of Information and Communication Technology for Rural Development. Current Interventions and Opportunities for action

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Abstract:

Technology transfer has been a longstanding issue in rural development. The key concerns relate to efficiency and effectiveness, how to translate and adopt the technology developed in rural societies. The process of technology transfer falters not at the micro-level pilot study or test plot but at the point when the technology is expected to be adopted and used both efficiently and effectively on a larger scale.

This paper investigates and identifies the role of Information and Communication Technology (ICT) in rural societies. It assesses the potential for pluralistic approaches to encourage widespread adoption of ICT. The need for flexible and decentralised models for using ICTs is discussed in the context of 'know and how'. Besides the paper also overviews the role and function of the Government and its' programmes for rural development in India. Science and technological interventions in the field of rural development have been discussed briefly and efforts being made to document some of the appropriate technologies developed by several research institutes, organizations suitable for application in rural society.

Keywords: ICT, digital revolution, technological interventions, pluralistic approaches.

[I] Introduction

Information and Communication technologies (ICT) are transforming all human activities, including agriculture which is the mainstay of rural India. One of the main reasons for the inequitable distribution of economic gains between the haves and have-nots is the gap in access to information. The significance of bridging this divide in developing countries stems mainly from the fact that rural areas are often, lack or lag behind urban areas in terms of essential infrastructure and services such as transportation, health, education and government services. This creates a politically and ethically unacceptable inequality of services and opportunities for rural populations and prevents them from participating appropriately and fully in socio-economic and political life of the nation. Rural isolation and deprivation can negatively impact the growth and certainly growth cannot be sustainable unless it is inclusive. This is especially true for a nation like India where more than 70% of population resides in rural areas and is largely engaged in low productivity agriculture and allied activities.

Information and Communication technologies can overcome many such infrastructural constraints. ICT have a potential for economic growth and social empowerment. Rural economies can be benefited from ICT by focusing on social production, social consumption and social services in the rural areas. Sustained development using rural informatics is possible, only if ICT interventions are able to respond to the local needs and re-adjust as per the prevailing knowledge (Traditional Knowledge Systems- TKS) of the rural areas. To capture the needs and local knowledge prevalent at the grassroots, these interventions should preferably have an effective bi-directional link. The inculcation of a Citizen-to-Government (C2G) and Citizen-to-Citizen (C2C) interface would provide this link that would also lead to community participation in design and implementation of ICT interventions. This in return could promise better economic opportunities as well as social inclusion of rural people in the developing countries.

[II] Role of ICT for Empowering Rural India

2.1 ICT and agriculture:

The vast majority of poor people lives in rural areas and derives their livelihoods directly or indirectly from agriculture. Increasing the efficiency, productivity and sustainability of small-scale farms is an area where ICT can make a significant contribution. Farming involves risks and uncertainties, with farmers facing many threats from poor soils, drought, erosion and pests. ICTs can deliver useful information to farmers about agriculture like crop care and animal husbandry, fertilizer and feedstock inputs, pest control, seed sourcing and market prices.

2.2 ICT for Education:

The use of ICTs in education aims to improve the quality of teaching and learning as well as democratize the access to education.

2.3 ICT for Economic Development:

Effective use of ICT can demolish geographical boundaries and can bring rural communities closer to global economic systems and be of meaningful help to the underprivileged.

2.4 Employment Opportunities:

One use of ICTs is to provide on-line services for job placement through electronic labour exchanges in

public employment service or other placement agencies.

2.5 ICT in e-Governance:

Improved governance by using ICT can have direct impact in reducing poverty and improving the environment. ICT can contribute in a large way in making government processes more efficient and transparent by encouraging communication and information sharing among rural and marginalized people.

2.6 ICT in Capacity-building and empowerment

Communities and farmer organisations can be helped through the use of ICTs to strengthen their own capacities and better represent their constituencies when negotiating input and output prices, land claims, resource rights and infrastructure projects.

A role is also played by ICT in making processes more efficient and transparent. It helps in making laws and land titles more accessible. Global Positioning Systems (GPS) linked to Geographical Information Systems (GIS), digital cameras and internet, help rural communities to document and communicate their situation. Rural com

munities benefit from better access to credit and rural banking facilities. Recent mobile banking initiatives offer further scope to reduce costs and stimulate local trade. The Indian AMUL programme automates milk collection and payments for its 500,000 members, thereby enhancing transparency of the milk volume and quality collected and ensuring fair payments to farmers.

2.7 ICT and Service delivery mechanisms:

The type of ICT used by local communities is subject to rapid change. However, broadband internet access is seen as central for societal innovation because storing of large datasets and live communication requires good connectivity. Until recently, connectivity in rural areas was limited to slow dial-up lines. Satellite connections now make broadband access possible in remote areas. Use of mobile phones has seen an enormous increase in recent years. Nevertheless, big differences still exist in broadband access between developed and developing countries. New wireless technologies such as MESH and WiMAX, and new-generation mobile phone networks, will provide high speed internet services at sharply reduced costs, thereby dramatically increasing internet coverage in rural areas.

2.8 ICT and Health:

Health care is one of the most promising areas for poverty alleviation. ICTs are being used in India to facilitate remote consultation, diagnosis and treatment. Delivering health care with ICTs enables health care professionals and institutions to address the critical medical needs of rural communities, especially those in remote locations and those that lack qualified medical personnel and services.

[III] Pluralistic approaches: intensifying rural developments in India.

3.1 Rural telephony:

In the past decade, India has seen a veritable telecommunications revolution which is the result of effective regulatory and policy environment coupled with an enterprising telecommunications sector made of both public and private service providers. The growth of rural teledensity is remarkable. In fact, today rural teledensity is growing at a much faster rate than urban teledensity.

Relevant applications and content would draw people to broadband usage as rural Indians would easily recognize their potential to augment incomes and access useful e-services. Such a 'pull' would result for example **National Rural Employment Guarantee Schemes (NREGS)** wages, Government pensions, subsidy for food and fertilizers etc are delivered through mobile/broadband enabled bank accounts facilitated by trained Rural Business Correspondents and supported by online bio-metric authentication enabled by Adhaar. Similar results would flow from wider availability of services such as Department of Agriculture's **Kisan call Centres** where farmers would obtain crop/weather/ market advice and information through mobiles/ broadband. An SMS /online feedback and grievance redress system for all government services on the lines of NREGS would encourage rural Indians to contact the Government through ICTs. This would empower them while also generating a much needed transparency and accountability in Government service delivery.

Promotion Schemes :

It is clear that the content and services delivered through mobiles and broadband that has the power to transform rural India. One important step would be to provide the entire content suite at the **Bharat NirmanKrendras (CSCs)** located in the village panchayats. This would include e-government services, telemedicine facilities, distance learning facilities and ICT training facilities etc. Apart from this, commercial PCO type public access points can provide rural public with a place from which to access either general or specialized services including entertainment services. Various projects have been initiated which provide mobile value added services (information on education, health, financial literacy, government schemes, social issues, vocational training, input and output prices and other market related information) specifically tailored to the entrepreneurial activities . To name few ITC's **e-Choupal and Kerala Government's Akshaya project** show us the way.

Sanchar Shakti a scheme aimed at ICTs for rural women's **Self Help groups (SHGs)** which includes projects to provide pertinent information to rural women in local language through their mobile

phonessoas to enable them to access the content (delivered through SMS and Integrated Voice Response Systems (IVRS)), assimilate it through group discussions and training sessions and to utilize it to improve their awareness and independence levels.

3.2 Community Radio

According to UNESCO [2002] CR is a type of radio service that caters to the interest of certain area, broadcasting content that is popular to a local audience but which may often be overlooked by commercial or mass-media broadcasters. Lewis [1995] defined CR as a medium that gives voice to the voiceless that serves as the mouthpiece of the marginalized and is at the heart of communication and democratic processes within societies. It aims at improving socio-economic conditions and quality of life of the community through well conceived and designed programs for targeted community participants.

Researchers confirm that CR is a participatory medium through which information is communicated to rural communities. For its success, program must be motivating, interactive and systematically designed to meet the development needs of the participants.

CR Initiatives in India: Bhatnagar [2008] reported that Government of India announced its CR policy in December 2002, which was liberalized in 2006. The Human Resources Development Ministry and the Indira Gandhi National Open University [IGNOU] with the help of PrasarBharati launched **GyanVani CR** in 2001.

Our Voice (NammaDhwani), India wasinaugurated in September 2001 in Budikote village of Kolar district in Karnataka, in partnership among VOICES, MYRADA, UNESCO, and Groups of poor farmers in the Boodkote region in Kolar district. Its target audience comprises Farmers, Rural entrepreneurs, Youth and Children and programs focus development issues related to agriculture, health, education, economic development, children, youth, environment, entrepreneurship and cultural affairs of immediate concern.

Uttarakhand CR [KumaonVani] was launched by The Energy Resource Institute on March 11, 2010 in Mukhteswar with a radius of 10 km and covering 20 villages broadcasts programs on Environment, Agriculture, culture, weather, education.

People's Action for Rural Development [Vaanoli] CRcovers 60 villages within a radius of 12 to 15 Km. It broadcasts programs relating to Education, Health, Environment and Legal awareness, Sustainable Agricultural Techniques, Information on Government Schemes and creating legal awareness among its target audience consisting of farmers, men, women, children.

Studies reveals that CRs have indeed achieved their objectives to some an extent. It is high time to create significant awareness among rural population in respect of socio-economic development programs being implemented by the Government and public sector banks, namely National Rural Employment Guarantee Scheme, Swaranjayanti Gram RozgarYojana, National Rural Health Mission, Integrated Child and Women Development Scheme, National Livelihood Mission, Bharat Navnirman, Self-Help-Group Bank Linkage Program, Pension and Insurance schemes, proposed food security etc. It is necessary to evaluate the effectiveness of the existing operating CRs to deliver the mandated results and modify the policy to establish new CR and consider establishing at least one CR in each block or tehsil throughout the country during the ensuing 12th Five Year Plan [2012-17].

3.3 Development Communication:

Development Communication is an important discovery for shaping rural change. This method can be of assistance in solving and designing projects and programmes that take into account the opinion and capacities of the beneficiaries.

Many projects aiming at technological up gradation and implementation of ICT in rural areas have failed in the past because of lack of willingness among rural people to absorb new schemes. Development communication has been a welcome method which has aided bringing about attitudinal and behavioural change among people in rural India through its simple pro-people approach and methods like Participatory Video, Documentaries, community radio, comics, bioscopy, photography, folk media and community newspapers are useful in providing audio-visual knowledge across communities and success story of one villages reaches another resulting in change.

ICT and other advanced technical facilities may be the new answer to technological solutions and advancement in rural India but little can be done if there is gap in implementing and absorbing this technology. Development communication is an effective tool which can bridge this acceptability gap and encourage accomplishment of new initiatives in rural development effectively.

3.4 Internet :

The Internet is not a panacea for rural and agricultural development, but it does bring new information resources and can open up new communication channels for rural communities and agricultural organizations. It offers a means for bridging the gaps between development professionals, rural people and agricultural producers through the initiation of interaction and dialogue. It can foster new alliances and interpersonal networks together with lateral and cross-sector links between organizations. Most importantly. It can support mechanisms that enable

the bottom-up articulation and sharing of information on needs and local knowledge. Primary benefits include increased efficiency in the use of development resources, less duplication of activities, reduced communication costs and global access to information and human resources. None of these benefits are guaranteed by the technology of the internet. Instead, they are realized when people work together to make the most of a decentralized and accessible communication tool.

[IV] Using ICT More Strategically for Rural Development – Cases from India

India boasts of the maximum number of rural ICT projects. There have been a number of models like Gyandoot, ITC e-Choupal, n-Logue, Drishtee, Warana, Sari, Sks, , Cybermohalla, Bhoomi, E-Mitra, Deesha, Star, Setu, Friends, E-Seva, Lokmitra, E-Post, Gramdoot, Dyandoot, Tarahaat, Dhan, Akshaya, Honeybee, Praja are in functioning for rural development. A common foundation for many of these projects is setting up an entrepreneurial information kiosk/ Telecenter at the village level.

4.1 ICT application in a dairy industry: The e-experience of Amul

The most crucial activity in dairy industry is milk procurement. A system for improving the milk procurement was conceived and implemented. The IT platform is called: Automatic Milk Collection Unit Systems (AMCUS). Thefocus was on empowering the farmers by employing IT at village cooperatives.The second end of the platform is Dairy Information System Kiosk project. Boththese together can change the dairy industry, AMCUS reduces the time forpayment for milk. Prior to this the payment was taking 14 days, the new system has reduced it to zero time.

4.2 Developing a Rural Market e-hub:The case study of e-choupal experience of ITC

The potential for the use of ICT platform to enhance transactional efficiency inthe agro-sector is very high. ITC Ltd implemented a project on electronic marketplace for the soyabean farmers in the state of Madhya Pradesh. The project owesits success to the factors such as utilization of local leadership in the villages, asustainable business model and collaboration between the local authorities and the corporate implementer. The technology embarked was easy to replicate andeasily scalable, and it was customized according to the needs of the localfarmers. The entire project thrived on the initiative and commitment of ITC andthe resource mobilization done by it. The project has helped the farmersdeveloping sustainable income levels, elimination of the middlemen, developingeasy access to the market place and shared ownership of the project.

4.3 E-governance in a fisherman's community:A case study of Pondicherry

e-governance has become one of the more effective and efficient way ofimproving the governance. A novel example in e-governance was that set-up byan NGO in the fishermen colony in Pondicherry. The project started by MSSFRwas successful since the entire project was implemented in the phased manner,it was customized according the needs of the rural users, and it helped indeveloping a systematic knowledge base for sharing within the community withinformation in the fields of environment, health, markets, sustainable agricultureetc.

4.4 Developing ICT platform for enhancing agricultural productivity:The case study of EID Parry

The scope for the use of ICT in the agriculture sector is high as India is antraditional agrarian economy. EID Parry has implemented the project "Parry'sCorner" to help the farmers, provide them with value-added services, improvetheir income levels and the productivity of their farms. The self help groups inthe vicinity are using the ICT platform for e-commerce. This has helped in thecreation of social networks.

4.5 ICT for the renewal of a Traditional Industry:A Case Study of Kancheepuram Silk Saree

Kancheepuram silk saree was a traditional industry that was losing competitiveedge. By developing an ICT platform the saree weavers have been able toreduce the cycle time and enhance the design interactivity. The ICT platform hashelped introduce new designs and improve the colour combinations. Customeracceptance of sarees increased considerably. The main driving force behind theinnovation has been two entrepreneurs. The main reasons for the success ofadoption of the ICT platform have been the following:

§ entrepreneurial orientation of the innovators
§ identification is a good window of opportunity
§ incremental cost of introducing innovations have been marginal and
§ understanding the user perspective and then blending traditionaltechnology and computer aided design.

4.6 Internet Kiosks for ruralcommunities: Using ICT platforms for reducing digital divide

ICT has the potential to provide digital transaction platforms for ruralcommunities. The Melur Project is one such ambitious project. The projectimplemented in the state of Tamil Nadu, shows us how the low cost technologywhich was incubated at IIT-Madras has been successfully passed on for thebenefit of the rural people and helping them to generate sustainable incomelevels. The project idea was easily adopted by the masses, this project fosteredcreation of knowledge and sharing of the knowledge, helped in skill developmentof the local entrepreneurs and encouraging the local participation. The projectwas a well conceptualized one. The cost of the platform was

low as they hadselected a low cost option. Large scale platforms can be implemented only
through public private partnership.

4.7 Evolving an ICT Platform for a Traditional Industry:Transforming Artisans into Entrepreneurs

Leather is one of the oldest traditional industries in India. This case studyhighlights the repositioning of a traditional leather industry. Kolhapuri footwearmaking was becoming uncompetitive. Using an ICT platform they were able tomodernize the traditional industry to respond to the customer needs and accessnew markets. The ICT project was initiated by Central Leather ResearchInstitute. Through the use of the innovation the leather footwear designers wereable to increase the product variety, enhance manufacturing productivity and change the manufacturing process.

4.8 Regaining Competitiveness using an ICT platform in a TraditionalIndustry:Adoption of Computer Aided Design for Carpet Weaving

Many of the traditional industries had been losing their competitive edge.Rajasthan carpet industry is one such traditional industry, which was losingcompetitive edge because of competition from synthetics carpets. The carpet
weavers have been able to enhance product variety and reduce the developmentcycle time and enhance the design interactivity through the use of an ICTplatform. The ICT platform has helped the weavers introduce new designs
improve the colour combinations. The customers acceptance of carpets hasincreased considerably since the product can be visualized before design. Theentrepreneurial motivation of the software provider and his ability to provide acomprehensive platform were the main driving forces for the success of theproject. There was close interaction between the software provider andexporters to analyze the latest trends in the export markets. Training wasprovided to the weavers to improve their skills. This project essentially showedthat a traditional industry can be transformed using ICT. It also proved thatthrough adoption of new technology our traditional industries can survive. ICTplatforms will be accepted if there are social and organizational readiness andeconomic viability built into the project concept.

4.9 Providing Rural Connectivity Infrastructure:ICT Diffusion through Private Sector Participation

With the objective of taking the power of Internet and the benefits of telephonyto the majority of country's population residing in rural India using a low costand an affordable communication technology option. This technology wasincubated at IIT, Madras. The technology was specifically customized to the localneeds. The project was taken to the rural area through an entrepreneurs work.The diffusion was done by an entrepreneurial start-up. To disseminate thetechnology, the start-up used a franchisee based business model on the beliefthat delivery and management of the Internet service should devote to the levelof the supply chain that comes closest to the user of the service. Factorsresponsible for the success are cost effectiveness of technology, provision ofvalue added services and commitment from the government authorities andentrepreneurial orientation of the startup.

4.10 ICT Platform for Enhancing Agricultural Productivity:The case study of Tata Kisan Kendra

The scope for the use and application of ICT in the agro-sector is high as India isan agrarian economy. Tata Chemicals Ltd embarked upon an ICT initiative toprovide farmers with the value-added services and improving their productivityand income levels. It implemented its project Tata kisan Kendra to help thefarmers with agro input suppliers, farm equipment leasing, bulk blending,training and skill development, insurance and credit facility. Tata Kisan Kendraalso introduced the concept of 'precision farming' to the Indian farmers. This ICTplatform thrives on the 'Geographical Information System' to provide thefarmers with infrastructure support, operational support, co-ordination andcontrol, and strategic support for farm management. The project was successful,
since it had the support of Tata Group and goodwill which the group holds in theminds of the rural farmers. The farmers had high level of trust for TataChemicals since the company had been operating in the region for a very longtime. The project was implemented in the phased manner so that the projectgrows in an evolutionary manner.The critical success factors that made the project work are :

§ the ICT platforms have been conceptualized after consulting the users
§ the project evolved step by step after validation
§ the contact persons helped in building trust between Tata KisanKendras
and the farming community.

The corporation, TCL has been able to conceptualize and implement a new ICT
platform that provides value added services to the farming community. Trust has
been the glue that binds all the members of the community.

4.11 A Telemedicine Platform:A Case Study of Apollo Hospitals Telemedicine Project

The idea of performing medical examinations and evaluations through the telecommunication network is not new. The Aaragonda Project of Apollo Telemedicine Enterprises Ltd, a non-profit organization was set-up for the purpose of implementing the telemedicine project. Telemedicine uses ICTs to provide specialized services to patients living in the different parts of the globe.

Telemedicine has the potential to revolutionize the whole of the health care industry. In ICT platforms for medical consultation, behavioral issues such as the trust becomes along with the cost of transaction. High investment platforms

Such as can be implemented only through public-private partnerships. The critical success factors for sustaining the telemedicine network are:

§ Economic sustainability of the platform
§ Connectivity of the platform and
§ Behavioral acceptability of the transactions.

To sum up the ICT platforms that we have studied have been successful in delivering a significant level of benefits to the rural communities. The traditional technologies have been transformed by the application of ICT.Significant results have come about through the use of ICT in these, namely: Carpet Weaving, leather, KancheepuramSaree making. Both in the case ofsoyabean marketing and dairy industry ICT platforms have completelytransformed the structure of business providing for considerable benefits. TheICT platforms have enormous potential to transform businesses, create newforms of business delivery and create new interaction spaces. The case studiesof leather footwear, soyabean marketing, Rajasthan Carpet Weaving andKancheepuram silk saree weaving indicate that ICT platforms can change theeconomics of an industry significantly.

When we look into the recent developments the **"Digital India Project of Narendra Modi Government"** intends to transform India into digital empowered society and knowledge economy. The aim of Digital India is to ensure that Government services are available to citizens electronically and in an online environment. It also intends to bring in public accountability through mandated delivery of government's services electronically, a Unique ID and e-Pramaan based on authentic and standard based interoperable and integrated government applications and data basis. The existing/ ongoing e-governance projects of India would be revamped to align them with the principles of Digital India.

[V] Conclusion :

ICT is an integral part of development strategies of both developing and developed countries. It has great potential to bring in the desired social transformations by enhancing access to people, services, information and other technologies. ICT applications can empower the poor by expanding the use of government services. However, the main issues are lack of localisationof content for rural communities and inadequateparticipation of rural communities in design ofrural ICT initiatives.Besides, the development of a society largely dependson the access to the information and so far in rural India -ICT has greatly facilitated the flow of information andknowledge offering the socially-marginalised andunaware community unprecedented opportunitiesto attain their own entitlements. On the otherhand, to break the vicious circle of rural povertyand to bridge the digital divide and empower therural communities - ICT-intervention has proved itseffectiveness in the sphere of capacity-building ofrural communities for breaking these barriers. So,the government, technology industry and societyshould work together to deploy ICT to accelerateeconomic and social development in rural areas.Hence it may be concluded that an integratedframework for ICT interventions in rural areas willunquestionably pave the way towards sustainablerural growth.

[VI] References :

- Annual report, 2002-2003, Ministry of Rural Development Government of India.
- E-Seva, an information brochure of Department of Information Technology and communications 2001
- Rural Informatics in India – An approach paper
- Kurukshetra – A Journal on Rural development
- India, Science and Technology 2008S&T Rural India and Inclusive Growth
- Ministry of rural development, Govt. of India, Chapter VII- Rural Development, pp. 88-99.
- Nayak, S. K.; Throat, S. B. and Kalyankar, N. V. (2010), Reaching the unreached: A Role of ICT in sustainable Rural development, International Journal of Computer Science and Information Security, Vol. 7, No. 1, pp. 220-224.
- Robert Chapman and Tom Slaymaker: ICTs and Rural Development: Review of the Literature, Current Interventions and Opportunities for Action
- Assessment of Impact of Information Technology on Rural Areas of India Implemented by M.S.Swaminathan Research Foundation Chenn8j, India. www.mssli.ora Supported by International Development Research Center (IDRC), Canada
- Critical Success Factors for Rural ICT Projects fin India: A study of n-Logue kiosk projects at Pabal and Baramati

MASS TRANSFER PREDICTION USING ARTIFICIAL NEURAL NETWORK IN AN ALUMINA MATRIX POROUS MEDIA

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Abstract: When it comes to the problem of expressing intricate non-linear interactions, one relatively recent development in the field of mathematical modelling is the application of artificial neural networks, which are also abbreviated as ANNs in some instances. In this paper, we develop a machine learning prediction model for predicting the flow of mass transfer in an alumina matrix porous media. Consider of a cylinder with a catalyst layer on its surface and a porous media surrounding it that is completely filled with fluid except for the one end. This cylindrical device is typical of a catalytic reactor. When the cylinder is heated to a constant temperature, the chemically reactive zeroth-order material is predicted to completely coat the outside of the vessel. Reinforced porous materials undergo a continual, temperature-dependent chemical reaction in their fluid phase. The model shows an improved predictive performance in all its experimentation.

Keywords: Mass Transfer, ANN, Machine Learning, Prediction

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INTRODUCTION

A significant variety of natural and man-made processes involve the movement of fluids across a body or across a stretched surface in some capacity. As a direct consequence of this, the stagnation-point flow has been the focus of a considerable amount of interest within the field of classical hydrodynamics [1]. However, a stagnation-point flow can be formed in porous media in a variety of different circumstances. One technique to increase heat transmission in microreactors that are hosting highly exothermic activities is to fill the pores of a porous medium that is hosting such activities [2].

Rarely is the topic of chemical systems, particularly those involving stagnation flows across a curved body that is enclosed by a porous substance, brought up for discussion. Solute diffusion, heat transmission by chemical radiation, hydrodynamics and chemical reaction of stagnation flows are some of the many factors that could be at play here. Electrochemical systems and thermochemical solar reactors are examples of industrial applications that make use of impinging flows in porous media [3].

As a result of this, it is absolutely necessary to research, enhance, and imitate them. The local thermal equilibrium (LTE) is widely used when talking about porous catalytic reactors due to the fact that it takes into account a thermally homogeneous mixture of fluid and solid. This assumption, however, is not valid in circumstances in which there are steep temperature gradients as a consequence of the existence of a major heat source or sink, in addition to the impacts of Soret and Dufour [4].

One technique that can be utilised in order to imitate the natural processes that take place inside of the brain is known as an artificial neural network, or ANN for short. This approach gets its cues from the neural system and is built upon its three fundamental components, which are the input data, the training process, and the output data. This method takes its cues from the neural system and is constructed upon its three primary components. Over the past few years, this method has evolved into a cutting-edge instrument that can optimise, forecast, and analyse a wide variety of complex engineering systems [5].

The conventional methods for modelling such a large data set call for an excessive amount of time and are prone to errors; ANN offers a novel option. The application of ANN to the management of energy has proven to be beneficial in the

resolution of a variety of challenging problems, including those that are encountered in multiphase flow. ANN has also been shown to be beneficial in the resolution of a number of other difficult problems [6].

It takes a lot of time and requires a lot of processing power to investigate many different fluid mechanics difficulties using typical methods. The examination of these difficulties is made more difficult as a result of the complexity that is brought about by the presence of a large number of characteristics that are interrelated. It is often necessary to perform a large number of calculations in order to accurately predict how an issue will behave in such a setting; however, machine-learning approaches such as ANN can be of assistance. In order to accurately predict how an issue will behave in such a setting, it is often necessary to perform a large number of calculations. It is self-evident that a modelling tool with a price point that is fair is required in order to properly handle the situation that is currently at hand [9].

In order to identify an algorithm that offers a high level of performance, we investigate a variety of ANNs to see what we can come up with. The use of non-linear heat transfer, which has been shown to improve both the accuracy of forecasts and the quality of studies, is the method that is applied in order to accomplish this goal. Additionally, utilising the thermal non-equilibrium hypothesis helps produce more detailed modelling of local heat transport than would otherwise be possible. This is because the hypothesis assumes that temperatures are not in equilibrium [10].

LITERATURE SURVEY

Sheri and Shamshuddin [11] analysed the boundary layer of a chemically reactive flow in the vicinity of a porous plate. It was hypothesised that there was also a magnetic field in the region, in addition to the radiation heat transfer and viscous dissipation that were already known to be there.

The first major efforts to discover a solution to this problem were performed by Chao et al. [12]. Their approach entailed the utilisation of a catalytic porous bed, a chemical reaction, and a stagnation-point flow. The governing equations could be solved by combining two distinct methods, namely the perturbation approach and the finite element methodology. Both of these methods are examples of how governing equations can be solved. As a result of a higher rate of conversion from reactants to products, it was found that the temperatures required to be higher, but the concentrations of the reactants needed to be lower. This was due to the fact that the activation energy and the solute diffusion rate were both decreased as a consequence of the increased conversion.

Pal and Biswas [13] used the singular perturbation method to carry out analytical research of double-diffusive transport. This study was an investigation of analytical behaviour. During the investigation, which took place in a porous media and involved oscillatory flow, it was carried out across a plate. When the response parameter was increased, there was a subsequent decrease in concentration, which was accompanied by an increase in the skin frictional coefficient.

Tlili et al. [14] conducted an investigation on the effects of chemical and thermal radiation on the magnetohydrodynamic (MHD) was surrounded by porous substance. It has been established that thermal slip, magnetic fields, a rise in the Reynolds number, and an increase in the proportion of solid volume all have a detrimental impact on the amount of heat that is transferred via convective means.

Khan et al. [15] conducted their research on a porous medium in order to investigate the convective heat transfer in an MHD flow over a stretched sheet. This type of heat transfer takes place during the stagnation point of the flow. The similarity technique, which was used to reduce the number of governing equations, was followed by the discovery of numerical solutions for the chemical process that was a part of the domain. This discovery came about as a result of the usage of the similarity method. In addition to this, it was demonstrated that an increase in the number of chemically reactive species, the Prandtl number, or the Lewis number all have the effect of dampening the temperature and concentration profiles.

Alizadeh et al. [16] focused their attention on the double diffusion that takes place in catalytic porous media when an impinging flow is applied to a cylinder. In order to get as close as possible to the underlying physics of the problem, mathematical modelling was done. The goal of this modelling was to get as close as possible to the underlying physics of the problem. They followed the lead of previous research in emphasising the preponderant influence of the Biot number. This was done to emphasise the relationship between the three numbers.

PROPOSED METHOD

Specific gravity of a porous medium can range anywhere from 2.45 to 19 gigapascals (GPa) in hardness. Specific gravity is determined by the soot content as well as the medium overall composition. If the bulk hardness of alumina needs to be preserved, the utilisation of fullerene soot comes highly suggested. By comparing these data to those for alumina, one may potentially get at the conclusion that the hardnesses of the materials listed here are up to 4.3 times higher than those stated for alumina. This is a plausible conclusion to arrive at. The comparison of the data presented here with those for alumina will lead to the discovery of this finding. The samples that have been sintered maintain the hardness of very pure and exceptionally dense alumina at a level that is within 97% of the level it was at when it was in its original state.

The most long-lasting samples were those that had been strengthened by one minute of heating at temperatures of 1300 and 1500 degrees Celsius with one weight percent fullerene soot. Testing for alumina is practically necessary because of the low levels of soot. This is because there is a relatively modest amount of soot. The problem is that doing so reduces resilience, and that where the challenge lies. In contrast, the samples that were reinforced with MWCNT soot have a higher porosity, which results in a reduced overall hardness which is shown in fig 1.

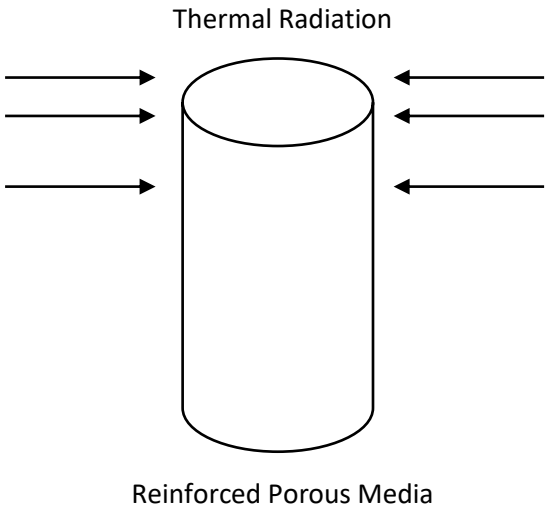

Figure 1: Reinforced Porous Material

Figure 1, which may be seen at this location, provides a concise representation of the conditions that have contributed to the current issue that we are dealing with. Consider a cylinder that is only open on one end, that has a catalyst layer on its surface, and that is surrounded on all sides by a porous media that is totally filled with fluid. This cylinder would be an example of a catalytic reactor. It is expected that the chemically reactive zeroth-order substance completely covers the exterior of the cylinder, which is heated to a constant temperature. There is a continuous chemical reaction going on in the fluid phase of the reinforced porous substance, and this reaction is dependent on the temperature.

In the following paragraph, we will go over the process by which the surface of the cylinder transforms into the position of a stagnation point flow that is uniform. In the equations, the terms solid and liquid are denoted by the s and f, respectively (8).

The following boundary conditions need to be satisfied in order to ensure that the equation for mass transfer can be completely solved:

$r=a: \partial C/\partial r = -kRD = \text{Constant}$; $r=\infty: C \rightarrow C\infty$

where,

kR - kinetic catalytic reaction,

D - molecular diffusion coefficient, and

C∞ - flow of mass concentration.

ANN

With the assistance of a type of artificial neural network called a Multilayer Perceptron, we generate forecasts in this investigation concerning the temperatures of non-dimensional solids (θs), fluids (θf), and concentrations (ϕ). This network is made up of many layers of neuronal connections. In general, people refer to the most frequent ones as the input, hidden, and output layers, in that particular sequence which is shown in fig 2.

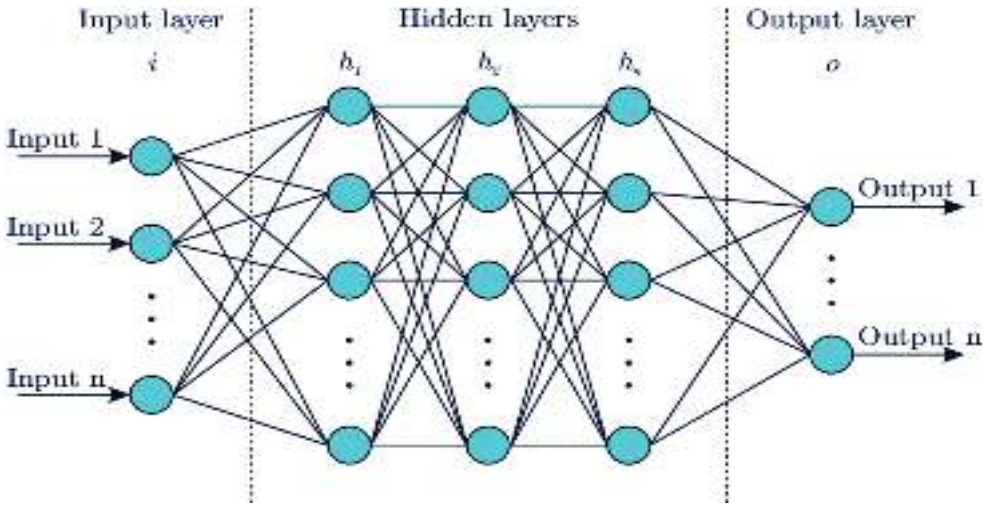

Figure 2: ANN

Figure 2 depicts an artificial neural network (ANN) in a simplified form of its architecture, which consists of n inputs, k hidden neurons, and a single output neuron. The ANN was designed to simulate natural neural networks. When a neuron connects to the neurons in the layer above it, it brings with it a weight coefficient that it uses to calculate the strength of the connection. Backpropagation of error is used during the training process to fine-tune the weights across a number of rounds. This is done over the course of several sessions. This procedure is repeated repeatedly until the required degree of precision is reached. An epoch or an iteration is a full forward-backward cycle that integrates new weight coefficients. In this context, either term can be used interchangeably. The accuracy of the algorithm forecasts is evaluated based on how closely they correspond to another collection of data referred to as benchmarking data.

ANNs are computational structures that, through an iterative learning process, are able to learn the link between a set of input variables and a set of output variables. Even the most complex and non-linear questions can be answered by these networks with nothing more than elementary mathematical operations like addition and multiplication. After a neural network has been trained, it can be used to make predictions about a target variable by drawing on the information contained in a separate dataset referred to as a holdout, with just a minimal amount of additional fine-tuning being necessary.

The vast majority of neural networks, which are often referred to as ANNs, are constructed up of neurons, which are weighted connections between successive layers of the network (edges). Each and every artificial neural network (ANN) has at least one hidden layer, along with at least one input layer and at least one output layer. A perceptron is a fundamental building element that is used in the construction of artificial neural networks. Each individual input in a perceptron is given a weight, and the sum is computed by using a function referred to as activation of the neuron.

A different function is utilised to perform the calculations necessary to determine the outcome. An artificial neural network, often known as an ANN, is a structure that consists of multiple layers and is built from stacked perceptrons. If we make the assumption that the outputs of the network, which are symbolised by the symbol zi, are decided by a summing function, then we obtain the following result if the inputs to the ith perceptron are as follows:

$zi = \sum xijwij+bi$

where

n - inputs;

m - neurons in a layer;

wij - jth neuron weight, and

bi - bias term.

It is possible to reduce the complexity of the zi matrix representation to the following:

$zi=wiTxi+bi$

where

$wi=[wi1,wi2, \ldots, win]T$

$bi=[bi1,bi2, \ldots, bin]T$

Iterative change of the weights and bias components of a perceptron can be used to improve the capacity of a perceptron to improve its estimates of the output values in response to a specific loss function. The approach corrects the network parameters in line with the errors that are computed with the help of observed and estimated data. This correction is based on the parameters of the network. The disparity between the expected value of the network output at iteration n (i.e., dn) and the actual value of the output is referred to as a loss term (yn).

$L(n)=Loss(dn, yn)$

where

Loss - function for the yn and dn, that quantifies the difference between the actual output values and the estimated values, and where yn and dn are the actual output values and the estimated values, respectively. In order to update the weights of the network based on this loss term, it is possible to utilise gradient descent learning at the neuron level.

$wij(n+1) = wij(n)-\eta\ (\partial L(n)/\partial wij(n)0$

where,

n - iteration,

wij - weight between j neuron to i,

η - step size, and

$\partial\ L(n)/\partial wij(n)$ - Loss gradient w.r.t wij.

Experimentation is the primary way for fine-tuning a network hyperparameters, including the step size, and is the one that is most commonly used. In the process of updating biassed terms, a methodologically analogous approach is utilised as part of the process.

The values of each neuron can be transformed from an unknown range using a non-linear function that is referred to as the activation function. This function is capable of converting values from a range such as [1, 1] or [0, 1], respectively. The sigmoid function, the hyperbolic tangent (tanh), and the rectified linear unit (ReLU) are the three activation functions that are most frequently used in artificial neural networks (ANNs). A summation term that reflects the activation function of the perceptron is included in the below equation.

$\sigma(z)=1/(1+e-z)$ (sigmoid)

$\tanh(z)=21+e-2z-1$

$ReLU(z)=\{z \quad if\ z>00 \quad if\ z\leq 0$

At this location, research is being conducted to investigate the efficacy of neural networks in accurately predicting the spread of disease across the United States. The ANN is a popular type of feedforward ANN that extends the (single) Perceptron model by including one or more hidden layers in the middle of the input and output layers. The ANN is put to use for classification and regression work during the supervised learning process.

RESULTS AND DISCUSSIONS

The use of artificial neural networks (ANN) should be avoided unless it can be shown that the numerical approach used to solve the governing equations adequately represents the physics that lies behind them. Until this can be proved, the use of ANN is not warranted. After that, the ANN algorithm is trained by employing the outcomes of the computations carried out on the set of equations. The materials and its configurations are shown in table 1, and the results achieved by performing several metrics are shown in fig 3- fig 7.

Table 1: Material and its configuration

Model	Algorithm structure	Functions
Porous Media	8:4:1	Gaussian
Reinforced Porous Media	8:4:1	Polynomial kernel
Reinforced Porous Media with ANN	8:100:1	Ensemble

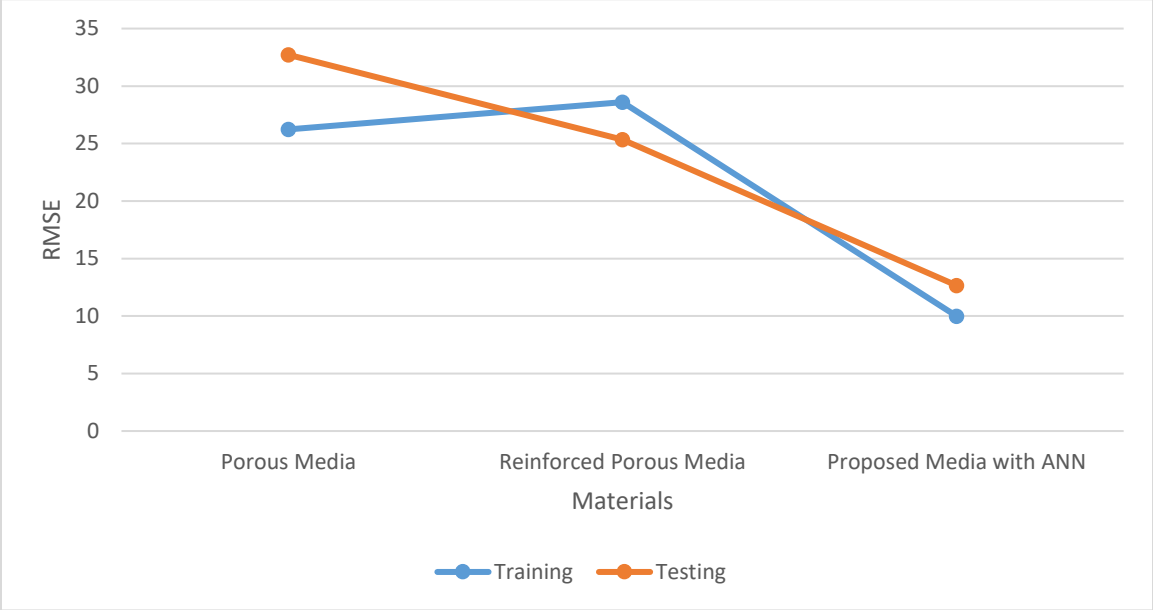

Figure 3: RMSE

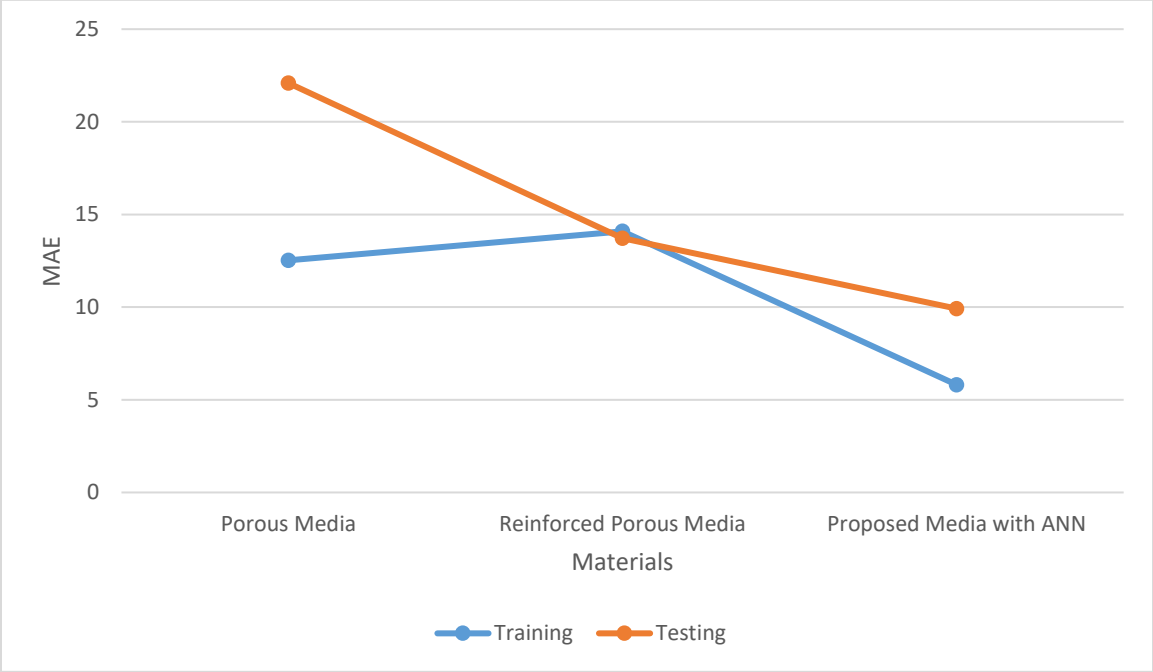

Figure 4: MAE

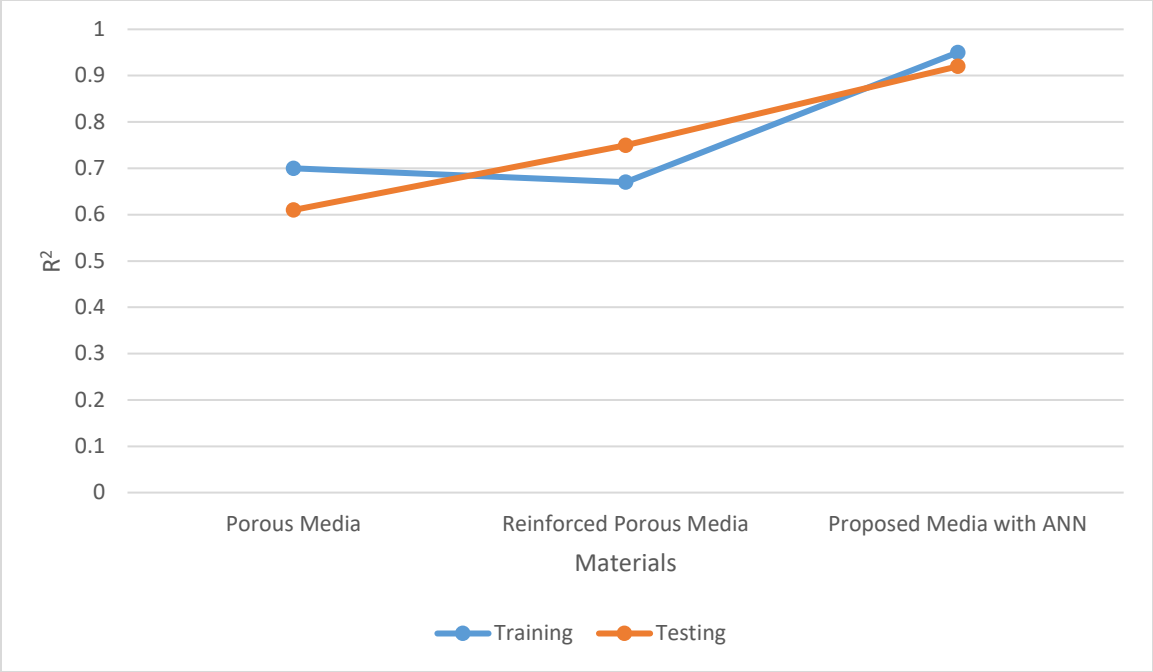

Figure 5: R2

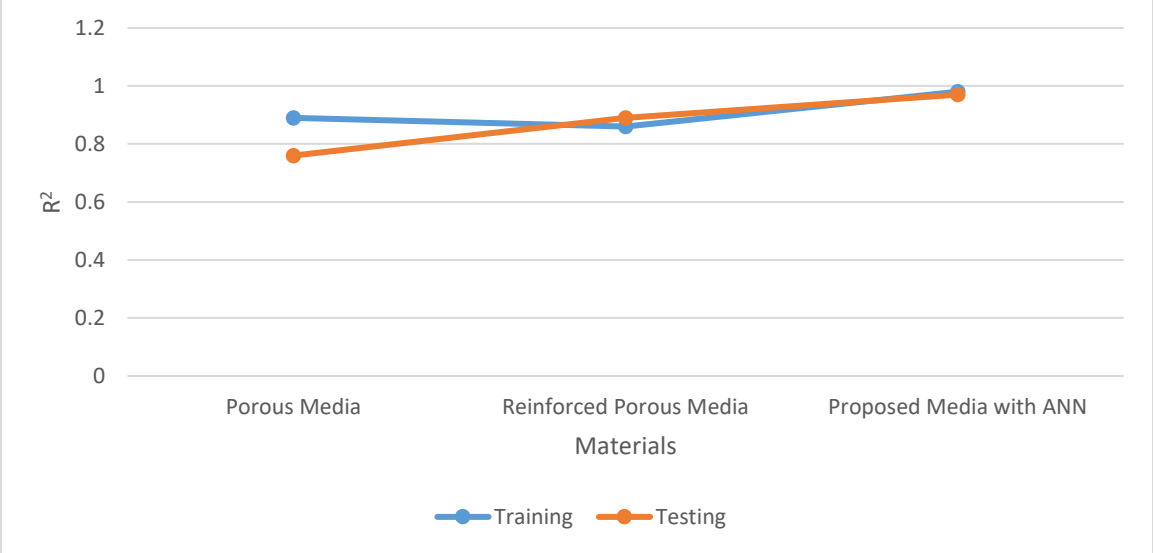

Figure 6: ROC

Figure 2-6 provides a comparison of the non-dimensional components of temperature with the non-dimensional components of velocity. The relative error of these findings, which were derived from the prior study, is often less than 0.1% of the time. The fact that this possibility already exists and that it has been properly investigated is very encouraging news. In addition, it was found that the results based on the current local thermal non-equilibrium and those of LTE reported demonstrate no noticeable difference in the limit of a large value of Biot numbers in the porous medium, which is physically expected.

The introduction of radiation into the flow field has the ability to bring about shifts in the way temperatures are distributed throughout the environment. Surprisingly, radiation does not have any effect whatsoever on the temperature of the fluid. This is because the temperatures of the fluid and the solid are different in a non-equilibrium thermal environment, which is essential for the radiation heat transfer mechanism to function properly. The condition must be non-equilibrium in order for the mechanism to work properly. However, if the value of the radiation parameter is increased to its maximum, the temperature of the solid will reach the temperature of the freestream over a shorter radial distance.

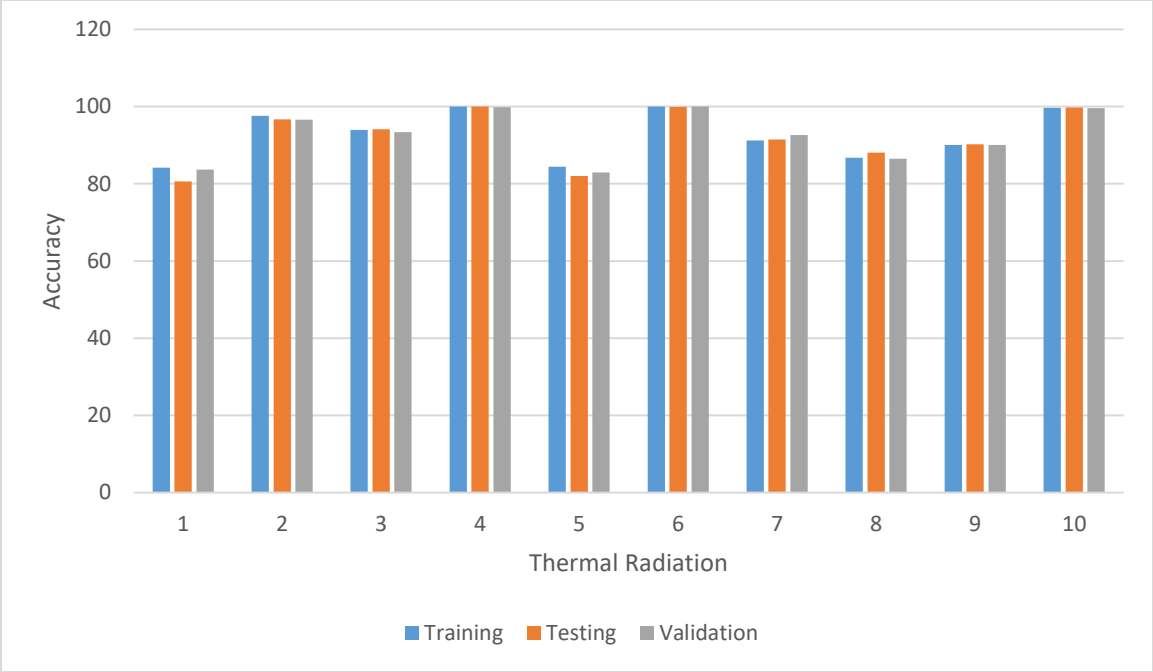

Figure 7: Accuracy

This occurs when the value of the radiation parameter is increased to its maximum. Because of this, we are aware that there is a limit to the extent to which radiation heat transport can have an impact on a porous domain. This came about as a direct result of the previous point. The study is able to see how the temperature of the wall effects the temperature distribution of the fluid and the porous solid. Find out how much of a role the temperature parameter has in determining the system's overall thermal response, and use this information to make decisions. Both convection and radiation are able to move heat more effectively when the temperature of the wall increases.

If the temperature does not influence the rate of the reaction, then the concentration must have a substantial impact on how the temperature is maintained. In order to accomplish the desired outcome of reducing the non-dimensional concentration by one order of magnitude near the cylinder wall, it is necessary to increase the reaction rate. This indicates that the mass boundary layer is becoming thinner as a result of greater species formation at the surface of the catalyst as a result of the increased reaction rate. This is because the increased reaction rate is the cause of the increased species formation at the surface of the catalyst. This is due to the fact that a higher reaction rate is the root cause of a greater number of species being created.

In addition, this image illustrates the impact that various values of the Soret number have on the mass distribution when applied to a variety of heat-generating intensities at a range of different levels. Because it is simpler for mass to migrate from the warm zone to the cold zone when the SORET number is negative, the mass boundary layer can be regarded complete at smaller radial distances. This allows for more efficient mass transfer from the warm zone to the cold zone. This is because when the Soret number is negative, heat transfer stimulates the transfer of mass, but when the Soret number is positive, heat transfer and mass transfer work in the opposite manner. The reason for this is that when the Soret number is negative, heat transfer stimulates the transfer of mass. Because of this, the mass boundary layer gets thicker as the SORET number goes up. This is a direct result of the situation.

Boosts that are applied to the Nusselt number are significantly influenced by increases in the heat source parameter, which can have a considerable multiplicative effect. This indicates that an increase in temperature differential, which can be induced either by an increase in the heat source or an increase in the response rate strength, is what makes the convective heat transfer more effective. This increase in temperature differential can be induced by either an increase in the heat source or an increase in the response rate strength.

Changes in the Damkohler number have a relatively minor impact on the Nusselt number. Because of this, it is possible to maximise the correspondingly negative value of the Nusselt number whenever the Soret number has a value that is in the negative. The absolute value of the Soret number will cause the Nusselt number to decrease. This is due to the fact that thermal diffusion will become more prevalent than convection as the Soret number grows. In spite of the fact that the activation energy might take on a variety of different values, the Nusselt number has a propensity to converge on a single maximum.

CONCLUSIONS

As part of this investigation, we develop a machine learning prediction model in order to compute an estimate of the rate of mass transfer in a porous medium whose foundation is an alumina matrix. This conclusion was reached after it was determined that both sets of results are based on the current local thermal non-equilibrium. After demonstrating that both sets of results were consistent with one another, this conclusion was reached as a result. These two comparisons show how trustworthy the equations that were selected and the numerical technique that was utilised are by demonstrating their dependability. In previous publications that they have authored,

the writers have provided a lengthy list of proofs and provided further depth of explanation regarding the numerical strategy that they applied.

REFERENCES

i. Seenivasan, D., Elayarani, M., & Shanmugapriya, M. (2021). Heat and Mass Transfer Analysis of Al 2 O 3-Water and Cu-Water Nanofluids Over a Stretching Surface with Thermo-diffusion and Diffusion-Thermo Effects Using Artificial Neural Network. Trends in Mechanical and Biomedical Design, 417-434.

ii. Hajimirza, S., & Sharadga, H. (2021). Learning thermal radiative properties of porous media from engineered geometric features. International Journal of Heat and Mass Transfer, 179, 121668.

iii. Duan, J., & Li, F. (2021). Transient heat transfer analysis of phase change material melting in metal foam by experimental study and artificial neural network. Journal of Energy Storage, 33, 102160.

iv. Pati, S., Borah, A., Boruah, M. P., & Randive, P. R. (2022). Critical review on local thermal equilibrium and local thermal non-equilibrium approaches for the analysis of forced convective flow through porous media. International Communications in Heat and Mass Transfer, 132, 105889.

v. Shilpa, B., Leela, V., Prasannakumara, B. C., & Nagabhushana, P. (2022). Soret and Dufour effects on MHD double-diffusive mixed convective heat and mass transfer of couple stress fluid in a channel formed by electrically conducting and non-conducting walls. Waves in Random and Complex Media, 1-22.

vi. Barnoon, P., Toghraie, D., & Rostami, S. (2020). Optimization of heating-cooling generators with porous components/cryogenic conductors on natural convection in a porous enclosure: Using different two-phase models and single-phase model and using different designs. International Communications in Heat and Mass Transfer, 111, 104472.

vii. Sheikholeslami, M., Gerdroodbary, M. B., Moradi, R., Shafee, A., & Li, Z. (2019). Application of Neural Network for estimation of heat transfer treatment of Al2O3-H2O nanofluid through a channel. Computer Methods in Applied Mechanics and Engineering, 344, 1-12.

viii. Mehdi, S., Nannapaneni, S., & Hwang, G. (2022). Structural-material-operational performance relationship for pool boiling on enhanced surfaces using deep neural network model. International Journal of Heat and Mass Transfer, 198, 123395.

ix. Maddah, H., Ghazvini, M., & Ahmadi, M. H. (2019). Predicting the efficiency of CuO/water nanofluid in heat pipe heat exchanger using neural network. International Communications in Heat and Mass Transfer, 104, 33-40.

x. Xi, L., Xu, L., Gao, J., Zhao, Z., & Li, Y. (2022). Cooling performance analysis and structural parameter optimization of X-type truss array channel based on neural networks and genetic algorithm. International Journal of Heat and Mass Transfer, 186, 122452.

xi. Sheri, S., & Shamshuddin, M. D. (2018). Finite element analysis on transient magnetohydrodynamic (MHD) free convective chemically reacting micropolar fluid flow past a vertical porous plate with Hall current and viscous dissipation. Propulsion and Power Research, 7(4), 353-365.

xii. Chao, B. H., Wang, H., & Cheng, P. (1996). Stagnation point flow of a chemically reactive fluid in a catalytic porous bed. International journal of heat and mass transfer, 39(14), 3003-3019.

xiii. Pal, D., & Biswas, S. (2018). Magnetohydrodynamic convective-radiative oscillatory flow of a chemically reactive micropolar fluid in a porous medium. Propulsion and Power Research, 7(2), 158-170.

xiv. Tlili, I., Khan, W. A., & Khan, I. (2018). Multiple slips effects on MHD SA-Al2O3 and SA-Cu non-Newtonian nanofluids flow over a stretching cylinder in porous medium with radiation and chemical reaction. Results in physics, 8, 213-222.

xv. Khan, M., El Shafey, A. M., Salahuddin, T., & Khan, F. (2020). Chemically Homann stagnation point flow of Carreau fluid. Physica A: Statistical Mechanics and its Applications, 551, 124066.

xvi. Alizadeh, R., Karimi, N., Mehdizadeh, A., & Nourbakhsh, A. (2019). Analysis of transport from cylindrical surfaces subject to catalytic reactions and non-uniform impinging flows in porous media. Journal of Thermal Analysis and Calorimetry, 138(1), 659-678.

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Synthesis and study of transition metal doped ferrites useful for permanent magnet and humidity sensor applications

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Highlights

- The properties of ferrites are mainly depending on chemical composition, synthesis method.
- We have prepared 100% replacement at A site AB_2O_4 materials with several dopant i.e Mn^{2+}, Co^{2+}, Ni^{2+}, Cu^{2+}.
- Samples were prepared by solution combustion method using glucose as fuel.
- VSM results reveals that samples were turns ferrimagnetic to ferromagnetic nature with changing substitution.
- Samples exhibits highly porosity so that these samples very good candidates for humidity sensor applications.

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Data Mining Application In Effective Knowledge Management: An Empirical Study

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ABSTRACT

Data mining is a process that involves the use of advanced analytical techniques to discover patterns and relationships in data. It has been widely applied in various fields, including knowledge management, to extract useful information from large data sets and support decision making. Effective knowledge management is critical for organizations to stay competitive and achieve their goals. It involves the creation, capture, sharing, and use of knowledge within an organization. Data mining can play a significant role in supporting effective knowledge management by enabling organizations to discover hidden knowledge and relationships in their data and use it to inform their decision making. Data mining is the application of statistical analysis, data visualization, and database management to discover patterns in large data sets involving human behavior and activities. Data mining can be used for many purposes, including the identification of fraudulent transactions in a credit card

ENHANCEMENT OF BANDWIDTH AND BEAM FORMING ANTENNA ARRAYS IN 5G CELLULAR COMMUNICATION NETWORKS

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Abstract

In general, an antenna is an interface that transmits signal data and receives incoming signal data. The radio waves received through this interface help to do the necessary things for the transmitter and receiver circuit systems used there. Also a radio transmitter antenna transmits different waves generated from the current generated at its tip to different areas. In this paper, the functions of increasing its bandwidth by making changes in some dimensions of the antenna are proposed. The oscillating current used in its transmitter area increases its vibration waves. This increases the amount of airwaves generated there and the number of data transmitted through it. So its bandwidth is more likely to be high. Furthermore these functions generate varying magnetic fields so that the time taken by the cross-sectional magnetic fields of the antenna varies.

Keywords:

Antenna, Radio Waves, Electric Current, Radio Transmitter, Bandwidth, Broadcasting, Two-Way Radio

1. INTRODUCTION

In this modern antennas are used to transmit and receive data through a communication wire channel or wireless channel. Or in other words, it can be defined as transmitting and receiving radio waves in all horizontal or specific directions [1]. These antennas act as an interface between electrical signals and radio signals [2]. Here, electrical signals are transmitted through metal conductors and radio signals are transmitted through free space. The main part of the antenna is made up of a conductor and the wider the antenna, the better the antenna performance [3-4]. At that time, wavelength comparison was based on the wavelength of the electromagnetic waves used [5]. Generally, an antenna with a long wavelength band is usually made of a transmitting wire, and an antenna with a very short wavelength band is mainly made of a plate conductor [6]. A conductor rod is used in the intermediate wavelength band. In these antenna conductors, current with a frequency similar to the wavelengths used, and the electrical charges are distributed with it [7]. For example, a strong electric field is generated near the conductor end of a high power transfer antenna due to high density electric charges, and a large current flows near the feed point [8]. When a fluorescent lamp is brought near such an antenna for that purpose, it burns due to a strong electric field [9]. Note that the current in the antenna is different from the current in the battery or the current in the household, and it is either high frequency current or very high frequency current, the direction of which repeats the vibrations at very high speeds and is continuous [10]. Even on a single wire, the current will vary in magnitude and direction depending on the location. However, if an incandescent light bulb is connected to the transmitter output terminal instead of the transmitting antenna, the current will flow and it will glow [11].

When an antenna individually, at a certain power, in a certain direction, produces the best transmission, how can it produce efficient output if a few more components are added? It was this idea that led to the invention of antenna arrays. The antenna sequence can be better understood by observing the following pictures [12]. Notice how the antenna rows are connected. An antenna array is a radiation system that consists of individual radiators and components [13]. Each of these radiators has its own induction field when operating. The elements are placed very close together, each in the induction field of a neighbor. Therefore, the radiation pattern they produce is the vector sum of the individuals. The Fig.1 shows another example of an antenna array. When designing these antennas the spacing between the elements and the wavelength corresponding to the wavelength must be kept in mind. The antennas radiate individually and when in line, the radiation of all the elements together brings together the radiation beam, which has a higher gain, greater mobility, and better performance.

When a high frequency current is transmitted through the antenna, a magnetic field is generated and an electric field is generated due to the charge distribution associated with the current. The generated electric and magnetic fields also oscillate as the current and electric charge change with oscillation depending on the operating frequency. However, since the fluctuations in the electric field excite one magnetic field and the fluctuations of the magnetic field induce an electric field, the vibrating electric and magnetic fields generated near the antenna propagate like waves in water to the surroundings while the other stimulates the surface [14]. It is an electromagnetic wave, and the radiation coming from the transmitting antenna is made according to such a principle. Note that the magnetic field and magnetic field strength of the electromagnetic waves are proportional to each other, so the strength of the electromagnetic waves is usually denoted by the electric field strength. The electromagnetic wave frequency of 3×10^{12} Hz or less used for wireless communications is called the radio wave. On the other hand, in order to cancel the electric field components of the incoming electromagnetic field, the receiving antenna acts to transfer current to the receiving terminal by flowing current through the antenna conductor [15]. This is the principle of the receiving antenna.

2. RELATED WORKS

Chuang, S.F et al. [1] discussed the oscillating electric and magnetic fields of the incoming radio waves exert power on the

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A Survey - Security and Privacy Issues In Cloud Computing

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ABSTRACT

Cloud Computing is inevitability as the number of connected devices are growing and also the computing and storage needs. Cloud computing converts the way Information Technology is encouraged and succeeded, cost worth, faster invention, faster time-to-market, and the capable to measure applications on demand. Security of the cloud is a major challenge today which has to be addressed. Several new technologies are emerging to keep the cloud services secure and efficient at the same time. This paper discusses the cloud services, risk associated with it and security measures in cloud computing.

Keywords : Public cloud, Private cloud, Hybrid cloud, Infrastructure as a service (Iaas), Software as a service (Saas), Platform as a service (Paas)

I. INTRODUCTION

Cloud Computing [1] is gaining importance in leaps and bounds and is expected to increase its usage in years to come. Cloud computing enables resources to be shared in a pool that can be rapidly provisioned and can be offered to the user with minimal interaction of the service provider. The main aim of the cloud computing is to provide secure, [2] quick and convenient data storage and computing service to the users. This paper discusses available types of cloud and various types of services offered to the end users in succeeding sections. The clouds which are accessible to the masses by internet wherein the user uses the service like application and storage are called public clouds.[10] The Clouds which are owned by a single company and are restricted to be used by its own set of people are called private cloud.[9] The Hybrid approach,[11] combines the above two types and is discussed in detail further in this paper. The highlight of the security issue on cloud computing is focused in the SPI model i.e. Software as a Service (SaaS), Platform as a Service (PaaS) and Internet as a service (IaaS) and id discussed in detail in this paper.

The Saas is the service provided to the user for using application running on the cloud. The PaaS[5] is the service offered by the service provider to install customer's own application on the service provider's cloud infrastructure without installing any additional tools and software on their local machines. The Iaas is the service provided to the user to utilize the facility of storage, processing and networking so that customer can run and deploy any software or tool on this platform. The paper then discusses and identifies the main vulnerabilities in these kinds of systems and also the threats related to these systems.

II. METHODS AND MATERIAL

2.1 TYPES OF CLOUDS

Cloud computing comes in basic three forms: public clouds, private clouds, and hybrids clouds. Virtual private clouds and Community clouds are few

modifications of the basic clouds. Depending on the type of data public, [10] private, and hybrid clouds, can be analyzed in terms of security and management requirement.

Fig.1 Types of cloud

2.2 PUBLIC CLOUDS

A public cloud [10] is basically the internet and is implemented using a shared data center infrastructure of hardware and software that is shared by multiple users. The data center is off-premises. Public Cloud service providers use the internet to provide resources, such as applications and storage to the general public, or on a 'public cloud. Examples of public clouds include Amazon Elastic Compute Cloud (EC2), IBM's Blue Cloud, Sun Cloud, Google App Engine and Windows Azure Services Platform. The disadvantages of the public cloud is limited configuration, security, and specifications of SLA, making it unideal for services using delicate data that is subject to compliancy principles.

2.3 PRIVATE CLOUDS

Private clouds are data centers which are owned by a single company that provides flexibility, scalability, provisioning, automation and monitoring. A Private Cloud[9] is implemented using a dedicated infrastructure of hardware and software that is used privately by an organization. The data center can be on-premises or off-premises. It is not shared with another organization. The goal of a private cloud is to use the cloud "as- a-service" for its employees to gain the benefits of cloud architecture rather than offerings to external customers. Private clouds are quite expensive with typically uncertain economies of scale. This type of cloud can be an option for Small-to-Medium sized enterprises and is mostly used by large scale enterprises. Private clouds are focused on security and compliance, and keeping resources within the firewall.

2.4 HYBRID CLOUDS

A Hybrid Cloud [11] is any combination of Private cloud and public cloud. Similarly it is also a combination of Virtual Private Cloud and one or more Public Clouds. The resources are shared among the Clouds in Hybrid approach. By using a Hybrid approach, companies can maintain control of an internally managed private cloud while relying on the public cloud as and when needed. For example during peak times a single application, or portions of applications can be transferred to the Public Cloud. This will also be useful during expected disruption: floods, scheduled maintenance windows, power failure. Due to the cost, it is hard to maintain an off-premise disaster recovery site for most organizations. Though there are some lower cost solutions and alternatives that slow down the band an organization gets, at this times the recovery of the data quickly reduces. Cloud based

Disaster Recovery (DR)/Business Continuity (BC) services allow organizations to contract failover out to a Managed Services Provider that maintains multi-tenant infrastructure for DR/BC, and specializes in getting business back online quickly.

2.5 VIRTUAL PRIVATE CLOUDS

A Virtual Private Cloud is created using a shared data center infrastructure of hardware and software. The data center is most likely off-premises. It is shared with multiple organizations. If the data center is not shared then that is a Private Cloud. The topmost layers of the Cloud Computing Stack (PaaS and SaaS) in a Virtual Private Cloud is dedicated to the

organization. The lower layer of IaaS is shared among various users in a Virtual Private Cloud. A Virtual Private Cloud can join in a Hybrid Cloud also.

2.6 COMMUNITY CLOUDS

A Community Cloud acts as a Private Cloud, Virtual Private Cloud, Public Cloud, or Hybrid Cloud. The design of a Community Cloud meets the need of a community. Such communities involve people or organizations that have shared interests. The communities such as industrial community, research community, standards community, and so on. So, a Community Cloud is not considered to be a cloud since it looks like it. Only few member organization data center support the Community Cloud.

2.7 TYPES OF CLOUD SERVICES

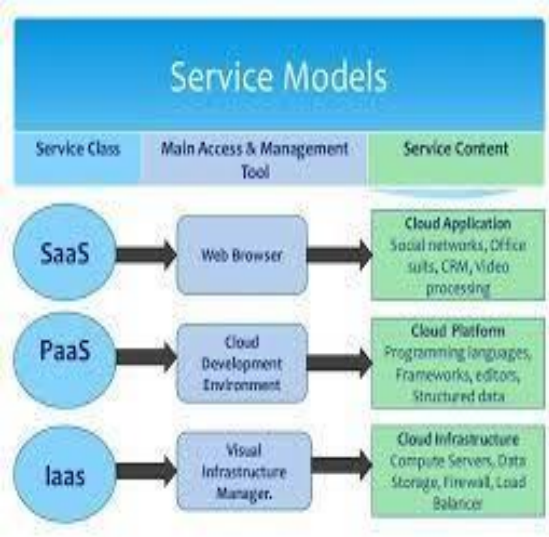

Fig.2 Types of Cloud Services

2.8 INFRASTRUCTURE AS A SERVICE (IaaS)

This service provides the customers with a collection of bare metal devices and software which are required to fulfill the computational and storage needs of the users. IaaS gives business access to web architecture, like storage space, servers, and connections, without purchasing and managing this infrastructure. It is economical to both service provider and user, in particular IaaS allows an internet business a way, to develop and grow on demand. Both PaaS [5] and SaaS clouds are a layer overlaid on IaaS clouds. The examples of IaaS are Amazon EC2 and Rack space Cloud.

2.9 PLATFORM AS A SERVICE (PaaS)

It is a layer over Iaas. PaaS has all flavors of operating environment to meet the various computational needs of the customer. The customer has the freedom to run any application without any additional expenditure of the operating environment and hardware requirements. Some examples of a PaaS [5] system include Mosso, Google App Engine, and Force.com. Main benefit of a PaaS is that it is an economical option for the user where the user can initiate application with no stress of the platform required for that application. A little porting may be required if you are dealing with an existing app. PaaS offers a lot of scalability by design because it is based on cloud computing. If you want a lean operations staff, PaaS is an option which will provide maximum output with limited staff.

2.10 SOFTWARE AS A SERVICE (SaaS)

SaaS is the topmost layer in the cloud stack which encompasses the software/applications [18] for the users. SaaS delivers the software services to the user over web. SaaS offers the users the advantage of not installing any software on their personal computers and neither the burden of maintenance of software which they use as per their computational needs. Examples of SaaS running on cloud are Gmail and Sales force, but it is not necessary that all SaaS has to be based on cloud computing.

III. THREATS RISKS OF CLOUD COMPUTING

There are a number of security risks [14] associated with cloud computing that must be adequately addressed:

1. LOSS OF GOVERNANCE.

While using public cloud, user have to surrender control to the cloud provider over a number of issues that may affect security. The service agreements provided by the service provider may not offer an assurance to solve such issues on the part of the cloud provider. This leaves a gap in security defense.

2. RESPONSIBILITY AMBIGUITY.

Responsibility of security issues may be split between the provider and the customer. This division of responsibility creates a critical vulnerability of unallocated responsibilities of critical security issues. This split is likely to vary depending on the cloud computing model used (e.g., IaaS vs. SaaS).

3. AUTHENTICATION AND AUTHORIZATION.

Cloud resources can be accessed from anywhere in the world on the Internet. This brings out a very important requirement of establishing with certainty the identity of a user especially if users now include employees, contractors, partners and customers. Authentication and authorization thus becomes a critical requirement to ensure security.

4. ISOLATION FAILURE.

Multi-tenancy and shared resources are main characteristics of public cloud computing. The isolation of storage, memory, routing and even reputation between tenants becomes a challenge which has to be dealt with for secure cloud operations (e.g. so-called guest- hopping attacks).

5. COMPLIANCE AND LEGAL RISKS.

It is very necessary for the service provider to prove that the services provided by the cloud comply with the industry standards for the customer to be completely satisfied before hiring the cloud service. The service provider must permit audits by the cloud customer. The customer must themselves verify that the cloud provider has appropriate certifications in place.

6. HANDLING OF SECURITY INCIDENTS.

he customer may hand over detection; reporting and successive management of security incidents to the cloud service provider, but these incidents affect the customer. Notification rules need to be discussed in the cloud service agreement so that customers are not caught unaware or informed with an unacceptable delay.

7. MANAGEMENT INTERFACE VULNERABILITY.

Interfaces to manage public cloud resources are usually accessible through the Internet. Since they allow access to larger number of resources than traditional hosting providers, they pose an increased risk, especially when combined with remote access and web browser vulnerabilities.

8. APPLICATION PROTECTION.

The defense-in-depth security approach is based on a clear demarcation of physical and virtual resources, and on trusted zones. In cloud computing the responsibility of infrastructure security is delegated to the cloud provider. The organizations now need to re plan perimeter security at the network level by incorporating more controls at the user, application and data level.

9. DATA PROTECTION.

Data Protection covers unauthorized exposure or leakage of sensitive data as well as the loss or unavailability of data. It is impossible for a customer (in the role of data controller) to keep a check on the data handling practices of the cloud provider. This problem increases greatly for cases of multiple transfers of data.

10. MALICIOUS BEHAVIOR OF INSIDERS.

Malicious actions of insiders within an organization can cause substantial damage, given the access and authorizations they enjoy. In the cloud computing environment this risk increases since such activity

might may occur within the customer organization or the provider organization.

11. BUSINESS FAILURE OF THE PROVIDER.
Such failures could render data and applications essential to the customer's business unavailable over an extended period.

12. SERVICE UNAVAILABILITY.
This could be caused by hardware, software or communication network failures.

13. VENDOR LOCK-IN.
Proprietary services of a specific cloud service provider could make the customer depend on that provider only. Absence of portability of applications and data among cloud service providers creates a chance of data and service unavailability in case of a change in providers; therefore it is an aspect of security issue. The absence of interoperability of interfaces associated with cloud services ties the customer to a particular provider and switching of provider becomes a difficult task.

14. INSECURE OR INCOMPLETE DATA DELETION.

After termination of a contract with a provider the data of the user may not be completely deleted. Backup copies of data usually exist, and there is a chance that this data may be mixed with other customers' data. The benefit of multi-tenancy thus posses a considerable risk to the customer than dedicated hardware.

IV. CLOUD SECURITY GUIDANCE

The applications and data which are critical for the customers to maintain are forwarded to the cloud to avail the cloud services. This section provides a recommended series of steps for cloud customers to estimate and manage the security of their use of cloud services, with the goal of mitigating risk and delivering an appropriate level of support.

1. Ensure effective governance, risk and compliance processes exist
2. Audit operational and business processes
3. Manage people, roles and identities
4. Ensure proper protection of data and information
5. Enforce privacy policies
6. Assess the security provisions for cloud applications
7. Ensure cloud networks and connections are secure
8. Evaluate security controls on physical infrastructure and facilities

PRESENT SECURITY SYSTEM IN CLOUD

There are mainly seven categories of the cloud security. The three major problems identified after referring to the various references are legal issues, compliance and loss of control over data.
Network Security Interfaces Data Security Virtualization Governance Legal Issues E- Discovery Various sub security issues under these main categories which ensure a secure cloud system are:-

1. Network Security:-
The issue related to the communication of the networks and their configuration with respect to cloud computing setup.

Firewall: - One of the most efficient and successful protection can be achieved by installing firewall which will analyze and control communication of data and applications. It prevents the DoS attacks and any other abnormal instance on the cloud. Main advantages of a firewall are Secure Data Centre, Secure Remote Access, Identity and Management

Transit security: - Existing infrastructure of VPN (Virtual Private Network) model should be exercised

to protect the cloud from side channel attack spoofing, man in middle and sniffing.

2. Interfaces

All issues related to human and electronic interfaces like user interface, programming interface, administrative interface etc for accessing and controlling the cloud network are critical in securing the user's interest. Main interfaces which provide secure system are:

a. Application programming Interfaces (API)

b. Administrative Interface c. User Interface

c. Access authentication

3. Data Security:-

a. Confidentiality Integrity and Availability (CIA) protection must be ensured by all available means.

b. Redundancy: Mission critical data integrity and availability must be ensured while catering for redundant storage of data.

c. Data disposal: Deletion is the common technique used for the data disposal but in the parlance of cloud all the log reference, hidden backup, registers and complete destruction of data should be ensured.

4. Virtualization: - VMs (Virtual Machine) isolation and vulnerabilities of the third party virtual platform like hypervisor must be addressed to ensure the security of the user's data and application. a. Cross- VM attacks:- It calculates the providers traffic ingress and egress rate in order to steel cryptographies key and increase changes of VM placement attacks.

b. VM identification: - Lack of controls for identifying virtual machines that are being used for executing a specific process or for storing files.

c. Data leakage: - Exploitation of the hypervisor vulnerabilities in order to leak data from virtualized infrastructure.

5. Governance:-

Problems related to administrative and technical controls in cloud computing solutions are:-

a. Data control: - Moving data to the cloud means losing control over redundancy, location, file systems and other relevant configurations

b. Compliance: - Includes requirements related to service availability and audit capabilities. c. SLA: Mechanisms: - to ensure the required service availability and the basic security procedures to be adopted. Service Level Agreement between the Provider and the company should be ensured for frequent Audits and resolution of the critical issues.

d. Loss of service: - Very strong and robust disaster recovery policies and also customer side redundancy should be implemented to avoid service outages in the cloud environments.

e. Audit: - Helps security and availability assessments to be done by customers and third party participants. Fair methodology should be adopted for continuous analyzing service conditions.

6. Legal issues:- Issues related to judicial requirements and laws, like different data storage location and privilege escalation management.

a. Data storage location: - For the achievement of redundancy the data is stored in various multiple geographic locations. No common cyber laws across the globe directly or indirectly affect the law enforcement measures.

b. E-Discovery: - Confiscated hardware for investigation may also affect the stored data of other customers also. Data disclosure is critical in this case.

V. CONCLUSION

Cloud computing is the future of computing and storage technology. The exponential increase of connected devices and the need of small and portable devices for complex computation warrant

the growth of cloud computing technology. This paper has discussed the cloud technology, various security threats and prevention measures for ensuring a secure cloud system. The need for security is increasing along with the increasing demand of cloud computing services and the balance has to be maintained hand-in-hand.

VI. REFERENCES

[1]. Brian F. Cooper , Adam Silberstein , Erwin Tam , Raghu Ramakrishnan , Russell Sears, Benchmarking cloud serving systems with YCSB, Proceedings of the 1st ACM symposium on Cloud computing, June 10-11, 2010, Indianapolis, Indiana, USA [doi>10.1145/1807128.1807152]

[2]. "Security Guidance for Critical Areas of Focus in Cloud Computing", Cloud Security Alliance, Dec. 2009, [online] Available:

[3]. T. Ristenpart, "Hey You Get Off of My Cloud! Exploring Information Leakage in Third-Party Compute Clouds", Proc. 16th ACM Conf. Computer and Communications Security (CCS 09)

[4]. "Security of virtualization, cloud computing divides IT and security pros". Network World. 2010-02-22. Retrieved 2010-08-22.

[5]. Boniface, M.; et al. (2010), Platform-as- a-Service Architecture for Real-Time Quality of Service Management in Clouds, 5th International Conference on Internet and Web Applications and Services (ICIW), Barcelona, Spain: IEEE, pp. 155– 160, doi:10.1109/ICIW.2010.91

[6]. Amies, Alex; Sluiman, Harm; Tong, Qiang Guo; Liu, Guo Ning (July 2012). "Infrastructure as a Service Cloud Concepts". Developing and Hosting Applications on the Cloud. IBM Press. ISBN 978-0-13-306684- 5.

[7]. Foley, John. "Private Clouds Take Shape". InformationWeek. Retrieved 2010- 08-22.

[8]. Jump up^ Haff, Gordon (2009-01-27). "Just don't call them private clouds". CNET News. Retrieved 2010-08-22.

[9]. "There's No Such Thing As A Private Cloud". InformationWeek. 2010-06-30. Retrieved 2010-08-22.

[10]. Jump up^ Rouse, Margaret. "What is public cloud?". Definition from Whatis.com. Retrieved 12 October 2014.

[11]. Jump up^ "Mind the Gap: Here Comes Hybrid Cloud – Thomas Bittman". Thomas Bittman. Retrieved 22 April 2015.

[12]. "Business Intelligence Takes to Cloud for Small Businesses". CIO.com. 2014-06- 04. Retrieved 2014-06-04.

[13]. Désiré Athow. "Hybrid cloud: is it right for your business?". TechRadar. Retrieved 22 April 2015.

[14]. Srinavasin, Madhan (2012). "'State-of- the-art cloud computing security taxonomies: a classification of security challenges in the present cloud computing environment". ACM ICACCI'.

[15]. "Swamp Computing a.k.a. Cloud Computing". Web Security Journal. 2009-12-28. Retrieved 2010-01-25

[16]. "Top Threats to Cloud Computing v1.0" (PDF). Cloud Security Alliance. Retrieved 2014-10-20.

[17]. Winkler, Vic. "Cloud Computing: Virtual Cloud Security Concerns". Technet Magazine, Microsoft. Retrieved 12 February 2012.

[18]. "Software as a Service (SaaS)". Cloud Taxonomy. Open crowd. Retrieved 24 April 2011.

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AI BASED MACHINE LEARNING ALGORITHM IN VLSI TECHNOLOGY APPLICATION

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Abstract

Estimating power consumption in CMOS VLSI circuits using supervised learning is the focus of this investigation. Unlike more conventional approaches like the SPICE circuit modelling that has been recommended, the proposed model does not assume a predetermined set of empirical equations or parameters. Unlike other technologies, and it doesn't require the user to pay attention to the circuit topology or the connectivity to provide precise results. An alternative interpretation with improved efficiency is suggested by the proposed design, but it will require a large amount of additional data for proper implementation. The proposed architecture has certain qualities that can improve power estimation for CMOS VLSI circuits.

Keywords:
AI, Machine Learning, VLSI, NoC

1. INTRODUCTION

The requirements of the platform in terms of data transmission are satisfied by the numerous communication lines that are included in the system-on-a-chip (SoC) [1]. Globally Asynchronous, Locally Synchronous Systems (GALS), is becoming increasingly popular because of the difficulties that are inherent in the design of these on-chip communication cables for sub-micron technology. This way of designing divides a platform up into many different synchronous areas, each of which can run a different application task in parallel.

This sphere is synchronous just inside itself, and to communicate with other synchronous zones, it would employ asynchronous ways. The network-on-chip, often known as NoC, offers a new paradigm for the communication that takes place within a chip when applied to a particular topology design. Because of this, the GALS based system enables communication to proceed without any problems. In addition to this, what emerges as a result is a layout that is efficient and extensible. Furthermore, the NoC is a scalable method for meeting application communication requirements [2] in heterogeneous CPUs with multiple cores.

It is necessary to map diverse activities of a target application to different cores to achieve better performance from a GALS-based SoC architecture. Fixing this issue, which is the root cause of the difficulty in mapping applications to the NoC architecture, may result in further quality of life enhancements. Therefore, it is vital to select the most effective solution for the performance of the NoC [3].

The computer industry will eventually shift its focus to artificial intelligence to manage the vast volumes of data that are required by cutting edge programs. In the field of artificial intelligence (AI), one example of a rapidly evolving application that requires a high degree of parallelism to meet the application processing deadline is neural networks (NNs) [4]. In the case of NNs, it is possible to make use of this parallelism by distributing neurons throughout the various components of the NoC design.

Throughout the years, there have been a great number of researchers who have focused on developing various application processes suitable for a variety of uses. It delves into the process of mapping multiple applications onto the architecture of the NoC. The mapping of AI algorithms onto a NoC infrastructure is not taken into consideration by this, though. In [5], a multi-objective algorithm is constructed by considering the various temporal limits of the intended applications. This was done to optimise the algorithm performance. Due to the difficulty of reconfiguring, the way that was suggested did not demonstrate any evidence of progress, which is unfortunate.

The article in [6] outlines the procedure that has been suggested as a means of locating this optimal zone for a certain application. The events took place in a sequential order, which may have contributed to the lack of noticeable results. Another paper [2] focused on developing a fault-tolerant method for application mapping and advocated giving healthy cores higher priority when constructing programmes. The concept was called application mapping.

Mapping algorithms on heterogeneous multi-core processors with distinct features are discussed in both [5] and [6], while discusses a NoC application mapping to balance packet latency with other performance aspects. It also discusses mapping algorithms on heterogeneous multi-core processors. A technique that is based on rectangle analysis is presented by the authors of [4] as a means of selecting NoC zones for use in multi-application mapping. With the use of this design space exploration (DSE) method, we can zero in on the sweet spot for the efficient operation of an application about both its latency and its power consumption.

2. RELATED WORKS

This article will explore the various mapping strategies currently in use for NoC architectures. Mapping is a key stage in the process of developing a NoC since different parts of the programme need to be distributed over different processor cores. Several different objectives might be decided upon, depending on the use case. Latency in application processing, energy consumption, meeting of real-time deadlines, and throughput are all examples. The implementation of these algorithms has involved the use of a variety of different optimization approaches [7].

For NoC based real time application mapping, the branch and bound (BB) based exact mapping (BEMAP) technique is explained in full in reference [8]. The method reduces the amount

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Deep Learning Based Detection and Classification of Anomaly Texts in Social Media

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Abstract: The Social Media (SM) not only plays a significant role in the process of connecting people from different parts of the world, but it also offers a multitude of opportunities for the extraction of knowledge. This is in addition to the fact that the SM plays a significant role in the process of connecting people from different parts of the world. It is not a straightforward process at this moment to provide an answer to the question of how to extract information from data and gain knowledge from this data. The advancement of techniques for machine learning and the growth in the amount of computer power that is easily available made it possible, in part, to make use of the latent value that is included in this data. In this paper, various machine learning models are integrated with deep learning to detect and classify the anomaly text in social media applications. We provide a deep machine learning technique to scanning Twitter for unusual behavior. This method takes into account not just the textual material that individuals publish on Twitter but also the relationships between those users. This strategy is predicated on the idea that a user data choice for a social network should be congruent with their regular behaviors or those of other users with profiles that are comparable to their own.

Keywords: *Deep Machine, Twitter, Anomaly Behavior*

1. Introduction

The broad availability of data from social media platforms all over the world has sped up the already rapid expansion of data-intensive challenges around the world. Because of the exponential growth in the amount of digital data that is available, it is now extremely difficult, if not impossible, to manage, evaluate, and analyze the data utilizing the most cutting-edge software and hardware tools and approaches that are currently available [1]. The 3 Vs are a concept that collectively refers to an abundant increase in data volume, diversity in data variety, and the velocity of entering and exiting data. These ideas are primarily responsible for explaining why and how the SM data exploded, and they are collectively referred to as the 3 Vs [2].

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This value can be expressed as a percentage of the total amount of information. A solution that is capable of more precisely depicting the concealed information as well as the insights that are disguised within the data is necessary as a result of the sheer volume and variety of the challenge [3] [4]. This is because the solution must be able to reveal the hidden information [5]. The study of deep learning, often known as DL, is a relatively new area of research that falls under the umbrella of the discipline of machine learning. This area of study shows promise as a potentially useful tool for solving the challenges that are posed by SMA. It would appear that web-based applications, in addition to a number of other sorts of social media, are enjoying growth as of late [6].

The production of new SM data takes place on a regular basis, which necessitates the development of increasingly complex methods of pattern and feature extraction in order to improve the surfacing of insights that were previously hidden. The vast majority of traditional methods of education utilize learning architectures that are only superficially structured. This is the case with the vast majority of traditional methods. Nonetheless, DL covers both supervised and unsupervised machine learning approaches, which enable the automatic construction of hierarchical representations for categorization. This is

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A DEEP LEARNING BASED ALGORITHM FOR IMPROVING EFFICIENCY IN MULTIMEDIA APPLICATIONS

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Abstract

Most of the time, these classifiers are trained using general-purpose datasets with a lot of classes. Therefore, the performance of these classifiers may not be as good as it could be. Both choosing classifiers based on registrations and dividing them into groups based on the subjects they cover are possible solutions that could lead to better classifier performance. This makes it clear that a classifier division and selection strategy needs for the proposed optimization to work. With the help of this method, the proposed model for feature extraction can choose an appropriate classifier while taking subscription constraints into account. There are subscriptions with the best values of n, and the results of using only n-class classifiers from one domain and ignoring classes from other domains are also given. These are in the same place as the effects of only using n-class classifiers from a certain domain. In this article, there are talked about in the same context as what happens when you only use n-class classifiers from a certain domain. For high-performance use of SAE-based systems, you need to use a classifier selection technique. This method is also needed for the investigation of multimedia events that need the method. To establish the effectiveness of the multimedia event-based system as well as its dependability, we are making use of traditional evaluation methods such as throughput and accuracy. These measures include the following: When compared to the efficiency of the system when using a classifier with a single class, the efficiency of the system diminishes as the number of classes per classifier increases. This is the case regardless of the other measures. This is the situation about both the throughput and the precision of the operation.

Keywords:

Multimedia Data, Stacked Auto Encoder, Deep Learning, Classifier

1. INTRODUCTION

The Internet of Thing (IoT) has been developed so that it can support smart devices. To bridge the functionality gap that occurs between the software that makes the IoT usable and the IoT themselves, event-based systems are currently under development. Event-driven analytics are reliant on accumulation and examination (processing) of structured data streams [1].

This is the fundamental principle upon which event-driven statistics are built. The publish/subscribe paradigm is the foundation of event processing systems because it makes it possible to streamline communication between individuals who produce content and individuals who make use of the work that the individuals who produce content create. The purpose of developing event processing systems is to process a user subscription in the shape of a language for rules and investigate the structured events [2].

In addition, the different kinds of smart city devices are responsible for the production of significant quantities of unstructured data in the form of multimedia. One example of a structured event is the processing of readings received from sensors such as those that measure temperature or energy. The events that are generated by traffic cameras, on the other hand, are examples of unstructured events that are associated with traffic consciousness.

The event-based systems that are in use today do not support the processing of such events; there is a need for an event processing system that is based on the Internet of Multimedia Things (IoMT) and is also capable of processing images and videos. This is because the processing of such events is not supported by the event-based systems that are in use today. The IoMT is an IoT-based paradigm that enables objects to connect with each other and share structured and unstructured data.

To better enable multimedia-based services and applications in smart cities [3]. IoMT can be described as an IoT-based paradigm that enables objects to connect with each other and share structured and unstructured data. This is done to improve the accessibility of services and applications dependent on multimedia content.

Object detection in images is a frequent problem in the field of image processing [4], which is why smart cities are an appropriate setting for this research. Real-time image-based systems are currently available in a vast majority, and most of these real-time image-based systems are exceptionally excellent at recognising objects. This is due to the features that are specific to their respective domains. It has been demonstrated that deep convolutional neural networks [5] are well adapted for the task of image classification, with remarkable outcomes.

There are currently no multimedia query languages that are available for events, and the event processing systems that are currently in use [6] are not designed to deal with the unstructured event types that are produced by the IoMT. In addition, there are currently no multimedia query languages that are accessible for events. Even though most image processing systems [7] [8] are built without taking the event-based paradigm into consideration during the construction process, these systems are still very good at recognising objects in image events and are highly specialised for the fields in which they are used.

The user expressiveness is seriously constrained because image processing systems do not offer much in the way of a query language. In today world, programmers are required to build an entirely new application each time they want to combine the outcomes of two separate processing systems, such as event processing and image processing. It is essential that they have this capability for them to be able to efficiently consume info pertaining to multimedia events. The expenses associated with the initial setup are high, and there are difficulties associated with combining the results of the two different systems. It is essential to have an IoMT-aware event processing engine to facilitate

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"AN ANALYTICAL STUDY ON INDIA POST PAYMENT BANK – WITH SPECIAL REFERENCE TO BANGALORE RURAL AREA, KARNATAKA"

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Abstract:
The study emphasizes on effective functioning of India Post Payment Bank (IPPB) in providing services to the people in the Bangalore Rural Area, Karnataka (North). The different various schemes like Post office saving bank scheme, Post Office Senior deposit scheme, Kisan Vikas Patra and Sukanya Samriddhi yojana scheme were taken into consideration for the critical analysis of the Indian postal payment banks. The sample size of 100 respondents' data analysed through Reliability analysis and Chi-square test. The major findings of the survey are satisfactory as majority of respondents opine that the IPPB schemes benefited with good returns. The IPPB also providing ATM card facility and Grameena Seva dak which helps them transact electronically also. The suggestions are given like easy withdrawal to be given and more awareness about the schemes should be done through advertisements and awareness programs.

Key words: India Post payment bank, Post office schemes, awareness programs.

Introduction:
The Department of Posts, Ministry of Communications, and Government of India together launched the India Post Payments Bank (IPPB). The Government of India is the sole owner of it. On September 1st, 2018, the Honorable Prime Minister Shri Narendra Modi introduced IPPB. The postal department's network is extensive, and it touches every region of the nation. By utilizing the network of the Department of Posts, IPPB was established with the goal of establishing an easily accessible, reasonably priced, and trustworthy bank for the ordinary man of India. During the bank's opening ceremony, Prime Minister Modi made sure to emphasize that customers could now receive banking services at their doorstep without having to meet any minimum transaction threshold by just sending a message to the postman. Prime Minister Shri Narendra Modi was the first to open his account using text message.
Payment's Bank offers identical basic banking services to typical banks, but is only permitted to offer credit facilities in the same and credit cards. Operating on digital platforms is Payments Bank. The fundamental goal of the Payments Bank, as originally conceived by the Reserve Bank of India, was to financially include India's unbanked and underbanked population. Meanwhile, banks are open for business. First to receive a license was Airtel Payments Bank, next came India Post Payments Bank. the desire to create the most reliable, affordable, and accessible bank for the average person. The IPPB's focus groups include urban migrants, homemakers, and senior persons. Rural Indians, as well as the unorganised retail industry India Post Payments Blank (IPPB) is a publicly traded corporation that the Indian government owns 100 percent of. Using India Post's extensive network of roughly 1.70 lakh post offices as access points and 2.5 lakh doorstep banking agents in every district, town, and village in India, India Post Payment Bank has more than doubled the size of the country's rural banking infrastructure. The five elements form the foundation of India Post Payments Bank. Accessibility. Affordability. Financial literacy, digital ecosystem, and ease of banking the goal of IPPB is to offer the most trustworthy, economical, and easily accessible banking services. IPPB is utilising India's network. In order to deliver financial services to India's unbanked and underbanked population, IPPB is leveraging a mobile platform and running a fully cashless economy. Through educating customers about savings, investing, insurance, and other topics, IPPB works to promote financial inclusion.

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RESEARCH ARTICLE

Shaping the Future of Libraries: Innovations in Materials and Services

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ABSTRACT

Libraries have traditionally served as repositories of knowledge and information, offering resources and services to meet the diverse needs of their communities. As society evolves in the digital age, libraries must adapt to remain relevant and effective. This paper explores the evolving landscape of library materials and services, focusing on innovative approaches to meet the changing needs of patrons. Through a review of current literature and case studies, this paper examines emerging trends in library collections, technology integration, and user-centered services. It also discusses the challenges and opportunities presented by these advancements, including issues of accessibility, equity, and sustainability. By embracing innovation and collaboration, libraries can continue to fulfill their vital role as centers of learning, culture, and community engagement in the 21st century.

Keywords: Augmented Reality, Digital Era, Future Library, Library Materials, Library Services.

INTRODUCTION

In the 21st century exploration into the transformative journey of libraries. In this dynamic volume, we embark on a captivating voyage through the evolving landscape of library science, where traditional paradigms are being reshaped and visionary approaches are driving libraries towards unprecedented heights of relevance and impact. Libraries have long been revered as bastions of knowledge and learning, but in today's fast-paced digital era, they are undergoing a profound metamorphosis. No longer confined to the confines of physical spaces filled with rows of books, libraries are emerging as vibrant centers of innovation, community engagement, and lifelong learning. We delve into the realm of materials, exploring the expansion of collections to encompass not only print resources but also digital archives, multimedia content, and interactive learning tools. Furthermore, we examine how libraries are embracing a culture of innovation, fostering creativity, and empowering patrons to become active participants in the

creation and dissemination of knowledge. By studying the latest trends, best practices, and forward-thinking initiatives, we gain invaluable perspectives on how libraries can continue to evolve and thrive in an ever-changing world. Whether you are a librarian, educator, policymaker, or simply a curious enthusiast, "Shaping the Future of Libraries" invites you to embark on a journey of discovery, inspiration, and possibility. Together, let us reimagine the role of libraries as catalysts for positive change and champions of lifelong learning in the digital age.

Technology Integration in future Library

i. **Artificial Intelligence and Chatbots:** Libraries may employ artificial intelligence and chatbots to provide personalized assistance, answer reference questions, and offer recommendations to patrons. AI-driven chatbots can streamline routine inquiries, freeing up library staff to focus on more complex tasks and user interactions.
ii. **Blockchain for Authentication and Copyright Management:** Libraries may explore blockchain technology for authentication, copyright management, and digital rights management. Blockchain-based systems can provide secure and transparent mechanisms for verifying digital identities, tracking intellectual property rights, and ensuring fair use of digital materials.
iii. **Data Visualization and Analytics:** Libraries may utilize data visualization tools and analytics software to analyze usage patterns, assess collection relevance, and identify emerging trends. This data-driven approach enables libraries to make informed decisions about resource allocation, collection development, and service improvements.
iv. **Digital Collections and Access:** Libraries will continue to expand their digital collections, offering e-books, audiobooks, digital magazines, streaming media, and online databases. Patrons will have seamless access to these materials through library websites, mobile apps, and digital lending platforms.
v. **Internet of Things (IoT) Integration:** Libraries may integrate IoT devices and sensors to enhance operational efficiency, monitor environmental conditions, and improve user experiences. IoT-enabled smart shelves, RFID tags, and beacons can automate inventory management, track item locations, and provide personalized notifications to patrons.
vi. **Maker and Innovation Spaces:** Libraries will continue to establish maker spaces, fab labs, and innovation hubs equipped with 3D printers, laser cutters, robotics kits, and other maker tools. These spaces will foster creativity, collaboration, and hands-on learning, empowering patrons to prototype ideas and develop new skills.
vii. **Remote Access and Virtual Services:** Libraries will offer remote access to digital resources and virtual services through online platforms, video conferencing, and virtual reference desks. Patrons can access library materials, attend virtual programs, and receive assistance from librarians remotely, expanding access to library services beyond physical locations.
viii. **Virtual and Augmented Reality:** Libraries may incorporate virtual and augmented reality technologies to provide immersive learning experiences, virtual tours, and interactive simulations. Patrons can explore historical sites, scientific concepts, and cultural artifacts in virtual environments, enhancing engagement and understanding.

Innovative Library Materials in future library

The future of library also involves offering innovative materials that cater to diverse interests and learning styles. Here are some ideas for innovative library materials:

i. **Augmented Reality (AR) Books:** Libraries can feature books with augmented reality elements that come to life when viewed through a smartphone or tablet. AR books can incorporate interactive animations, videos, quizzes, and other multimedia content to engage readers in new and exciting ways.
ii. **Digital Art and Design Tools:** Libraries can offer access to digital art and design tools, such as graphic design software, drawing tablets, and video editing programs, to support creative expression and digital literacy skills. Patrons can use these tools to create artwork, animations, videos, and multimedia projects.

iii. **Digital Collections:** Libraries can expand their digital collections to include e-books, audiobooks, digital magazines, streaming media, and online databases. Providing access to digital content allows patrons to conveniently borrow materials from anywhere, at any time.

iv. **Educational Games and Puzzles:** Libraries can curate collections of educational games, puzzles, and brain teasers that promote critical thinking, problem-solving, and creativity. These materials can appeal to patrons of all ages and provide alternative modes of learning.

v. **Multilingual Materials:** Libraries can expand their collections to include materials in multiple languages to serve diverse communities. This can include books, films, music, and periodicals in languages other than English, as well as resources for language learning and cultural exploration.

vi. **STEM Kits:** Libraries can offer STEM (Science, Technology, Engineering, and Mathematics) kits that contain educational materials and hands-on activities for learning about topics such as robotics, coding, electronics, and physics. These kits can be borrowed like books and used at home or in educational settings.

vii. **Virtual Reality (VR) Experiences:** Libraries can offer VR experiences through VR equipment that allows patrons to explore virtual environments, visit historical landmarks, engage with educational simulations, and more. VR experiences can enhance learning and provide immersive educational opportunities.

Innovative Library Services in future library

The future of libraries lies in their ability to evolve and adapt to changing technological landscapes while remaining true to their core mission of providing access to information and knowledge. Here are some innovative library services that could shape the future of libraries:

i. **Community Engagement Initiatives:** Libraries can serve as hubs for community engagement by hosting events, workshops, and discussion groups on topics of local interest. They can also partner with local organizations to address community needs and promote civic participation.

ii. **Data Literacy Programs:** With the increasing importance of data in society, libraries can offer workshops and resources to help patrons understand and analyze data effectively. This could include courses on data visualization, programming, and critical data analysis skills.

iii. **Digital Humanities Support:** Libraries can support digital humanities research by providing access to digital archives, offering workshops on digital scholarship methods, and collaborating with scholars on digital projects.

iv. **Digital Preservation and Curation:** With the growing volume of digital content, libraries play a crucial role in preserving and curating digital collections for future generations. This includes digitizing analog materials, managing born-digital content, and ensuring long-term access to digital resources.

v. **Embedded Librarianship:** Librarians can embed themselves in academic departments, community organizations, or businesses to provide specialized research support and information services tailored to the needs of specific user groups.

vi. **Makerspaces and FabLabs:** Libraries can provide access to tools and equipment like 3D printers, laser cutters, and CNC machines, empowering patrons to create and innovate. Makerspaces can also offer classes and workshops on topics like electronics, robotics, and digital design.

vii. **Open Access Publishing Support:** Libraries can support open access publishing initiatives by providing funding, resources, and expertise to authors and researchers interested in publishing their work in open access journals or repositories.

viii. **Personalized Learning Platforms:** Using machine learning algorithms, libraries can develop personalized learning platforms that recommend resources based on users' interests, reading habits, and learning goals. These platforms could integrate with library catalogs and digital collections to provide tailored recommendations.

ix. **Remote Access Services:** In an increasingly digital world, libraries can provide remote access to their resources through digital platforms, allowing patrons to borrow e-books, access online databases, and participate in virtual programs from anywhere.

x. **Virtual Reality (VR) Libraries:** VR technology can create immersive learning experiences, allowing users to explore historical events, visit far-off places, or interact with digital collections in new ways. Libraries can offer VR stations or even virtual meeting spaces for collaborative projects.

Challenges and Opportunities in Shaping the Future Library

Challenges:

i. **Budget Constraints:** Libraries often face limited budgets, which can restrict their ability to invest in new materials and services. Acquiring innovative materials such as VR equipment or STEM kits can be expensive, requiring libraries to find creative funding sources or reallocate resources from other areas.

ii. **Changing User Needs:** Understanding and anticipating the evolving needs and preferences of library users can be challenging. Libraries must continuously assess their communities' interests and demographics to tailor their collections and services effectively.

iii. **Copyright and Licensing Issues:** Acquiring digital materials often involves navigating complex copyright and licensing agreements, which can limit libraries' ability to provide access to certain materials or restrict how they can be used. Libraries must advocate for fair and equitable access to digital content while respecting copyright laws.

iv. **Digital Divide:** While digital resources offer many benefits, they can also exacerbate existing inequalities. Not all patrons have access to the internet or digital devices, making it challenging for libraries to provide equitable access to digital materials and services. Bridging the digital divide requires innovative approaches to digital inclusion and outreach.

v. **Technological Obsolescence:** Rapid advancements in technology can lead to the obsolescence of materials and equipment, making it difficult for libraries to maintain up-to-date collections and services. Libraries must navigate the balance between investing in cutting-edge technologies and ensuring long-term sustainability.

Opportunities:

i. **Advancements in Technology:** Emerging technologies, such as artificial intelligence, augmented reality, and blockchain, present opportunities for libraries to enhance their collections and services in novel ways. Embracing technological innovations can enable libraries to offer personalized experiences, streamline workflows, and improve access to information.

ii. **Collaborative Partnerships:** Libraries can leverage partnerships with other organizations, such as schools, universities, community centers, and businesses, to expand their reach and enhance their offerings. Collaborative initiatives can enable libraries to access additional resources and expertise while reaching new audiences.

iii. **Open Access and Open Educational Resources (OER):** The open access movement presents opportunities for libraries to provide free and unrestricted access to scholarly research and educational materials. By promoting OER and open access publishing, libraries can support lifelong learning and knowledge sharing within their communities.

iv. **Professional Development and Training:** Investing in the professional development and training of library staff is essential for implementing innovative materials and services effectively. Providing staff with opportunities to learn new skills, stay abreast of industry trends, and experiment with new technologies empowers them to drive positive change within their libraries.

v. **User-Centered Design:** Adopting a user-centered approach to library design and service development allows libraries to better understand and meet the needs of their patrons. Soliciting feedback, conducting user surveys, and implementing usability testing can inform the development of innovative materials and services that align with user preferences.

Some of the Case Studies:

- The Library of Things at Sacramento Public Library, USA:

Sacramento Public Library introduced the Library of Things, offering non-traditional items for borrowing such as tools, kitchen appliances, musical instruments, and sports equipment.This initiative expanded the library's role beyond books, attracting new patrons and increasing community engagement. It addressed the needs of patrons who may not have access to these items otherwise, promoting sustainability and sharing economy principles.

- BiblioTech Digital Library, San Antonio, USA:

BiblioTech was the first all-digital public library in the United States, providing access to e-books, audiobooks, digital magazines, and other digital resources.By eliminating physical books and embracing digital resources, BiblioTech significantly reduced operating costs while providing convenient access to a wide range of materials. It served as a model for other digital libraries and inspired similar initiatives worldwide.

- Dokk1, Aarhus Public Library, Denmark:

Dokk1 is a state-of-the-art library and cultural center that combines traditional library services with community spaces, event venues, and digital resources. It features innovative architecture, interactive exhibits, and flexible spaces for collaboration and learning.

Impact: Dokk1 has become a vibrant hub for residents and visitors, hosting a wide range of cultural and educational activities. Its emphasis on user experience and community engagement has earned international acclaim and inspired the design of libraries around the world.

- The Studio at Anythink Libraries, Colorado, USA:

Anythink Libraries launched The Studio, a dedicated space equipped with digital media tools such as 3D printers, laser cutters, sound recording equipment, and video editing software. The Studio has empowered patrons to explore digital creativity, learn new skills, and engage in hands-on projects. It has fostered innovation, collaboration, and entrepreneurship within the community, supporting lifelong learning and digital literacy.

CONCLUSION

The future of libraries is shaped by innovative approaches in materials and services. The shift towards digital collections and open access resources reflects a broader movement towards accessibility and inclusivity. Libraries can serve diverse communities regardless of geographical or socioeconomic barriers. Diverse formats and languages contribute to this mission. Innovative library services like digital literacy programs, maker spaces, and personalized learning initiatives empower patrons to engage with information meaningfully. Technology integration enhances user experiences and streamlines operations. User-centered approaches emphasize community engagement and inclusivity. Libraries can strengthen their role as hubs of learning, culture, and civic engagement through outreach efforts and partnerships. Challenges like the digital divide, privacy concerns, funding constraints, and staff training require strategic planning. By embracing innovation in materials and services, libraries can continue to fulfill their vital role as stewards of knowledge, culture, and community.

REFERENCES

1. https://bexarbibliotech.org/
2. https://www.anythinklibraries.org/studio
3. https://www.dokk1.dk/english
4. https://www.saclibrary.org/
5. Rothemund, P., Kim, Y., Heisser, R. H., Zhao, X., Shepherd, R. F., & Keplinger, C. (2021). Shaping the future of robotics through materials innovation. Nature Materials, 20(12), 1582-1587.
6. Schulte, J., Tiffen, B., Edwards, J.A., Abbott, S., & Luca, E.J. (2018). Shaping the Future of Academic Libraries: Authentic Learning for the Next Generation. Coll. Res. Libr., 79, 685-696.
7. Tait, E., Martzoukou, K., & Reid, P. (2016). Libraries for the future: the role of IT utilities in the transformation of academic libraries. Palgrave Communications, 2(1), 1-9.
8. Gul, S., & Bano, S. (2019). Smart libraries: an emerging and innovative technological habitat of 21st century. The Electronic Library, 37(5), 764-783.
9. Ram, B., & Singh, K. K. (2020). Innovative library services in mobile technology: A recent approach. International Journal of Information Dissemination and Technology, 10(4), 192-194.

10. Wójcik, M. (2019). How to design innovative information services at the library?. Library Hi Tech, 37(2), 138-154.
11. Baker, D. (2016). Making sure things can never be the same again: Innovation in library and information services. In Innovation in Libraries and Information Services (pp. 1-44). Emerald Group Publishing Limited.
12. Lee, P. C. (2021). Technological innovation in libraries. Library Hi Tech, 39(2), 574-601.
13. Baker, D., Evans, W., & Hines, S. S. (Eds.). (2017). Innovation in libraries and information services. Emerald.
14. Tabatha Farney (2020) Library technology: Innovating technologies, services, and practices, College & Undergraduate Libraries, 27:2-4, 51-55, DOI: 10.1080/10691316.2020.1952776
15. Noh, Y. (2015). Imagining library 4.0: Creating a model for future libraries. The Journal of Academic Librarianship, 41(6), 786-797.

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RESEARCH ARTICLE

Applications of Artificial Intelligence and their Impact on Academic Libraries

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ABSTRACT

Artificial intelligence (AI) is becoming more popular in libraries. AI can be used to create computers that see, think, and act like humans. AI is useful for library information resources and services because it can do hard jobs. Powerful computer technology and artificial intelligence will transform libraries in the future. Library AI uses cutting-edge technology to provide libraries with computers that are intelligent. This paper describes the applications and impact of artificial intelligence in academic libraries. AI tools like REFSEARCH, POINTER, and ORA automate tasks, while machine learning and chatbots provide personalized feedback.

Keywords: Artificial Intelligence, Chatbot, Computer, Data Mining, Robots.

INTRODUCTION

Intelligence is one's ability to think, study, and apply information and skills. Many individuals are interested in creating computers that observe, learn, reason, and act like humans. Humans' capacity to observe, reason/think, and act is natural yet evolves and improves over time due to various variables. Human intelligence is assessed by the Intelligence Quotient (IQ) from a set of aptitude tests on distinct intellectual functions. Developing intelligent machines that see, think, and act like humans is the core of AI. Computers and robots with intelligence can perform specified tasks in the face of unpredictability, monitor their surroundings, and change their activities depending on what they detect (Omame 2020). AI tries to make robots solve challenging problems like humans. It includes modelling and integrating human cognition into computer-processable algorithms. AI uses neural networks, artificial neurons or nodes that replicate biological processes. As they analyse data, these networks make educated choices and best estimates. AI originated in the 1950s and libraries adopted it in the 1990s (Ajakaye 2021). AI

(artificial intelligence) is becoming more popular, and libraries must to utilise it. At the moment, AI is mostly used in university libraries to do different kinds of library tasks. AI's most important effect is its ability to handle jobs that humans used to do. This makes AI more important than its technology uses. AI is useful for library information resources and services because it can do hard jobs like interpreting or moving itself. Libraries can reach their goals and aims with the help of AI, which shows how important it is to society (IFLA 2016). AI is mostly represented in three areas for the future use of AI technologies in artificial intelligent libraries: Intelligent library hall space guidance; Intelligent sensing space construction should allow users to use mobile phones, wearable devices, and other mobile terminals for intelligent voice service, seat reservation, accurate information material positioning, intelligent library navigation, especially for the physically challenged, intelligent machine consultation (which can be combined with virtual reality technology), and other intelligent services (Yu, Gong, Sun and Jiang, 2019).

The Concept of Artificial Intelligence

AI has been used since the 1950s to describe a machine's ability to perform a task that would have previously required human intelligence, such as self-driving cars, robots, ChatGPT or other AI chatbots, and artificially created images (Diaz, 2023). Nwakunor (2021) defines AI as computer-controlled robots that think like humans. These robots replicate human intelligence with computer control. Thus, artificial intelligence is an evolving technology that simulates human intellect by comprehending, reasoning, learning, and using knowledge to operate, act, and replicate human problem-solving and decision-making. Library AI uses cutting-edge technology to provide libraries computers that can understand, perceive, act, and learn (Oyetola, 2023). AI in the library will affect information technology connection, actively assist information utilisation, and help patrons seek and find what they need. Future libraries will be transformed by artificial intelligence and powerful computer technology, although experts disagree on the quality (Vijayakumar & Sheshadri, 2019). The figure above illustrates the several sub-areas of Artificial intellect, including expert systems, natural language processing, pattern recognition, and robotics. These sub-areas try to replicate human intellect using computers (Vijayakumar & Sheshadri, 2019).

Impact of AI on libraries

Library personnel often exhibit an inability to accept emerging information technologies, such as card catalogues, microfilm, personal computers, and e-books. This tendency may result in delays in providing services and deficiencies in training. The sluggish acceptance of this might also lead to deficiencies in fundamental skills. The present surge of AI software and tools illustrates this problem, as libraries attempt to match the fast development of new technologies.

Information professionals

Library professionals focus on improving the quality of information management and accessibility by using artificial intelligence. Their efforts include improving the accuracy and efficiency of search and retrieval, examining digital collections in detail, and including more information. With the increasing accessibility of AI-based solutions, library professionals are going to keep in adapting and expanding their responsibilities as custodians of knowledge and collaborators within the community. In addition, they will participate in the development of AI-driven information exploration tools and provide public education on their use.

Library operations

Across the institution's extensive and challenging the past, library management systems have developed alongside associated technology. Simply integrating book loan monitoring and late fines was the primary goal. Library automation began with the ability to automate manual operations using computer technology. Library management systems are improving again because to rule-based software and AI.

User services

Libraries are using AI to customise services for certain user groups. Collection Development, Circulation, Reference, Interlibrary Loans, and Programming adapt to user needs and new technology. AI-driven chatbots are providing personalised information and introducing consumers to new AI technologies. Libraries want to employ AI in

circulation services to provide suggestions based on customers' searches and borrowing behaviours as AI advances. More personalised and intuitive services and born-digital material accessibility will result.

Data and AI Literacy

Libraries and academic institutions have promoted information literacy since the 1970s, which involves finding and using information for problem-solving and decision-making. Today, libraries and librarians concentrate on data and AI literacy. AI literacy involves understanding its function, logic, limits, and possible effects, whereas data literacy involves finding, evaluating, and analysing data. Libraries teach clients AI literacy so they may confidently engage with a society that uses more AI tools and procedures every day.

Library analytics

Libraries use static data from circulation and use statistics to analyse and alter to answer queries like:
"Which book is missing from this collection?"
"When do most people visit the library?"
This strategy is both labor-intensive and ineffective, and it ensures that the provided data is obsolete and useless. Integrating artificial intelligence with library analytics is a rational decision. The objective of this is to use data to detect patterns in almost real-time situations. Library workers has the ability to transform this knowledge into management and planning methods in order to provide more effective services.

Use of AI tools in libraries:

Kristin (2016) states that AI applications provide libraries the chance to improve their attention and concentration. The manner in which we navigate information constantly changing. Artificial Intelligence provides a very efficient method to use this information and provide better outcomes. Libraries are strategically preparing to use the implementation of cognitive computing, namely artificial intelligence, to enhance the quality of their services.

Expert Systems in Library Services

Library activities including documents, patrons, and staff. Expert systems that enable staff-user-database conversation are promising. The expert system will let the librarian realise productivity needs improved. A well-programmed expert system improves quality.

- Reference service is an essential function provided in libraries, and the Expert System may be utilised to replace the reference librarian in the following ways: REFSEARCH, POINTER, Online Reference Assistance (ORA), AMSWERMAN, and PLEXUS are all advising systems designed to help users locate reference materials and actual information.
- Cataloging:One of the oldest library crafts is cataloguing. Due to its rule-based nature, Expert Systems have been utilised to automate descriptive cataloguing (AACR2).There are two AI cataloguing methods. A human-machine interface, where the intermediary and support system share intellectual effort; an Expert System with full cataloguing capability linked to an electronic publishing system so that online-generated texts can be catalogued without intermediary input.
- Classification is the primary process in the organising of information. Therefore, it is very significant in all systems for classifying knowledge in libraries and information centres. The use of expert systems in library categorization include the implementation of Coal SORT, EP-X, and BIOSIS.
- Expert systems are also being developed when it comes to the indexing of periodicals. Indexing a monthly article includes identifying ideas and assigning restricted vocabulary words that are conceptually comparable to vocal descriptions. The intellectual components of indexing are automated to increase uniformity and quality. The indexer helps systems find preferred phrases to automatically assign subdivisions. System may form assumptions and behave accordingly. The finest library indexing system is Med Index.
- Acquisition : Librarians and users are vital to library collection development. The innovative Monograph Selection Advisor builds library collections using new technologies. Focusing on item-by-item decision-making for topic bibliographers ensures a wide knowledge base and quick library access to needed information.

Natural Language Processing in Library Services

When we think about NLPL, we probably picture being able to speak or type an entire phrase and having a computer carry out the request. Many fields may use NLPL. Library and information science, particularly searching databases like Online Public Access Catalogues, might use this. Indexing supports document retrieval. The goal of indexing is to enhance accuracy and recall of relevant materials.

Machine learning in Library Services

AI that adapts without human intervention is machine learning. Machine learning may be supervised, unsupervised, or deep depending on the learning system. Machine learning subcategory deep learning employs complex neural networks to simulate human intelligence. Deep learning algorithms can identify complex patterns in images, text, audio, and other data to make accurate predictions.

Robotics

Robots are "an automatically controlled, reprogrammable, multi-purpose manipulator programmable in three or more axes which may be fixed in place or mobile for use in automation applications." Robots scramble, roll, soar, and ascend. They are learning how to get here alone. Libraries acquire significant amounts of printed documents as they provide more digital services and resources. The burden of offering electronic and print materials and services has caused many libraries, particularly university research libraries, to have space issues. Comprehensive Access to Printed content (CAPM) aims to construct a robotic on-demand and batch scanning system for real-time online viewing of printed content. Users will activate the CAPM system to send a robot to fetch the item. Another robotic device will open and flip the pages once the robot delivers it. The CAPM system will enable viewing of text images and finding and analysing full-text output from them utilising current scanners, OCR software, and indexing software from the Digital Knowledge Centre.

Chatbot

Chatbots are used to provide round-the-clock user services by addressing intricate and varied inquiries, facilitating personalised feedback when browsing the library website, and aiding in research by replying to requests from library users and guiding them towards particular library resources. Chatbots may enhance the efficiency and productivity of library personnel by addressing complex inquiries and reducing the time spent on recurring questions. Chatbots vary from robots in that they just provide spoken or written responses to questions, while robots demonstrate engagement by expressions, motions, verbal communication, and other human-like activities.

Data Mining

Data mining methods may extract useful information from a dataset. This Natural Language indexing technique finds particular text in vast online texts. Analytic and automated design are employed for AI data mining. An AI-powered indexing tool can automatically assign keywords based on concepts it identifies in a text through content analysis, helping academic library users find more specific and accurate research sources from different disciplines.

CONCLUSION

The impact of AI on libraries is transformative, reshaping traditional library services and ushering in a new era of efficiency, accessibility, and user engagement. AI tools have permeated various aspects of library operations, enhancing information retrieval, automating repetitive tasks, informing collection development, and improving overall user experiences. Examples such as AI-powered search engines, virtual assistants, and recommendation systems illustrate the diverse applications of AI in libraries. These technologies not only streamline processes but also contribute to the preservation of cultural heritage through digitization efforts. AI's ability to automate tasks like cataloging and metadata management frees up valuable time for librarians to focus on more complex and strategic activities. Moreover, the adaptive learning environments facilitated by AI contribute to a more personalized and inclusive library experience, catering to diverse user needs. Librarians and information professionals play a pivotal

role in ensuring that AI implementations align with ethical standards and uphold the principles of user confidentiality. As libraries continue to evolve in the digital age, embracing AI technologies not only augments their capabilities but also positions them as dynamic and responsive institutions that meet the evolving needs of their communities. The ongoing collaboration between human expertise and AI tools holds the potential to further elevate the role of libraries in providing accessible, relevant, and curated information in an ever-changing technological landscape.

REFERENCES

1. Ajakaye, Jesubukade. (2021). Applications-of-Artificial-Intelligence-(AI)-in-Libraries. 10.4018/978-1-7998-9094-2.ch006.
2. Asemi, A., &Asemi, A. (2018). Artificial Intelligence (AI) application in library systems in Iran: A taxonomy study. Library Philosophy and Practice (e-journal), 7 (9), 1 -10, 2018.
3. Cox, A. M., Pinfield, S., & Rutter, S. (2019). The intelligent library: Thought leaders' views on the likely impact of artificial intelligence on academic libraries. Library Hi Tech, 37(3), 418-435.
4. Diaz, M. (2023). What is AI? Everything to know about artificial intelligence https://www.zdnet.com/article/what-is-ai-heres-everything-you-need-to-know-aboutartificial-intelligence/
5. IFLA. (2016). IFLA Trend Report 2016. IFLA.
6. Jha, S. K. (2023). Application of artificial intelligence in libraries and information centers services: prospects and challenges. Library Hi Tech News, 40(7), 1-5.
7. Kankanamge, C. N., & Wickramasinghe, D. (2020). Utilization of artificial intelligence in academic libraries: Opportunities and challenges. Journal of Advances in Librarianship, 14(1), 28-37.
8. Kankanamge, C., & Wickramasinghe, A. (2020). Artificial intelligence in academic libraries: A review. Library Hi Tech, 38(2), 339-350.
9. Liu, X., Li, X., Li, M., & Jin, B. (2018). The application of artificial intelligence in academic libraries. Journal of Library and Information Science, 44(2), 46-55.
10. McHugh, M. L., Buckley, K. & Hill, B. (2018). Artificial intelligence and the future of libraries: An exploratory survey of librarian's perspectives. College & Research Libraries, 79(5), 631-648.
11. Nwakunor, J. A. (2021). Leveraging artificial intelligence to enhance brand management. The Guardian Newspaper.
12. Omame, Isaiah & Alex-Nmecha, Juliet. (2020). Artificial Intelligence in Libraries. 10.4018/978-1-7998-1116-9.ch008.
13. Oyetola, O. S., Oladokun, B. D., Ezinne, M. C., & Akor, O. S. (2023). Artificial intelligence in the library: Gauging the potential application and implications for contemporary library services in Nigeria. Data & Metadata. 2023;2:36. https://doi.org/10.56294/dm202336
14. Vijayakumar & Sheshadri, (2019). Applications of Artificial Intelligence in Academic Libraries. International Journal of Computer Sciences and Engineering. https://www.google.com/search?q=Artificial+Intelligent+Component+Diagram&oq. DOI: 10.26438/ijcse/v7si16.136140
15. Wheatley, A., & Hervieux, S. (2019). Artificial intelligence in academic libraries: An environmental scan. Information Services & Use, 39(4), 347-356.

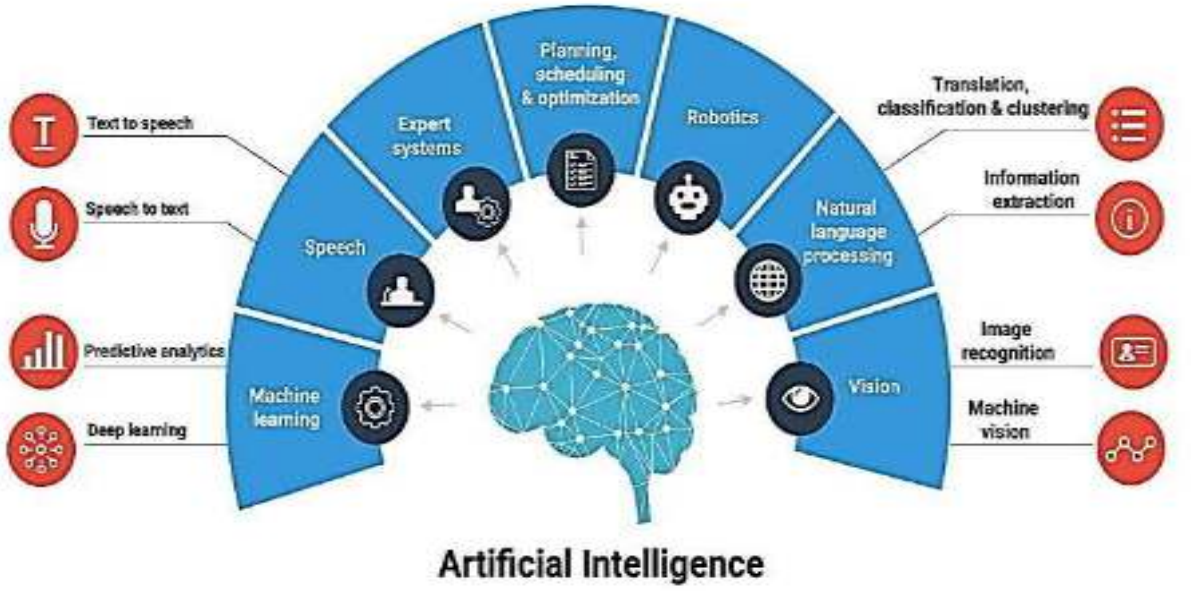

Fig: 1. Pictorial Diagram of AI Components (Source: Vijayakumar & Sheshadri, 2019).

The Efficient Energy Routing Strategy Making Through Hybrid Techniques of ANFIS and SVM

Publisher: IEEE

M Shanmathi ; T Thirumurugan ; S Suhasini ; N Manoj Kumar ; Hayder Saadoon Abdulaali ; Huthaifa Alani **All Authors**

Abstract:
Due to their reliance on batteries for power, conventional wireless sensor networks (WSNs) continue to have significant energy-related limitations. Consequently, prolongi... **View more**

Metadata

Abstract:
Due to their reliance on batteries for power, conventional wireless sensor networks (WSNs) continue to have significant energy-related limitations. Consequently, prolonging the lifespan and enhancing the performance of WSNs requires improved energy efficiency. The aim of this study is to address WSN energy utilisation by selecting relay nodes and cluster heads (CH) using adaptive neuro-fuzzy inference system (ANFIS) and support vector machine (SVM). The CH is required for data transmission and collection from all other nodes in the cluster, and the book concentrates on advanced optimisation approaches to reduce power usage at this node. By dramatically decreasing energy consumption at the relay node and CH by 30%, the recommended optimisation strategy enhances WSN's energy-efficient operations and extends its lifespan. This paper presents the development and impact of the revolutionary optimisation technique.

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Contents

Wireless sensor networks, or wsns, are used in the military, commercial, and medical fields and are crucial to wireless communication. These networks let nodes to transmit data to a base station (bs), hence enabling the collection of data within a geographical area. Data is exchanged between sensor nodes and the cluster head (ch), which functions as a data aggregator in the network. By removing the need for direct data transfer to the bs, the ch saves energy and bandwidth by sending the aggregated data to the bs. Clustering is a commonly used approach in applications to integrate geographically neighbouring sensor nodes by using correlations and reducing duplicated sensor readings. [1, 2]

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THE IMPACT OF DIVERSITY MANAGEMENT ON ORGANIZATIONAL PERFORMANCE

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Abstract:

On these days converting business environment, diversity control has become an essential strategy for corporations trying to improve productiveness and competitiveness. This article explores the complex relationship among diversification and corporate effectiveness. Using present studies and empirical information on range management techniques, we can more and more see that they affect critical components of organizational effectiveness the take a look at identified some of ways wherein range control improves performance improve. First, it describes how Enhance encourages creativity and productivity through connecting people with distinct perspectives and backgrounds. These techniques foster original ideas and concepts, facilitating organizational creativity and alternate. Diversification has turn out to be an important method for companies searching for to enhance productivity and competitiveness in today's changing commercial enterprise environment. This article examines the complicated dating between diversification and company effectiveness. Drawing on present studies and empirical facts on variety control strategies can be broadly seen as affecting essential elements of organizational effectiveness the examine recognized several strategies a variety management improves performance. First, it describes how Enhance encourages creativity and productivity by using connecting people with extraordinary perspectives and backgrounds. These strategies foster original thoughts and ideas, facilitating organizational creativity and exchange. The study also indicates how range improves organizational choice making. Teams make higher selections by means of integrating distinct perspectives and questioning assumptions, which reduces the chance of team consensus and will increase ordinary results. Exploring the Significance of Diversity in Talent Acquisition and Retention. Prioritizing diversity and inclusion within the organization creates an environment where employees feel appreciated and engaged, which increases productivity, reduces waste and attracts talent more diversity exploring the impact of diversity in depth on stakeholder relations and corporate reputation. Organizations can improve their brand image, increase customer loyalty and strengthen their relationships with employees, customers and communities by enhancing diversity and inclusion

The report also discusses how diversity management is critical to maintaining ethical standards and regulatory compliance. Organizations can cultivate a culture of fairness and equity to reduce the risk of legal and reputational challenges by implementing robust strategies for different processes in summary, factors implementation is an important policy as well as an ethical

requirement for businesses hoping to succeed in today's international market. Organizations can improve productivity and competitiveness by harnessing creativity, Enhanced decision-making, leading to the full potential of a diverse workforce.

Keywords: felony compliance, efficacy, recognition, skills retention, innovation, variety management, organizational overall performance, and worker engagement.

I. INTRODUCTION:

Diversity has become an important strategy for companies looking to increase productivity and survive competitively in today's fast-paced corporate Diversity of employees. This journey lays the groundwork for exploring the significant impact that different strategies can have on different factors of organizational effectiveness.

Diversity strategies are critical to the success of incumbent companies because they can help increase choice, stimulate innovation, attract and retain top performers Understanding the broader consequences of boundary management, including family including participation, hard work, and adherence to criminal and ethical standards

The need to manage diversity has evolved over time in today's global economic system, where demographics, business dynamics, and social expectations are constantly changing, as organizations that plan through resources discover more if difficult Seeing emphasizes the importance of innovation, talent management, choice , and by examining the complex effects of diversity across domains, organizations build culture inclusive diversity by isolating strategies for gaining practical insights.

Diversity management has proven critical to organizational performance in the current business environment, characterized by rapid technological advances, changing customer tastes, and increased sense of corporate social responsibility If diversity is consumed diversity better than identifying the most effective differences based primarily on race, gender, ethnicity and ethnic origin. This also includes creating an inclusive environment where a compassionate approach is valued and assimilation is central to the workplace. These results lay the foundation for more detailed research on how managed services affect critical business decisions such as productivity, creativity, employee engagement, and ultimately financial outcomes.

II. LITERATURE REVIEW:

Study, research and perspective on how diversity management affects overall organizational performance. Academic research has scrutinized the mechanisms by which policies influence many aspects of organizational effectiveness, providing insight into related hypotheses. The expertise of diversity management as a strategic necessity for modern-day corporations lies at the coronary heart of this literature. Workforce range and organizational overall performance metrics like creativity, choice-making great, and financial results had been shown to definitely correlate

in several studies. For instance, studies by using Cox and Blake (1991) and Thomas (1992) highlight how various groups can promote creativity and innovation by means of such as quite a number of viewpoints and techniques. Similar to this, studies by way of Jehn et al. (1999) and Herring (2009) emphasizes how variety improves decision-making methods through reducing the possibility of groupthink and elevating the possibility of contemplating other factors of view.

Additionally, researchers like Richard et al. (2009) and Cox et al. (2014) have proven how variety control strategies, such inclusive management and diversity schooling, raise worker engagement, retention, and normal effectiveness of the corporation. The literature does, but, additionally understand the problems and complications that come with coping with range, which include subconscious prejudice, resistance to exchange, and the requirement for chronic evaluation and improvement of variety tasks. The research emphasizes range management's transformative capacity in boosting organizational performance and competitiveness in modern day numerous and dynamic corporate environment, in spite of those barriers.

Recent studies have elevated at the essential studies through exploring the mechanisms by means of which variety control programs affect the overall performance of groups. The mediating and moderating elements that influence the relationship among diversity and overall performance outcomes have drawn greater interest from academics. Examples of studies that have demonstrated how corporate lifestyle can aid or hinder the completion of diversity applications consist of Kalev et al. (2006) and Pelled et al. (1999). Van Knippenberg and Schippers (2007) and Harrison and Klein (2007)

also contributed to this area of study. has checked out how organizational shape and leadership style affect how variety influences crew dynamics and choice-making methods.

Furthermore, the literature has grown to consider the intersectionality of diversity dimensions, acknowledging that people have quite a few social identities that overlap and interact in intricate methods. Academics like Thomas and Ely (1996) and Cox and Nkomo (1990) have highlighted the significance of addressing much less evident components of range like cognitive diversity and diversity of thought, in addition to more apparent dimensions like race and gender.

Furthermore, researchers are focusing greater on the worldwide putting and investigating how cultural variances and cross-cultural interactions affect how a hit variety management technique are. Studies conducted with the aid of Thomas and Inkson (2009) and Maznevski and Chudoba (2000) have introduced attention to the necessity of culturally adaptive strategies to range management that take into consideration the exceptional cultural norms and values of diverse regions and nations.

In well known, studies on how diversity control impacts organizational overall performance remains developing and offers insightful statistics approximately the complex dynamics of place

of job range. This frame of studies gives a radical expertise of how businesses can use variety to gain their strategic targets and improve their competitiveness in an ever-changing world turning into dedicated to cultivating a workplace that's becoming more diverse. globalized via fusing theoretical perspectives, empirical findings, and sensible implications.

III. Hypothesis Development:

When developing hypotheses for Exploring the Influence of Diversity Management Strategies on Organizational Performance researchers wish to offer predictions that can be positioned to the take a look at on how special components of organizational success are associated with the range management strategies a simple hypothesis suggests that effective diversity management positively impacts an organization's overall performance, which includes the things like economic effects, worker engagement, creativity, and the caliber of decision-making. Adding to this, theories may additionally look into mediating variables, implying that employee attitudes closer to variety, corporate way of life, and management style all Facilitate communication between diversity management and business results. Furthermore, researchers may position forth moderation hypotheses, which contend that the degree to which range management and overall performance outcomes are correlated is moderated through the contextual traits such as organizational length, enterprise kind, and geographic location. An extra method to growing hypotheses is to research intersectionality, which posits that during order for range management practices to fully affect organizational overall performance, they ought to take into the account intersecting identities of employees, together with race, gender, ethnicity, age, sexual orientation, and incapacity fame. Lastly, theories would possibly center on cultural edition, setting forth the idea that diversity control applications designed to appreciate cultural variances and promote intercultural expertise will result in higher profits in corporate effectiveness. Researchers growth our knowledge of how diversity management influences organizational performance in state-of-the-art various and dynamic running environments by empirically evaluating these theories.

The complex relationship between organizational business strategy and diversity management can be further examined with other theories. Researchers could also consider, for example, whether firms with more schooling applications would have higher employee satisfaction and retention costs than those with little or no schooling. Furthermore, theories may middle on how inclusive leadership promotes a modern and innovative tradition, affirming that groups under the direction of inclusive leaders might show off higher ranges of innovative conduct and generate extra imaginative answers to troubles. Additionally, it's far viable for researchers to hypothesize that agencies with numerous forums of administrators will perform better financially than people with homogeneous boards, indicating a wonderful dating among board diversity and shareholder cost. These theories, which can be supported by theory and empirical statistics, provide vital insights into the complicated courting among range control and organizational overall performance. They

can also serve as a roadmap for destiny research tasks and assist with strategic choice-making in numerous workplaces.

IV. Research Methodology:

To investigate "Diversity Management's Effect on Organizational Performance," an in-depth study approach may be used. The studies will set the scene for the study by way of defining the importance of variety control in contemporary organizations and the way it is able to affect performance results inside the first phase. After that, a robust theoretical framework explaining the dynamics behind the relationship between range management techniques and organizational effectiveness could be advanced, based totally on the body of current literature. A thorough take a look at layout will then be created, outlining the method (qualitative, quantitative, or combined-techniques), facts collection techniques, and pattern processes. To capture a number of views and organizational contexts, the information amassing section will employ an aggregate of surveys, interviews, and archive information evaluation. Then, if you want to extract massive insights, analytical methods ranging from statistical analyses to qualitative coding may be used. In order to in addition our information of how diversity management influences organizational overall performance, the research will in the end finish with a synthesis of findings, implications for theory and practice, and guidelines for similarly observe.

Figure 1: **Key Challenges in Diversity Management**

Figure 1 - When illustrating the primary obstacles in variety management, a center challenge is encircled by using peripheral circles that stand for wonderful barriers. "Diversity Management," the determines important image, is placed at its center. Challenges along with implicit bias, a loss of inclusive regulations, communique limitations, stereotyping, reluctance to exchange, tokenism, management commitment, and cultural competency are indicated by using the out of doors earrings surrounding it. Drawing linkages among the primary concept and each issue demonstrates how they're associated with one another and the way variety management impacts and is affected by these demanding situations. This association offers a radical overview of the problematic dynamics concerned in efficiently managing variety.

The investigation "Impact of Diversity Management on Organisational Performance" could be carried out using a rigorous research method that includes essential elements. The research will start with a comprehensive introduction with a purpose to outline the take a look at backdrop, the importance of range management in present day organizational settings, and any capacity implications for overall performance indicators. After that, a sturdy theoretical framework explaining the underlying mechanisms and theories governing the relationship between variety

management techniques and organizational effectiveness could be developed, based on an intensive examination of the literature.

Building in this framework, a specific studies design will be created, consisting of the choice of suitable methodologies, strategies for accumulating information, and sampling plans in step with the observer's goals. Diverse viewpoints and organizational contexts will be recorded the usage of an aggregate of quantitative surveys, qualitative interviews, and evaluation of historical records. Then, so one can extract extensive insights, rigorous statistics analysis strategies—from statistical analyses to thematic coding—may be used. Ultimately, the observe will produce a thorough synthesis of the consequences, supplying implications for idea and exercise and establishing the door for extra studies on this essential vicinity.

The person investigating "The Impact of Diversity Management on Organisational Performance" calls for a methodical and exhaustive method to investigate. The studies will begin with a comprehensive preface that clarifies the significance of variety management in modern-day organizational environments and its possible outcomes for enhancing overall performance. After that, a thorough literature analysis can be achieved to offer a solid theoretical framework to be able to support the relationship between range management techniques and the performance of organizations.

Building in this theoretical framework, a properly-thought-out research layout could be put into practice, including the choice of appropriate processes, gear for gathering information, and pattern strategies suitable to the observer's goals. A thorough draw close of various viewpoints and organizational contexts might be won via a combination of quantitative surveys, qualitative interviews, or examination of archive information. To extract huge insights, rigorous statistics evaluation strategies may be used, ranging from statistical analyses to qualitative coding. The research will ultimately come to a near with a summary of the findings that offers realistic implications for idea and practice and opens the door for other studies on this crucial discipline of have a look at.

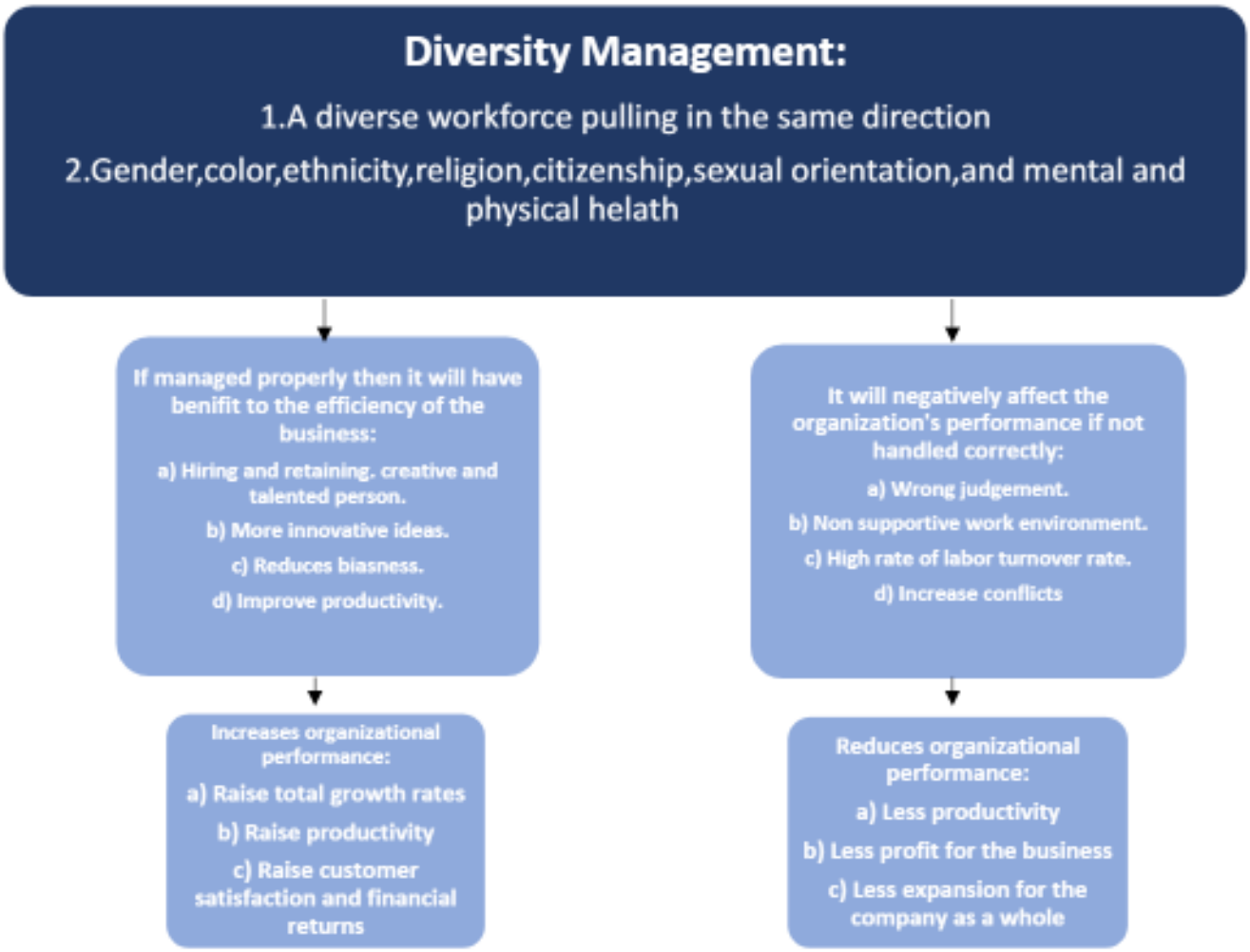

Figure2: Diversity Management

Figure2- One way to organize a visual depiction of range control is to have a middle concept encircled by using associated components. Its essential characteristic is "Diversity Management," that is at the center. The complex community of guidelines, schooling, leadership dedication, and staff involvement that surrounds this center highlights the complexity of range control. The relationships among these factors is probably represented with arrows or lines, emphasizing how they work together to promote an inclusive and various workplace tradition. This association offers a complete perspective on variety management, highlighting its complexity and significance for the overall performance of companies.

V. Data Analysis and Results:

1.Statistical Relationship Analysis: Quantitative Data Analysis:

Statistical techniques like regression and correlation evaluation could be used on this stage of the research to measure the connections among organizational performance measures and variety

control guidelines. We will compare the degree to which range management initiatives may also account for variances in organizational overall performance via regression analysis. Furthermore, correlation evaluation will take a look at the course and electricity of the hyperlinks among precise performance metrics and diversity management projects.

2.Analyzing Qualitative Data: Discovering Patterns and Perspectives:

We will explore the rich testimonies that members have shared thru cognizance groups, interviews, and open-ended survey questions via qualitative statistics analysis, which incorporates topic evaluation and content material analysis. Through the identification of recurrent issues, styles, and insights, technique to obtain a more profound comprehension of the processes involved, qualitative research seeks to aid of which range management influences the overall performance of groups. The impact of diversity on innovation, teamwork, worker morale, and organization tradition are some possible themes.

3.Incorporation of Results: Comparing Viewpoints:

A complete expertise of the effect of diversity control on organizational performance might be made possible by using the synthesis of quantitative and qualitative results. We can affirm and deepen our expertise of the hyperlinks determined within the quantitative analysis by triangulating facts from several sources. Furthermore, this integration will provide a nuanced point of view at the elaborate interactions between numerous control strategies and one of a kind component organizational success.

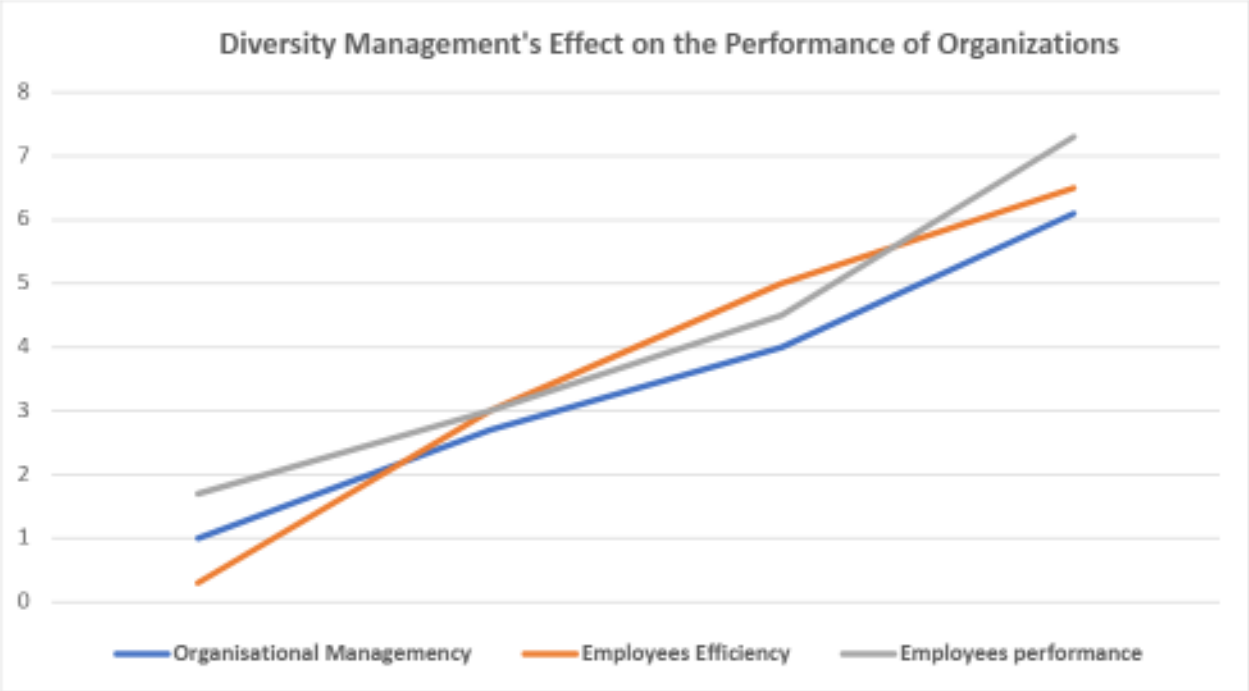

Figure3: Diversity Management's Effect impact on how well businesses operate

Figure3- Fundamental theme, " Effects of Diversity Management," is probably surrounded by way of critical additives in a succinct discern arrangement that suggests how range control affects organizational overall performance. These components ought to consist of organization subculture, innovation, morale among personnel, teamwork, and organizational performance measures. The effect of variety control on those KPIs might be represented with the aid of arrows linking each element to the primary subject. Furthermore, the image should have representations of each qualitative and quantitative statistics evaluation techniques on both sides, highlighting the all-encompassing method used to recognize this courting. This association makes it simpler to recognize how range management techniques effect one-of-a-kind facets of organizational performance by way of providing a visual description of the way they are associated.

4.Statistical Associations in Quantitative Data Analysis:

Using state-of-the-art statistical techniques together with regression evaluation and correlation, we inspect measurable connections among organizational overall performance measures and diversity management techniques. We can determine how a great deal version in diversity management practices account for changes in organizational performance by using regression analysis.

Correlation analysis, alternatively, exhibits the path and degree of relationships between unique diversity packages and overall performance metrics. We hope to pick out patterns and trends that show how variety control influences organizational outcomes by using the usage of those statistical gear.

5. Analysis of qualitative data: Demonstrating an aesthetic view:

Thematic and content analysis are methods of qualitative research that allow for detailed analysis of participant data obtained through focus groups, interviews, or open-ended survey questions on the mouth. Through recurring themes and disclosures, this qualitative approach reveals the complex ways in which diversity management strategies impact organizational performance Themes can include topics such as materials the story of new development, cultural integration, and successful communication. They offer qualitative depth to go along with quantitative data.

6.Integrating Results: Combining Viewpoints:

Integrating data from other sources provides a squared view of the effectiveness of interdisciplinary programs, allowing for better analysis of findings This integrated approach improves our understanding on how diversity efforts influence organizational effectiveness is improved by blending statistical outcomes with qualitative data.

7.Results Analysis: Results and possible recommendations:

We recognize the importance of our findings for conceptual, action, and destiny processes in research throughout the discussion section. We provide concrete answers for companies looking

to improve their category management strategies through quantitative trends in qualitative insight. These indicators may include unique ways of using diverse employees to achieve an inclusive workplace climate, increase leadership levels, or increase creativity and responsiveness in the marketplace At the level, testing a it further seeks to contribute to evidence-based choices and aims to enhance performance in a positive manner by managing a range of different factors. seeks to encourage organizational change.

VI. Findings and Discussion:

Results: Knowledge Gained thru Data Analysis:

A thorough examination of the quantitative and qualitative statistics has yielded several crucial conclusions on Diversity Management's Effect on the Performance of Organizations. Our examines quantitative findings showed a strong courting amongst some of overall performance indicators and precise range control techniques. For example, groups with complete variety training applications confirmed extended worker engagement and satisfaction. In a comparable vein, corporations with several management groups installed extended creativity and versatility, giving them a competitive aspect inside the market.

Through qualitative interviews, members emphasized how range manipulate tasks have a profoundly excellent effect at the dynamics and way of lifestyles of companies. Throughout cognizance agencies and interviews, topics like greater creativity, higher conversation, and elevated teamwork saved developing. Workers established a feel of inclusion and belonging, which encouraged elevated determination to the targets of the organization. Diverse viewpoints were moreover viewed as beneficial equipment for trouble-fixing and decision-making, which produced greater revolutionary and a success answer.

Talk: Consequences and Future Courses:

The findings take a look at have important implications for overall organizational performance and diversity management considerations in addition to exercises. First and foremost, as a way to sell true integration and equity in firms, our results highlight the importance of a broader range of business practices beyond the simple compliance of the past emphasize. Organizations can enhance talent pools and improve business outcomes through investments such as inclusive career change, diversity training and mentoring.

Furthermore, our results suggest that diversity is a strategic business need as well as an ethical one. Apart from employee engagement and morale, companies that embrace diversity and inclusion also gain a competitive advantage in terms of innovation and market responsiveness for this reason organizations should view diversity management as a priority it leads to long-term success and is delivered primarily by incorporating it into their standard organizational structure

In the future, this discipline may look at the innovation and discover the best ways thru which range control influences exceptional elements of organizational overall performance. Furthermore, a good way to evaluate the lengthy-time period impacts of variety applications on organizational consequences, longitudinal research could reveal the have an impact on of those initiatives over the years. Through greater research into the intricate courting between diversity control and organizational performance, we will affect widespread exchange within the course of extra efficient and inclusive work environments.

VII. Future Research Area:

Researching how diversity control impacts organizational overall performance is a fascinating and essential topic, especially given the diverse and global body of workers of these days. The following are some viable subtopics and techniques to examine inside this discipline of take a look at:

Effectiveness of Diversity Management Practices:

Examine the ways wherein different range management strategies would possibly develop range, fairness, and inclusivity in groups. Examining regulations, schooling plans, hiring and recruitment procedures, and mentorship packages are a few examples of how to do this.

Organizational Performance Metrics:

Examine the consequences of diversity control on profitability, creativity, productivity, employee happiness, retention rates, and ordinary effectiveness of the organization. Look for relationships among more a hit overall performance results and various teams.

Employee Engagement and Satisfaction:

Examine the effects that diversity management has on workers' commitment to the enterprise, activity happiness, and degree of involvement. Examine elements such as opportunities for professional growth amongst different personnel, the inclusiveness of the corporation subculture, and the perception of equity.

Effect on Creativity and creativity:

Analyze the connection between diversity management and organizational creativity. Think about the methods that a variety of viewpoints, experiences, and backgrounds influence revolutionary hassle-solving, product introduction, and market adaptability.

Organizational Climate and Culture:

Evaluate how management contributes to the improvement of an inclusive and various place of work tradition. Examine how the tradition, norms, and values of the business enterprise have an effect on range control initiatives and the outcomes they produce.

Market and Reputation:

Examine the impact of range control on an organization's marketplace competitiveness, brand photo, and reputation. Examine stakeholder family members, customer perceptions, and feasible financial effects of an inclusive and diverse place of business tradition.

Comparative Studies:

Examine groups with differing tiers of variety control implementation in evaluation to one another. Examine how distinct industries, locations, and organization sizes compare in phrases of performance effects, employee reports, and organizational practices.

Challenges and obstacles:
Identify specific challenges, barriers and resistance to effective implementation of diversity strategy in industry. Identify potential barriers to diversity and inclusion efforts, such as unconscious bias, lack of leadership support, and ineffective organizational capacity.

Rules and Regulations:
Research rules and regulations relating to diversity management, such as those relating to affirmative action, anti-discrimination and diversity reporting. Companies figure out how to meet these responsibilities and aim for optimal business outcomes.

Case studies and longitudinal research:
Use case studies and longitudinal research to track how diversity management systems in companies change over time. Identify the best strategies for long-term success and look at the long-term impact on business results.

By exploring these areas of research, students can gain an important comprehension of the intricate connection between diversity management and organizational effectiveness, providing useful recommendations for diversity-oriented companies will be used as a strategic advantage

VIII. Conclusion:

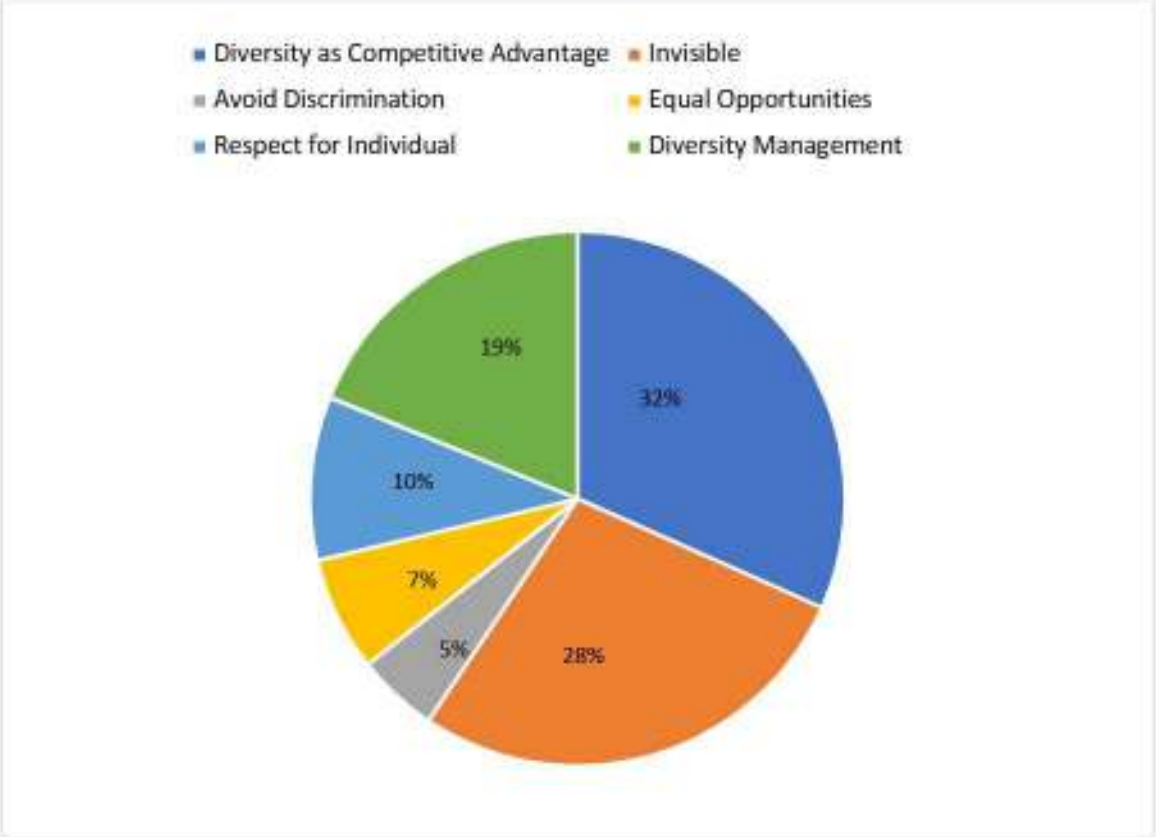

Figure4: Enhancing Organizational Performance through Diversity Management

In summary, the study of how diversity strategy affects organizational performance highlights the importance of designing inclusive workplaces for today's diverse workforce Reviewing literature and detailed findings, we get several key findings:

First, there is evidence that diversity management policies—including practices, rules, and cultural norms—improve organizational performance through diversity and affect self-monitoring Research often shows that teams deliver better performance in terms of productivity, profitability, creativity, and employee satisfaction, among other metrics

Second, effective diversity management needs to foster a culture of ownership where everyone feels appreciated, acknowledged and urged to impart their distinct expertise and viewpoint. It goes beyond just sharing tokens and locations. Organizations that prioritize diversity can tap into a vast talent pool and harness the creativity, intelligence and problem-solving skills that come naturally to teams. Champions in the areas of diversity, equality, and inclusion serve as role models for the company as a whole, fostering a culture that sees diversity as a strategic asset rather than just a legal requirement for free encouragement

There are certainly benefits to range control initiatives, but there are drawbacks as properly. The introduction of inclusive workplaces is frequently hampered through resistance, cultural limitations, and unconscious biases internal corporations. A multidimensional method, including leadership dedication, extensive training applications, accountability measures, and ongoing evaluation of range metrics, is needed to conquer those challenges.

Looking in advance, the research indicates that organizations have to do not forget diversity control an ongoing investment as opposed to a band-aid answer. Research the usage of longitudinal studies and case analyses indicates that consistent initiatives to advance inclusivity and range are successful in the long run by improving organizational competitiveness, resilience, and variation in an extra various environment.

References:

1. Nguyen, N. T., Yadav, M., Pande, S., Bhanot, A., & Hasan, M. F. (2022). Impact of diversity management on organizational performance in hotel organizations: a conceptual framework. *International Journal of System Assurance Engineering and Management*, *13*(Suppl 1), 186-196.
2. Mulu, A., & Zewdie, S. (2021). The effect of diversity management on organizational performance: The case of Ethio-Telecom South West Region. *European Journal of Business and Management Research*, *6*(2), 134-139.
3. Choi, S., & Rainey, H. G. (2010). Managing diversity in US federal agencies: Effects of diversity and diversity management on employee perceptions of organizational performance. *Public Administration Review*, *70*(1), 109-121.
4. Otike, F., Messah, O. B., & Mwalekwa, F. K. (2022). Effects of workplace diversity management on organizational effectiveness: A case study.
5. Lu, C. M., Chen, S. J., Huang, P. C., & Chien, J. C. (2015). Effect of diversity on human resource management and organizational performance. *Journal of Business Research*, *68*(4), 857-861.
6. EGELAN, A. (2018). *Effects of Diversity Management on Organizational Performance: A Case Study of Narok County* (Doctoral dissertation, MUA).
7. Sabharwal, M. (2014). Is diversity management sufficient? Organizational inclusion to further performance. *Public personnel management*, *43*(2), 197-217.
8. Ohunakin, F., Adeniji, A., Ogunnaike, O. O., Igbadume, F., & Akintayo, D. I. (2019). The effects of diversity management and inclusion on organisational outcomes: A case of multinational corporation. *Business: Theory and Practice*, *20*(3), 93-102.
9. Ogbo, A. I., Kifordu, A. A., & Ukpere, W. I. (2014). The effect of workforce diversity on organizational performance of selected firms in Nigeria. *Mediterranean Journal of Social Sciences*, *5*(10), 231-236.

10. Yadav, M., & Rajak, R. (2022). Impact of diversity management practices on learning organization and organizational performance in hotel industry. *International Journal of System Assurance Engineering and Management*, *13*(Suppl 1), 81-91.
11. Gaunya, C. R. (2015). Effect of workforce diversity management on employee performance in the public sector in Kenya. *Journal of Resources Development and Management*, *13*(2), 9-15.
12. Armstrong, C., Flood, P. C., Guthrie, J. P., Liu, W., MacCurtain, S., & Mkamwa, T. (2010). The impact of diversity and equality management on firm performance: Beyond high performance work systems. *Human Resource Management*, *49*(6), 977-998.
13. Sanyang, L., & Othman, K. (2019). Work force diversity and its impact on organisational performance. *AL-ABQARI: Journal of Islamic Social Sciences and Humanities*.
14. Blouch, R., & Azeem, M. F. (2019). Effects of perceived diversity on perceived organizational performance: Mediating role of perceived organizational justice. *Employee Relations: The International Journal*, *41*(5), 1079-1097.
15. Al-Shamlan, N., & Doblas, D. M. P. (2019). Workforce Diversity Management towards Organizational Performance: The Case of AlAujan Group, Kingdom of Bahrain. *International Journal of Engineering and Management Research*, *9*.
16. Ahmad, S., Mehfuz, S., Mebarek-Oudina, F., & Beg, J. (2022). RSM analysis based cloud access security broker: a systematic literature review. Cluster Computing, 25(5), 3733-3763.
17. Ahmad, S., Shakeel, I., Mehfuz, S., & Ahmad, J. (2023). Deep learning models for cloud, edge, fog, and IoT computing paradigms: Survey, recent advances, and future directions. Computer Science Review, 49, 100568.
18. Ahmad, S., Mehfuz, S., & Beg, J. (2021). Enhancing security of cloud platform with cloud access security broker. In Information and Communication Technology for Competitive Strategies (ICTCS 2020) Intelligent Strategies for ICT (pp. 325-335). Springer Singapore.
19. Urooj, S., Lata, S., Ahmad, S., Mehfuz, S., & Kalathil, S. (2023). Cryptographic data security for reliable wireless sensor network. Alexandria Engineering Journal, 72, 37-50.
20. Ahmad, S., Mehfuz, S., & Beg, J. (2022). Assessment on potential security threats and introducing novel data security model in cloud environment. Materials Today: Proceedings, 62, 4909-4915.
21. Okafor, C. E., Iweriolor, S., Ani, O. I., Ahmad, S., Mehfuz, S., Ekwueme, G. O., ... & Chikelu, O. P. (2023). Advances in machine learning-aided design of reinforced polymer composite and hybrid material systems. Hybrid Advances, 2, 100026.
22. Ahmad, S., & Mehfuz, S. (2024). Efficient time-oriented latency-based secure data encryption for cloud storage. Cyber Security and Applications, 2, 100027.
23. Ahmad, S., Mehfuz, S., & Beg, J. (2023). Hybrid cryptographic approach to enhance the mode of key management system in cloud environment. The Journal of Supercomputing, 79(7), 7377-7413.

24. Ahmad, S., Mehfuz, S., & Beg, J. (2022). Cloud security framework and key management services collectively for implementing DLP and IRM. Materials Today: Proceedings, 62, 4828-4836.
25. Ahmad, S., Mehfuz, S., & Beg, J. (2020, December). Securely work from home with CASB policies under COVID-19 pandemic: a short review. In 2020 9th International conference system modeling and advancement in research trends (SMART) (pp. 109-114). IEEE.
26. Tătăranu, E., Diaconescu, S., Ivănescu, C. G., Sârbu, I., & Stamatin, M. (2016). Clinical, immunological and pathological profile of infants suffering from cow's milk protein allergy. Romanian journal of morphology and embryology = Revue roumaine de morphologie et embryologie, 57(3), 1031–1035.
27. Ciongradi, C. I., Sârbu, I., Iliescu Halițchi, C. O., Benchia, D., & Sârbu, K. (2021). Fertility of Cryptorchid Testis-An Unsolved Mistery. Genes, 12(12), 1894. https://doi.org/10.3390/genes12121894
28. Ciongradi, C. I., Filip, F., Sârbu, I., Iliescu Halițchi, C. O., Munteanu, V., & Candussi, I. L. (2022). The Impact of Water and Other Fluids on Pediatric Nephrolithiasis. Nutrients, 14(19), 4161. https://doi.org/10.3390/nu14194161
29. Ciongradi, C. I., Benchia, D., Stupu, C. A., Iliescu Halițchi, C. O., & Sârbu, I. (2022). Quality of Life in Pediatric Patients with Continent Urinary Diversion-A Single Center Experience. International journal of environmental research and public health, 19(15), 9628. https://doi.org/10.3390/ijerph19159628
30. Popa, Ș., Apostol, D., Bîcă, O., Benchia, D., Sârbu, I., & Ciongradi, C. I. (2021). Prenatally Diagnosed Infantile Myofibroma of Sartorius Muscle-A Differential for Soft Tissue Masses in Early Infancy. Diagnostics (Basel, Switzerland), 11(12), 2389. https://doi.org/10.3390/diagnostics11122389
31. Mohammed, A. H. (2021). Fish Schooling And Sorensen Trust Based Wireless Sensor Network Optimization. International Journal, 9, 6.
32. Mohammed, A. H. DDoS Malicious Node Detection by Jaccard and Page Rank Algorithm in Cloud Environment.
33. Mohammed, A. H. (2021). Invasive Weed Optimization Based Ransom-Ware Detection in Cloud Environment.
34. Purohit, S. (2023). California Geographical Society, 96162, California, United States. Journal of Environmental Science and Public Health, 7, 176-184.
35. Purohit, S. Role of Industrialization and Urbanization in Regional Sustainable Development–Reflections from Tier-II Cities in India.
36. Purohit, M. S. (2012). Resource management in the desert ecosystem of Nagaur district_ An ecological study of land _agriculture_ water and human resources (Doctoral dissertation, Maharaja Ganga Singh University).
37. Faisal, L., Rama, V. S. B., Roy, S., & Nath, S. (2022). Modelling of Electric Vehicle Using Modified SEPIC Converter Configuration to Enhance DC–DC Converter Performance Using MATLAB. In Smart Energy and Advancement in Power Technologies: Select

Proceedings of ICSEAPT 2021, Volume 2 (pp. 643-653). Singapore: Springer Nature Singapore.

38. Faisal, L., Rama, V. S. B., Yang, J. M., Wajid, A., & Ghorui, S. K. (2022, May). Performance and Simulation Analysis of IPMSyncRM (Internal Permanent Magnet Synchronous Reluctance Motor) for Advanced Electric Vehicle Design. In 2022 3rd International Conference for Emerging Technology (INCET) (pp. 1-6). IEEE.
39. Faisal, L., Rama, V. S. B., Yang, J. M., Wajid, A., & Ghorui, S. K. (2022, May). Performance and Simulation Analysis of IPMSyncRM (Internal Permanent Magnet Synchronous Reluctance Motor) for Advanced Electric Vehicle Design. In 2022 3rd International Conference for Emerging Technology (INCET) (pp. 1-6). IEEE.
40. Mohd, R., & Faisal, L. (2022). Smart Agricultural Practices using Machine Learning techniques For Rainfall Prediction: A case Study of Valkenburg station, Netherlands. Mathematical Statistician and Engineering Applications, 71(4), 8451-8462.