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SOFTWARE-DEFINED NETWORKING: SELF-HEALING TOPOLOGY DISCOVERY PROTOCOL FOR SOFTWARE DEFINED NETWORKS

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Abstract—**Plug-and-play information technology (IT)infrastructure has been expanding very rapidly in recent years. With the advent of cloud computing, many ecosystem and business paradigms are encountering potential changes and may be able to eliminate their IT infrastructure maintenance processes. Real-time performance and high availability requirements have induced telecom networks to adopt the new concepts of the cloud model: software-defined networking (SDN) and network function virtualization (NFV). NFV introduces and deploys new network functions in an open and standardized IT environment, while SDN aims to transform the way networks function. SDN and NFV are complementary technologies; they do not depend on each other. However, both concepts can be merged and have the potential to mitigate the challenges of legacy networks. In this paper, our aim is to describe the benefits of using SDN in a multitude of environments such as in data centers, data center networks, and Network as Service offerings. We also present the various challenges facing SDN, from scalability to reliability and security concerns, and discuss existing solutions to these challenges.**

Keywords—Software- Defined Networking, OpenFlow, Datacenters, Network as a Service, Network Function Virtualization.

1. INTRODUCTION

Today's Internet applications require the underlying networks to be fast, carry large amounts of traffic, and to deploy a number of distinct, dynamic applications and services. Adoption of the concepts of "inter-connected data centers" and "server virtualization" has increased network demand tremendously. In addition to various proprietary network hardware, distributed protocols, and software components, legacy networks are inundated with switching devices that decide on the route taken by each packet individually; moreover, the data paths and the decision-making processes for switching or routing are collocated on the same device. This situation is elucidated in Fig. 1. The decision-making capability or network intelligence is distributed across the various network hardware components. This makes the introduction of any new network device or service a tedious job because it requires reconfiguration of each of the numerous network nodes.

Legacy networks have become difficult to automate [1, 2]. Networks today depend on IP addresses to identify and locate servers and applications. This approach works fine for static networks where each physical device is recognizable by an IP address, but is extremely laborious for large virtual networks. Managing such complex environments using traditional networks is time -consuming and expensive, especially in the case of virtual machine (VM) migration and network configuration. To simplify the task of managing largevirtualized networks, administrators must resolve the physical infrastructure concerns that increase management complexity. In addition, most modern-day vendors use control-plane software to optimize data flow to achieve high performance and competitive advantage [2]. This switch-based control-plane paradigm gives network administrators very little opportunity to increase data-flow efficiency across the network as a whole. The rigid structure of legacy networks prohibits programmability to meet the variety of client requirements, sometimes forcing vendors into deploying complex and fragile programmable management

systems. In addition, vast teams of network administrators are employed to make thousands of changes manually to network components [2, 3].

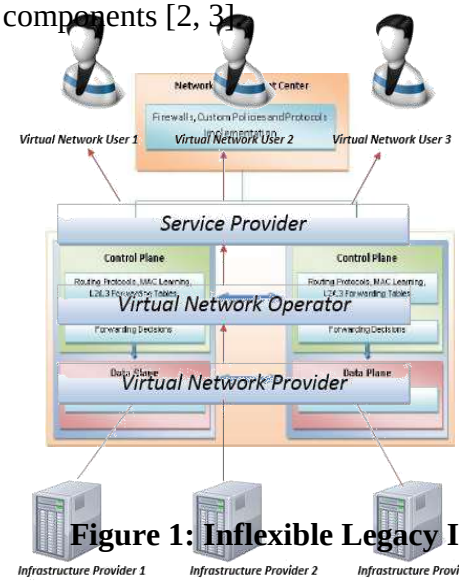

Figure 1: Inflexible Legacy Infrastructure

Figure-7: General Network Virtualization Architecture

3.2 Benefits of Network Virtualization

Some of the key benefits offered by network virtualization are mentioned below [18, 19]:

1) Co-existence of Dissimilar Networks

Network virtualization makes it possible to create multiple virtual networks on the same physical hardware. However, these virtual networks can be isolated from other existing virtual networks. This isolation can be used as a tool in the deployment of networks using different or even incompatible routing protocols.

2) Encouraging Network Innovation

Like SDN, network virtualization can be used to encourage innovation in the networking domain. The isolation that can exist between two virtual networks can be used to create separate domains for production traffic and test traffic. This isolation guarantees that a malfunction experiment will not affect production traffic.

3) Provisioning of Independent and Diverse Networks

NV deploys packet handling, quality of service (QoS) and security policies to configure network operations and behaviors. This configuration allows the categorization of different networks based on their services, users and applications.

4) Deployment of agile network capabilities

The inclusion of agile facilities into the current network improves the data transport efficiency and provides robust network. With the agile manner, NV allows the integration between legacy and advanced networks. Also, it enables migration from legacy systems into advanced ones in an agile manner.

5) Resource Optimization

The dynamic mapping of multiple virtual network nodes to the physical substrate ensures that the network hardware is utilized up to capacity. This approach cuts down on hardware costs and delivers additional profit to the infrastructure provider.

6) Deployment of Distinct Network Services

Network services such as wireless local area networks (WLANs) and Intranet require specific network architectures. In addition, a multi-national corporation might need to offer distinct services to its employees. This can add complexity to the existing overlay network. Network virtualization can help alleviate these problems by deploying such services in separate virtual networks.

3.3 NETWORK FUNCTION VIRTUALIZATION

As for the ambiguity between the concepts of network function virtualization (NFV) and SDN, it is necessary to take advantage of the definitions and benefits of both technologies.

3.3.1 Definition of NFV

Expansion of the deployment of various applications and network services induced service providers to come up with the concept of NFV. Therefore, they established a European telecommunication standard institute (ETSI) Industry Specification Group for NFV. The group defined the real concept of NFV together with its requirements and architecture.

NFV decouples network functions, e.g., firewalls, domain name service (DNS), and caching, from dedicated hardware appliances and entrusts them to a software-based application running on a standardized IT infrastructure, high-volume servers, switches, and storage devices. The interesting feature of NFV is its availability for both wired and wireless network platforms. NFV reduces capital expenditures (CAPEX) and operating expenditures (OPEX) by minimizing the purchase of dedicated hardware appliances, as well as their power and cooling requirements. Virtualization of network

functions enables fast scale-up or scale-down of various network services and provides agile delivery of these services using a software application running on commercial off-the-shelf (COTS) servers.
convergence architectures to fix the fractures in the DCN infrastructure, these solutions do not address the problems in heterogeneous networks. Nevertheless, the software-defined network paradigm is a promising solution to solve these challenges in DCN setups.

4.1.2 SDN DEPLOYMENT IN DCNS

In SDN Open Flow based-networks, the virtual network segments are centrally configured, and network security is simplified by directing flows to security policy services. Moreover, the central controller transforms the core and aggregation devices into a "high-speed transport backplane" [20]. The controller can provision a new device that is added to the network and allow it to receive the configuration policy when it appears online. Finally, SDN improves DCN infrastructure, its power consumption, and its various metrics. Due to these improvements and modifications, different SDN applications in DCNs have been proposed.

a. Changes in DCN Infrastructure

Automation and virtualization of data-center LANs and WANs has resulted in a flexible and dynamic infrastructure that can accommodate operating-cost challenges. As a result, Vello Systems [22] has proposed an open and scalable virtualization solution that connects the storage and computation resources of the data center to private and public cloud platforms. To facilitate the migration of VMs from their Layer 2 network, Layer 2 was extended across multiple DCs using Layer 3 routing. However, Layer 3 routing introduces challenges in intra-data center connectivity and cannot meet the requirements for VM migration across DCs. Therefore, the proposed solution is based on a cloud-switching system that enables cloud providers and enterprises to overcome the traditional Layer 2 domains, the direct server-to-server connection, and virtual server migration.
Because the switching system supports integration of end-to-end network attributes, its operating system can provide a

Green DCN		
Proposed Solution	**Objective**	**Functionality**
OpenFlow platform for energy-aware data center [24]	Provide guidelines for studying energy consumption in DCN elements	Estimate the minimum power for a given network topology Satisfy the traffic conditions and QoS requirements Provide a power module in the controller that determines the power state of network elements No evaluation of the proposed approach on different network topologies
OpenFlow switch controller (OSC) [26]	Decrease the influence of carbon emissions in the DCs	Reduce configuration time of network elements Enable flexible power management operations based on the programmable controller

The proposed approach predominantly varies from existing work in that it expects to reproduce and keep an organization's geography, instead of simply its network or measurement. This is doable in application settings where hubs can be reproduced and reconnected (for example spare workers in Data Centers; torpid gadgets in sensor organizations; repetitive robots or handhelds in specially appointed versatile organizations). For example, [9] proposed a plan technique for becoming both vigorous and effective onion-like topological constructions. [2] pointed to construct a solid geography dependent on a fractal cell-structure and contrasted it and sans scale organizations, as characterized in [3]. This is corresponding to our methodology in that we mean to recuperate the network geography in the event of disappointment. Different methodologies expected to manage hub disappointments by reconnecting remaining hubs; thus staying away from network parting into secluded segments, which would
render the framework useless. E.g., the recommendations in [5] and [18] trigger hub reconnection to keep up availability when a hub looses a specific number of neighbors; or, to keep up internode distances like the first organization or possibly under a most extreme distance. As in the past, this methodology doesn't recuperate fizzled hubs and consequently doesn't save network geography. [13] proposed a self-recuperating convention for Software Defined Networks (SDNs). It intended to keep a given geography in two stages: 1) utilizing multi-cast for network disclosure and state information assortment; what's more, 2) utilizing an autonomic disappointment recuperation component. Investigations were performed for sans scale organizations. Our methodology goes more profound into investigating and assessing elective information assortment instruments (in light of Trickle and Mobile Agents), to decrease asset overheads. We adjust Trickle and Mobile Agents calculations to give hubs topological information, as important to keep a directed organization geography. Besides, we break down the productivity of these calculations for various geographies, showing that underlying qualities, however regularly overlooked, do matter. Stream is a scaleable and powerful calculation for engendering and keeping up data in low-power, lossy organizations (for example remote sensor organizations). It was characterized under the RFC6206 standard [12], with regular applications including traffic timing control, multicast proliferation and course revelation. We embrace Trickle as a gauge for assessing our Mobile Agents approach

CONCLUSION:

SDN aims to simplify network architecture by centralizing the control-plane intelligence of L2 switching and L3 routing equipment. It also markets network hardware as a product service and forms the basis of network virtualization. The generalized SDN architecture consists of the SDN controller and SDN-compatible switches. Because SDN makes it possible to build programmable and agile networks, academic researchers and network engineers are exploiting its flexibility and programmability to generate strategies that simplify the management of data-center LANs and WANs and make them more secure. Besides, SDN supports NaaS, the new Internet based model that acts as a link between cloud computing and SDN. While SDN manages forwarding decisions and network administration, NaaS will provide packet-processing applications for cloud tenants. In addition, researchers are proposing various SDN prototypes that will serve DCNs, wireless networks, enterprises, and campus networks. Despite all the promising opportunities that accompany SDN, it encounters certain technical challenges that might hinder its functionality in cloud computing and enterprises. Therefore, IT organizations and network enterprises should be aware of these challenges and explore the functionality of the SDN architecture to counter these criticisms.

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STUDY ON SUCCESS AND MOTIVATIONAL FACTORS FOR ENTREPRENEURS IN MSMES

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ABSTRACT

For the past few years, the growth of entrepreneurship has been seen as a focus area in development policy in many countries, especially India. Paper, communications, engineering, electrical, textile and metal manufacturing, constructing, food processing, teaching, and artisanship are only a few of the small to medium-sized micro-enterprises that young entrepreneurs are involved in. Internationally, the MSME sector was regarded as the driving force behind economic growth. Given the increased demand on land and rising unemployment as a consequence of net population development, the need for strong growth in the MSME sector has assumed critical importance. The changing economy has provided favorable conditions for the area's manufacturing and economic development. More entrepreneurs are needed in the area to take advantage of new market opportunities and help micro, tiny, and medium-sized companies develop. The success and motivational factors for entrepreneurs in MSMEs are discussed in this article.

Keywords: Entrepreneurs, Motivational Factors, MSME sector, India, economy, Etc.

I. INTRODUCTION

Entrepreneurship's growth and advancement is a significant phenomenon in today's economies. Small and medium-sized enterprises (SMEs), which are the largest emerging factor in industrialized market economies, are closely related to entrepreneurship. In terms of production, jobs, and export opportunities, Micro, Small, and Medium Enterprises (MSMEs) play a significant role in the Indian economy. Despite rivalry from large-scale manufacturing and multinational corporations, these industries have seen rapid development since liberalization. One of the key objectives of industrialization, according to the government, is to have a high and steady level of jobs in the country. Given the importance of entrepreneurs to the growth and development of economies in the countries where they run their enterprises, knowing their motivating and performance drivers is critical. These two sets of variables have a significant effect on the growth of entrepreneurial ventures, as well as the birth rate and size of SMEs. Unfortunately, until recently, studies on this subject were not undertaken in sufficient numbers in the developed countries of South-Eastern Europe. For the past few years, entrepreneurship growth has been regarded as a priority field in many countries' development policies, especially in India.From paper to electronics, engineering to

electrical, garment to metal and pipe industry, building to food production, education to handicrafts, the young entrepreneurs are involved in a wide range of small and medium scale businesses. The fascinating reality is that, particularly in rural and semi-urban areas, entrepreneurial projects are providing more business opportunities not only for men, but also for women.

Thus, the main objective of this research is to determine motivational and success factors of entrepreneurs.

II. ENTREPRENEURSHIP

In the 17th and 18th century, the term "entrepreneur" was coined in France. The concept contractor has shown a close link with the general understanding of a company's start-up, which was previously important. However, its ultimate importance has shifted to a world where high yields are generated by increasing economic growth competitiveness. Following the significant gains made by small and medium-sized companies in overall economic development in recent years, the company has attracted a lot of attention.

Entrepreneurship is a doorway to the operational aspect of national expansion. Maintaining a person's natural freedom is a powerful key to economic development that is particularly important in developing countries. Small to medium-sized enterprises recruit a substantial number of people. Small companies also participate as a key player in the process of local economic development and reorganization of national economies. In India, women's entrepreneurship has only developed in the last three decades. Enterprise has become increasingly important in the age of globalization, particularly as the global economy has become increasingly imbalanced as a result of integrated economies.

The function of businesses is not confined to the establishment of businesses; it also includes the development of wealth, employment, and income capacity, which are the most visible indices of economic growth. A nation's underdevelopment is caused by the lack of or inadequate supply of entrepreneurs, not by a lack of natural resources.

III. MICRO, SMALL AND MEDIUM ENTERPRISES

In India and across the world, micro, small, and medium enterprises (MSMEs) have emerged as the New Millennium's growth driver. The MSME sector, which is largely powered by individual ingenuity and invention, is a fertile ground for new ventures. The industrial economy was influenced by entrepreneurship at the turn of the twentieth century. The backbone of this global revolution is the founders who are able to take on the challenge of developing new SMEs. Those with an ambitious outlook have already steered the economic revolution that has improved people's quality of living and will strive to do so in the future.

Even in India's evolving liberalized economic climate, the SSI industry has proven its value. Simultaneously, the liberalization of 1991 presented fresh problems and opportunities. Concrete in the form of necessary efforts to improve it was unquestionably needed at the time

in order to transform obstacles into new heights of potential. When citizens are directly engaged in manufacturing, economic development becomes genuinely important. The biggest impediment to development is excessive labor. Currently, first-generation developers manage a large percentage of MSMEs, with technocrats, consultants, and skilled labor responsible for a significant portion of the number. They also changed the work atmosphere and climate in the field of information and communication technology. The Indian economy's micro, tiny, and medium-sized enterprise (MSME) industry has grown to be a vibrant and flourishing field.

IV. MOTIVATION OF MSMES

Motivation exists in a variety of sizes and forms. The majority of impulsive actions are guided by some kind of inspiration. Each entrepreneur is guided by a different set of factors. Their diverse approaches to work are based around their own interests and aspirations. Any entrepreneurs are guided by a deep urge to provide financial resources for their families. Others are motivated by a need to supplement their profits. Everyone has their own motivations for wanting to be an entrepreneur and start their own company. “Some people have already worked in the corporate world, whilst others choose to start their own.’’Others, too, are made to work when they are unemployed (Barah, 2015). For an individual to become an entrepreneur, he or she must have strong inspiration from inside or from those near to him. Without motivation, one cannot accomplish something, especially entrepreneurship, which entails dabbling in an unfamiliar field, losing one's money and status, and necessitates a high level of motivation. The researcher has attempted to analyze the variables that have inspired the study's survey respondents in this article.

A majority of the new entrepreneurial class was prompted to enter into industry mainly because of the following three factors:

- The assistance available from the Governmental support systems and various financial and promotional Institutions.
- A strong desire to do something independent in life
- The technical knowledge or trading or manufacturing experience in the same or related line of the persons

However, all these are further classified into the following sub-majorfactors. They are:

- Friends
- Family members
- Surplus funds from Agriculture
- Experience in the line

- High demand for the products
- Surplus funds from Business
- Government’s Assistance
- Availability of raw materials
- To avail backward area concessions
- Availability of cheap labour.

Besides, some of the research studies have also found the following factors influence entrepreneurship.

- Entrepreneurial characteristics
- Socio – economic factors

The author P. N. Sharma has identified the following main Nine motivating factors that encouraged the entrepreneurs to start the units.

- Occupational experience
- Educational background
- Desire to branch out to manufacturing
- Desire to work independently in manufacturing line
- Assistance from Government
- Family background
- Availability of technology / raw material
- Assistance from financial institutions

Other factors including demand of the particular product, utilization of excess money earned from contractual estate business started manufacturing to facilitate trading / distribution business since the product was in short supply, unstable policy of the foreign government for non-residents, and no chance for further promotion.

4.1 Intrinsic motivation in small and medium enterprises

Intrinsic motivation occurs when one acts without any obvious external rewards. It refers to the reason why one performs certain activities for inherent satisfaction or pleasure. It arises from the individual's positive reaction to the task itself such as interest, involvement,

curiosity, satisfaction, or positive challenge, which serves as a type of reward for the work. From the Self Determination Theory, intrinsic motivation is central to the proactive, growth-oriented nature of human beings, which is the basis for learning and development.

Intrinsically motivated business owners are more likely to pursue enjoyment, interest, satisfaction of curiosity, self-expression, or personal challenge in business. Intrinsic motivation is a natural motivational tendency and a critical element in cognitive, social, and physical development. MSME owners who are intrinsically motivated, are more likely to engage in the business willingly and work towards improving their skills. Grant and Berry (2011) state that SME owners are likely to be intrinsically motivated if they attribute their business growth to factors under their own control (also known as autonomy), believe that they have the skills to be effective agents in reaching their desired goals (also known as self-efficacy), and are interested in growing a business, not just in achieving wealth.

V. MOTIVATION AND ITS INFLUENCE ON MSMEGROWTH

Extrinsic incentives, such as promotions, can boost morale in the workplace, but intrinsic variables affect the actual nature of the work produced. When one is engaged in activities that are enjoyable, exciting, and challenging, one is more likely to generate new ideas and solutions. The inspiration, innovation, and knowledge of management have an impact on how a company is handled or mismanaged. Inadequate and inadequate management skills may lead to business loss. In this scenario, motivation applies to a mechanism that elicits and maintains influence of such behaviours. It may be extrinsic or intrinsic of origin. Extrinsic motivation is more concerned with material causes, while intrinsic motivation is concerned with achieving one's personal goals. The aim of this study is to see whether intrinsic motivation has an impact on MSME development. It is important to remember that human inspiration is extremely important in the entrepreneurship phase. Grant and Berry (2011) emphasized the value of entrepreneurial ambitions as a precursor to starting a new company, emphasizing the importance of understanding what motivates an individual to develop a business. As a result, Tu and Lu (2014) demonstrate that inspiration is crucial in the development of new companies. They show that explanations of market creation that do not take into account this concept are incomplete.

Motivation is also a guiding factor in life that triggers the transition from urge to will. A plant without water, for example, also needs water to survive. However, because of its inability to travel to obtain water, the plant is unable to obtain water, resulting in a loss of motivation. Which isn't to suggest that the plant isn't capable of moving itself. As a result, any aspect of existence can be said to include, at the very least, the igniting flame of inspiration. As a result, it can be thought of as a psychological condition that motivates or confirms a desired behaviour. Hunger, for example, is a stimulus that causes a need to feed. As a result, motivation is an effort geared against a particular goal, which is a desire to be internally inspired. As a result, the need is an individual (i.e., intrinsic) motivation for behaving, resulting in the sequence of acts (e.g., to grow the business). Motivation may also be described as behaviour directed toward achieving a target. ‘‘It is an effort that is geared against a certain goal, which is a desire to be internally inspired.” As a result, the need serves

as the motivation (or reason) for acting. As a result, the aim of this research is to see whether MSME owners are motivated to expand their companies by intrinsic motivational factors.

VI. CONCLUSION

The most significant goal that motivated entrepreneurs to start their own business was to earn money. The most compelling cause for them to start their own business was "unemployment." Micro, tiny, and medium enterprises (MSMEs) are critical to the country's socioeconomic growth. They are thought to be the driving force behind the developmental phase. This assistance not only alleviates unemployment and hunger, but it also provides extra family revenue. The current research on motivating influences and entrepreneurship suggests that women are playing an increasingly important part in new entrepreneurial enterprises. Entrepreneurship frequently plays an important role in the path to self-employment and independence. India's economy is one of the world's biggest and fastest developing. The aforementioned factors have also prompted India to look into entrepreneurship as a means of ensuring the country's long-term development. The Indian government should pay more attention to the growth of MSME in the country by raising knowledge of the various schemes and assistance given to MSMEs to the general public, allowing them to earn a livelihood by beginning a new MSME, thus promoting economic development and increasing GDP.

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UNDERSTANDING THE IMPACT OF FAMILY COUNSELLING ON DYSFUNCTIONAL FAMILIES'SPIRITUAL INTELLIGENCE AND SELF-DIFFERENTIATION

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ABSTRACT

During a tragedy, healthy households appear to adjust to regular functioning. Problems in broken homes, on the other hand, are more likely to be persistent, and children's needs are not often fulfilled. In the lives of their offspring, negative trends of parental activity appear to predominate. Any disorder that interferes with proper family functioning is considered family dysfunction. Stressful events (a family member's suicide, a parent's medical illness, etc.) affect the functioning of most households at some stage. Disruptive communities (e.g., divorce, parental drug dependence, low socioeconomic status, permissive parenting styles) have been described as harmful factors that lead to sexually unsafe behaviour in female teens, especially in households with step-parents. Family counseling is a form of psychotherapy that focuses on fostering transformation and growth of communities and personal relationships. It stresses the importance of family relationships in one's psychological well-being. Family issues are examined in the context of family involvement rather than focusing only on particular participants. It sees 'shift' as a mechanism of interrelationships between family members. The aim of this essay is to examine the impact of family counseling on the moral intelligence and self-difference of dysfunctional families.

Keywords: Dysfunctional Families, Family Counselling, Spiritual Intelligence, Self-Differentiation, etc.

I. INTRODUCTION

When there is persistent and ongoing tension, neglect, and misbehavior in a household, it is considered unstable. Families with anxious processes are described as unstable in modern psychology. There is a great deal of emotional turmoil within family members, which is often accompanied by child deprivation and violence. Every family has its own complexities, as someone who has grown up in one understands. The early years of a child's life, as well as the world in which he grows up, have a significant effect on how he develops as an individual.

Children from broken households believe that their condition is natural because they are constantly subjected to it and are unaware of the many ways of living with a dysfunctional family.

Family is the aggregate of all interpersonal partnerships; relationships are the fibers that weave the fiber of the family together. In a nutshell, it is the bond that distinguishes one family from another. Any society's most important and core component is the family. It is the society's most basic unit. Society would not be able to develop and thrive without the establishment of a good and balanced home. As a result, in today's western environment, the family debate is extremely important. Modern families encounter many challenges in order to remain stable families, both within the home and in community.

In India, increasing knowledge and understanding of the value of family counseling is a pressing need. Since the family is the most basic institution of culture, promoting safe and stable communities benefits society as a whole. As a result, an approach should be taken to motivate partners to effect change in their personal and family lives. As a result, Impact of Family Counseling in Dysfunctional Communities becomes a necessary factor.

II. DYSFUNCTIONAL FAMILIES

A broken family (DF) is one in which harmful conduct such as bullying, apathy, abandonment, or a lack of emotional care has hampered the family's regular safe functioning. Living in a broken family can be exhausting. You can find yourself overwhelmed by their energy and unsure about how to communicate with them properly on a regular basis. Families, on the other hand, may fall short of meeting much of their children's emotional and physical needs. Furthermore, the communication habits of the family can seriously restrict the child's ability to communicate feelings and needs. Children raised in such households are more likely to have poor self-esteem and believe that their interests are unimportant or may not be taken seriously by anyone. As a consequence, they can develop unsatisfactory adult relationships.

Impact of a dysfunctional family

People who grew up in a dysfunctional, volatile, and unstable household have a lot of the same characteristics and coping patterns. “This is what distinguishes Adult Children of Dysfunctional Families (ACOD) from the general population.’’ ACODs are not like those people who grew up in all kinds of homes. They have a distinct perspective on the universe. Try to spot yourself in any of these characteristics (not everybody would have any of them):

- They feel that everyone else has the ‘secret rules’ for how to live as a healthy adult.
- They never feel that they know what ‘normal’ is.
- They can have difficulty following finishing tasks and through with things.

- They don’t know how to live without chaos and crisis, a lifestyle pattern which is difficult to break.
- They don’t know how to relax and just have fun.
- They often judge themselves without mercy.
- They have difficulty with intimate relationships.
- They may take themselves very seriously and be highly intense.
- They constantly seek approval and affirmation.
- They over-react to changes over which they have no control.
- They are extremely loyal, even in the face of evidence to the contrary.
- They are either super-responsible or super-irresponsible.
- They are impulsive and jump into things without thinking clearly.
- They maintain the lie that everything was ok in the family.
- They erroneously believe that, with a little more effort, they can get others to change.
- They erroneously believe that, with a little more effort, they can get others to love them.
- They have never grieved their lost childhood and struggle with underlying depression, anxiety or anger.

III. SPIRITUAL INTELLIGENCE AND SELF-DIFFERENTIATION

The expression ‘spiritual wisdom’ can be broken down into two words: metaphysical and intelligence, with the term spiritual being broken down into the word spirit once more. Spirituality and the quest for significance in life have long been regarded as essential aspects of human nature. ‘‘Despite the fact that spirituality has long been a domain of religion and science, it was only in the last century that it became a recognized field of research within psychology.” In mythology, the word ‘soul’ refers to an unphysical or immaterial aspect of human being that is responsible for personality and is sometimes used interchangeably with the terms ‘spirit’ or ‘self.’ The soul is known as the aspect of a human that connects him to divinity and is often thought to survive the death of the body in spirituality or religion.

Spiritual intelligence is based on spirituality, but it is different from it. Spirituality has become a topic of study for scholars and practitioners within its own conceptual context. However, there is no single philosophical meaning of spirituality.

How we value ourselves is described by our self-concept. In general, a person's self-concept can be described as an ordered collection of attributes, attributes, viewpoints, feelings, pictures, and abilities that they attribute to themselves. These psychological entities make up the so-called referential structure, which a person uses to organize and orient their behavior (20). As a result, self-concept is a social mechanism in which we view ourselves, how we see ourselves and how others see ourselves, and how we act in response. Our self-concept evolves as a result of our experiences with others. The willingness to think of what we are likely to do in a certain case is often included in the definition.

Self-differentiation has been used interchangeably with the related principles of individuation and psychological differentiation. The lack of conceptual-operational fit seen in several experiments has hampered the development of a solid scientific evidence base for self differentiation.

Murray Bowen, whose theories became the foundation of family systems counseling, coined the word ‘self-differentiation.’ Self-distinction has two aspects: intrapsychic differentiation and interpersonal differentiation. When we can distinguish our feelings from our impulses, this is known as intrapsychic distinction. To put it another way, it's self-awareness. Interpersonal distinction, on the other side, occurs as we can differentiate our own perception from that of those with whom we are associated. Both facets of self-differentiation are critical because they enable us to be mindful of our current condition as well as the impact of various experiences and conditions on our state, allowing us to take action. Self-differentiation refers to the ability to recognize and own your own opinions and emotions, as well as differentiate them from those of others. It's a way of staying connected to yourself and maintaining a strong bond with others, even those you care for who hold opposing viewpoints. You will tend to self-differentiate if you grew up in a family where someone retains connection (or has just had fleeting disconnect) while having different thoughts and feelings. Self-differentiation is often complicated if the parental dictum was ‘my path or the highway’ or ‘let's all think alike to prove we support each other.’

IV. FAMILY COUNSELLING

Family therapy, also known as couple and family therapy, marriage and family therapy, family structures therapy, and family counselling, is a type of psychotherapy that focuses on nurturing transformation and growth of communities and couples in interpersonal relationships. It has a

tendency to think about transition in terms of family relationship processes. It stresses the importance of family connections in psychological well-being. Family therapy, also known as family counselling, is a type of medication that is used to resolve particular problems that influence a family's welfare and functioning. ‘‘It may be used to assist a family during a stressful time, a significant change, or family members with emotional or behavioural health issues. Techniques and exercises from educational analysis, behaviour therapy, behavioural therapy, and other forms of individual therapy can be seen in family therapy.” The methods used, as in all forms of therapy, would be determined by the particular conditions that the client or clients come with. These are the most popular forms of family counselling, according to Licensed Clinical Social Worker Laney Cline King:

- **Structural*:***Structural counselling works on modifying and reinforcing the family structure such that parents have autonomy and children and adults set clear limits. The psychiatrist ‘joins' the client in this type of counselling to observe, understand, and improve their capacity to support the family maintain their relationships.

- **Bowenian*:***This type of family counselling is ideally adapted for people who are unable or unable to have other family members in their care. Triangulation (the innate propensity to vent or anxiety when referring to a third party) and separation (learning to become less physically reactive in family relationships) are the foundations of Bowenian counselling.

- **Strategic*:***The psychiatrist gives homework to the family in this form of counselling, which is shorter and more concise than the others. This homework is designed to improve the way family members relate and make decisions by analysing and modifying how they communicate and make decisions. In this form of treatment, the psychiatrist assumes the role of authority, allowing those family members who do not have as much control to negotiate more efficiently.

- **Systemic*:***The Systemic model is a form of counselling that reflects on the unspoken messages and meanings that underpin family members' behaviour. The psychiatrist of this type of therapy is impartial and detached, helping family members to delve further into their shared concerns and challenges.

V. IMPACT OF FAMILY COUNSELLING ON DYSFUNCTIONAL FAMILIES’ SPIRITUAL INTELLIGENCE AND SELF-DIFFERENTIATION

Dysfunctional households are those in which dispute, misbehavior, and, in certain cases, infant neglect or violence by particular parents exist on a daily basis.

There is a significant beneficial association between self-differentiation and moral intelligence. As a consequence, an improvement or decrease in self-differentiation will be accompanied by an

increase or decrease in moral intelligence. Also, the increase/decrease in spiritual intelligence would result in the corresponding increase /decrease of differentiation of self. There is a significant detrimental association between family dysfunction and self-difference, as well as between moral intelligence and family dysfunction. As a result, either increasing self-differentiation or increasing moral intelligence will help to alleviate family discord.

In the case of family dysfunction, the aspects of Spiritual Intelligence and Transcendence, as well as Reality, Grace, Meaning, and Consciousness, are important predictors of family dysfunction. In the case of family dysfunction, the aspects of self-differentiation and fusion with others, as well as emotional reactivity and emotional cutoff, are important predictors.

The aspects of spiritual wisdom play a role in self-differentiation. Transcendence (higher nature, holism, activity, relatedness, and sacredness) has the strongest causal connection on self-differentiation, accompanied by Truth (egolessness, inner wholeness, openness, presence, and trust), Meaning (purpose and service), Grace (beauty, discernment, liberation, gratitude, immanence, and joy), and Consciousness (beauty, discernment, freedom, gratitude, immanence, and joy) (intuition, mindfulness and synthesis). Each unit improvement in these dimensions increases self-differentiation, and each unit increase in self-differentiation reduces family dysfunction.

VI. CONCLUSION

Nothing will entirely replace the family as an intermediary entity between persons and community. The complexities of modern culture, characterized by centrifugal powers, necessitate ensuring that communities do not feel alone. The biggest poverty is one of being rejected, unloved, and uncared for. To alleviate this type of suffering, we must begin in our own homes.' The family is built on a strong intimate bond between the husband and wife, which is maintained by love and shared understanding. Families are a vital good for individuals, an essential pillar for civilization, and a wonderful and lasting treasure for couples. It is a one-of-a-kind good for girls, who are supposed to be the fruit of their parents' affection, of their absolute and charitable self-giving. As a result, culture, government, and the ecclesial community play an important role as networks of support, motivation, and spiritual nourishment that can reinforce family cohesiveness and provide a helping hand for family development, especially during times of trial or difficulty.

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EVALUATION OF INDIAN CAPITAL MARKET AND ITS INFLUENCE ON ECONOMIC GROWTH

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ABSTRACT

The stock market's role as an effective medium of financial intermediation has been well recognized by scholars, academicians, and policymakers as a primary determinant of a country's economic development, both established and emerging, over the last several decades. The relationship between stock market growth and economic activity has long been a source of controversy in economics, and it poses the scientific issue of whether stock market development affects or is a result of increased economic activity. In light of the Indian capital market's scale, era, and growth, the overall amount of research on it appears to be woefully low - around 0.1 unit of study per institution per year. The effect of capital market performance on India's economic growth is examined in this article.

Keywords: Indian Capital Market, Economic Growth, capital market reforms, etc.

I. INTRODUCTION

The capital sector is where corporations borrow and lend short- and long-term money. It mostly deals with capital raised by personal investments, banks, investment companies, government departments, and corporate savings. The amount of money invested by households in risk-free, low-yielding, and fixed-return financial products has steadily increased. Investors should have enough financial literacy and understanding of the different investment options available to them so that they do not risk money by investing in poor instruments. The stock market has a major impact on the country's economic growth.

II. INDIAN CAPITAL MARKET

Capital markets, most generally known as capital markets, have existed for decades. The British East India Company was the first company to sell stock to the general public. Since then, economies have undergone significant transformations. The way the economy functions, the asset groups, the distribution structure, and everything else has changed over time. The reforms have been phased in over time to fit the needs of consumers and market participants. In addition, securities regulatory authorities across the globe provide monitoring methods for mitigating certain actions in order to discourage market players from taking unfair advantage of knowledge in order to achieve monetary benefits.

Since India has a fair share of the global economy, the financial markets and stock markets account for a significant portion of the global economy. The stock market is critical to the functioning of the financial economy. The country's capitalism is supported by the stock

market. To safeguard investors and strengthen the microstructure of India's financial markets, the Securities and Exchange Board of India (SEBI) and the Reserve Bank of India are the two regulatory authorities for the Indian securities industry. The trading platforms of stock markets are now accessible from anywhere in the world through their trading terminals, thanks to the expanded use of information technology.

The capital sector plays a significant part in resource distribution. Furthermore, well-developed and well-functioning money and capital markets are capable of coping with and preventing (localized) supply disruptions that can destabilize the economy. Financial corporations and non-banking financial firms can still access funding on a short and long-term basis via the stock sector. "In reality, India's structured stock market showed backwardness prior to independence.'' Through the passing of time, India's stock market has matured as the government has implemented various policies to strengthen the capital market.

Capital Market Categorization

Based on the types of securities, the capital market is divided into two parts: The stock Market/Share Market and the Bond Market:

Bond Market: Bond Market is also known as the credit market, or fixed income market is a part of the capital market where the debt securities are bought and sold by the investors. The securities are traded in the form of bonds.

Stock Market: A share market or the equity market is a public entity where company stocks are traded. It is the market where shares and derivatives are traded at an agreed price. For instance, BSE or Bombay Stock Exchange is one of the oldest stock exchanges and enjoys the status of being the fourth largest stock exchange in Asia.

The Indian share market is also classified as the primary market and the secondary market.

Secondary Market: It is the part of the capital market where the already launched or the existing shares and bonds of companies are traded among investors and traders either on a securities exchange, or over-the-counter.

Primary Market: It is the part of the stock market where new stocks or bonds are issued by the company to raise the capital from the market. The company launches the stocks and bonds through an IPO (Initial Public Offering).

Functions of Capital Market

Although Capital Markets is generally thought of as a platform for long-term or infinite-term financial assets, it really plays a critical role in mobilizing resources and allocating them to efficient outlets. As a result, Capital Markets may be seen to facilitate a country's economic development mechanism. The important functions and significance of the markets have been discussed below: –

- **Promotes Saving Habits:** After the development of Capital Markets, the taxation system, and the banking institutions provide facilities and provisions to the investors to save more. In the absence of Capital Markets, they might have invested in unproductive assets like land or gold or might have indulged in unnecessary spending.

- **Economic Growth:** The Capital Markets help to accelerate the process of economic growth. It reflects the general condition of the economy. Capital Market helps in the proper allocation of resources from the people who have surplus capital to the people who are in need of capital. So, we can say that it helps in the expansion of industry and trade of both public and private sectors leading to a balanced economic growth in the country.

- **Availability of Funds:** Investments are made in Capital Markets on a continuous basis. Both the buyers and sellers interact and trade their capital and assets through an online platform. Stock Exchanges like NSE and BSE provide the platform for this and thus the transactions in the capital market become easy.

- **Stable and Systematic Security prices:** Apart from the mobilization of funds, the Capital Markets helps to stabilize the prices of stocks. Reduction in the speculative activities and providing capital to borrowers at a lower interest rate help in the stabilization of the security prices.

It alludes to India's governance system maturing, as well as its past mistakes and current power. The role of SEBI as the Indian capital market's ultimate regulator, as well as the numerous measures taken by SEBI to preserve investor trust in the market, are highlighted in the paper. According to the report, while India has reached the required acceptability on the global map, progress must continue. Newer innovations must be launched to ensure that competition persists, while industry best practices are maintained to carry Indian capital markets to the next stage of globalisation. The urgent need to implement second-generation financial sector reforms would propel India's capital markets to double-digit GDP rise.

III. INDIAN ECONOMY

Despite harsh lockdowns, deep GDP contractions, and supply chain disturbances, India was able to pursue a road to economic recovery. Large swaths of the economy have returned to levels seen in the same period last year. India's economy is on the mend, according to productivity, demand, and expenditure indicators, with select segments showing steady yet persistent growth over the last two quarters. However, the pandemic continues to affect industries in sectors such as real estate, retail, and transport and tourism. A deeper examination of data on mortgages, vehicle loans, credit card debt, and other personal loans reveals conservative borrower behavior, which is steadily changing.

Digitisation, increased automation, de-globalisation, and a demand towards green policies are some of the possible factors that would shape the global economy post-Covid-19. Proposed measures to rationalize tariffs, reduce conflicts, and introduce open access, for example, are

desperately needed in the power sector. The power sector has been allotted Rs 3.05 lakh crore by the government. Furthermore, considering commercial coal mines and drawing international and private capital through infrastructure via new PPP modalities with predetermined deployment timelines would help India recover faster. Other policies to raise private money, particularly international capital, include monetizing government property, growing foreign participation in G-Secs, raising the FDI ceiling to 74 percent in insurance, privatizing PSBs, and lowering the cost of doing business. Recovery would be accelerated by indirect fiscal stimulus, IT enablement and digitisation through government business operations, and smoothing out labor reforms at the state level. Infrastructure support schemes for seven Bulk Drugs and Medical Devices Parks, seven Mega Textile Parks, and other infrastructure support schemes would be a major boost for domestic manufacturing.

The government can concentrate on the economy's recovery on a project mode basis, with an action plan that addresses both supply and demand side causes, so that it can reach double digits in 2021-22 and stay there.

IV. INDIAN CAPITAL MARKET AND ITS INFLUENCE ON ECONOMIC GROWTH

The financial sector is concerned with numerous organisations collecting funds via the issuance of various securities. Any company needs two forms of financing. There are two types of capital requirements: short-term or operating capital and long-term or stable capital. The money market is used to collect or deposit short-term or working capital needs by issuing various securities such as bills, promissory notes, and so on. Treasury bills are used by the government to collect short-term funds. Banks are critical in delivering short-term financing. Companies collect long-term equity or fixed capital by issuing securities, debentures, and bonds on the capital market. Companies collect long-term equity or fixed capital by issuing securities, debentures, and bonds on the capital market.

In 2022, our nation will celebrate 75 years of independence. Our Prime Minister has issued a vision statement for New India in 2022 to celebrate this historic moment in our country's history! The New India Movement envisions an India free of hunger, inequality, insurgency, communalism, casteism, and filth, and one that is united throughout the world by implementing righteous governance and cutting-edge technology. This Movement would have a significant economic effect on India, in addition to positively affecting the country's social structure. Economic development would be greatly accelerated by a country that is ethically responsible and well-governed. The discernible shift toward a more formal economy is an example of this. The overall amount of income tax returns submitted for the year 2018 increased by c.71 percent (c.54.2 million), which is a commendable accomplishment for the government.

Capital Market Importance: With relation to Economy

- It provides opportunity for the public to invest their savings in attractive securities which provide a higher return.

- It is only with the help of capital market; long-term funds are raised by the business community.
- Capital market provides an opportunity for the investing public to know the trend of different securities and the conditions prevailing in the economy.
- A well-developed capital market is capable of attracting funds even from foreign country. Thus, foreign capital flows into the country through foreign investments.
- Existing companies, because of their performance will be able to expand their industries and also go in for diversification of business due to the capital market.
- It enables the country to achieve economic growth as capital formation is promoted through the capital market.
- Capital market provides opportunities for different institutions such as commercial banks, mutual funds, investment trust; etc., to earn a good return on the investing funds. They employ financial experts who are able to predict the changes in the market and accordingly undertake suitable portfolio investments.
- Capital market is the barometer of the economy by which you are able to study the economic conditions of the country and it enables the government to take suitable action.

India's latest economic liberalization efforts have culminated in a slew of new initiatives aimed at increasing the country's overall economic performance. None, though, have seen the same level of popularity as those used in the country's financial markets. 'India's capital markets institutions, laws, and practices are on par with the best in the world,' says Subhash Aggarwal, chairman and managing director of SMC Global, an investment solutions company in India. 'Financial sector development has been crucial in fostering investment and economic growth in the region. Because of the increased capacity of the Indian retail sector, it continues to expand, creating more opportunities for foreign investors as well as India's financial services business.' India's capital markets have had a very successful modern history, with stock markets outperforming global indices for the better part of a decade. A spectacular incident, albeit one with a long past.

Some of the important influences of the capital market on the economy include:

- **Proper channelization of Capital Formation** – With the developments of financial formations, there is a proper structure in place where the mobilized capital is distributed to organizations where the owners believe they will be able to reap fruitful returns in the future. The stock market is quick to adjust to market volatility in order to represent the true price of financial instruments, which benefits both consumers and corporations by either attracting or discouraging capital inflows.

- **Mobilization of Savings** – The ability to pool savings from different sectors is simple in an appropriate capital markets setting. The participant in these markets is enabled by the fair yield and liquidity of capital market instruments. Savings may be spent in unproductive, conspicuous spending, and inefficient instruments if there is no efficient capital market mechanism.

- **Raising Capital –**Capital markets enable businesses to collect long-term capital. Some owners will not be able to retain funds for an extended period of time, allowing shares to allow different buyers to sell and purchase stocks, allowing the firm to preserve permanent cash. In addition to domestic assets, stock markets attract funds from abroad in the form of shares, bonds, and other financial instruments. Along with international investor money, technologies from other countries can be introduced, which is beneficial to the country's economic growth.

- **Liquid and Continuous Market –** the capital markets are the places where the sellers and buyers of the securities are moved to one place to perform the transactions. The holdings can be easily converted into cash as these marketable securities are more liquid when compared to other instruments.

- **Provision of diversified services** – capital markets enable the financial institutions to perform various services such as providing expertise advice, grant of loans to entrepreneurs, promotion of organizations, underwriting facilities, guidance towards participation in the equity markets, technical assistance etc. They also assist during the preparation of feasibility reports, training to the corporate, identification of growth potentials in the sector.

- **Revival of sick units and Backwards Areas** – capital markets provide sick units with timely financial assistance to revive their operations. The funds raised through capital markets can be utilized for the long-term projects to be implemented in the rural and backward areas. This helps the economic development of the rural and backward areas.

- **Encouragement for investment and stability of prices** – Capital markets allow savers to participate in corporations, political organizations, and other entities across a variety of financial instruments. When spending grows and interest rates fall, capital formation and distribution become more portable. Markets are efficient in their processes and design, resulting in financial instrument stability and a decline in security price volatility. The instruments' stability is achieved by the supply of funding at a low rate of interest, the diversion of funds to profitable ventures, and the elimination of speculative operations, among other things..

- **Promotion of reliable industrial growth** – capital market assesses the financial status of the corporate which promotes efficiency and encourages the investors to invest in productive industrial sector. The funds are mobilized towards corporate

securities for investments. This process kindles the industry growth followed by the sector and economic development of the country.

- **Payback to the investors** – Capital markets ensure investment marketability by publicizing the flow of financial instruments, allowing investors to monitor their portfolios and adjust their investment choices to more attractive lines if necessary. The economy is sufficiently well-equipped that buyers' rights are protected by the creation of a Stock Exchange Compensating Fund in the event of a failure or theft by banks or businesses.

- **Allocation of Risk –** capital markets provide returns to the investors based on their risk appetite. Higher risk instruments provide high returns and at the same time higher losses to the investor. There is a perception that the new risks are inversely correlated to the high-risk instruments.

V. CONCLUSION

In a modern economy, economic growth is dependent on a well-functioning financial sector that pools domestic assets and mobilizes foreign capital for productive investment. Because of high trading rates or the difficulty in having a good price in the bond sector whether the financial markets are inefficient, the public offering largely vanishes. As a result, dysfunctional capital markets could reduce the motivation to start new businesses, lowering the economy's overall long-term competitiveness. ‘‘An productive stock exchange, on the other hand, lowers the acquisition costs of selling possession of real properties, allowing for the advent of an ideal ownership system.” The article demonstrates how capital markets are often seen as a measure of a country's economic health and development. India's financial markets now fully represent one of the world's fastest-growing economies.

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PARENTS' ATTITUDE TO INCLUSIVE EDUCATION IN MALAPPURAM DISTRICT, KERALA

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Abstract

The current study explores the parental attitude toinclusive education in Schools of Malappuram district, Kerala. The participants were 51 parents, whose children had different degrees of Intellectual Disability and every one of them was attending mainstream schools at the time of the study and 49 parents of normal children. The parents completed a questionnaire examining their perspectives regarding (a) the foremost effective educational placement in mainstream schools (special class, mainstream class or co- teaching), (b) their satisfaction with the inclusive mainstream education, (c) their cooperation with the teachers, (d) the perceived benefits of their children's educational placement and (e) their suggestions regarding the development of the inclusive educational model. Results indicated that the majority of the parents have expressed positive responds to inclusive education and would like their child to attend mainstream class with a co-teaching arrangement. The perceived benefits are mostly related to the development of their children's social skills. Huge contemplations in regards to participation with the educators, absence of individualizeddataanddirection,managerialand hierarchical issues werecommunicated.

Keywords: Parental Perspectives, Children with Intellectual Disabilities, Inclusive Education

1. Introduction:

The Education and equality of Persons with Intellectual disabled is determined by the myths, concerns and ignorance of parents, professionals, and the general public. Parents are the first persons in the family who care the children with disabilities or children with Intellectual disabled. Many parents are worried about the isolation with their children with Intellectual disabled will face as adults in terms of education, participation, responsibilities life experiences etc. Mentally Handicapped children and adults have a right to education in the field of their interest and requirement and it can be possible with the concept of inclusive education with keeping the view in sense that every individual have right of to live their life as others. In education of the mentally retarded individual levels must be gain importance for training. Parents face difficulty while discussing occurred matters with their children. There may be some another reason. The explanation must be adapted to their ability. Simple and user friendly material is needed for instruction and information. Much can be explained through role playing using everyday situations and language. The nature of training for the youngster with Intellectual crippled ought to be furnished with wide edge work. The way of thinking of comprehensive instruction which was the consequence of preceded with the examination of incorporation implies teaching youngsters with Intellectual handicapped in a normal instructive setting alongside 'non-crippled' peers. Instruction, regard, opportunity, investment, correspondence, and Parenthood are likely the most far from being an obviously true issue in standardization for Persons with Intellectualdebilitated.

All parents show of three fundamental reactions towards their youngster. In the first place, the youngster is acknowledged for what he is and the guardians perceiving the kid confinements attempt as well as could be expected to give the most wholes one condition conceivable in which the kid can accomplish his most noteworthy conceivable level. Second there guardians either acknowledge or dismiss the youngster, which conceivable concealing of acknowledgment and dismissal response however chose to systematize him, third they dismiss the kid either part or in entirety (Ehlers Krishef&Prothern 1977).

Reponal (1955) seen that when the lack is evident during childbirth at when the acknowledgment gradually downs, the most major issues are stimulated by parental blame, at having created such a kid. It was discovered that very much different couples who love one another and are bound together by solid common compassion will in general become considerably filmier joined to frame a portion, protective triangles as moms, father, and flawed kid. Then again, if the groups between the couples are not solid has a shockingly dividing impact. Each strained to fault the other, progressively to discover deficiency are reprimands scatterings increments and may prompt partition or family separation. In by far most of cases, there are troublesome issues regularly to a great extentundiscovered.

The response of most guardians is a blend of the agreeable dismissing and over compensatory response. There have been efforts internationally to include children with disabilities in the educational mainstream. In order to achieve truly inclusive education, we need to think about and incorporate children with special needs into regular schools. Especially, because these kids face some sort of barriers to learning and participation in the classroom. As general education classrooms include more and more diverse students, teachers realize the value of accepting each student as unique. In effective inclusive programs, teachers adapt activities to include all students, even though their individual goals may be different. We have learned that inclusive education is a better way to help all students succeed. Researches show that most students learn and perform better when exposed to the richness of the general education curriculum. The growing body of research has shown that children do better academically when in inclusive settings and Inclusion provides opportunities to develop relationships. Some of the benefits include: friendships, social skills, personal principles, comfort level with people who have special needs, and caring classroom environments. The purpose of this study was to examine the parents' Perspectives towards inclusion of their children with disabilities in general education and to associate their perspectives with parent variables (e.g. education) and child variables (e.g. age, severity of disability) and to explore the perspectives of parents' effectiveness of developing the children through the inclusiveeducation.

2. Review ofLiterature:

Review of pertinent literature is evident that training of parents, Peer or other family members / attendants of disabled child is very helpful not only in the understanding of the disability but also in handling the disability in an effective manner.

According to Winnick, 2000 A gradually increasing number of parents want their CWSN to attend a regular school, that is, the same neighbourhood school that siblings and children without disabilities attend. Such parents believe that their children receive education that is as near to normal as possible as they are prepared for adult life Hardman *et al.*, (1993) Chakuchichi*et al*. (2003). There are parents who also reiterate that inclusive education in physical education promotes assimilation, accommodation, adjustment and adaptation among learners in a free atmosphere Ballard, (1999); Hallahan and Kauffman, (1994); Musangeya*et al.*, (2000) Kanhukamwe and Madondo,(2003).

Numerous inclusive physical education models have been designed to help students with disabilities gain social competence and other skills to function fully and independently in regular physical education classes. Panda (1996) attempted to study the attitude ofparents,

teachers and community members towards disability of different categories of children. Major findings are that the attitude varies with gender whether they are teachers, parents or community members. Females showed favorable attitude towards normal, hearing impaired, visually-impaired and severely mentally retarded children on the evaluative dimension. Males showed more favourable attitude towards the educable, mentally retarded and speech impaired. Female parents had significantly more favourable attitudes than the male parents. On the activity factor, sex had no differential effect on attitudes towards disability. On the potency dimension, the females were slightly more favourable towards EMR and hearing-impaired than themales.

Moreover, Leyser and Kirk (2004) surveyed parents of children with disabilities regarding their attitudes toward inclusion. The results of this study indicated that while some parents supported inclusion or mainstreaming for their children with disabilities, other parents feared possible isolation socially because their children are different from the general education students. On the other hand, several studies (e.g., Gallagher *et al.,* 2013, Hilbert, 2014) have indicated that there is a difference between parents of children with and without disabilities attitudes toward including their children into the general education classroom Hilbert (2014).

Although many researchers have reported that parents of children with disabilities hold positive attitudes toward inclusion, some researchers have reported that some parents had doubts about inclusion. For instance, the findings of Bennett and Gallagher's study (2013) on parents of students with disabilities are concerned with the availability of the qualified staff, services and resources. In addition, Gallagher (2013) the parents also worried that their children would not receive as much instruction in the general education classroom as they would with more individualized instruction in a special education classroom.All successful system of inclusion requires that the community belief in the competence of the education system to meet the needs of all the students. Parents especially should have confidence in the capacity of the school in education their children with special needs (Bollapalli VR, Prakash S, 2019). Through this literature review, the researcher understood many things and found the gap for the study that aims at examining parents' perspectives on effectiveness in inclusive education and its influence in the performance of special needs students in inclusive setup atMalappuram District in the State of Kerala,India.

3. Methodology

This study was designed to investigate the perspectives of parents in rural schools of Malappuram district, Kerala towards the inclusion of students with disabilities in the regular classrooms. After restating the research questions the researcher described the methodological approach and chooses to collect and analyze data. Following this the researcher describes the remote municipality in the rural department of Malappuram district, Kerala, in which he conducted this study. Then the researcher described the specific methods used, and discusses the ways in which he maintained confidentiality for participants and ensured the credibility of this research in order to compare its findings to those of published studies on parents'perspectiveson effectiveness towards inclusion from around theworld.

***Tool for data collection and its Description*:**

The present study attempts to find out the perspectives of parent's towards inclusion of their children with special needs in mainstream classrooms. In order to collect the data the investigator adapted the Parent's Attitudes to Inclusion (PATI) scale developed by Palmer, Borthwick-Duffy, and Widaman (1998). Palmer *et al*. (1998a) recognized and responded to the growing awareness of the multidimensional nature of widespread attitudes among parents of children with special needs by designing the *Parent Attitude to Inclusion* (PATI) specifically to survey and elicit parental attitudes. They conducted extensive field testing to gather and analyze the survey data (Palmer *et al.,* 1998b; Palmer *et al.,* 2001).

The PATI's construction deliberately incorporated the "multidimensional nature of parent perceptions regarding inclusive practices for children with significantcognitive

disabilities" (Palmer *et al.*, 1998b). In particular, they specified three dimensions: quality of educational services, mutual benefits for the included child and non-disabled peers, and socio-emotional issues of peer acceptance and self-feelings. Two of the factors, labelled *Quality of educational services* (Items 5, 6, 9 and 10) and *Childacceptance and treatment* (Items 2 & 3), focused on the benefits of inclusion for these students. The third factor, labelled *Mutual benefits of inclusion* (Items 1, 4, 7, 8 and 11), focused on relations with otherstudents.

Research design

This Study was conducted by using quantitative research methods. Quantitative research is collection and analysis of numerical data to describe, explain, predict, or control phenomena (Gay, Mills, &Airasian, 2009). This can be considered the best approach to collect information regarding parents' perspectives on effectiveness toward inclusion of the children with disabilities in general education classrooms.

The researcher discussed with the school authority about the purpose of the study and the procedures to be adopted. At a subsequent meeting, 51 parents' with Intellectual Disabled children who attended regular schools were invited to participate in the study. The researcher distributed an introductory letter to the parents. Each parent signed a consent form and provided background information of their child. The researcher gave a copy of the PATI scale to each parent, and asked to read the instructions and to rate the level of agreement for eachitem.

The Parental perspectives were analyzed descriptively. The primary outcomes analyzed for the study of differences and similarities in perspectives of the parents. All analyses were completed using IBM SPSS version 20.0. Differences in the outcomes between the parents were compared using independent samples parents't- tests when data were normally distributed. Non-parametric tests (Mann–Whitney U test) were applied for scores that were not normally distributed. The outcomeswillbe reported as percentage correct for the parents' perspectives on effectiveness of inclusion of children with disabilities in inclusivesetup.

Statistical significance was accepted at the 5% level and all P values are two-tailed. Ninety-five per cent confidence intervals (95% CI) were also calculated where appropriate. Spearman correlations were conducted to examine the relationship between them and outcomes will be used for data analysis & interpretation.

4. Results and Discussion

Total 51 Parents of Children with CWSN Participated shown in Figure-1

The table-1 shows the responses made by the parents of CWSN towards the PATI items based on this the overall opinion of the respondents responded on a 6-point Likert scale, ranging from 1 (strongly disagree) to 6 (strongly agree). The same Likert scale was adhered to in this study. For the ease of making sense of the data when comparing across contexts, the scores in this study will be reversed such that a higher score will reflect a more positive attitude as the authors of the original PATI have done.But reverse scoring was used in the present study to ensure that the lowest score invariably reflects the mostpositiveperception.Choicesof agreement as 1, strongly disagree to 6, and stronglyagree.

Table- 2 represents the parents of CWSN responses with reference to the PATI items from the findings presented above, is as follows:

(1) **Statement -1:**31% of the respondents were Strongly Agreed, 65% of the respondents Agreed and 4% of the respondents slightly agreed. This indicates that the most of the respondents agreed to thestatement.

(2) **Statement -2:** 57% of the respondents were disagreed, 33% of the respondents slightly disagreed, and 8% of the respondents were slightly agreed and 2% of the respondents Agreed. This indicates that the Most of the respondents i.e., 80% of the respondents disagreed to the statement whereas only 20% of the respondents wereagreed.

(3) Statement -3: 18% of the respondents were strongly disagreed, 59% of the respondents disagreed, 23% of the respondents were slightly disagreed and none of the respondents Agreed. This indicates that the Most of the respondents disagreed to thestatement.

(4) Statement -4: 26% of the respondents were strongly agreed, 43% of the respondents agreed and 31% of the respondents were slightly agreed and none of the respondents Disagreed. This indicates that the Most of the respondents agreed to thestatement.

(5) Statement -5: 31% of the respondents were strongly agreed, 69% of the respondents agreed and none of the respondents Disagreed. This indicates that the Most of the respondents agreed to thestatement.

(6) Statement -6: 43% of the respondents were slightly disagreed, 47% of the respondents were slightly agreed and 10% of the respondents were agreed. This indicates that the 57% of the respondents agreed to thestatement.

(7) Statement -7: 8% of the respondents were strongly disagreed, 21% of the respondents disagreed, 57% of the respondents were slightly disagreed and 14% of the respondents slightly agreed. This indicates that the Most of the respondents i.e., 86% of the respondents disagreed to thestatement.

(8) Statement -8: 29% of the respondents were strongly agreed, 61% of the respondents agreed, 10% of the respondents were slightly agreed and none of the respondents disagreed. This indicates that the all most all of the respondents agreed to thestatement.

(9) Statement -9: 61% of the respondents were agreed, 39% of the respondents slightly agreed, and none of the respondents disagreed. This indicates that the Most of the respondents agreed to thestatement.

(10) Statement -10: 51% of the respondents were strongly agreed, 37% of the respondents agreed, 12% of the respondents were slightly agreed and none of the respondents disagreed. This indicates that the almost all of the respondents agreed to thestatement.

(11) Statement -11: 65% of the respondents were strongly agreed, 35% of the respondents agreed, and none of the respondents disagreed. This indicates that the almost all of the respondents agreed to thestatement.

These findings indicated that the respondents hold some concerns regarding the impact of inclusion on their children academic achievement.

The findings from the Table-2 revealed that the percentage of the respondents agreed with theitems from 1 to 11 in PATI Scale withparticipants responded on a 6-point Likert scale, ranging from 1 (strongly disagree) to 6 (strongly agree).But reverse scoring was used in the present study to ensure that the lowest score invariably reflects the mostpositive perception. Choices of agreement as 1, strongly disagree to 6, and strongly agree.Descriptive Statistics for Eleven Items have been notified in Table-3.

Descriptive Statistics for Eleven Items Used to Measure Attitudes (N = 51) represented in Table-3.

From the table -3, Z- Scores represents as a numerical measurement used in statistics of a value's relationship to the mean of a group of values, measured in terms of standard deviation (SD) from the mean. If Z-score is 0, it indicates that the data point's score is identical to the mean score. This measures of an observation's variability. The three itemsin Table with the lowest scores (with which the respondents agreed most strongly)were:

(1) Item-3: "the more time my child spends in a regular classroom, the more likely it is that he/ she would end up feeling lonely or left out around the regular education students."(*M=3.00*);

(2) Item-2: "The more time my child spends in a regular classroom, the more likely it is that he/ she will be mistreated by other nondisabled students in that room." (*M=3.48*);and

(3) Item-7:"If my child were to spend much of his/her day in a regular classroom, he/she would endupbecomingfriendswithnondisabledstudentsinthatroom."(*M=3.69*);Thethree

items with the highest scores in Table (with which the respondents not agreed Most strongly) were

(4) Item-11: "The more time my child spends in a regular classroom, the more likely it is that he/ she will be treated kindly by the nondisabled students in that room." (*M =6.52*);

(5) Item-10:"A regular education classroom provides more meaningful opportunities for my child to learn than does a special education classroom."(*M=6.26*); and**Item-5**: "It is impossible to modify most lessons and materials in a regular classroom to truly meet the needs of my child. *(M =6.19*).

The responses of parents Group Statistics for Eleven Items Used to Measure Attitudes (N = 51; Males (A) =20; Females (B) =31) are notified inTable-4.

The three items from the Table-4 with the lowest scores (with which the respondents agreed most strongly) were:

(1) **Item-3:** "the more time my child spends in a regular classroom, the more likely it is that he/ she would end up feeling lonely or left out around the regular education students." (*Mean of A=2.20 & B=1.97*);

(2) **Item-2**: "The more time my child spends in a regular classroom, the more likely it is that he/ she will be mistreated by other nondisabled students in that room." (*Mean of A=2.90 & B= 2.32*); and

(3) **Item-7**:"If my child were to spend much of his/her day in a regular classroom, he/she would end up becoming friends with nondisabled students in that room." (*Mean of A=2.40 & B= 3.00*);

The three items with the highest scores in Table (with which the respondents not agreed most strongly) were**:**

(1) Item-11: "The more time my child spends in a regular classroom, the more likely it is that he/ she will be treated kindly by the nondisabled students in that room." (*Mean of A=5.50 & B=5.74*);

(2) Item-10: "A regular education classroom provides more meaningful opportunities for my child to learn than does a special education classroom."(*Mean of A=5.30 &B=5.45*);and

(3) Item-8: "The quality of a regular education student's education is enriched when a student with severe disabilities participates in his/her class."(*Mean of A=5.30 & B=5.13*).

The responses of parents from Independent samples Test by Levene's Test for Equality of Variancesfor Eleven Items Used to Measure Attitudes (N = 51; Males (A) =20; Females(B) =31) are notified in Table-5.

The table-5 represents the attitudes of parents' of CWSN with reference to the PATI items with Equal variances assumed from the findings presented above, is as follows:

(1) For Statement -1: The mean score for Attitudes for the statement-1 indicates that there was no significant difference (p=0.795; t=0.269) between the attitudes of the Male parents (M= 5.25) and Female parents with disabled children (M=5.29). This indicates that the parents tended to be more cautious in their agreement with positive statements aboutinclusion.

(2) For Statement -2: The mean score for Attitudes for the statement-2 indicates that there was a significant difference (p=0.005; t=0.969) between the attitudes of the Male parents (M= 2.90) and Female parents with disabled children (M=2.32). This indicates that the parents tended to be more cautious in their agreement with positive statements aboutinclusion**.**

(3) For Statement -3: The mean score for Attitudes for the statement-3 indicates that there was no significant difference (p=0.213; t=0.602) between the attitudes of the Male parents (M= 2.20) and Female parents with disabled children (M=1.97). This indicates that the parents tended to be more cautious in their agreement with positive statements aboutinclusion**.**

(4) For Statement -4: The mean score for Attitudes for the statement-4 indicates that there wasnosignificantdifference(p=0.496;t=0.290)betweentheattitudesoftheMaleparents(M=

4.85) and Female parents with disabled children (M=5.00). This indicates that the parents tended to be more cautious in their agreement with positive statements aboutinclusion**.**

(5) For Statement -5: The mean score for Attitudes for the statement-5 indicates that there was no significant difference (p=0.296; t=0.412) between the attitudes of the Male parents (M= 5.40) and Female parents with disabled children (M=5.26). This indicates that the parents tended to be more cautious in their agreement with positive statements aboutinclusion**.**

(6) For Statement -6: The mean score for Attitudes for the statement-6 indicates that there was no significant difference (p=0.564; t=0.269) between the attitudes of the Male parents (M= 3.60) and Female parents with disabled children (M=3.71). This indicates that the parents tended to be more cautious in their agreement with positive statements aboutinclusion**.**

(7) For Statement -7: The mean score for Attitudes for the statement-7 indicates that there was no significant difference (p=0.007; t= -0.174) between the attitudes of the Male parents (M= 2.40) and Female parents with disabled children (M=3.00). This indicates that the parents tended to be more cautious in their agreement with positive statements aboutinclusion**.**

(8) For Statement -8: The mean score for Attitudes for the statement-8 indicates that there was no significant difference (p=0.326; t=0.517) between the attitudes of the Male parents (M= 5.30) and Female parents with disabled children (M=5.13). This indicates that the parents tended to be more cautious in their agreement with positive statements aboutinclusion**.**

(9) For Statement -9: The mean score for Attitudes for the statement-9 indicates that there was no significant difference (p=0.213; t=0.105) between the attitudes of the Male parents (M= 4.50) and Female parents with disabled children (M=4.68). This indicates that the parents tended to be more cautious in their agreement with positive statements aboutinclusion**.**

(10) For Statement -10: The mean score for Attitudes for the statement-10 indicates that there was no significant difference (p=0.453; t=0.251) between the attitudes of the Male parents (M= 5.30) and Female parents with disabled children (M=5.45). This indicates that the parents tended to be more cautious in their agreement with positive statements aboutinclusion**.**

(11) For Statement -11: The mean score for Attitudes for the statement-11 indicates that there was no significant difference (p=0.080; t=0.030) between the attitudes of the Male parents (M= 5.50) and Female parents with disabled children (M=5.74). This indicates that the parents tended to be more cautious in their agreement with positive statements aboutinclusion**.**

These findings indicated that the mean score for Attitudes for the **statement-2** i.e., 'The more time my child spends in a regular classroom, the more likely it is that he/ she will be mistreated by other nondisabled students in that room.' Only indicates that there was a significant difference (p=0.005; t=0.969) between the attitudes of the Male parents (M= 2.90) and Female parents with disabled children (M=2.32). This indicates that the parents tended to be more cautious in their agreement with positive statements about inclusion**.** And all the other statements has no significant difference between the attitudes of the both the parents' of children with disabilities. This indicates that the respondents hold some concerns regarding the *Childacceptance and treatment* (Items 2 & 3), focused on the benefits of inclusion for these students impact of inclusion on their children academicachievement.

5. Conclusions

Researcher observed that 60 percentage parents of disabled children have positive attitude about the effectiveness of inclusive education with normal children and they feel that Intellectual Disabled children can benefit in education equal opportunity in regular class they feel that non-government organization play an important role in education &Intellectual Disabled children shows better performance in academic skills in inclusive education.

Researcher observed that 40% Intellectual Disabled children parents' perspectives are not important in inclusion and inclusion is not more effective & cannot provide appropriate instructions, cannot affect the educational back ground age difference of husband & wife on the

development of Intellectual Disabled Children but have positive attitude about effect of social economic student son the development of Intellectual disabled Children. This implies that the socio-economic status plays an important role in effectiveness of inclusive education & provides appropriate instruction use in inclusive education school.

Researcher concluded that more than 60% of the parents believe that Intellectual Disability is a disease and teacher attitude is important for implementation for inclusive education. Intellectual Disabled Children need individual support, so regular teacher need appropriate training because they believe that special methods & studies play a main role in educating these children that the way regular teacher can give special attention to these studentsand can provide appropriate teaching learning material to them which can receive required support for learning.

Whereas 40% of the parents believed that it is not a disease and not required individual support regular teacher can teach non-disable children in regular class room. Regular teachersdo not needa special training to teach Intellectual Disabled children. It will not stream fully manage and has less effectiveness for the Intellectual Disabled children with normal children in inclusive education setup. Regular teacher can give individual attention in inclusive education & can provide appropriate teaching learning material & plan inclusive education programme appropriately. Children with special needs will not require support for learning they only need mental support fromtheir teacher and classmates.

6. Justification for theResearch:

The study aims at examining parents' perspectives on effectiveness of inclusive education and its influence in the performance of special needs students in inclusive setup at Malappuram District in the State of Kerala, India. Children with disabilities demonstrate high level of social interaction with non- disabled peer in inclusive setting when compared with segregatedsetting.

Social competence and communication skills of children with diverse abilities are improved in inclusive setting and closely associated with social interaction with non-disabled peer Children with disabilities in inclusive setting often have more rigorous educational program, resulting in improved skills acquisition and academic gains.

Social acceptance of children with diverse abilities is enhanced by frequent small group work nature of their instruction in inclusive classroom. Children get to see beyond the disability when working with small group and begin to realize that they have much in common with children with disabilities and friendship more commonly developed children with disabilities and those without disabilities in inclusivesetting.

7. Limitations of thestudy:

This study was conducted in Malappuram district of Kerala; it cannot be a representative sample of the whole population of India and this study is limited to 51 parents from 5 schools only as the inclusive setup government schools are less in number. So the findings may not be generalized to study. Further studies with an enlarged sample drawn from all the provinces of India areneeded.

8. Suggestions/Recommendations:

Inclusive education should start by conducting both specialized programmesfor disabled children and regular programmesfor normal children under the same roof. The school programmed should be designed in such a way that all activities like cultural games, art and craft etc. remain common for both normal and disabled children. The design of the plan should include faculty from education as well as from other disciplines such a psychology, sociology,etc.

A committee may be burned with special general education, teacher, parents and the principal to explore research on incisive programs, report finding and recommendations to the faculty, solicit input and develop and implement the plan.

Regular and continuous communications and planning must take place among faculty members both before and after during the implementation process. Emphasis should be laid on the promotion of behavior and emotional development of children.Proper arrangement should be made for social support such as friends group. Parents of disabled children should come forward to receive advice and information about their children additional support needs. Students should be prepared for the inclusion of special educations students through discussions of acceptance, respect, maintaining and assisting. Regulate interaction between the teachers and parents should be arranged to discuss the progress of children. Parents of all children (both normal and disabled) should be taken to confidence, so that their children are given proper individual attentions in inclusive settings. An effective approach to develop communities of belief about inclusion should be put into place by creating many opportunities for all community members to think carefully and discuss practicalaction.

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Table 1.Responses of the parents' towards PATI Scale

S.No	Gender	PATI Items										
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
1	M	5	2	3	4	5	3	1	5	4	5	5
2	M	6	3	3	5	5	4	2	5	4	5	6
3	M	5	4	3	4	5	4	2	6	5	6	6
4	M	5	3	3	4	5	4	1	5	4	5	5
5	M	6	2	2	4	6	4	1	6	4	6	6
6	M	5	3	2	6	5	3	3	5	5	6	6
7	M	6	4	2	5	6	4	3	5	4	5	5
8	F	6	2	2	4	5	4	3	5	4	5	6
9	M	6	5	1	5	5	3	2	5	4	6	5
10	M	5	2	3	6	6	5	4	6	5	4	6
11	M	4	3	2	5	6	3	3	6	4	6	5
12	M	5	4	3	6	5	4	2	5	5	5	6
13	M	5	3	2	4	5	4	2	5	4	5	6
14	M	5	2	2	5	5	3	3	4	5	6	6
15	F	5	3	1	5	5	4	3	5	4	6	6
16	M	6	2	1	4	6	3	4	6	5	5	5
17	M	5	2	3	4	6	4	2	6	5	6	6
18	F	5	3	2	6	5	3	3	5	5	6	6
19	M	5	3	3	5	5	4	4	5	4	4	5
20	M	6	2	2	5	6	4	3	6	5	5	6
21	M	6	2	2	5	5	3	2	5	4	6	5
22	M	4	3	1	5	6	3	1	5	5	5	5
23	M	5	4	1	6	5	3	3	5	5	5	5
24	F	5	2	2	4	5	3	3	6	5	6	5
25	F	5	2	3	6	6	5	4	6	5	4	6
26	F	6	2	2	5	6	4	2	5	5	5	5
27	F	5	2	2	5	5	3	3	4	5	6	6
28	F	6	2	2	4	5	4	3	5	4	5	6
29	F	5	3	1	5	5	4	3	5	4	6	6
30	F	5	3	2	6	5	3	3	5	5	6	6
31	F	5	2	2	4	5	3	3	6	5	6	5
32	F	5	2	3	6	6	5	4	6	5	4	6

33	F	6	2	2	5	6	4	2	5	5	5	5
34	F	5	2	2	5	5	3	3	4	5	6	6
35	F	6	2	2	4	5	4	3	5	4	5	6
36	F	5	3	1	5	5	4	3	5	4	6	6
37	F	5	3	2	6	5	3	3	5	5	6	6
38	F	5	2	2	4	5	3	3	6	5	6	5
39	F	5	2	3	6	6	5	4	6	5	4	6
40	F	6	2	2	5	6	4	2	5	5	5	5
41	F	5	2	2	5	5	3	3	4	5	6	6
42	F	6	2	2	4	5	4	3	5	4	5	6
43	F	5	3	1	5	5	4	3	5	4	6	6
44	F	5	3	2	6	5	3	3	5	5	6	6
45	F	5	2	2	4	5	3	3	6	5	6	5
46	F	5	2	3	6	6	5	4	6	5	4	6
47	F	6	2	2	5	6	4	2	5	5	5	5
48	F	5	2	2	5	5	3	3	4	5	6	6
49	F	6	2	2	4	5	4	3	5	4	5	6
50	F	5	3	1	5	5	4	3	5	4	6	6
51	F	5	3	2	6	5	3	3	5	5	6	6

Table 2.Percentage of parents of CWSN responded for each question in PATI items

Item	**Statement**	**1 Strongly Disagree**	**2 Disagree**	**3 Slightly disagree**	**4 Slightly Agree**	**5 Agree**	**6 Strongly Agree**	**N**
01	The more time my child spends in a regular classroom; the more likely it is that the quality of his/her educationwill improve.	0%	0%	0%	4%	65%	31%	51
02	The more time my child spends in a regular classroom, the more likely it is that he/she	0%	57%	33%	8%	2%	0%	51

	will be mistreated by other nondisabled students in that room.							
03	The more time my child spends in a regular classroom, the more likely it is that he/ she would end up feeling lonely or left out around the regular education students.	18%	59%	23%	0%	0%	0%	51
04	When a student with severe disabilities is enrolled in a regular education classroom, the positive benefits to the regular education students outweigh any possible problems that this practice maypresent.	0%	0%	0%	31%	43%	26%	51
05	It is impossible to modify most lessons and materials in a regular classroom to truly meet the needs of my child.	0%	0%	0%	0%	69%	31%	51
06	If my child were to spend a lot of time in a regular classroom, he/she would end up not getting the	0%	0%	43%	47%	10%	0%	51

	extra help he/sheneeds.							
07	If my child were to spend much of his/her day in a regular classroom, he/she would end up becoming friends with nondisabled students in thatroom.	8%	21%	57%	14%	0%	0%	51
08	The quality of a regular education student's education is enriched when a student with severe disabilities participates in his/her class.	0%	0%	0%	10%	61%	29%	51
09	If my child were to spend much of the day in a regular classroom, he/she would end up not getting all the necessary special services that would be provided in a special education classroom.	0%	0%	0%	39%	61%	0%	51
10	A regular education classroom provides more meaningful opportunities for my child to learn than does a special education classroom.	0%	0%	0%	12%	37%	51%	51

11	The more time my child spends in a regular classroom, the more likely it is that he/ she will be treated kindly by the nondisabled students in that room.	0%	0%	0%	0%	35%	65%	51

Table 3.Descriptive Statistics for Eleven Items Used to Measure Attitudes of Parents' of CWSN

Item	Statement	Mean	SD	Z-Score
01	The more time my child spends in a regular classroom; the more likely it is that the quality of his/her education will improve.	6.15	0.532	-0.515
02	The more time my child spends in a regular classroom, the more likely it is that he/ she will be mistreated by other nondisabled students in that room.	3.48	0.729	-6.153
03	The more time my child spends in a regular classroom, the more likely it is that he/ she would end up feeling lonely or left out around the regular educationstudents.	3.00	0.645	-4.274
04	When a student with severe disabilities is enrolled in a regular education classroom, the positive benefits to the regular education students outweigh any possible problems that this practice may present.	5.82	0.759	-2.395
05	It is impossible to modify most lessons and materials in a regular classroom to truly meet the needs of my child.	6.19	0.468	-0.515
06	If my child were to spend a lot of time in a regular classroom, he/she would end up not getting the extra help he/she needs.	4.57	0.653	-4.274
07	If my child were to spend much of his/her day in a regular classroom, he/she would end up becoming friends with nondisabled students in that room.	3.69	0.789	-8.033
08	The quality of a regular education student's education is enriched when a student with severe disabilities participates in his/her class.	6.07	0.603	-0.515
09	If my child were to spend much of the day in a regular classroom, he/she would end up not getting all the necessary special services that would be provided in a special education classroom.	5.50	0.493	-2.395
10	A regular education classroom provides more meaningful opportunities for my child to learn than does a special education classroom.	6.26	0.695	-0.515
11	The more time my child spends in a regular classroom, the more likely it is that he/ she will be treated kindly by the nondisabled students in that room.	6.52	0.482	-0.515

Table 4.Group Statistics

Parents' of CWSN& PATI items	GENDER	N	Mean	Std. Deviation	Std. Error Mean
W1	A	20	5.25	.639	.143
	B	31	5.29	.461	.083
W2	A	20	2.90	.912	.204
	B	31	2.32	.475	.085
W3	A	20	2.20	.768	.172
	B	31	1.97	.547	.098
W4	A	20	4.85	.745	.167
	B	31	5.00	.775	.139
W5	A	20	5.40	.503	.112
	B	31	5.26	.445	.080
W6	A	20	3.60	.598	.134
	B	31	3.71	.693	.124
W7	A	20	2.40	.995	.222
	B	31	3.00	.516	.093
W8	A	20	5.30	.571	.128
	B	31	5.13	.619	.111
W9	A	20	4.50	.513	.115
	B	31	4.68	.475	.085
W10	A	20	5.30	.657	.147
	B	31	5.45	.723	.130
W11	A	20	5.50	.513	.115
	B	31	5.74	.445	.080

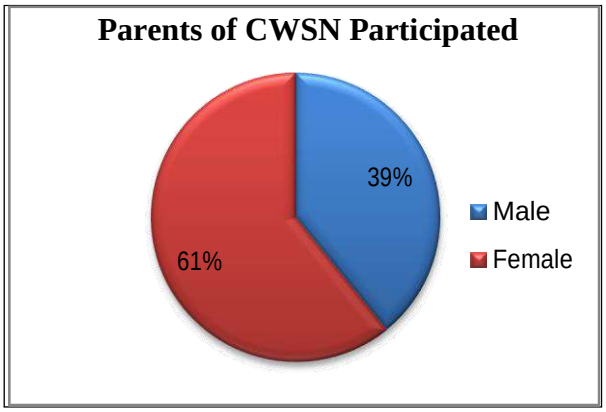
Table 5. Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
W1	Equal variances assumed	2.260	.139	-.262	49	.795	-.040	.154	-.350	.269
	Equal variances not assumed			-.244	31.676	.809	-.040	.165	-.377	.296
W2	Equal variances assumed	7.588	.008	2.966	49	.005	.577	.195	.186	.969
	Equal variances not assumed			2.612	25.740	.015	.577	.221	.123	1.032

W3	Equal variances assumed	7.149	.010	1.262	49	.213	.232	.184	-.138	.602
	Equal variances not assumed			1.174	31.341	.249	.232	.198	-.171	.635
W4	Equal variances assumed	.011	.916	-.685	49	.496	-.150	.219	-.590	.290
	Equal variances not assumed			-.691	41.845	.493	-.150	.217	-.588	.288
W5	Equal variances assumed	3.548	.066	1.057	49	.296	.142	.134	-.128	.412
	Equal variances not assumed			1.029	37.059	.310	.142	.138	-.137	.421
W6	Equal variances assumed	.415	.522	-.582	49	.564	-.110	.189	-.489	.269
	Equal variances not assumed			-.600	44.831	.551	-.110	.183	-.478	.258
W7	Equal variances assumed	18.989	.000	-2.829	49	.007	-.600	.212	-1.026	-.174
	Equal variances not assumed			-2.490	25.690	.020	-.600	.241	-1.096	-.104
W8	Equal variances assumed	.147	.703	.992	49	.326	.171	.172	-.175	.517
	Equal variances not assumed			1.010	43.032	.318	.171	.169	-.170	.512
W9	Equal variances assumed	2.768	.103	-1.262	49	.213	-.177	.141	-.460	.105
	Equal variances not assumed			-1.241	38.405	.222	-.177	.143	-.467	.112

W10	Equal variances assumed	.699	.407	-.757	49	.453	-.152	.200	-.554	.251
	Equal variances not assumed			-.773	43.477	.444	-.152	.196	-.547	.244
W11	Equal variances assumed	5.874	.019	-1.786	49	.080	-.242	.135	-.514	.030
	Equal variances not assumed			-1.731	36.468	.092	-.242	.140	-.525	.041

Figure 1.Gender wise Percentage of parents of CWSN responded for each question in PATI items



Effect of Differentiating Instruction using Multiple Intelligences on achievement subjects of among mixed ability student in the primary classroom

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Abstract

This study investigated the effect of using differentiated instruction using multiple intelligences on achievement towards subjects among mixed group ability students in primary classroom. A total of 60 students identified with LD participated. The sample was randomly divided into two groups; experimental (n= 30) and control (n= 30). An experimental Pretest-Posttest Control-Group design was used in this study. Findings from this study indicated the effectiveness of differentiated instruction using multiple intelligences on better attainment in subjects in the target students. On the basis of the findings, the study advocated for the effectiveness of using differentiated instruction using multiple intelligences on better attainment in subjects in mixed group ability students i.e in intellectual disability and learning disabilities.

Keywords: Differentiated instruction, multiple intelligences, achievement, attainment, mixed group, ability, intellectual disability, learning disability, primary classroom.

Introduction:

Teachers are faced with the challenge of teaching students with a wide range of abilities. Teachers are now dealing with a level of academic diversity in their classrooms unheard of just a decade ago. In a single classroom, students' learning abilities may range from above grade level to below grade level. For example, in a second grade class made up of 30 students, one will find that reading abilities vary in level. One student may be reading at a kindergarten level, while another is reading beyond a fifth grade level. In this case, the teacher must find ways to adapt lesson plans to meet the learning abilities of both students, while also accommodating the needs of the other 20 students in the class. Therefore, teaching students with a wide range of abilities requires teachers to be innovative in how learning opportunities are offered.

One solution to this challenge is to implement differentiated instruction in the classroom. Differentiated instruction accommodates the diverse learning needs of the students by varying the methods and materials used to teach each concept. Differentiated instruction is vital to effecting positive change in student performance, because the one-strategy-fits-all approach doesn't work in a real classroom. As a way to differentiate instruction, a teacher may implement the theory of multiple intelligences (MI).

The theory was developed by **Howard Gardner in the early1980s** and states that each person has several distinct intelligences correlating with a specific part of the brain. Gardner originally identified seven categories of intelligences: linguistic, logical-mathematical, spatial, bodily-kinesthetic, musical, intrapersonal, and interpersonal. After continued research, Gardner added the naturalistic intelligence to his theory, and continues to research the existence of an existential intelligence. Utilizing the MI theory, teachers can differentiate learning activities to accommodate each of the intelligences in the classroom. This means students will have targeted learning experiences, resulting in higher levels of achievement.

Individuals with disabilities are also the main source of improvement of the society and sustainability of its presence if they grown up appropriately. Education and training being a bridge between human and the life, so education and training of individuals become important parallel with the progress, attainment and changes in the community.

Therefore teachers should make a plan of subjects they are teaching with respect to their students. For a qualified subject's, the curriculum accommodation should be planned according to the interests of students of different ability. It will not only motivate students but also make various ability students to learn the subject in an effective way. Levy (2008) stated that "students enter classrooms with different abilities, learning styles, and personalities. Teachers need to find adequate strategies that provide students with the support needed to achieve standards presented through problem solving .Differentiating instruction by integrating student's multiple intelligences and learning style is one such strategy.

According to **Colleta and Chiapetta (1994),** quoted that science subject education should be related with the attitudes and interests of the students. These psychological concepts help motivate students and make the educational process more pertinent. **McBride(2004)** stated that "Differentiated instruction is vital to effecting positive change in student performance, because the one-strategy-fits-all approach doesn't work in a real classroom" **.VanSciver (2005) stated**, "Teachers are now dealing with a level of academic diversity in their classrooms unheard of just a decade ago. In a single classroom, students' learning abilities may range from above grade level to below grade level.

According to Lawrence (2004),"with suitable supports, including differentiated instruction, students ranging from gifted to those with significant disabilities can receive an appropriate education in general education classrooms" .

Advantages of Differentiated Instruction

Differentiating instruction is that it helps educator to address the learning needs of each student. This can be accomplished by targeting the student characteristics **Tomlinson (2001)** identified as: **readiness, interest, and learning profile**. When planning for differentiated instruction, knowing students' interests and dominant learning styles, or profiles, can allow the teacher to plan learning activities that specifically target what students would like to learn and how they learn best (Servilio, 2009). When teachers teach to students' readiness level, they can accommodate a student who has mastered the lesson content, and is ready to be challenged. In this case, a harder text or a more complicated project could be assigned. Once a need is identified, the teacher responds by finding a method or solution to answer the need in order for all students to be successful in learning (VanSciver, 2005). In these examples, the teacher is able to use differentiated instruction to meet the learning needs of their diverse students.

Another benefit of differentiated instruction is that it leads to increase in progress of student achievement. **Servilio (2009)** stated "The combination of a differentiated curriculum and the options for student choice are ideal for promoting success for students with disabilities and it can improve outcomes for other students as well". In a differentiated classroom, when students are engaged and have achieved their goal or completed a task, they are more motivated to continue learning and exceed their original goal or expectation. "With the tools of differentiated instruction, we can take each child as far as he or she can go" **(Levy, 2008)** towards further achievement and success.

Methods for Differentiating Instruction: Multiple Intelligences

Howard Gardner first introduced the theory of multiple intelligences in the early 1980s. According to Armstrong (2003) **"**Gardner argues that traditional ideas about intelligence employed in educational and psychological circles for almost a hundred years require reform. In particular, he suggests that the concept of a **"**pure, intelligence that can be measured by a single I.Q. score is seriously flawed". Gardner has identified nine intelligences and has indicated there may be many

more that people possess at varying levels**.** Gardner**'**s theory is that the variability to which people possess certain intelligence determines how they learn and interact best with other people**.**

Gardner (2003) summarized the first seven intelligences as follows:

1. **Linguistic Intelligence:** The understanding of the phonology, syntax, and semantics of language, and its pragmatic uses to convince others of a course of action, help one to remember information, explain or communicate knowledge, or reflect upon language itself**.**
2. **Bodily-Kinesthetic Intelligence:** The ability to control one**'**s bodily motions and the capacity to handle objects skillfully**.**
3. **Spatial Intelligence:** The ability to perceive the visual world accurately, to perform transformations and modifications upon one**'**s initial perceptions, and to be able to re-create aspects of one**'**s visual experience.
4. **Musical Intelligence:** The ability to understand and express components of music, including melodic and rhythmic patterns through figural or intuitive means (the natural musician) or through formal analytic means (the professional musician).
5. **Logical Mathematical Intelligence:** The understanding and use of logical structures, including patterns and relationships, and statements and propositions, through experimentation, quantification, conceptualization, and classification**.**
6. **Intrapersonal Intelligence:** The ability to access one**'**s emotional life through awareness of inner moods, intentions, motivations, potentials, temperaments, and desires, and the capacity to symbolize these inner experiences, and to apply these understandings to help one**'**s own life**.**
7. **Interpersonal Intelligence:** The ability to notice and make distinctions among other individuals with respect to moods, temperaments, motivations, intentions , and to use this information in pragmatic ways.

According to **Sanfeliz and Stalzer (2003),** one way to help students become active agents in their society is by making the educational experience more pertinent, especially regarding science. Students can be motivated to learn a scientific concept and discover the importance that such experience has to offer. If the student has the chance to learn what they find interesting in science, children will feel a sense of control and greater responsibility and enthusiasm toward their learning.

Mourad Ali & Amal Mostafa (2013) investigated the effect of using differentiated instruction by integrating multiple intelligences and learning styles on solving problems , achievement in , and attitudes towards math in six graders with learning disabilities in cooperative groups. A total of 60 students identified with LD were invited to participate. The sample was randomly divided into two groups; experimental (n= 30 boys)and control (n= 30 boys). ANCOVA and T .test were employed for data analysis. Findings from this study indicated the effectiveness of differentiated instruction by integrating multiple intelligences and learning styles on solving problems, achievement in , and attitudes towards math in the target students. On the basis of the findings, the study advocated for the effectiveness of using differentiated instruction by integrating multiple intelligences and learning styles on solving problems, achievement in , and attitudes towards math in learning disabled students.

Further study is necessary to build on the vast amount of research into differentiated instruction with other disability like learning, intellectual disability including Autism spectrum disorder, emotional disorder and other which comes under PRD Act 2016. This will allow researchers to determine how differentiated instruction can be best used as an intervention with intellectual and learning disabled students as there is a need of research with this population. In order to address this

issue with the lack of research on differentiated instruction with ID and LD students. Thus the present study seeks to give answers to the following questions.

1- Are there differences in post-test scores mean between control and experimental groups on subject Achievement Test?

2- Are there differences in post test score in the dimensions of quality effectiveness of differentiated instruction using MI implemented by teachers?

Method:

Participants

Sixty students identified with intellectual and learning disability were participated. Each student participant met the following established criteria to be included in the study:

1. A diagnosis of ID and LD by teacher's references, and screening test.
2. An IQ score on the Mental Abilities Test between 90 and 114.
3. Low scores on achievement and Quality tests.
4. Absence of any other disabling condition.

The sample was randomly divided into two groups; **experimental** (n= 30; 24 boys and 6 girls) and **control** (n= 30; 24 boys, 6 girls).

The two groups were matched on age, IQ, achievement and Quality tests. Table 1, shows means, standard deviations ,t- value , and significance level for experimental and control groups on age (by month) , IQ , achievement and quality tests (pre-test).

Table1. Pretest Scores Means, standard deviations, t- value, and significance level for experimental and control groups on age (by month) , IQ, achievement and quality tests.

Variable	Group	N	M	SD	T	Sig.
Age	**Experimental**	30	145.51	2.42		
	Control	30	145.23	2.45	0.453	-
IQ	**Experimental**	30	109.19	7.44		
	Control	30	109.80	8.05	-.305	-
Achievement	**Experimental**	30	12.129	1.14		
	Control	30	12.100	1.18	0.097	-
Quality	**Experimental**	30	20.61	0.91		
	Control	30	21.50	1.90	-2.32	-

Table1. Shows that al t- values did not reach significance level. This indicated that the two groups did not differ in age, IQ, achievement and attitude tests (pre-test).

Instruments

1. **Academic Achievement Test:** The end of year examination results of the participants in various standardized and marked by the teachers, and provided the summative evaluation scores for the analysis. Hence, scores in the various subjects served as the measures of students' achievement.
2. **Quality Towards EMHS Scale:** The scale consisted of 10 statements, three-point Likert-type scale, reflecting feelings towards subjects, ranging from positive to negative (e.g. *Learning subjects makes me upset*).The test has demonstrated high internal consistency with Cronbach's α ranging from 0.86 to 0.89.

Procedure:

Screening: 60 students identified with ID and LD was participated. Each diverse student participant met the following established criteria to be included in the study as mentioned above.

Pre-intervention testing: All the 60 students in grade one preparatory completed Academic Achievement Test , which assesses students various subjects Academic Achievement and quality Towards EMHS Scale, which assesses students quality subjects. Additionally, the end of year examination results of the participants in subject standardized and marked by the teachers and provided the summative evaluation scores for the analysis. Hence, scores in the various subject served as the measures of students achievement**.** Thus data was reported for the students who completed the study .**Experimental group** students were taught in the " ICT Room " at **School** after the school day ended for one hour .The researcher gave teacher an idea about the MI theory and how it is useful in helping them achieve their students lessons in different school subjects in general.

General Instructional Procedures: The MI program comprised 4 weekly sessions lasting between 40 min, and several homework tasks/activities. The program lasted for 2 months. During sessions, students were allowed to work together, and the researcher with the help of subject teachers gave help, prompting and modeling , if necessary. The seven intelligences were employed in all sessions. Employing

1. **Verbal / linguistic intelligence** requires students to do the brainstorm , use new and latest vocabulary, and tell the story in their own words.
2. While using **logical / mathematical intelligence** requires that students asking and answering questions about the text, and explain their answers.
3. Students employed **visual / spatial intelligence** through illustrations, and using pictures of the new vocabulary.
4. Students also used role play, body movements, and concrete materials while learning the new word as part of **bodily / kinesthetic intelligence**.
5. **Musical / Rhythmic intelligence** was employed by students. They created rhythmic patterns, and sang songs.
6. Students shared work with one another, assessed peer's work, and worked collaboratively as part of their **interpersonal intelligence**.
7. Additionally, each student had a space to work individually and reflect on his/her progress and achievement as part of his **intrapersonal intelligence**.

Experimental Design

An experimental Pretest-Posttest Control-Group design was used in this study. In this mixed design, two groups are formed by assigning 30 of the participants to the experimental group and 30 to the control group. Both groups were pre tested and post tested in the same manner and at the same time in the study. The independent variable was the multiple intelligences intervention and it assumed two **values,** presence versus absence of the multiple intelligences intervention. The dependent variables were the gains in scores on achievement in, and quality towards subjects tests.

Results

Subjects Achievement

Table 2, shows data on ANCOVA analysis for the differences in post- test mean scores between experimental and control groups in subject Achievement. The table shows that the (F) value was (416.92) and it was significant value at the level (0.01).

Table 2, ANCOVA analysis for the differences in post- test mean scores between experimental and control groups in subjects Achievement

Source	Sum of squares	df	Mean square	F	Sig.
Pre	3.894	1	3.894		
Group	6327.64	1	6327.64	416.92	0.01
Error	880.27	58	880.27		
Total	7208.85	60			

Table 3, shows T. test results for the differences in post- test mean scores between experimental and control groups in subject's achievement. The table shows that (t) value was (20.54). This value is significant at the level (0.01) in the favor of experimental group. The table also shows that there are differences in post- test mean scores between experimental and control groups in subject achievement in the favor of experimental group.

Table 3, T-test results for the differences in post- test mean scores between experimental and control groups in subject achievement.

Group	N	Mean	Std. deviation	T	Sig.
Experimental	30	35.97	2.58	20.54	0.01
Control	30	15.59	4.85		

Quality Toward Subject

Table 4, shows data on ANCOVA analysis for the differences in post- test mean scores between experimental and control groups in Quality toward subjects. The table shows that the (F) value was (244.722) and it was significant value at the level (0.01).

Table 4, ANCOVA analysis for the differences in post- test mean scores between experimental and control groups in Quality toward Subject.

Source	Sum of squares	df	Mean square	F	Sig.
Pre	.128	1	.128	244.722	0.01
Group	5538.336	1	5538.336		
Error	1312.607	58	22.631		
Total	7375.73	60			

Table 5, shows T- test results for the differences in post- test mean scores between experimental and control groups in quality toward Subject. The table shows that (t) vale was (16.75). This value is significant at the level (0.01) in the favor of experimental group. The table also shows that there are differences in post-test mean scores between experimental and control groups in quality toward subject in the favor of experimental group.

Table 5, T-test results for the differences in post- test mean scores between experimental and control groups in quality toward subject.

Group	N	Mean	Std. deviation	T	Sig.
Experimental	30	41.74	6.46	16.75	0.01
Control	30	21.80	1.42		

Discussion

The main objective of the study was to explore the effect of differentiated instruction using multiple intelligences on achievement of subject among mixed group ability student in primary classroom.

The results of this study as revealed in tables 3, 5, show that the differentiated instruction that used multiple intelligences was effective in achievement and quality towards subjects of students in experimental group, compared to the control group whose individuals were left to be taught in a traditional way.

Contributor (Students) of this study fall into the minimum IQ range from 60 to 90 above, nevertheless, they have Intellectual disability and learning disability. Thus IQ score cannot account for learning disabilities and intellectual disability. The results of the present study support that conclusion with evidence that students who participated in the study do not fall into the low IQ range, however they have learning disabilities and intellectual disability. When designing a program based on the differentiated instruction that used multiple intelligences, they had statistical increase in achievement and quality towards subjects. Mourad Ali (2007), however , notes that "learning disabled, as well as gifted students can master the same contents and school subjects", but they need to do that in a way that is different from that used in our schools.This goes in line with what Mourad Ali et al. (2006) notes that there is one problem " students who are identified as learning disabled often cover any special abilities and talents, so their weakness becomes the focus of their teachers and peers, ignoring their abilities.

Experimental group gained better scores in achievement and quality towards subjects than did control groups in post-tests though there were no statistical differences between the two groups in pre- test. This is due to the program which met the experimental group's needs and interests. On the contrary, the control group was left to be taught in a traditional way. This goes in line with our adopted perspective which indicates that traditional methods used in our schools do not direct students as individual toward tasks/activities and materials, and do not challenge their abilities. This may lead students to hate all subjects and the school in general. On the contrary, when teachers adopt differentiated instruction that suits students interests and challenge their abilities with its various modalities and methods.

This indicates that " as we learn more about the scope and complexity of individual differences and how they affect academic progress, we become increasingly convinced that many individuals who do not do well at school due to the instructional methods used to teach them does not complement preferred styles to learn, thus, we should seek strategies that help these students and match their strengths.

Implications

The results of this study have several important implications. This study adds to the literature on the effectiveness of differentiated instruction with intellectual disability and learning disabled students. Results appear to indicate that differentiated instruction are an effective instructional strategy for achievement and quality towards subjects test scores of students with intellectual and learning disabilities. This study has referential adequacy because this study could be replicated for any performance task or activities by any teacher or educator wanting to test how students perform when learning and training through using multiple intelligences.

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FACTORS AFFECTING CUSTOMERS IN ADOPTION OF MOBILE BANKING

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ABSTRACT

Traditional branch banking is giving way to electronic banking (e-banking) and, more recently, mobile banking as technology progresses and people's demographics and lifestyles change (m-banking). Cell phones are used by more citizens in developed countries than bank accounts. Mobile banking is a cutting-edge platform that is gaining traction in Africa and across the globe. Mobile banking applications provide topics like balance inquiries and fund transfers, among other things. Mobile marketing is one of the aspects of development in the field of product marketing (goods, services, and ideas), and it is therefore considered a tool of electronic marketing, which can be described as using interactive wireless media to provide customers with information about the products at any time in a way that generates value for stakeholders), or as a set of practices that enables the organization to communicate with customers about the products at any time in a way that generates value for stakeholders. Following the evolution in electronic networking techniques and cooperation with mobile service providers, the introduction of mobile banking has resulted in improvements in banking operations. As a consequence, mobile banking technology has become more conductive to individuals and the banking industry. The aim of this paper is to identify the factors that influence mobile banking adoption.

Keywords: Mobile Banking Adoption, Technology, Customers, Banks, India, etc.

I. INTRODUCTION

Technology is seen as a global change driver. In India, there is a positive trend against smartphone and internet banking. The distribution and usage of banking financial resources from a cell phone is referred to as mobile banking. Mobile banking, according to Tiwari and Buse [1], provides a variety of services such as conducting banking transactions, accessing and managing accounts and records.

In comparison to the technical means and techniques widely used today, mobile banking is one of the most modern and advanced ways of delivering electronic banking services. However, owing to a variety of reasons, including factors impeding the consumer's use of this method, this type (mobile banking services) continues to face a number of issues surrounding customer use, despite the fact that there are other factors motivating the use of this form of providing banking services. Customers' adoption of mobile banking services is influenced by

a variety of variables, including driving factors such as: (Pursuance, speed of transaction, communication, ease of use and assurance). These five driving factors are included in the survey, and the study shows that they have a positive effect on the use of mobile banking services.

Mobile banking offers a payment and accounting framework that improves the pace at which banking services are delivered. Because of the growing number of smartphone users, mobile banking is spreading like a virus among consumers. There is already a demand for mobile phones to operate in. The introduction of mobile banking in India has accelerated the rise of phone-based transactions. Mobile banking appeals to a vast amount of citizens because it is available 24 hours a day and is easy to use. There is a significant disconnect between consumer and mobile banking, according to Ashta. The bulk of people want to do their banking in the conventional way rather than using mobile banking.

II. MOBILE BANKING

In India, the company banking sector has needed various financial technologies, such as changing their emphasis from traditional banking to technology banking in order to meet the needs of their customers and gain a competitive advantage. One such breakthrough is mobile banking. Mobile banking is described as the use of mobile phones to conduct various banking transactions such as fund transfers, deposits, balance inquiries, and bill payments.

It has made banking more convenient for customers and has had an effect on their banking purchases. It is used not only for shopping, but also for paying taxes, booking movie tickets, and recharging cell phones. It enables banks to communicate with their customers on a regular basis and generate revenue from enhanced customer purchases through mobile banking. Mobile banking is currently cost-effective, and banks provide it to customers at a lower cost. Following the introduction of online banking, mobile banking has become increasingly relevant in the corporate world.

This will enable customers to conduct banking transactions efficiently and conveniently without having to visit a bank branch. To compete in this dynamic environment, banks use mobile banking as an innovation strategy. Furthermore, it assists banks in improving their profitability and maintaining their effectiveness among customers.

Sms banking was one of the first mobile banking systems to use sms. European banks started offering mobile banking services to their customers on this website. In terms of technology, the banking sector now has more options than ever before. Because of the simplicity and convenience of the customers, mobile banking is becoming more common. “Money transfer is really cool these days.’’ To make their customers more at ease, the majority of banks have created their own banking applications. Mobile banking is extremely simple and comfortable.

2.1 Characteristics and Features of Mobile Banking

Mobile banking has transformed over the years. Banks not just provide mobile banking services to the clients of theirs as a convenience but also support the banking institutions to save cash. Some characteristics/features with mobile banking services are:

- ***Saving money:*** Many banks use the savings initiated from online transactions to provide clients better interest rates or maybe incentives for keeping the online accounts of theirs.

- ***Saving the environment:*** Mobile banking reduces the paperwork which would usually happen if a buyer walked into a bank. Thus, it will help in preserving the natural resources.

- ***Cross selling:*** Banks frequently use M banking as a platform for cross selling or perhaps up selling other financial services, such as, automobile loans, credit cards, etc. as it does not produce burden on buyers to think about such services.

- ***Convenience***: Mobile banking is undoubtedly handier as compared to actually visiting the bank. Financial transactions may be completed at any time as well as during holidays

- ***Larger client base***: Since mobile banking may be performed anytime and anywhere, people that would usually have to find a far more regional bank are actually no more needed to do it. Hence, this really encourages the buyers to utilize M banking and hence helps in raising consumer base.

- ***Security***: Mobile Banking could be established with security concerns. Despite the point that its unusual, hackers have been noted to have access to consumer accounts. Banks are actually starting to be more vigilant about safeguarding mobile banking access points and require extra passwords or maybe answer to personal security questions.

- ***Information***: Customers that use mobile banking; have a much better attention of the day-to-day monetary transactions of theirs. They're much more apt to get fraudulent or erroneous transactions.

- ***Simplicity***: Customers are able to set up immediate bill payment services and mechanize other tasks via mobile banking. It frees the consumer from wasting time on writing checks and mailing envelopes. Automated bill payment is in addition invaluable when the buyer is out of the nation.

- ***Account notification:*** Most banks are going to e-mail notices to their clients whenever their bill is actually due. This will help the consumer to spend the bill of theirs on time along with other such products before they're overdue.

III. ADOPTION OF MOBILE BANKING

The use of technology by banks has a positive effect on India's payment processes. Technology is critical to the bank policy of moving away from paper-based transactions and into paperless transactions. Banks profit from technological advances because it improves their operating performance and competitiveness. Because of the introduction of technology, the banking industry has undergone a paradigm change, and branchless banking is now commonplace. Customers conduct the majority of their transactions at their convenience at home or at work, and they should not feel compelled to visit a branch for their banking. For banks, technology serves as a catalyst and a market engine. The advancement of telecommunication technology has given banking a new dimension, and it is being used to acquire clients, automate processes, and improve process performance. Almost all banks have focused on core banking solutions throughout the last decade and have achieved the transition to technology-driven banks. Bank divisions are evolving from order service centers to partnership management centers.

Mobile banking has given consumers more flexibility in terms of time and space, which is also seen as a major drawback of traditional banking. It has also aided banks in lowering their operating costs and widening their consumer base. It has increased the productivity, proficiency, and ability of banks to provide better services to their customers. It has also aided banks in offering a variety of other related facilities to their current customers at little or no expense. A medium in which a consumer connects with a bank through a mobile computer, such as a mobile phone or personal digital assistant, according to the definition of mobile banking. It enables its customers to gain access to account details and conduct low-cost remote purchases in their accounts. Due to the sheer scale of its population, the amount of internet users, the government's push for financial inclusion, and public awareness of the ease and convenience of mobile banking, India's prospects for mobile banking seem to be quite promising.

Adoption of banking boosts competitiveness and performance by allowing banks to compete more effectively. The use of real-time data allows for improved decision-making. The role of complete banking automation in the Indian banking industry is growing due to an efficient regulatory and competitive environment. Banks collaborate with each other in implementing technologies to provide quality service to their clients by delivering the right knowledge and adopting the correct technology. In order to overcome the competitive climate, banks should use information and communication technology (ICT) to develop a modern competitive strategy weapon. Customers today are technologically advanced and continue to utilize the most up-to-date technologies available from banks and other financial institutions. Banks are attempting to introduce technologies in order to stay up with consumer trends in order to retain such tech-savvy clients. Banks are finding it difficult to adopt newer technologies to offer their products and services through it.

M-banking is the product of recent telecommunications advancement and expansion, which provides a new consumer entry point. M-banking is a form of m-commerce in which bank customers connect with banks through mobile apps, taking advantage of all of the bank's

facilities and services. M-banking services are available through a variety of platforms, including Interactive Voice Response (IVR), Short Messaging Services (SMS), Mobile Applications, and Wireless Application Protocol (WAP), among others. Banks are using mobile innovation to deliver cost-effective and profitable services to their clients. The launch of m-banking enables banks to conduct their functions more effectively, resulting in increased customer retention and loyalty.

IV. FACTORS AFFECTING CUSTOMERS IN ADOPTION OF MOBILE BANKING

The increasing advancements and developments in the banking sector are revolutionizing the industry and have generated a sense of uncertainty and curiosity for those with a banking mentality who stay on their toes to see what these technologies have to bring. However, there is no consensus among users as to whether these inventions are effective or not. As a result, it depends heavily on an individual's affirmation of the degree to which it meets the need. In that power, the topic of factors that influence customer mentality has gotten a lot of attention in recent years.

The availability of the internet, its complexity, compatibility, understanding, and interest both play a role in m-banking adoption. Lack of information, technical skills, and culture are also impediments to electronic m-growth. banking's Market behaviour in regards to m-banking adaptation is influenced by financial expense, utility, self-efficacy, and reputation. Another impediment to m-banking adoption is the cost of internet access. Market acceptance of m-banking innovations is influenced by social effects, efficiency, and task-technology suit. The following are the most important factors:

- **Financial cost:** Cost benefit trade-off is an important factor, which affects m-banking technology adoption. Advancement of technology always adds some direct or indirect cost such as investment, operation and utilization cost. Indian consumers take an account of this factor before adopting new technology. Affordability of mobile phone price has also a significant impact on m-banking adoption process. Many authors reported channel cost or financial cost as independent variable in their studies.

- **Self-efficacy:** Self-efficacy is the belief of an individual on his or her ability to execute behavior which is mandatory for better performance in a particular situation. Generally, there is a positive relationship between experience and technology uses.

- **Social influence:** Individual adoption decision making process is affected by belief and opinion of people around. Family, social group, social class and culture are having significant impact on consumer adoption of new technology. Opinions of society member affect consumer intention to use m-bank.

- **Security and privacy risk:** Security and privacy are major concern while using m-banking. Security is major problem faced by consumer while making online transactions. Consumers always try to avoid to share their personal information online

because of online privacy issue. Consumer trust is key factor in adoption of m-banking. Security and privacy are major concern while adopting e-services by consumers. Bank should develop trust with their customers to ensure secure online service, which will lead to better customer service and satisfaction.

- **Compatibility:** Technology should always compatible with the need of the user. M-banking can adopt by consumer only if it is compatible with banking activity needs of consumer. If technology is compatible and provides best solution to customers, there is higher chance of adoption.

- **Ease of use:** Customers adopt technology which is not complex and consume less physical and mental effort to work with. If any technology is very complex and consumer not able to learn and use it easily, there is fewer chances of adoption. Ease of use is a critical success factor in technology adoption in India as many people have less knowledge of innovative and developed technology.

- **Usefulness:** Individuals adopt any innovation only when they perceive that using of particular technology is useful in daily life. Usefulness as important construct of electronic services adoption. If consumers perceive that use of m-banking technology provide them better and quality service then only they can accept new technology.

- **Awareness:** Technology related information about innovation play crucial role in consumer adoption behavior. Previous many studies exhibited that information regarding online services play crucial role in adoption of new services. M-banking is new concept for Indian banking user, so bank should create awareness about it to speed up the adoption process.

V. CONCLUSION

Because of technical and telecommunication advancements, banking functions have moved from branch banking to virtual banking. M-banking is also a key priority approach for both banks and telecom service providers. The pace at which mobile banking services are adopted is a major concern for the banking sector, and it poses significant challenges for all bankers. The adoption of technologies increases bank efficiency. As a result, technology is serving as a catalyst for long-term economic development as well as increased efficiency. ‘‘Slow and gradual technological advancements contribute to economic development.” Development is one of the most significant factors that affects a country's tasks. Today, whole industries are acting as innovation acceptors. M banking may be a significant advancement in the developing world. The banking industry's sustainability is dependent on improved consumer relationships. Consumer requirements are becoming more complex, and there is a greater need for more advanced goods. Users of mobile banking are getting increasingly familiar with using their phones to conduct banking transactions. New consumers are more confident in banking on mobile devices as the trend in m-banking grows.

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STUDY ON CHALLENGES AND DEVELOPING A SUCCESSFUL PPP SCENARIO IN INDIA

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ABSTRACT

India is a developed world with rapidly developing infrastructure. The infrastructure has to be established, which necessitates an injection of funds. The government is short of funds for long-term growth. Public-private partnerships are exploding all over the place. According to the Government of India, a Public Private Partnership (PPP) project is one that is focused on a long-term arrangement or concession deal between a government or regulatory authority on the one hand and a private sector corporation on the other, for the delivery of infrastructure services in exchange for user fees. In a Public-Private Partnership, the public entity identifies the results it requires from the initiative. The private sector is in charge of the project's planning, construction, execution, and maintenance, as well as meeting the public agency's production requirements. The challenges of designing a competitive PPP scenario in India are examined in this article.

Keywords: Public-Private Partnerships, Challenges, Socio-economic impact, India, etc.

I. INTRODUCTION

A public–private partnership (PPP) is a government service or private company enterprise that is financed and managed through a joint venture between the government and one or more private corporations. PPP, P3, and P3 are some of the terms used to describe these plans. Thus, a public-private partnership (PPP) is a long-term arrangement between public and private sector institutions with the aim of funding, planning, implementing, and running infrastructure facilities and services in the state. This PPPs are designed to meet the twin goals of high growth and equity on a long-term basis. The basic elements deciding the performance of PPP ventures are the project's suitability for PPPs, careful assessment, and case-by-case selection of the appropriate PPP type. Prior to participating in PPPs, public authorities must determine and validate the value, performance, and potential treats of the foreseeable PPP form by economic calculations.

The majority of PPPs have been limited to the road market. And the sector still has a lot of room for development, with PPPs playing a role in achieving it. To close the infrastructure deficit, ambitious project proposals have been built for different transportation sectors. The industries are booming, but there are already roadblocks and constraints in the way of the seamless construction of world-class infrastructure. This is because the commercial sectors participating with PPPs are only interested in generating a profit rather than performing some

social work. Companies with strong links to political parties can even embark on a project with the aim of raising a lot of money. If the proposal falls into the wrong hands, or if the tender is given to the wrong individual, he can trigger serious issues. However, the government is keeping a tight grip on all of these stumbling blocks in order to set a good example in PPP and help the nation progress economically. It took a number of efforts to make the ventures a success.

II. INDIAN PPP SCENARIO

In the last decade and a half, India has seen a significant increase in PPPs. Due to many policy and structural steps taken by the central as well as several state governments, it has emerged as one of the world's leading PPP markets. To streamline the assessment and acceptance of ventures, the Indian government established the Public Private Partnership Appraisal Committee. Bidding mechanisms that are transparent and competitive have been developed. PPPs also received substantial cross-sectoral assistance in the form of project growth grants, feasibility gap finance, usage fee reforms, long-term capital and refinancing, as well as institutional and person capacity building. “In several industries, such as highways, ports, and airports, PPPs are now seen as the chosen execution style. PPPs are becoming increasingly common in the urban and social fields.’’ Institutions, developers, financiers, equity suppliers, strategies, and protocols have all evolved into a complex eco-system for PPPs over time.

India has a significant infrastructure deficit, as well as a funding gap. PPPs may help satisfy a requirement while still filling a funding void. In several PPP ventures, the private sector arranges and finances the project. This eliminates the need for the government to fulfill its financial needs from its own receipts (taxes) or borrowing. This is a benefit in situations where the public sector's ability to raise capital is restricted, such as in India. PPPs will allow further capital spending and greater access to infrastructure resources by taking financial burden away from the public sector.

III. DISADVANTAGES AND ADVANTAGES OF PPP

Disadvantages

- If the expertise in the partnership lies heavily on the private side, the government is at an inherent disadvantage. For example, it might be unable to accurately assess the proposed costs.
- Finance is one of the major problems for any project. Public sector projects require a large amount of funds. Sometimes government can’t arrange for the required amount of funds. It is private organisations who arranges all the finances & undertakes the whole risk.
- Under these partnerships, the government is required to share return from projects with private organisations. Private sector invests in public sector projects in return for

income from these projects. After completion of the project, private companies charge high prices for providing services.

- Every public-private partnership involves risks for the private participant, who reasonably expects to be compensated for accepting those risks. This can increase government costs.

- PPP project agreements are long-term, complicated and comparatively inflexible because of impossibility to envisage and evaluate all particular events that could influence the future activity.

- Changing Governments and major changes in law has sometimes a very bad impact on PPP projects.

- This partnership decreases the roles & responsibilities of public sector organisations. Most of the work is done by the private sector decreasing the government role. This decreases the employment opportunities in the public sector.

- PPP projects are always behind the risk of corruption as there are too many people and processes involved in the completion of the project.

Advantages

- They result in faster project completion and reduced delays on infrastructure projects by including time-to-completion as a measure of performance and therefore of profit.

- PPP leads to cost efficiencies which are as a result of increased competition, increased proportion of risk transfer, and closer integration of various aspects.

- Ensure the necessary investments into public sector and more effective public resources management.

- PPP projects can be delivered quicker than under conventional procurement because of better project management, better management of project risks and because the service provider is not paid until the project is completed.

- Public-Private Partnership is formed for large infrastructural projects. These projects require large finance & risk. When public & private organisations join together, this risk is diversified among two.

- Public-private partnership makes it possible to utilize funds in different projects. Government can utilize its funds elsewhere in more important projects. As projects are funded under this partnership by private corporations.

- For the public sector, one of the greatest advantages of a PPP is the access it provides to modern technology, management and skills from the private sector. For the private sector, it is an opportunity for increased innovation. *With a PPP, the private sector*

can own and operate the facility to deliver a service to the government, says Banks. *It can build in synergies and innovative ways of delivering the infrastructure required to meet the service outcomes.*

IV. CHALLENGES FOR PPP IN INDIA

A PPP is not a panacea for all the public sector's funding and infrastructure problems and PPPs are not always the most appropriate procurement option. The following are noted complexities in PPPs. Most of these can be minimized under certain circumstances and through careful management of the PPP design by the Sponsoring Authority. This requires public sector capacity (experience and expertise) to manage the PPP process.

- **Lack of information**-The PPP programme lacks of comprehensive data base regarding the projects, studies to be awarded under PPP
- **Regulatory environment**-In order to attract more domestic and international funding of infrastructure, a more robust regularity environment with an independent regulator is essential in India
- **Regulatory environment**-In order to attract more domestic and international funding of infrastructure, a more robust regularity environment with an independent regulator is essential in India
- **Project Development**-The project development activities such as detail feasibility study is must require for the private executors
- **Financing availability**-Private sectors depend on commercial banks. Sometime funding for projects become difficult because delay in rise of debt in commercial banks in India. Sources of fund is biggest difficulty in success of projects by PPP.
- **Difficulty in demonstrating value for money in advance**: Ideally, a project should be procured as a PPP on the basis of a clear demonstration that it provides value for money (VFM) compared with public sector procurement. However, it is difficult to demonstrate VFM in advance due to uncertainties in predicting what will happen over the life of the project and due to a lack of information about comparable previous projects.
- **Contract uncertainties:** PPPs often cover a long-term period of service provision (eg. 15-30 years, or life of the asset). Any agreement covering such a long period into the future is naturally subject to uncertainty. If the requirements of the public sponsor or the conditions facing the private sector change during the lifetime of the PPP the contract may need to be modified to reflect the changes. This can entail large costs to the public sector and the benefit of competitive tendering to determine these costs is usually not available.

V. DEVELOPING A SUCCESSFUL PPP SCENARIO

The PPP would be developed keeping in mind the following broad principles:

- Ensure that the projects are planned, prioritized and managed to benefit the users and maximize stakeholders' economic returns
- Provide a fair and transparent framework to facilitate and encourage PPP mode of implementation for provision of public assets and/or related services
- Protect the interests of end users, project affected persons, private and public sector entities and other stakeholders
- Adopt an efficient, equitable, consistent, transparent and competitive process for selection of private partners, and ensure efficient governance over the project life cycle
- Provide requisite provision in budgets for contingent liabilities for the sponsoring government, in various forms, such as, liabilities towards lenders in case of contract termination or minimum revenue guarantees
- Achieve increased efficiency in the deployment of investments by setting out enabling frameworks for greater private sector participation in building future public assets and ensuring their long-term maintenance
- Encourage efficient delivery of public services by engaging proficient and innovative practices with the utilization of best available skills, knowledge & resources in the private sector

VI. CONCLUSION

Infrastructure funding and growth are top targets around the world, but public-private partnerships are growing at a fast pace. Infrastructure growth, in fact, contributes to economic development. The public-private partnership (PPP) is a method for the public sector to conclude development programs by using the private sector's expertise and experience. ‘‘The government's finances are often insufficient, and private corporations may help.” The government plays a key position in PPP projects and must devise plans to improve as a collaborator. Since the primary outcome of PPPs is the emphasis on efficiency and long-term success, both the public and private sectors should collaborate to expand the reach of PPPs in India.

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ASSESSMENT ON THE ROLE OF TEACHER IN MORAL DEVELOPMENT OF CHILDREN

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ABSTRACT

Children should not grow up in a vacuum. Their moral learning is influenced by their relationships with family, home, education, culture, and society. Schools play a critical part in the development of potential people as spiritual beings. Citizenship education, character education, spiritual education, and morals education are also terms used to describe this. The moral nature of teaching has been explored under a variety of themes, and ability sets for moral technical teachers have been developed into typologies. Orientations to moral sensitivity, moral reasoning, moral motivation, and positive conduct, as well as teachers' professional ethics and principles, are typical examples. A teacher is supposed to have a clear understanding of the subject(s) taught, as well as pedagogy and learning psychology, but more importantly, a teacher should be emotionally mature, compliant with himself/herself, a socially attractive individual, and capable of educative contact with children. The function of teachers in the moral growth of primary school children is examined in this essay.

Keywords: Moral Development, Children, Teachers, Schools, Primary Education, Morals, Valus, Ethics, etc.

I. INTRODUCTION

A school is an entity that has a significant impact on the education of a country's young generations, the propagation of cultural and spiritual ideals, and the foundations for modern societal reforms. The importance of school in influencing the next century necessitates a thorough examination of its true contribution and ideals. Even if academic education and information transmission seem to be the primary functions of the classroom, its effect on children's spiritual and affective growth cannot be overlooked. Teachers are believed to have a theoretical understanding of cognitive progress and how it relates to social and spiritual development as well as literacy. They might not be able to pinpoint the origins of their theories or their metaphysical underpinnings, but they should be able to explain how children think about morals and how this knowledge informs their instruction.

Moral education encompasses a variety of facets of school life. For example, the school culture and the teacher's moral growth are highly important in the moral development of students. While much of the philosophical ramifications of teaching are accidental, teaching

is fundamentally moral. Moral education, on the other hand, is the deliberate teaching of specific beliefs, behaviors, and dispositions in order to promote students' prosocial and moral growth.

II. MORALITY

The focus of this entry is not on moral philosophy, at least not directly; rather, it is on the concept of morality. Definitions are not moral philosophies, which are vast and complicated. The problem of defining morality is the problem of determining the object of philosophical theorizing. By identifying this goal, we will see how various moral philosophies are all trying to catch the same object. Morality is a collection of principles that allow people to work together as communities. It's what cultures deem right and appropriate. More specifically, the word morality may be applied in two ways:

- normatively to refer to a code of conduct that, given specified conditions, would be put forward by all rational people, or
- descriptively to refer to certain codes of conduct put forward by a society or a group (such as a religion), or accepted by an individual for her own behaviour.

Morality and ethics are both loosely concerned with deciding between positive and evil or right and wrong. Many people consider morals to be a personal and normative concept, while ethics refers to the good and bad values established by a society or social environment. Morality isn't set in stone. What you deem appropriate in your society will not be acceptable in another. Morals are influenced by geographical locations, faith, family, and life experiences.

Moral creation is a phenomenon of moral science that has seen at least as much recognition from researchers as it has from theorists in the last few decades. Moral maturity is the phase of acquiring the beliefs, dispositions, sentiments, and cognitive competencies required for moral judgement and action. The essence and function of these elements are determined by how morality is seen. The concept of moral growth is based around the fact that, whether or not there is an objective right and wrong out there, there is something that we, as humans, take to be so, and that we should be stronger or bad at understanding and reacting to accordingly. “One of the most significant aspects of moral growth is that we should educate ourselves and each other to become better at it, implying that there is need for a kind of moral education. Morality is distinguished from prudence and tradition or etiquette by the majority of modern moral psychology.” They both believe that being decent entails treating people with fairness and regard about their well-being. Individuals engage with different cultural contexts, which leads to moral growth. Moral sophistication entails not only moral decisions, but also a sense of obligation grounded in a moral identification.

Moral development theories argue that individuals' moral beliefs can be tracked and analyzed in the same manner that their psychological development can. Another way to think of moral growth is as an increasing awareness of moral ideas or values and how to put them into practice.

III. PRIMARY SCHOOL EDUCATION

Elementary schooling, commonly known as elementary education, is the first level of formal education, starting at the age of 5 to 7 and finishing at the age of 11 to 13. Elementary or basic school refers to the first years of formal education (just to confuse the issue, elementary schools are also called grade or grammar schools). Today's primary school curriculum focuses on improving children's basic reading and numeracy abilities, as well as their comprehension of the environment. These abilities are becoming highly important in today's environment and are critical to the functioning of developing economies. As a result, primary education is obligatory and funded by the government in nearly every country on the planet.

Individual schools and families have different organizational and developmental goals, because the primary school program differs. Promotion from one grade to the next is dependent on a student's attainment in specific skills, but in rare cases, a pupil might be expected to repeat a year.

Despite the many cultural and political distinctions between countries, the goals and curriculum for elementary education are mostly similar. Nearly every country has made an official commitment to universal schooling, which is envisioned to potentially provide a free primary education for all citizens. As a result, there is a growing consensus among countries that citizenship training is one of the primary goals of elementary education. This goal suggests a focus on reading and writing abilities, math skills, and fundamental social studies and science in the curriculum.

The below are the general goals of primary education:

- To prepare the child for a continuum of learning.
- To enable the child to live a full life as a child and to realise his or her potential as a unique individual
- To enable the child to develop as a social being through living and co-operating with others and so contribute to the good of society

The primary program seeks to offer a broad learning environment and promotes a diverse range of teaching and learning styles to meet the needs of particular students. The main curriculum was completely updated in 1999, marking the first time since 1971 that the

curriculum has been completely revised. The new program is intended to cultivate the infant in all aspects of his or her life, including cultural, moral, cognitive, physiological, creative, aesthetic, educational, and physical development.

The curriculum is divided into the following key areas:

- Mathematics
- Language –English
- Arts Education, including Visual Arts, Music and Drama
- Physical Education.

Elementary students are usually given homework; however, the workload is lighter than in many countries. The workload increases with higher grades.

IV. MORAL DEVELOPMENT AND EARLY SCHOOLING OF PRIMARY CHILDREN

Morality is a system of beliefs about what is right and good compared to what is wrong or bad. **Moral development** refers to a person's religious values changing as he or she becomes older and more mature. Moral convictions are similar to, although not equivalent to, moral behavior: it is possible to believe what is correct but not do it. It's often not the same as understanding societal norms, which are arbitrary customs that keep culture running smoothly.

There are no good or bad children, but there are positive and bad forms of teaching children to recognize and care for their surroundings. Many brilliant minds in the world of cognitive psychology have devoted their lives to figuring out how children internalize universal principles, dubbed the internalization effect.– *moral development*.

When it comes to education and instruction, moral decisions are incorporated into nearly any part of classroom existence, rather than being limited to tragic events. Consider the following scenario. Assume you're a teacher, and you're reading to a tiny group of second-graders, who are taking turns reading a story aloud. Should you allot the same amount of reading time to each pupil, even though some might profit from more time? Should you devote more attention to students who need additional assistance, even though it bores classmates and deprives others of equivalent floor time? Which choice is more equitable and considerate? Simple dilemmas like this arise every day at all grade levels due to the diversity of students and the limited nature of class time and a teacher's resources.

The spiritual consciousness of the small child has not yet grown. Rather, the child's basic desire is to be protected and cherished, and her early encounters of loving partnerships become the basis of morality. Relationships begin with a mother's affection for her child and spread to extended family, neighborhoods, and other cultures, such as the Infant and Primary

classes at kindergarten. Since children this age experience what they see and hear, they internalize the religious beliefs, ethical behavior, and empathetic behaviors of the people of their lives. When people handle them well in a warm, healthy atmosphere, they grow a sense of what is nice.

Most children begin to exhibit morality related behaviors and values between the ages of 2 and 5. Tasha, for example, could see Juan taking Tyler's blocks from his hands and say, Greetings, Juan! You're going to get yourself into some serious trouble! Many small children begin to exhibit empathy-based remorse when they violate the rules at this age. For eg, if Juan from the previous example sees Tyler weep because his blocks were taken, he might feel guilty about hurting Tyler's feelings. Juan, on the other hand, would be upset only if he was disciplined for taking the blocks rather than causing anyone else unhappy as a boy.

According to Kohlberg, at this age, young children's morality is based on punishment and compliance. Kohlberg, like Piaget, argued that small children act morally as a result of their distrust of authority and desire to escape retribution. To put it another way, little children obey the law to avoid getting into trouble. Expecting preschool-aged children to simply do the correct thing is unrealistic. Most small children, on the other hand, may distinguish between positive and evil conduct, and this perception serves as the foundation for potential moral reasoning.

V. ROLE OF TEACHER IN MORAL DEVELOPMENT OF CHILDREN

Discipline among children is one of the most pressing issues in today's classrooms. This is why it's important to address the issue, How do teachers help children's moral development? Despite the fact that certain schools have spiritual education classes, such schools do not seem to be more successful in dealing with youth morality issues. This, we think, is due to the fact that teachers and colleges, as civil and educational structures, must adopt a new strategy.

Teaching is a morally upright occupation. It is a calling that necessitates both a strong personal dedication and the application of simple, logical values. Teachers must pose themselves the same questions as they ask their pupils. Cheating, stealing, coercion, upholding or violating commitments, among other legal dilemmas and questions abound in the school. This is why, rather than merely teaching moral theory, learning about morals may be seen in daily experiences and partnerships with the instructor and students. It's simpler to imagine teachers participating in moral education than it is to say how it will happen. It entails more than just a specific kind of deliberate cultivation of a person's qualities or character attributes.

Many scholars have emphasized that thorough analysis of moral growth, learning your own value structure as an instructor, dispute transformation, and core principles teachers themselves ought to instill in their learners, such as reverence, duty, compassion, fairness, and being just, should all be included in teacher preparation. Many instructors, of course, are skilled at recognizing and reversing downward spirals, as well as fostering important mental and ethical values. Often teachers express strong moral standards and have consistent

listening and opportunities for achievement, which help students feel less ashamed and distrustful. Often instructors learn from their own spiritual mistakes and work to improve their ability to see each student's point of view in their classrooms.

Through the minds of their pupils, teachers are heroes. What helps you stick out even more is whether you follow your own advice. Demonstrating how to demonstrate good character to students is just as critical as modeling reasoning techniques. Teachers are more needed than ever in today's culture to have a lasting impact on the students they teach. Despite the fact that education is not the same as it was in previous decades, we are focusing on the wrong topics. Students choose to go to school because they feel they are respected not only by their instructors but also by their peers. Respect towards others, honesty, compassion for others, and teamwork are all character traits that do not magically appear when we teach how to take a test. Make heart function a priority over homework, and your future would be more valuable than a paycheck.

VI. CONCLUSION

Morality education relates to attempts to provide students with the tools they need to improve ethical skills. Children's relationships change when they become older. Primary positions are played by schools and students. Parents and other significant people in the family that will provide them with dynamic and intense relationships that last a lifetime are the main adults. Help from secondary adults, on the other hand, is critical for productive growth. By providing an atmosphere that welcomes and nurtures communities, schools and teachers will support primary relationships. Educators have an impact on students' moral development not only from becoming good role models—important as it is—but often from what they bring to their daily interactions with students: their ability to appreciate students' perspectives and disentangle them from their own, their ability to admit and learn from moral error, their moral energy and idealism, their generosity, and their ability to hegemony. Being an adult in a school with that degree of authority is a huge moral challenge. And it ensures that without tackling the difficult challenge of improving adults' competence and ethical capabilities, we would never be able to significantly increase students' moral learning in classrooms. We must reconsider the essence of spiritual creation as a whole. ‘‘By promoting social behaviors, parents, students, extended family, jobs, supervisors, and policymakers will grow children together.’’ Our children would be profound if we live together in peace and provide them with a caring and supportive environment.

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ANALYZING THE ROLE OF YOGA IN SELF-PERSONALITY DEVELOPMENT

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ABSTRACT

There isn't a single aspect of life where Yoga isn't applicable. It alters our perspective on existence. It boosts our imagination and improves our interpersonal partnerships. Nothing stays mundane under the light of Yoga, but everyone gains a hint of the sublime. We learn self-control and moral growth. Through this sense, the concept of self is no longer limited to personal functioning. It goes into that, as it has to do with the social environment in which we live. Stress has been shown to lead to the growth of significant illnesses such as cardiac failure, depression, and obesity, as well as worsen chronic health problems, according to research. We've noticed that children are very adept at concealing their anxiety and mental discomfort from their parents, since they don't want their parents to be concerned with them. Personality is a stable collection of traits and tendencies that define certain commonalities and inconsistencies in people's psychological behaviour (thoughts, emotions, and actions) that persist over time and are difficult to explain solely as a function of social and biological influences. The aim of this paper is to shed light on personality formation from a contemporary viewpoint. Yogic sciences highlight important concerns related to personality refinement and development in modern human existence.

Keywords: Yoga, Personality Development, Human Life, Mental Peace, etc.

I. INTRODUCTION

The word personality applies to a person's general effect on other people. Personality is the aggregate of all physical, constitutional, psychological, motivational, academic, and other traits, including tastes, likes, dislikes, and attitudes. Yoga teaches you how to exercise your mind and body to achieve spiritual equilibrium. Yoga is said to bring in alignment and peace. According to a recent study, yoga will help you listen to your ears. We claim that children and teenagers need some assistance in order to listen inward to their bodies, emotions, and thoughts. As a result, yoga will aid in the creation and maintenance of good mental health in children; health promotion for children can involve the enhancement of their focus, self-esteem, empowerment, and self-regulation. We conclude that children and teenagers must grow and evolve in accordance with their own identities, interpreting and achieving a compromise between their own talents and social standards. Yoga can help them grow in a healthy way, improve themselves, and contribute as social beings.

II. PERSONALITY

A pleasing personality is a combination of a person's attitude, behavior and expression. It is apparent in the way a person walks and talks, his tone of voice, the warmth in his behavior and his definitive level of confidence. Some people never lose their attractiveness regardless of age, because of flows both from the face and heart. 'The personality is the sum total of ways in which an individual reacts and interacts with others.' Thus, human personality includes:

- The particular pattern or organization of measurable traits, both 'inner' & 'outer'.
- External appearance and behavior or social stimulus value.
- Inner awareness of self as permanent organizing force.

Personality is defined as a deeply ingrained pattern of behaviour that includes modes of perception, relating to and thinking about oneself and the surrounding environment. Personality traits are normal, prominent aspects of personality.

III. YOGA AND SELF-DEVELOPMENT

Human beings, most of them will believe, have a self. Normally, people use the expression 'Self' to refer to the personality, but the term 'self' refers to more than just the ego. The ego in us, according to Indian philosophy, is the actor, knower, and experiencer. "The 'I' or 'Ego', which conducts all of the roles of the body and mind, is just a manifestation of the absolute regarded as Brahman or pure consciousness.''The ego is said to be the reflection of the spiritual spark inside us that brings us life and allows it to perform both mental and physical tasks. It is considered as a separate body with distinct characteristics and roles. People establish their own sense of self when they get older, which influences how they interact with others and carry out different activities. We see others as people, connect to them, and form

friendships and other intimate relationships with them. Our self-concept, on the other hand, does not stay unchanged across our lives; however, it evolves as we progress through them. Let's have a look at how self-development happens at various periods in existence.

- **Childhood and Adolescence:** During early childhood children start defining themselves on the basis of certain psychological attributes. They start thinking about attitudes. During adolescence representations of the self-become much more subtle. Some adolescents establish their identities after considerable soul searching and introspection. Others commit early without much effort. This forecloses the process of identity development.

- **Infancy:** Children of different age groups respond differently to the images they see. Infants are found to have a visual self-recognition by the age of two years but clear self-awareness is not found even in the third year of age. During childhood the idea of self remains concrete.

- **Middle Age:** During this stage of life people become concerned with relating to the next generation and one's contribution to society. During this period a person faces crisis of engaging with generative activities. In fact, midlife crisis has become a popular phrase. It brings an interruption in the normal rhythm of life. For some, the changes are gradual and for others quite drastic in nature.

- **Early Adulthood:** This stage of development is characterized by the challenge of intimacy v/s isolation. Intimacy refers to the establishment of a committed relationship which is enduring. It includes both romantic as well as friendly relationships. In the course of development, one needs to redefine his or her role as father / mother, uncle / aunt.

- **Old Age:** In view of social mobility and disintegration of traditional family ties, many aged people lack social support and suffer from poor self-concept. However, those who look back upon their life with a sense of satisfaction that they have lived it well, experience a sense of integrity. Others may have regrets and despair.

IV. YOGA AND PERSONALITY DEVELOPMENT

The term 'yoga' is derived from the Sanskrit root yuj, which means'harness.' Yoga can be included in many ancient philosophies, including Vaidic Shastra, Four Vedas, Upnishada, Smiritis, and Puranas. Maharshi Patanjali's thoughts place a strong focus on yoga activities for personal growth. Various ideas, forms, rules, and Sadhana, as well as Human Purushartha, are ways to enhance the facets of Personality Development in ancient philosophy. Sports, warm-ups, outdoor activities, 'Yoga,' a healthy lifestyle, and Human purushartha Dharma, Artha, Kama, and Moksha are examples. Yoga is one of the easiest and most practical ways to change one's attitude. Yoga can be described as a method of assisting an individual in the formation of their personality:

- Yoga is providing control over the fluctuation of human mind and sensual desires.
- Yoga provides the means and methods for integration of soul.
- Yoga can help to create energy of humankind.
- Yoga has played an important role in the purification of thoughts and feelings by winning over the evil intentions.
- Yoga is the means of seeking way of the knowledge for successful lifestyle of humankind.
- Yoga is helpful universal spiritual sense.
- Yoga helpful for promotion and concentration power of mind towards Samadhi supreme attainment of moksha.

Role of Astang yogic activities provide immense help in assisting an individual to seek his all-around growth and development personality dimensions (Aspects).

- Yoga helps in the spiritual growth of the individual.
- Encourages an inward journey in order to achieve the ultimate state of Samadhi, which is said to lead to kaivalya or liberation.
- Develops introspection and altruism.
- Yogic practices to develop this aspect of personality are: dharana, dhyana, Samadhi, samyama

Yoga was never meant to be a workout for the body. The ancient Indian Yogis who created the Yoga way of life saw the body as merely a vehicle for the spirit. They looked after the body and they tried to hold it going as much as possible so that they could experience the spiritual development they desired. Yoga is a road to enlightenment and development, according to Patanjali's Yoga Sutras, which are the cornerstone of Hatha Yoga. We will attain immense personal, mental, and spiritual growth and development by pursuing the direction he lays out for us. Yoga will help one flourish personally in a variety of ways:

- **Awareness of body:** You gain a strong sense of your body, how it feels, and what it requires through practicing Asana (postures) and Pranayama (breath control) on a regular basis. When you become more in contact with your body, you will be able to properly listen to its needs, recognizing the messages it sends you regarding your physical and emotional well-being.
- **Connection to self:** Yoga practices help you to take off the mask you wear in daily life, the one that stops you seeing your true self. We wear masks all the time, we are constantly hiding parts of ourselves from others and ourselves, and, conversely, often

revealing parts of ourselves without knowing it. Yoga helps us to see the parts we are not aware of, so that we can decide if we want to keep them or change them. It also helps to promote better self-esteem.

- **Awareness of thoughts:** It is said that we have roughly 60,000 thoughts racing through our minds on an average day. Most of these are unheard by the conscious mind, but all absorbed by the subconscious, and go on to create our emotions. If a thought you have every day is 'I'm not good enough', even if you aren't aware of it, it is going to impact how you feel about yourself. Through stillness and self-study, you can bring those thoughts to your conscious awareness and process them healthily, and transform them into something more helpful.

- **Awareness of emotions:** The emotions have a powerful impact on how the body feels (think of how you feel when you are stressed, angry, upset, or feel desire, happiness, excitement, you feel it in your body don't you?) They also guide most of our actions. When we can recognise our emotions for what they are, we can choose how we are going to respond to them.

- **Stillness in the mind:** It is so easy to get overwhelmed with the endless stimulation the world presents us today. If the ancients thought they needed stillness in the mind, imagine what they would have to say about a world in which people are connecting to the world wide web before they have even got out of bed! The mind needs stillness and rest to be healthy.

- **Awareness of behaviour:** Much of our behaviour is based on programming in the subconscious mind, and conditioning from society. Yoga helps us, through the Yamas and Niyamas, to examine how we behave to ourselves and to others, and invites is to look at ways we can live more in line with our values.

- **Resilience:** These stress management strategies and practices will increase your resilience to stress and upset so that you will be able to weather the storms of life. Resilience is not about not having any problems, yoga doesn't give you a 'get out of jail' card to excuse you from a difficult life, but it gives you the strength to get through it, and to learn the lessons that each difficulty in life presents us with.

- **Stress management strategies:** The practices and concepts of Yoga offer a range of strategies to help to release stress and tension, both on the short term to help you manage a specific situation, and in the longer term to reduce your stress levels and bring your nervous system into balance.

V. CONCLUSION

Human identity is a complicated topic. Personality may be described in a variety of ways. Simply put, it is a set of physical, emotional, and behavioral characteristics and patterns that we show during our lives. A person's personality is a collection of characteristics that

distinguishes them from others. The activity and the philosophy of yoga are two sides of the same coin in yoga theory. Both are essential for personality formation.‘‘The philosophy aids man's confidence in practice, and actual knowledge aids in understanding the concept in subtle ways.” Yoga exercise on a regular basis aids in the maintenance of physical and mental health, all of which are essential for overall personality development. Yoga aids in the growth of a fully developed personality. Yoga could not only be used as a medicine but also adopted as a way of life in order to attain the ideal harmonious condition of mind and body.

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Urban Transportation Planning: Systematic Literature Review, SLR.

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Abstract— This paper presents the orderly writing survey based on different writers audit on metropolitan vehicle organization and foundation the board and transport arranging. This exploration paper presents a utilization of progressive system networks in to utilize Analytic Hierarchy Process (AHP) for building up a need positioning model for upkeep of metropolitan streets. The need model has likewise been created utilizing Direct Assessment (DA) technique and results were contrasted and AHP model. In Direct Assessment technique, the specialists were approached to rate the significance of every boundary influencing the street support, on a size of 0 to 100% while in AHP the specialists were approached to make a couple savvy examination between the boundaries. Measurable tests were performed to show that the gathered information displayed great consistency and repeatability. The created need positioning models has been applied to a metropolitan street organization of Hyderabad city, comprising of 21 metropolitan street segments.

Keywords: Systematic Literature Review, Prisma methodology, comparison, Suggestion and Findings, Objectives, Problem Specification, Urban transport management,

I INTRODUCTION

Priority setting techniques as used in the PMS cover a wide spectrum of methods and approaches ranging from simple priority lists based on engineering judgment to complex network optimization models (Haas et al. 1994). These prioritization methods can be further divided as: (i) Ranking Methods (ii) Optimization Methods (iii) Artificial Intelligence Techniques (iv) Analytical Hierarchy Process Method.

Transportation planning is the process of defining future policies, goals, investments, and designs to prepare for future needs to move people and goods to destinations as continuation of this research work we are executing analytical Need setting strategies as utilized in the PMS cover a wide range of techniques and approaches going from straightforward need records dependent on designing judgment to complex organization streamlining models (Haas et al. 1994). These prioritization strategies can be additionally separated as: (I) Ranking Methods (ii) Optimization Methods (iii) Artificial Intelligence Techniques (iv) Analytical Hierarchy Process Method. Transportation arranging is the way toward characterizing future strategies, objectives, speculations, and plans to get ready for future necessities to move individuals and merchandise to objections as continuation of this examination work we are executing insightful

progressive system interaction to take care of the metropolitan vehicle issues utilizing novel methodologies.

The prioritization techniques subject to monetary examination can be of two sorts: (I) using ideal benefit/cost extent (ii) using slow benefit/cost extent. In the essential system, prioritization measure uses the ideal M&R proposition and looking at advantage/cost extents (or reasonability/cost (E/C) extent) for each black-top piece of the association conveyed from the novel programming. The higher the E/C extent of a section, the higher the need of that portion for

fix. The open monetary arrangement is assigned to the black-top territories as indicated by the need list till the monetary arrangement is completely exhausted. The resulting procedure is a heuristic technique for spending improvement. In this system all pragmatic M&R decisions of a fragment are perceived and the looking at extended starting cost, present-worth costs, and weighted benefits are gotten. This information is then used in the program to make ideal M&R recommendations for each black-top portion, including starting cost and kind of treatment. The spending improvement furthermore gives the outright association weighted benefits contrasting with ideal M&R proposition (Butt et al. 1994).

II URBAN RAOD INFRASTRUCTURE:

The impacts that modifications on urban road infrastructure and traffic management measures could have on traffic and emissions of a zone soon disappears due to induced traffic, and last option has a negligible effect. Hence, there are not suitable actions, on the supply side, for reducing traffic and emissions for the near-future.

An Urban Road is a road located within the boundaries of a built-up area. Urban roads are typically characterized by the presence of street lighting and in most but not all cases the presence of kern and channel

URBAN TRNSPORT NETWORK:

The characterizing quality of metropolitan transportation is the capacity to adapt to this thickness while moving individuals and merchandise. These qualities imply that two of the main marvels in metropolitan transportation are gridlock and mass travel. Metropolitan transportation arranging is the cycle that prompts choices on transportation strategies and projects. The essential target of transportation is to give productive and safe degrees of versatility needed to help a wide range of human requirements for a heterogeneous assortment of cultural gatherings. that image mix gives an effective system to enable assessment and examination of such data.

There are various strategies that have been created to perform picture combination. Some notable picture combination techniques are recorded beneath:

ORGANIZATION TRANSPORT MANAGEMENT:

A metropolitan territory or metropolitan agglomeration is a human settlement with high populace thickness and framework of constructed climate. In 2009, the quantity of individuals living in metropolitan regions (3.42 billion) outperformed the number living in provincial territories (3.41 billion) and from that point forward the world has gotten more metropolitan than rustic.

TRANSPORT INFRASTRUCTURE:

Transportation Infrastructure Uintah's transportation foundation was seen during numerous field visits led in 2001 and 2002. The foundation incorporates a road framework and two railroad tracks that go through the city. The transportation framework support concerns incorporate the accompanying:

- Pavement.
- Pavement markings;
- Signs traffic control, regulations, warnings, informational, etc.

V RELATED WORK

M.G. Pathak at el.[01] The article focuses on the need to smooth out the authoritative set up of the state transport endeavors considering the advancement that is occurring in the transport administration area. He further thought that the arising serious climate makes the requirement for creating more profile for endurance just as the development of State transport Undertakings. The current administration control framework are anyway not equipped enough to spur the administrative unit to utilize their resources and labor saved for creating benefits to the greatest degree conceivable. The frameworks are likewise not prone to deliver the portion of the current capital assets proficiently and furthermore to develop an ideal blend of vehicle. For this reason the correct productivity standard must be presented. He likewise focused on the need to smooth out existing monetary frameworks by pace of profit from venture (ROI) presenting multi benefit duty focal point of different levels like stop division end Head Office.

Parkas Narnia at el [02] The essayist in this paper thought that the New Economic Policy has significant ramifications for the Transport Sector, primarily in regard of Road Transport. While explaining the perspective on the whole vehicle area, the creator focuses on the job of street transport as essential to all vehicle exercises. He says that the actual presentation of state Transport endeavors was overall, brilliant and the issue was fundamentally an endless loop set up by low charges, low quality of armada, helpless resolve, further weakening in execution. He was of the assessment that the state Government ought to be given a choice of either raising the fairs or working State Transport endeavors without appropriation or privatizes the activities. He focused on that the Government ought to hold the ability to give course allows and give a blend of profitable and unremunerated courses to every administrator in case of privatization.

A.M. NADAF at el [03] Transport Industry assumes an essential part in the advancement of a country. The advances of a Nation and transport industry are corresponding to one another. The street transport industry has a lion's offer in India's Industrial and agrarian advancement. The pillar of the street transport industry is the tire as it is the last connection between the street and the vehicle. It conveys the heap and the economy of the business is a lot of ward on the help the tire renders. The creator in this paper communicated that it isn't sufficient to have a decent tire however it additionally needs dealing with something similar. He likewise said that the existence of the tire and its exhibition regarding cost per kilometer relies upon numerous components, like consideration and upkeep of tires, edges and so on, tire burden and swelling pressure, driving propensities, mechanical state of vehicles, street condition and the occasional impact on tire execution. He likewise examined in subtleties the requirement for better tire care and support to have a sturdy life for the vehicle administrators.

R.K.Mishra and R.Nandagopal at el [04] The development of traveler street transport has been compelled by the no accessibility of accounts with the Central and State governments. The confound among cost and toll strategy of the state Transport endeavors has made the issues intense. In spite of tireless suggestions by different boards of trustees, working gathering commissions and specialists to Set up such en office all failed to attract anyone's attention and the Government.

Shih-Lung Shaw and Jack F.Williams at el [05] This article analyzes the improvement of homegrown transportation framework in Taiwan in lands of transport organizations, and changes in stream circulations on these organizations, pushing on between territorial and bury metropolitan linkages. The article investigates connection between transport strategy,

financial development and local turn of events. All the more significantly, changing spatial examples of transport frameworks and transport streams during the previous many years are concentrated corresponding to financial development and local improvement designs are examined. The creators analyzed different phases of improvement from the setting of two kinds of transport arrangements in particular interest following and supply-driving. They additionally introduced some of intense transportation issues and ideas for future transportation improvement.

M.C. Vijayakanth and so forth al.[06] The motivation behind this investigation is to acquire an improved comprehension of the level to which administration quality is conveyed in Public administrations and private assistance by cutting edge representatives (FLE) and client impression of administration quality out in the open Transport (Volvo Buses). The paper investigates how intently client assumptions for administration and FLE view of client assumptions match.

Chow-Chua, C. and Komaran, R.[07] This investigation embraces a basic philosophy for Understanding assistance quality that considers of what clients hope to get and what the specialist organization can offer. Gowan,

M., Seymour, J., Ibarreche, S. and Lackey, C.[08] This paper endeavors to depict that Service conveyance is more troublesome in the public area since it isn't simply a matter of addressing explained needs, yet of result of implicit requirements, setting needs, allocating restricted assets and openly legitimizing and responsible for what has been finished.

D. Paul Dhinakaran at, el [09] This examination is intending to quantify the various challenges and prescribe approaches to diminish confusions and to convey great assistance, as well as perceiving the degree of passengers‟ discernment towards administration quality in Tamilnadu state transport enterprise (Kumbakonam) restricted, Kumbakonam**.**

SUGGESTION AND FINDINGS:

There are also important “gaps” in the policies, both at national level and municipal level. Some of these policy gaps are described in more detail below. Fuel Subsidies, Mismatch of Policies on Public Transport and Investment in Public Transport Vehicles, Driver Education and Road Safety, More Effective Parking Policies, Road congestion, air pollution, parking problems, deteriorating of road safety.

The fundamental gaps and issues for transportation is to provide not efficient and safe levels of mobility required to support a wide spectrum of human need.

In general, the importance of road maintenance can be seen as the following
Roads are key public resources which support financial action.

- Road transport is an establishment for monetary action.
- Ageing framework requires expanded street support.
- Traffic volumes proceed to develop and drive expanded requirement for upkeep.
- Impacts of street upkeep are different and should be perceived.
- Investing in upkeep at the opportune time saves critical future expenses.
- Maintenance venture should be appropriately overseen.
- Road foundation arranging is basic for street upkeep for people in the future

RESEARCH OBJECTIVES

Problem definition Problem is defined by defining the objective/goal of planning. The objective could be found out.

To build up a vehicle framework that obliges all segments of society accordingly advancing comprehensive turn of events.

To build up a transportation framework that is basically manageable in nature.
iii. To limit framework costs and give self-activity and so forth

Identification of need Inventory of existing condition of framework and a gauge of future condition (request). , Interpolation of objective.

Urban transportation arranging is the cycle that prompts choices on transportation strategies and projects. The major target of transportation is to give proficient and safe degrees of portability needed to help a wide range of human requirements for a heterogeneous assortment of cultural gatherings.

RESEARCH PROBLEM SPECIFICATION:

The logical cycle settles different issues of metropolitan vehicle network issues. These are given underneath: Among the most eminent metropolitan vehicle issues are:

1. Gridlock and stopping challenges
2. Longer driving.
3. Public vehicle insufficiency
4. Challenges for non-mechanized vehicle.

5. Loss of Public Space

6. Public Transport Inadequacy Many public travel frameworks, or parts of them, are either finished or under utilized

CONCLUSION:

The prioritization is a vital part in nearby streets upkeep since it helps the leaders in distributing the assets in keeping up neighborhood streets productively and viably with the goal that streets can be kept in their ideal condition. Given the significance of prioritization, it is essential to distinguish techniques utilized, rules considered, and entertainers included. As indicated by the writing, there are four gatherings of prioritization techniques dependent on strategy they directed, the four classes of prioritization strategies are basic abstract positioning; positioning dependent on boundaries with scoring or potentially weighting; positioning dependent on boundaries with financial investigation; and streamlining. The standards utilized in surveying the choices can be single rules and multi measures. Besides, in this examination word proposition we are depicting prioritization of nearby street transport networks utilizing positioning valuation and minimal effort enhancement measure.

The essential reason that of prioritization of metropolitan vehicle upkeep relies upon predefine boundaries are Ranking., Low expense streamlining and cost support, The created need positioning models has been applied to a metropolitan street organization., The proposed choice help idea and created ANN model show that intricate and delicate dynamic cycles, for example, the ones for metropolitan street framework support arranging, can accurately be upheld if suitable techniques and information are appropriately coordinated and utilized.

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Review Article on Integrated hydrological and hydrogeological Studies of Artificial Rainwater harvesting Structures for Augmentation of Groundwater.

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ABSTRACT:

Among the characteristic assets, water is the most fundamental component in nature, close to air for food of life and is fundamental for typical and sound development of life. Serious utilization of common assets and expanding worldwide populace likewise put an extraordinary focus on water. For homegrown inventory purposes, the percent of groundwater use has expanded to over 40% on an overall premise. A few analysts all through the world have done hydrological and hydro-land concentrates in various regions and hypotheses are created. [5]

Nagarkurnool is an area in the southern locale of the Indian province of Telangana. The yearly precipitation is most minimal and because of various stone sorts, the ground water is less. Out of complete water assets, 90% of drinking and water system water is from groundwater assets in pieces of Nagarkurnool area. Already an almost no work has been completed in the current examination territory which is for the most part immature area in the dry spell inclined piece of the region. The primary point and objective of the current examination is to investigate the achievability of groundwater assets with exceptional accentuation on groundwater assets by applying all conceivable incorporated techniques like topographical, geo-morphological and hydrological strategies, so as to propose some helpful and pragmatic gathering strategies for generally speaking turn of events and the board of groundwater assets. The current region is taken up for coordinated hydro geographical methodology by gathering significant measure of essential information and just as information from different organizations. The investigation of these outcomes are to come to certain significant end results for the most ideal approach to investigate and the administration of accessible groundwater asset in pieces of Nagarkurnool District, Telangana. [2]

Keywords: integrated hydrological, hydrogeological studies, artificial intelligence, rainwater harvesting structures, augmentation, groundwater, systematic literature review. etc.

INTRODUCTION:

Groundwater is an inexhaustible mineral asset and has the wonderful qualification of being profoundly trustworthy, accessible at the spot required, safe and inside the scope and control of recipients. All in all, groundwater is considered unadulterated, safe when contrasted with surface water. The spectra of an incredible thirst are approaching in front of us. Water shortage is certifiably not an overall marvel yet a provincially, locally and occasionally explicit issue. Groundwater goes through an assortment of inorganic compound responses as it travels through a spring and interfaces with the strong system materials and related gases. The majority of the drinking water is gotten from surface waters be that as it may, especially in agricultural nations, groundwater is frequently favored in light of the fact that it needs less treatment and has a superior bacteriological quality, which assists with limiting the spread of water-borne illnesses like cholera. The greater part of the groundwater is of acceptable quality and appropriate for drinking besides in certain spaces.

Admittance to clean freshwater will be one of the greatest worldwide asset issue of the coming many years. One billion individuals had no admittance to clean drinking water from public stock in the year 2003. Most likely, somewhere in the range of 2 and 7 billion individuals will live in water scant nations in this century. Late gauges propose that environment changes will represent around 20% of the expansions in worldwide water shortage (www.unesco.org). [4]

One of the numerous imperative jobs played by soil is, its capacity as a support directing the nature of water in streams and lakes and somewhat groundwater. In most of catchments, except if outcropping rock is predominant, precipitation collaborates to a

considerable degree with soil. The exact destiny of approaching precipitation, for example the pathway it finishes or over soil to a channel, stream or lake, relies on actual attributes of the dirt, the quality, term and force of precipitation, earlier climatic conditions, surface and subsurface geography, and the actual type of the precipitation. The hydrological pathway followed, thusly, administers the dirt water collaboration.

A watershed is basically hydrological unit depleting spillover water at a typical point and is separated dependent on the edge and chasm lines. The projects under watershed approach extensively fall into soil and water preservation, dry land and downpour took care of cultivating, gorge recovery, control of moving development and improvement in the vegetative cover. The fundamental target is to expand creation and accessibility of food, grain and fuel; reestablish biological equilibrium. Watershed the board is an iterative cycle of incorporated dynamic in regards to utilizations and adjustment of terrains and waters inside a watershed. Advancement of the watershed needs better comprehension about the different characteristic assets their relations with one another and their relations with job of the partners. [7]

SYSTEMATIC LITERATURE REVIEW: SLR.

A few specialists have conveyed concentrates on watershed the executives and water gathering strategies in Nagarkurnool area (Mahabubnagar locale) and announced lobbyist results. The current investigation is an endeavor utilizing incorporated hydrological and hydro-land strategies for expansion of groundwater in the examination territory.

A few analysts all through the world have conveyed hydrological and hydro-topographical examinations all through the world in various regions. The study of groundwater assets and its suggestion being developed of progress is pre-recorded. There are references in old Roman and Greek writing too. Edme Mariotte (1620-1684) and Edme Halley (1742-¬1856) are pioneers of hydrology. O.E. Meinzer (1923) was the principal architect of groundwater hydrogeology who clarified the Artesian Flow Theory. Henry Darcy (1856) was quick to give numerical formulae on laminar progression of groundwater, "Darcy's Law" is known to follow fundamental of groundwater stream and Dupuit (1857) grew consistent state equation for the progression of water into a well. The commitment of Aristotle (384-322 B.C.) Karats of Persia and Egypt, the gigantic groundwater passages of 800 B.C. (Tolman, 1937) are the works most punctual known on groundwater. Theim (1906) built up a strategy to decide penetrability of springs in the field. Slichter (1906) inferred a condition to discover explicit limit of burrowed well from recuperation information. Theis (1935) gave the reason for groundwater assessment from non-harmony conditions. Cooper and Papadopulos (1967) depicted the progression of groundwater to gatherer well (Dug well). Gibbs (1970) gave a component controlling world water science. Gleick P.H. (2000) has refreshed the world water i.e., the amounts in various focuses and zones on the earth.

In India during mid twentieth century groundwater, related issues were handled by Geological Survey of India (G.S.I.), groundwater wing was shaped in Geological Survey of India in the year 1945 with expanding request to oblige the requirements of water supply. With increasingly more advancement programs in the country, Exploratory Tube well Organization (E.T.O) was shaped in the year 1954. In this way, in the year 1972, the groundwater wing in Geological Survey of India converged with the Exploratory Tube well Organization shaping a zenith body at public level Central Groundwater Board' (C.G.W.B.) under the service of water system. Commitment of National Geophysical Research Institute (N.G.R.I.), Hyderabad, Center for Exploration Geophysics and Geology Department, Osmania University, Hyderabad towards groundwater research prepared for immense advancement in various land arrangements. A large portion of the colleges in different pieces of the nation have taken up groundwater concentrates under various undertakings. Thangarajan, M. (2000) drew closer the groundwater concentrates in hard rock spring framework with accentuation on displaying. Many state governments have framed their own groundwater offices for precise and fruitful execution of the projects. Apte (1972) took up groundwater concentrates in hard shakes of peninsular India, Karanth (1973) and Srinivas (1973) contemplated meaning of cracks and joints. Roy and Rama (1973) Seshu Babu (1978) in Andhra Pradesh and Rajurkar et al (1990) in Madhya Pradesh and Maharashtra applied aeronautical photograph translation and distant detecting methods in getting ready changes hydro-topographical guides. Deshmukh (1969) decided the groundwater potential in pieces of Telangana Region, while Panduranga Rao (I974) led spring trademark concentrates in granitic territory of Telangana Region. Resulting to crafted by W.King (1881), H.E.H. The Nizam's geologist, P.V. Rao (1952) planned regions in Adilabad locale and gave brief record of topography and Ramkishan Desai (1984) detail investigation of Ground water examination, improvement and the executives in ancestral lots of Utnoor territory.

Through the current examination region was not canvassed in limited scope with more subtleties, the encompassing zones were covered by G.S.I. Geologists J.P. Dias (1965). The groundwater examination works in far off pieces of the locale were for the most part taken up by State Ground Water Department and Central Ground Water Board since 1973. Again Shankar Narayana and Ravindra (1981) considered Kalvar stream bowl. Ananth Reddy (1983) considered explicit limits of wells in stones of Ranga Reddy locale. Prakash Goud (1984) chipped away at ground water conditions in Koilsagar Project Area, Mahabubnagar region.

Audit on the writing showed that no investigations have been attempted in the examination territory with respect downpour water collecting strategies and their outcomes yet. So the target of this examination was to explore on counterfeit water gathering structures for increase of groundwater in the investigation territory.

SUGGESTION AND FINDINGS:

a) Using of area drainage map to know the drainage pattern and for finding out the drainage density and stream slope.
b) Preparation of hydro-geo-morphological map for finding out groundwater prospects to suggest water harvesting structures.
c) Preparation of drainage morpho-metric analysis map to locating suitable sites for infiltration well and water harvesting structure.
d) Preparation of land use land cover map to know the various uses which are carried out on the land and about vegetation, water bodies, rock/soil, artificial cover and others.

RESEARCH PROBLEM SPECIFICATION:

The region picked for study is profoundly dismissed regarding foundation and water assets improvement. Beforehand a little work has been done in the current examination territory which is for the most part immature area in the dry season inclined in pieces of the locale. The principle point and objective of the current examination is to investigate the achievability of groundwater assets with extraordinary accentuation on groundwater assets by applying all conceivable coordinated techniques like topographical, geo-morphological, hydro-geographical and hydrological so as to recommend some useful and reasonable reaping strategies for the general turn of events and the executives of groundwater assets. The current region has along these lines adopted up an incorporated strategy for doctoral work by gathering considerable measure of essential information and just as information from different organizations. The examination of these outcomes are to come to certain significant end results for the most ideal approach to investigate and the administration of accessible groundwater asset. [10]

PROPOSED METHODLOGY: [14] [18]

a) To decipher the surface and subsurface hydrological hydrogeological conditions to locate and develop rain water harvesting structures.
b) To evaluate the design of implemented RWH structures.
c) To study the impact of RWH on improvement in groundwater potential.
d) To model the groundwater dynamics by simulating the effect of RWH and to predict the future scenario.
e) To carry out a sustainable groundwater management resources.

EXPECTED OUTCOMES:

To gather and store water for future different uses, water reaping (RWH) is a valuable strategy. It is an advantageous method because of a minimal effort answer for water emergency among the local area, scholastic, achieved, framework, clumsy and achieved in the previous few years. Underground water is re-energized by fake re-energize procedures (RWH). For tackling the water issue of present and group of people yet to come, water reaping is a helpful device in water the executives. Putting away spillover to re-energize shallow springs utilizing small scale structures is accomplished by (RWH) in India. To reestablish springs by (RWH), different writing is featured. Different strategies, its effects on groundwater amount and quality and its demonstrating are accessible on (RWH). At first, different issues like the use of far off detecting (RS) and geographic data framework (GIS) in fake re-energize contemplates, re-energize assessment and groundwater demonstrating are covered. [11]

ESTIMATION OF GROUND WATER RECHARGE:

Re-energize is characterized as the upward progression of water joining the water table, adding to the groundwater stockpiling. Re-energize is ordinarily communicated as the volume per unit time like m3/day. Precipitation re-energize, return stream from the surface and groundwater water system, leakage from tanks and lakes and drainage from channels are different components of re-energize. For proficient administration of the groundwater asset, the investigation of the normal re-energize is important (https://books.google.co.in). To evaluate the re-energize quantitatively, numerous literary works have accomplished. Korkmaz (1988) assessed the groundwater re-energize from water level and precipitation information [12].

CONCLUSION:

Various procedures of RWH alongside its effect, different techniques for re-energize, utilization of RS, GIS and models in counterfeit re-energize were surveyed. It assisted with learning the past RWH execution encounters all throughout the planet and the diverse way that are probably going to give the most quantitative assessments of re-energize. From the different writing, it has been distinguished that different analysts took care of various goals with various systems and recognized that every one of the works done are at the underlying levels, so there is a need to deal with the various issues of groundwater re-energizing by applying the water gathering methods which are significant difficulties now days.[15]

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ANALYZING THE GROWTH AND TRENDS OF MUTUAL FUNDS INDUSTRY IN INDIA

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ABSTRACT

The financial market's instability and fluctuations are a worldwide phenomena. With the gradual liberalization of economic policy, the stock sector, money market, and financial resources, such as merchant banking, lending, and venture capital, have grown rapidly. The Indian mutual fund (MF) industry is maturing, with a wider range of investors and a wider geographical reach. In India, mutual funds have risen to prominence in the stock and corporate bond sectors, as well as offering critical liquidity help to the money sector. The industry has launched a number of items to meet the desires of investors since its inception in 1964. According to various AMFI studies, the percentage of institutional investors in Asset Under Management in developing countries is substantially lower than in developed countries. Despite having a large investment opportunity in this market, the Indian mutual fund industry has been unable to draw retail investors for the past 49 years. The Indian mutual fund sector provides a wide range of schemes and caters to a wide range of investors. Equity securities, loan funds, liquid funds, gilt funds, and balanced funds are among the items available. There are also funds designed specifically for young and elderly investors, as well as small and big investors. The development and patterns of the Indian mutual fund industry are examined in this study.

Keywords: - Mutual fund, Growth, Demonetization, Indian Mutual Funds industry, Growth and Trends, etc.

I. INTRODUCTION

Credit intermediation has shifted in recent years, with non-bank intermediaries, such as wealth management firms, gaining ground on the banking sector's conventional supremacy. The MF industry is proving to be the fastest growing and most lucrative segment of India's financial market, providing operating stability and attractive returns to investors, as part of this quiet transition. The most appropriate investment for the common man is a mutual fund, which gives the ability to invest in diversified portfolio management, strong analysis staff, well run Indian stock as well as the global sector. The key goal of the fund manager is to take the stocks that are undervalued which would rise in value in the future, and then sell them out.

Demonetization, GST rollout, linking the pan card and Adhar card with a bank account, and increased knowledge of capital market growth among Indians are some of the factors driving

the mutual fund industry's rise. Demonetization was announced by the Indian government on November 8, 2016, and as a result, citizens will no longer cover their income in the form of black money. Investors are looking for legal ways to raise their profits with low risk as a result of this government reform, and equity funds are one of the safest ways to invest capital with low risk. The Indian government has made a decision to introduce the Goods and Service Levy, which is a major change in the country's tax structure. This new tax system requires businesses to pay their fair share of taxes; as a result of this program, businesses will no longer cover their earnings. The businessman still seeks to spend his capital in legitimate and secure investment opportunities.

II. INDIAN MUTUAL FUNDA INDUSTRY

India has a diverse finance sector that is rapidly expanding, both in terms of established financial services firms' strong development and new entrants into the industry. Commercial banks, insurance providers, non-banking investment firms, co-operatives, hedge funds, mutual funds, and other smaller financial institutions make up the market. "New institutions, such as payment banks, have recently been approved to be established by the banking regulator, expanding the types of entities that operate in the industry." However, India's finance market is mostly a banking sector, with commercial banks responsible for more than 64% of the financial system's overall assets.

The Indian government has implemented a number of measures to liberalize, control, and develop this sector. The government and the Reserve Bank of India (RBI) have taken a number of steps to make it easier for Micro, Small, and Medium Enterprises (MSMEs) to obtain financing (MSMEs). These initiatives include establishing a Micro Units Development and Refinance Agency, establishing a Credit Guarantee Fund Scheme for MSMEs, providing guidelines to banks on collateral conditions, and establishing a Credit Guarantee Fund Scheme for MSMEs (MUDRA). India is unquestionably one of the world's most thriving financial markets, thanks to a joint drive from the government and the private sector.

Currently, only about 2% of Indians invest in mutual funds. MFs account for just 3% of total household financial savings, but they are gaining ground on bank deposits. SIPs have proven to be a brilliant breakthrough, with flows holding up well through periods of elevated uncertainty and reflecting increased investor understanding.

III. MUTUAL FUND INDUSTRY GROWTH

Mutual funds were first founded in India in the second half of the nineteenth century. In 1869, the Financial Association of India and China became India's first investment trust. The development of the investment trust industry, on the other hand, did not begin until after 1930. The Indian Central Banking Enquiry Committee recognized the need for the creation of a Unit Trust form of organization in 1931. The Committee noted in its report that the establishment and proper operation of unit trusts, as well as the assistance that they would provide to investors in the development of intermediate securities that do not exist now, would provide a channel for investment in industrial and other fields where the primary investor will be too afraid of too ignominious risks.

The mutual funds industry, which began operations in the country in 1963, has grown to become one of the most significant components of the financial sector. In terms of goods and services sold, legislative mechanisms, and the proliferation of a vast number of domestic and international private sector assets, the industry has seen sufficient growth and standardization. The country's fund sector has progressed from selling basic equity and debt funds to a wide range of items like Gold Funds (GF), Exchange Traded Funds (ETFs), capital protection-oriented funds, and even native funds (Fozia, 2013). True, the country's mutual fund industry has come a long way, but the issue is whether it has truly realized its ability. To address this issue, we'd have to examine its development objectively. For this purpose, the growth of the mutual fund industry over a span of time has been evaluated in the following paragraphs in terms of the following parameters:

- Fund Schemes offered
- Number of funds
- Assets Under Management
- Mobilization of Funds
- Performance of AMCs in terms of earnings and profitability
- Household Savings mobilized.

Since 2003, when the current stage of the bull run in Indian capital markets started, the mutual fund industry has expanded at a far faster rate than in most of the previous periods. The numbers in the ensuring table show that the market is growing at a faster rate. Though asset under management (AUM) growth was moderate from 2005 to 2010, it accelerated dramatically in the five years leading up to March 2010. Over the last five years, the funds under administration have increased from Rs 1, 49,554 crores to Rs 6, 16,967 crores as of March 31, 2010. Over a five-year cycle from 2005 to 2010, the average increase was more than 400 percent. During this time frame, the industry's compounded annual growth pace has been as strong as 38.35 percent. The phenomenal development of the Indian capital markets during this time span has undoubtedly caused this high level of growth. During this period, the NSE index of select 50 stocks has been about 42.60 percent. Over the same time frame, the Nifty – 50 index rose from 978.20 points to 5,762.75 points in absolute terms. The financial markets have grown much faster, with a CAGR of 46.05 percent for the BSE-30 share Sensex. This index increased from 3,048.72 points to 20,286.99 points in absolute terms. It is undeniable that the mutual fund sector has developed in lockstep with the stock market. Under the watchful eye of the SEBI, the regulatory climate has steadily improved. The mutual fund's monitoring frequency has improved. The mutual fund industry's advances have piqued the media's attention, and fund success is regularly recorded and analyzed. The industry's stronger growth prospects have drawn international investors as well as top-tier asset management expertise. The investment trends have been more apparent to investors.

Inflows into India's mutual fund schemes by Systematic Investment Plans (SIPs) increased to Rs 67,190 crore (US$ 10.43 billion) in FY18, up from Rs 43,921 crore (US$ 6.55 billion) in FY17. From April to November 2018, the government raised Rs 604.57 billion (US$ 8.61

billion). The mutual fund industry's Assets Under Management (AUM) stood at Rs 22.86 trillion (US$ 316.84 billion) as of December 2018. The mutual fund market is anticipated to be shaped in the coming years by growth in B30 (beyond top 30) cities, alpha sustainability, alternative assets, and regulatory norms. From April to December 2018, equity mutual funds received a net inflow of Rs 812.11 billion (US$ 11.26 billion), bringing their total asset base to Rs 6.99 trillion (US$ 96.88 billion).

The mutual fund industry handled Rs. 30.50 lakh crore (US$ 420.80 billion) in AUM as of January 2021. In 2019, mutual fund inflows into the Systematic Investment Plan (SIP) route totaled Rs. 82,453 crores (US$ 11.70 billion). At the end of December 2019, equity mutual funds had received a net inflow of Rs. 8.04 trillion (US$ 114.06 billion). In addition, India's largest stock exchange, the Bombay Stock Exchange (BSE), will establish a joint venture with E-bix Inc to create a comprehensive insurance distribution network in the country through a new distribution exchange framework. The insurance business is another important part of India's finance sector. The insurance market has been rapidly growing. In FY20, life insurance firms' gross first-year premiums totaled Rs. 2.59 lakh crore (US$ 36.73 billion). In 2020, fund raising from the stock sector increased by 116% to Rs. 1.78 lakh crore by IPOs, Offers for Sale (OFS), and other market issuances. In FY20, there were 1,795 and 5,377 classified firms on the NSE and BSE, respectively.

By 2025, the Association of Mutual Funds in India (AMFI) hopes to increase assets under management (AUM) by approximately five times to Rs. 95 trillion (US$ 1.30 trillion) and customer accounts by more than three times to 130 million. India's efforts to introduce reforms to unleash the country's investment capacity are projected to change the market climate, liberalize FDI laws, speed up the resolution of corporate conflicts, simplify the tax system, and increase public and private spending. India would need to invest around US$ 1.4 trillion (Rs. 100 trillion) on infrastructure over the next few years to reach a GDP of US$ 5 trillion by FY25.

IV. RECENT TRENDS IN INDIAN MUTUAL FUNDS INDUSTRY

Increased internet rates, as well as increased digital integration and government targeting of smart cities, are encouraging the shift of asset share to smaller cities and towns. The strength of digital penetration in India is demonstrated by increased retail contribution by SIPs.

Following are the Mutual Fund trends in 2020:

- As of May 31st, 2020, the AuM in the Indian mutual fund industry is 24.55 trillion INR. In a decade (2010-2020), India's AuM increased fourfold, with another fourfold increase expected by 2025. In September 2019, equity AuMs accounted for 42.1 percent of AuMs, while debt-oriented schemes accounted for 28.8 percent of AuMs and liquid/money market accounted for 23.3 percent. The overall amount of folios as of May 31, 2020 was 91 million, with the retail sector accounting for the majority of the expenditure at INR 80.3 million.

- From April 2016, monthly SIP flows increased by 2.8 times to 8,641 crore in March 2020. In March 2020, 3.12 crore SIP transactions were processed, compared to 1.01

crore in April 2016. SIPs combine the advantages of daily investment with the benefits of rupee cost averaging. They are usually sticky long-term inflows that have AUM development visibility and predictability.

- Individual investors' MAAUM in the sector has increased by 18.2 percent since March 2015, reaching 12.9 lakh crore in March 2020. Over this period, the amount of individual folios has risen from 4.14 crore to 8.93 crore. Over the last five fiscal years, net inflows into the market totaled 9.46 lakh crores, including 6.47 lakh crores in equity-oriented schemes.

- Institutions also committed 77 percent of their reserves to debt and liquid schemes, and 10% to ETFs, in terms of mutual fund asset distribution. Individuals allocate 68 percent of their portfolio to stock securities and 23 percent to loans. Individual investors continue to bear the brunt of mutual fund danger. As a consequence, individuals' valuation has decreased in the last year, whereas organizations' value has increased.

- Institutional buyers are continuing to favor non-equity assets. Institutional investors, for example, held 59 percent of debt schemes' assets, 85 percent of liquid schemes' assets, and 91 percent of ETFs and FOFs' assets. Retail buyers, on the other hand, accounted for 87 percent of all mutual fund shares as of June 20.

- Around 2009 and 2014, the overall amount of investor accounts dropped from 4.76 billion to 3.95 billion, indicating a downward trend in investor folios (not investors, just accounts). However, the amount of folios has more than doubled since September 2014, from 3.95 million to over 9.03 million. This is partially due to the widespread adoption of mutual funds and systematic investment plans (SIPs) by institutional investors. Most large fund houses were unhappy with the shift in mandate for multi-cap schemes. Many top asset managers and chief investment officers have spoken out against the change, claiming that it would make the group riskier for investors.

- The reform had a big flaw: it needed a necessary 25% exposure to small-cap stocks. Sebi interfered on November 6th, issuing a circular for the launch of a new mutual fund group called Flexi Cap Funds. Flexi cap funds are the latest term for multi cap funds, which are market cap agnostic and include a minimum equity contribution of 65 percent.

- The choice for direct versus normal schemes is a fascinating study. Overall, the Direct Route is preferred by 47 percent of Indian investors in terms of pricing. When you glance at the investor sensible breakdown, though, you will see how skewed this statistic is. ‘‘Just about 14% of institutional investors and 23% of high-net-worth individuals want the direct path.” Nearly 75% of institutional and business buyers, on the other side, go the straight path. To put it another way, the institutional buyers who were expected to profit from Direct Investments and save money aren't seeing the maximum benefit.

- When we look at the fund mix, we will see the above pattern more clearly. Direct access is used by 72 percent of liquid funds and 55 percent of debt funds, but just 19 percent of equity funds are accessed this way. Clearly, people do not seem to be quite familiar with the idea of direct investment at this time.

- Finally, for those of us who are concerned about excessive churning of mutual funds by individual investors, more than 41% of equity fund deposits in India are kept for more than two years. That explains why, despite tepid market conditions, MF flows through SIPs have been strong. It's possible that this is the positive stuff!

V. CONCLUSION

With emerging markets (such as India, China, and Brazil) being the rage, foreign funds have been frantically allocating a substantial portion of their portfolios to these nations. It's not shocking, given the incredible returns that markets like India have provided. The mutual fund industry in India has never had it so well. Retail investors have poured billions of dollars into funds, reaping handsome returns while many of the funds pay double-digit (even triple-digit) dividends. With a broader base of investors and a wider regional range, mutual funds are maturing as an asset class in India. Provided that they are the largest lenders in the CBLO segment, MFs in India have been significant players in the equity and corporate bond markets, as well as offering critical liquidity support to the money market. In India, the mutual fund sector has a promising future. Mutual fund investments would double within the next ten years. By 2028, India is forecast to be the world's fourth largest private wealth economy.

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UTILIZATION OF MACHINE LEARNING FOR STUDENTS IN EDUCATION SECTOR

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ABSTRACT

The events of 2020 have taught us that culture is already fragile, and that it is vulnerable to events that shift the paradigms that rule it quickly. A pandemic like Coronavirus disease 2019 has shown this; this global emergency has transformed the way citizens connect, chat, learn, and function. The need to extract useful information from data becomes more pressing. In data mining and data analytics, methods and approaches that were once mostly seen in academic labs are now being adopted by forward-thinking businesses to produce market insight and improve decision-making. It's not easy to separate reality from fiction and recognize study opportunities and realistic implementations as analytics and data mining projects in education become more common. Learning analytics (LA) as a field stays in its earliest stages. Large numbers of the strategies now unmistakable from professionals have been drawn from different fields, including HCI, computer science, statistics, and learning sciences. Machine learning and data analytics are proposed methods that can help remove data and discover important examples inside the gathered data. In this work, the field of e-learning is researched regarding definitions and attributes. This Article dissects the Utilization of Machine Learning for Students in Education Sector.

Keywords: Educational Data Mining, artificial intelligence; machine learning; data analysis, Learning analytics, etc.

I. INTRODUCTION

Currently, society is dealing with a wellness crisis that has altered how people work. The Coronavirus Outbreak of 2019 (COVID-19) has exposed the vulnerability of all sectors, including wellness, education, and industry. There has been an impact on every aspect of society; moreover, it is the responsibility of universities and their academic teams to address many of these flaws and develop comprehensive frameworks focused on what has been learnt from this crisis. It is important to consider the resources that have helped us to fight this epidemic and that have acted as a conduit to maintain those places open and usable, which are required for society's growth and survival. These techniques are information and communication technology (ICT),

which have made it possible to conduct most operations remotely and safely. It's worth noting that what occurred has altered our perspective on life.

In the 21st century, AI has become a significant space of examination in all fields: science, education, Engineering, business, medicine, accounting, marketing, finance, stock market, economics, and law, among others. The scope of AI has developed tremendously since the intelligence of machines with machine learning abilities significantly affects business, governments, and society. The objective that this record might want to accept that isn't the trigger of an abrupt multiplication of a generally united area, however it is trusted that this exploration could be a significant scholarly apparatus for both the pulling together of the work and setting out new learned open doors.

E-learning is one of the later fields that is adding to the lot of produced data. E-learning can be characterized to be the utilization of electronic devices and technology for learning new information and skills. The multiplication of technology all through the world and the blast in information access has made distance learning more mainstream lately. Distance learning is one segment of the e-learning measure as it permits individuals to share information in spite of geological limits and impediments. Social network investigation, recommender systems, just as student achievement and prescient models depend vigorously on data drawn from these systems. Learning analytics projects over the previous decade have depended on sensibly very much organized data drawn from learning management systems (LMS) and student information systems (SIS).

The developing variety of educational data manages the cost of scientists a chance to investigate new methodologies, effectively practically speaking in fields, for example, artificial intelligence and machine learning, to break down a more extensive range of student data than is as of now being thought of. In this work, the combination of Machine Learning, data Analytics, and LA is dissected to improve an online education demonstrate and along these lines improve student learning.

II. MACHINE LEARNING

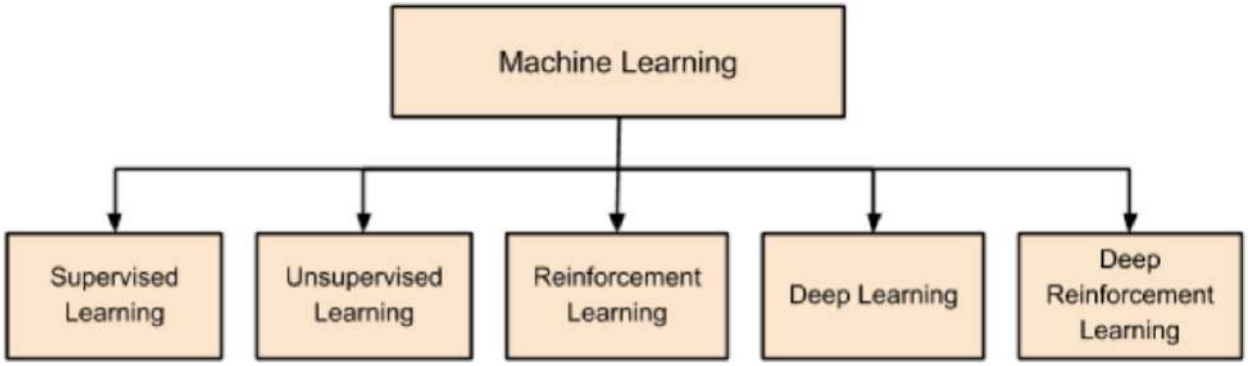
Artificial Intelligence (AI) has already outpaced the hysteria of blockchain and quantum computing in recent years. This is attributed to the reality that the average person has access to vast computer facilities. Developers are also using this information to create new Machine Learning models and to retrain current models for improved efficiency and outcomes.

Machine learning comes in a variety of forms. Machine Learning has been one of the mainstays of computer technology over the last two decades, and with it, a very important, but mostly secret, part of our lives. With ever-increasing volumes of data being accessible, there's cause to think that smart data processing would become much more prevalent as a critical component of technical advancement.

Uses of Machine Learning

- Credit card fraud detection
- Spam filtering
- Detecting faces in images
- Digit recognition on checks, zip codes
- Recommendation system
- MRI image analysis
- Scene classification
- Handwriting recognition
- Search engines

Machine learning evolved from left to right as shown in the above diagram:



III. LEARNING ANALYTICS

Learning, like knowledge, is impossible to describe simply since it encompasses so many different mechanisms. 'To acquire insight, or comprehension of, or ability in, through observation, training, or experience,' according to a dictionary description, as well as 'modification of a behavioral pattern through experience.' Animal and human learning were studied by zoologists and psychologists. Animal and computer learning have a number of similarities. Many machine learning approaches are undoubtedly derived from psychologists' attempts to use statistical methods to refine their theories of animal and human development. It's also possible that the principles and approaches being discussed by machine learning researchers will shed light on certain facets of biological learning.

In terms of computers, we might assume that they learn if their configuration, program, or data is changed in such a way that their predicted future output increases (based on their inputs or in reaction to external information). Machine learning is one of the hottest fields of computer technology, with a wide range of implementations.

The assessment, processing, study, and reporting of data regarding learners and their contexts for the purposes of understanding and maximizing learning and the situations in which it happens is referred to as LA. At the moment, educational data mining is primarily concerned with the creation of new methods for detecting trends in data. These habits are all for studying microconcepts such as one-digit multiplication, subtraction with carries, and so on. Learning analytics relies on incorporating methods and strategies to broader rates, such as in classes and at colleges and postsecondary universities, as opposed to data mining, at least as it is currently compared with data mining.

IV. EDUCATION AND MACHINE LEARNING

There are plenty of other business implementations of machine learning, lot of them are in education area. Some of interesting areas are:

- Fairly Test and Grade Students (Machine learning may assist in the development of computerized adaptive assessments.) The machine learning-based evaluation provides teachers and educators with continuous guidance about how the student performs, the help they need, and their success against their learning objectives.)
- Predict Student Success (Predicting student performance is a fantastic application of machine learning. The machine learning model will identify shortcomings in each pupil by ‘learning’ about them and suggesting ways to better, such as adding further lectures or reading more literature.)
- Things to support teachers and institutions (Machine learning based algorithms can help with classification of students handwritten assessment papers)
- Boost Retention (Machine learning, such as learning analytics, may also aid retention.) By finding students who are ‘at risk,’ schools will reach out to them and provide them with the support they need to succeed.)

4.1 Analytics in education

‘No one method of teaching fits well for all students,’ educators and scholars have discovered. Since students' motivations, desires, and skills vary, utilizing a diverse range of methods is critical.’ Teachers and school leaders in several countries already have access to growing amounts of data and data resources, such as personalized report dashboards. By offering a

consistent picture of student success, these data and reports have had a positive impact on teaching and learning. However, data tools do not often have advice about a student's next moves in learning, and for best results, they take advanced expertise as well as time. When it comes to training different students for a changing world, schools and academic programs pose challenges. Collecting data on student learning and system success is a part of tracking and measuring their development. The resources and capacity to use data to optimize results have not always kept up with the growth and complexity of these datasets.

Schools and educators also have access to innovative data and analytics resources that will assist them in dealing with the complexities of schooling. Educators can better understand students' static data (for example, demographics; previous achievement) and dynamic data (for example, pattern of online logins; quantity of conversation posts) using powerful data visualization software that can be personalized for each person, address unique questions, and automatically update to include current knowledge. Today's sophisticated analytics technologies, such as deep learning, will display students' progress (for example, at risk; high achiever; social learner), allowing for more timely measures (for example, offering extra social and academic support; presenting more challenging tasks).

The advantages of data visualization, analysis, and prediction benefit:

- Parents get detailed reports on student progress
- Students get feedback on their pattern of performance in learning systems, and who may be assessed more frequently in ways that better guide progress and give them a personalized learning experience
- Content designers and curriculum managers get data on content usage and relationships between content and learning
- Teachers get detailed reports on all students, as well as relative effectiveness of lessons and content, freeing them from low-order assessments to focus on more complex feedback
- School system leaders get data across campuses year to year
- School leaders get student progress data, teacher effectiveness data, and school-level outcomes. Facility factors like busing, buildings, schedules, and activities can be factored into learning. Staff factors like professional learning and credentials can be analyzed
- Education researchers who will get ongoing insights into impacts of practices and conditions at large scale
- Policymakers get outcomes associated with different school and community conditions

As education analytics advances, a wider range of data can be integrated for more refined and personal guidance.

V. UTILIZATION OF MACHINE LEARNING FOR STUDENTS IN EDUCATION SECTOR

Four categories that clearly discuss the use of ML in Education sector:

Improving student retention: Like we said before, schools will spot and contact the kids early by finding students at risk and helping them succeed. The retention of students is an important feature of many registration schemes. Almost all segments of academic or school measurements are affected: credibility, finance, rating. In particular, the retention of students has been one of the most critical aspects for managers in universities. There are few research that have established models to forecast and explain the reasons behind the declining number of students

Grading students: Machine learning can graduate students by eliminating human prejudices. Some recent examples include the usage of supervised machine learning in text classification for the prediction of final courses for students in certain classes, and the ability to recognise students at risk of course failure with classified messages from ML. In addition, it is intended to enhance the evaluation of educational problem solving by using language technology and computer statistic training approaches to automatically evaluate the natural language answers of pupils. A great illustration of how students learn to use machines by matching their behavior with a model of expert behaviour.

Testing students: The machine learning evaluation gives instructors, students and parents continuous updates on how the student succeeds, how they require guidance and how they advance towards their learning objectives. In a thesis, a teaching method for students to construct the right evidence in propositional or predicate logic. In addition to traditional technologies, they used animations focused on specifically chosen demonstrators and step-by-stage solutions, including slides-supported demonstrations and drills. To assess the awareness of students, a questionnaire was produced that captured the entire phase of a logical proof creation. A student generated evidence and addressed questions from the questionnaire. They outlined and explained the concept of the questionnaire. In addition to supervised machine learning algorithms, they used frequent subgraph mining to automatically evaluate the accuracy of the tests.

Predicting student performance: Machine learning (regarding the amount of studies in science databases) probably benefits greatly from its capacity to anticipate student success. The technology will detect shortcomings and recommend strategies to strengthen them through ‘‘learning” about each pupil, such as extra practice testing. This seems to be a very hot topic in research; there have been several studies in this field in recent years, as we said before. For example, an analysis uses the machine learning method called the recursive clustering strategy to divide the students in the curriculum into groups based upon their success in the prerequisite

classes, their core requirement and their current course results. Students present in the lower classes are taken into account as they are very susceptible to failure. In another important research in this category, the writers suggested a novel model to classify students into three groups to assess their academic skills and allow them to develop their techniques of learning.

VI. CONCLUSION

Researchers will use emerging technologies, which are now in use in fields like artificial intelligence and deep learning, to study a wider range of learner data than is typically being regarded, thanks to the increasing diversity in educational data. Both the importance of data as a platform for science discovery and the advantages of statistical models and hypotheses for educational technologies and study have been noted by educational researchers. Educational scholars have been able to produce data-driven hypotheses regarding learning and learning results thanks to recent developments in statistical approaches such as machine learning. Educational data mining and learning analytics are being utilized to conduct analysis and develop models in a variety of fields that have the potential to impact online learning structures. Educational data mining and learning analytics have the ability to render previously unknown, overlooked, and therefore unactionable data available. The research was conducted using many applicable sources, although not all of them were used, so this can be called a study restriction. Furthermore, it is possible that any of the related experiments would be overlooked by accident.

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METHOD DEVELOPMENT AND VALIDATIONOF AN LC–ESI-MS/MS TECHNIQUE FOR THE QUANTITATION OF FEDRATINIBIN BIOLOGICAL MATRICES

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ABSTRACT

An LC–ESI-MS/MS methodfor the estimation of anticancer agent fedratinibin human plasma was developed and validated. Ledipasvirwas used as an internal standard. After extraction from 200 µL plasma by liquid liquid extraction technique,analytes were separated on a ZorbaxSB(250mm x4.6mm, 5µm)C_{18} column with 0.1%V/V formic acidandacetonitrile in the ratio of 10:90as mobile phase with 0.80mL/min infusion flow rate. Total run time was 3.5 min. The method was validated as per the FDA guidelines over the concentration range of 1.5–5000.00 ng/mL for fedratinib with correlation coefficient value of 0.9994.The intraday and interday precision were within 4.32% and the assay accuracy was 95.31–104.06% of the nominal values. Matrix factor ranges from 94.25– 104.85% with a %CV of 4.61 for analyte at LQC level and at HQC level, the matrix factor range was 94.62–103.88% with a %CV of 4.02. Stabilities of stock in aqueous solutions and in plasma were also determined.Stabilities revealed that the method has high degree of stability.The developed method can be applied successfully to routine analysis in quality control, bioavailability and bioequivalence studiesof biological samples.

KEYWORDS: Tyrosine kinase inhibitor, Fedratinib, FDA, Accuracy and Linearity.

INTRODUCTION

Myeloproliferative neoplasms (MPNs) are clonal, BCRABL1negative hematopoietic diseases of myeloid proliferation,and characterized by abnormal production of terminallydifferentiated functional blood cells. MPNs areclassically categorized into three disease entities: primarymyelofibrosis (primary MF or PMF), polycythemia vera(PV) and essential thrombocythemia (ET) (Moulardet al, 2014; Vainchenkeret al, 2017). Patientswith PV and ET are characterized by an abnormal increasein hemoglobin/hematocrit and platelet count, respectively,and PMF is more advanced subtype of MPNs, associatedwith bone marrow fibrosis, release of profibrotic and proinflammatorycytokines and splenomegaly due to extramedullaryhematopoiesis. Janus kinase (JAK)/signal transducer and activation oftranscription (STAT) pathway is key to cytokine receptorsignaling and plays a critical role in hematopoiesis andimmune response. In human, the JAK family comprisesfour members: JAK1, JAK2, JAK3 and tyrosine kinase(TYK) 2, each of which associates with different cytokinereceptors (Sangleet al, 2014; Pardananiet al, 2015).

Fedratinib, also known as SAR302503 and TG101348, is a tyrosine kinase inhibitor used to treat intermediate-2 and high risk primary and secondary myelofibrosis. It is an anilinopyrimidine derivative.Fedratinib is an inhibitor of Janus Activated Kinase 2 (JAK2) and FMS-like tyrosine kinase 3 (Jamiesonet al, 2011; Zhang et al, 2015). JAK2 is highly active in myeloproliferative neoplasms like myelofibrosis. Fedratinib's inhibition of JAK2 inhibits phosphorylation of signal transducer and activator of transcription (STAT) 3 and 5, which prevents cell division and induces apoptosis. Fedratinib is metabolized by CYP3A4, CYP2C19, and flavin-containing

monooxygenase 3 (Zhang et al, 2011; Pardananiet al, 2011). Beyond that, data regarding the metabolism of fedratinib is not readily available.Patients taking fedratinib may experience anemia, thrombocytopenia, gastrointestinal toxicity, hepatic toxicity, or elevated amylase and lipase. These effects should be managed by reducing the dose, temporarily stopping the medication, or providing transfusions on a case by case basis.Fedratinibdesignated as N-tert-Butyl-3-{5-methyl-2-[4-(2-pyrrolidin-1-yl-ethoxy)-phenylamino] –pyrimidin-4-ylamino}-benzenesulfonamide(Fig. 1) with molecular formula and weight of $C_{27}H_{36}N_6O_3S$and 524.68 $g \cdot mol^{-1}$ respectively (Roskoskiet al, 2016).

Literature on fedratinibrevealed that no sinsgle analytical method was reported on LC-MS/MS. The development of specificmethod like LC-MS/MS is highly essential for the quantification of fedratinibin biological matrices.

MATERIALS AND METHODS

Chemicals and reagents

Ledipasvir (99.52 % purity)wasacquired from Hetero drugs, Hyderabad, India. Fedratinibobtained from Selleck chemicals, Houston, TX, United states. Drug free human plasma having K_2-EDTA anticoagulant was procured from Vivekananda blood bank, Hyderabad, India. Milli-Q water purification system (Millipore, USA) was utilized for HPLC-water in the research work. HPLC grade Methanol and acetonitrile, ammonium acetate, ethyl acetate and formic acid of the highest purity grade were purchased locally.

Preparation of solutions

Stock solution of individual analyte (1000 µg/ml) was prepared in acetonitrile. This concentration was then corrected by taking into account its potency and actual amount weighed.The stock solution was then diluted with acetonitrileto get concentration range of 1.5-5000.0ng/mL.

Preparation of calibration standards

To prepare calibration curve standards, 20 µl of the diluted samples of fedratinibwas added to 960 µl of K_2EDTA pooled plasma. Then, 20 µl of each dilution of IS was added. Final concentration ranges of1.5-5000.0ng/ml were prepared and stored below −20 °C in a freezer.

Preparation of quality control samples

These solutions were prepared at three different levels of lowest quality control(LQC), standards, median quality control(MQC) standards and highest quality control(HQC) standards. These quality control(QC) samples were prepared according to calibration standards to get the concentration of 4.2, 2500.00 and 3750.00ng/mL for LQC, MQC and HQC respectively. Prepared solutions were store at -20^0c till the time of analysis.

Preparation of solution of internal standards

Ledipasvir was used as internal standard and 1 mg/mL stock solution in acetonitrilewasprocessed in a separate conical flask. The respective stock solution was diluted with acetonitrileto get 1µg/mL solution.

Sample preparation

Sample solution was prepared by transferring 200 µl of plasma and 50µL of ledipasvir(1µg/mL) in to a polypropylene tube and vortexed for 2 min. Fedratiniband IS were extracted with ethyl

acetate and dichloromethane (3:2 ratio) as solvent, followed by centrifugation of the solution at 3500 rpm/min for 20min. After centrifugation, organic phase was separated and it was dried using lyophiliser. The resulting product was made solubilize in 250µl of mobile phase and then it transferred into a pre-labeled vials. The vials were kept in an auto-sampler and infused into LC-MS/MS system.

Chromatography

10µLof sample was injected on a reversed phase ZorbaxSB(250mm x4.6mm, 5µm)C_{18} columnas stationary phase with an isocratic mobile phase consisting of 0.1%V/V formic acidandacetonitrile in the ratio of 10:90 was used at a flow rate of 0.80 ml/min.Chromatographic system was equipped with HPLC-Shimadzu combined with API-5000 Mass spectrometer of Applied Biosystems, USA. The reversed phase column was maintained at 45 °C in the column oven. The run time was 3.5 min.

Mass spectrometry

Electrospray ionization (ESI) interface operated in positive ionization mode was used for the multiple reaction monitoring (MRM). By infusing dilute stock solutionof analyte, theoperational conditions were optimized as follows (Table 1).Auxiliary gas (GS2) and nebulizer gas (GS1) flows were 45 and 40 psi, respectively. Source temperature was set at 280 °C. Quadrupoles Q1 and Q3 were set on unit resolution. Acidic mobile phase (due to addition of formic acid) has improved the protonation of all compounds and has shown a positive impact on signal intensities. MRM transitions monitored were as follows: m/z 525.26 → 57.1 for fedratinib and m/z 889.42 → 130.1 for ledipasvir.

Sample concentrations were calculated by linear regression analysis using the analyst software 1.5.1. Data was processed by peak area ratio. The concentration of unknown was calculated from the equation (Y = mx + c) using regression analysis of spiked plasma calibration standards with reciprocal of the square of the drug concentration ($1/X^2$).

Method validation

The current LC–MS/MS method was validated as per FDA guidelines for specificity, intra and interday precision, linearity, accuracy and stability (FDA, 2001; EMA, 2011).

RESULTS AND DISCUSSION

Method development

Specific and effective sample clean-up procedures were required for sensitive and selective LC–MS/MS method for the determination of very low concentration levels of pharmaceutical targets present in biological samples(Henionet al, 1998; Chambers et al, 2014). Three methods, e.g., protein precipitation (PPT), liquidliquid extraction (LLE), and solid-phase extraction (SPE), are generally used for preparing biological specimen. Protein precipitation method using organic solvent is the simplest one but the chances of matrix effect prevail. Next we tried with LLE with ethyl acetate and dichloromethane as solvents. Finally, good recovery was obtained with ethyl acetate and dichloromethane (3:2 ratio) as solventfor sample extraction.

Method validation

Selectivity

Selectivity of the method was evaluated in eight individual human K_2 EDTA plasma lots along with one lipemic and one hemolytic lot. Negligible interferences were observed at the retention

times of analyte and internal standard when peak responses in blank lots were compared against the response of spiked LLOQ containing IS mixtures (Patel et al, 2011). Representative chromatograms in Fig. 2.

Recovery

This technique was shown to be robust, provided clean samples, and gave good and reproducible recoveries of fedratiniband IS. The extraction recovery of analyte was determined by comparing peak areas from plasma samples (n = 6) spiked before extraction with those from aqueous samples (Murphyet al, 1995). The mean overall recoveries across QC levels (with precision) was 95.57%. The recovery of IS was found to be 97.75 % and the findings were shown in Table 2 (Fig. 3 to 5).

Linearity and sensitivity

Eight point calibration curvewas processed with analyte concentration ranging from 1.5–5000.00 ng/ml. The peakarea ratio (y) of analyte to internal standard was plotted against the nominal concentration (x) of analyte to determine the linearity of each calibration curve. Excellent linearity was achieved with correlation coefficients greater than 0.999 (0.9994) with linearity equation of y= 0.003216 x+ 0.00428 for the validation batch.The concentrations of calibration standards were back calculated to obtain the accuracy of each calibration point(Richard et al, 1997).The ranges of the calibration points' accuracy foranalyte was95.41–103.93.Precision and accuracy of analyte at the LLOQwere found to be ≤ 4.19 and 96.82 % respectively. The LLOQ of the method was1.5 ng/ml for fedratinib.This indicates that this method is sensitive enough for a pharmacokinetic study. Moreover, the good signal-to- noise obtained at this concentration

indicates that the LLOQ of the method can be lowered further or the volume of plasma can be decreased. This further widens the scope of this method even to the pediatric patients.

Precision and accuracy

Precision and accuracy for intra- and interday batches for all analytes were determined by six replicate analyses of QC samples (n = 6) at four different concentrations—lower limit of quantification (LLOQ), low quality control (LQC), middle quality control (MQC), and high quality control (HQC). The respective concentrations forfedratinib were 1.50, 4.20, 2500.00 and 3750.00ng/ml. Results of precision and accuracy were presented in Table 3. The intraday and interday precision were within 4.32% and the assay accuracy was 95.31–104.06 % of the nominal values. The accuracy of the assay was expressed by [(mean observed concentration)/ (spiked concentration)] × 100 %, and precision was evaluated by relative standard deviation (RSD).

Matrix effect

Matrix effect was investigated by extracting blank plasma from eight different sources, including one hemolytic and one lipemic lot. One hundred microliters of blank plasma from each lot was processed as per the procedure mentioned in sample preparation. Aqueoussolution of individual analyte either at LQC or HQC level was added to each of the final eluent. These samples were considered as post-extracted samples (presence of matrix)(Zhong et al, 2005; Murphyet al, 1995).

Similarly, the aqueous solution of individual analyte either at LQC or HQC level was prepared with the elution solvent and was considered as aqueous samples (absence of matrix). Sixreplicates each of aqueous samples were injected along with post-extracted samples of LQC

andHQC.Individual analyte area response and IS area response of each post-extracted sample were compared with the mean analyte area response and mean IS area response of the aqueous sample, respectively. The matrix effect was calculated via the formula: Matrix effect (%) = A_2/A_1 × 100(%), where A_1 = response of aqueous concentrations and A_2 is the response of post-extracted concentrations.Average (n = 6) matrix factor ranges from 94.25– 104.85 % with a %CV of 4.61 for analyte at LQC level and at HQC level, the matrix factor range was 94.62–103.88% with a %CV of 4.02 (Table 4).

Dilution integrity

Dilution integrity of the method was evaluated after diluting twofold and fourfold with interference free humanplasma. Six replicates of these samples were processed and analyzed against a set of freshly spiked calibration standards. The analyte upper concentration limits were shown to be extendable up to 5000ng/mL by dilution with blank plasma. The mean back calculated concentrations for twofold and fourfold dilution samples were within 96.43–103.81 % with a % CV of ≤3.45 for the analyte(Patel et al, 2011).

Carryover effect

Carryover effect was evaluated in order to evaluate the cleaning ability of rinsing solution used for the injection needle and port. This avoids any carryover of injected sample in subsequent runs. The experiment was carried out by placing samples in the following order: LLOQ of analyte, blank plasma, and upper limit of quantitation (ULOQ) of analyte and blank plasma. No carryover was observed during the experiment.

Stability

Stability evaluations were performed in both aqueous- and matrix-based samples. For aqueous solution, both short-term and long-term stabilities were determined as follows(Kumar et al, 2015)

Stability in aqueous solution

i. Short-term stock solution stability

MQC concentration of analyte was prepared by dilution of respective stock solution and stored at 25 °C for 24 h. Six replicate injections were given for MQC sample. No significant differences were noticed when these results were compared with those obtained from the freshly prepared MQC samples indicating that analyte wasstable at 25 °C and the mean stability was 95.64%. Accepted criteria for the ratio of mean response for stability samples should be between 90 and 110 %.

ii. Long-term stock solution stability

Aqueous MQC sample of analyte, prepared by dilution from respective stock solution which was stored at 2–8 °C for 40 days was injected. Mean area response of MQC of stored stock solution was then compared against MQC fromfreshly prepared stock solution. Mean percent stability (95.23%) was well within accepted limit (90–110 %). This indicated the stability of each analyte solution for 40 days at 2–8 °C.

Stability in human plasma

i. Bench-top stability

Six aliquots of each analyte in human plasma (at LQC and HQC concentrations) from −20 °C were allowed to thaw unassisted at room temperature (25 °C) for 7 h and processed along with a

set of freshly prepared calibrationstandards as well as LQC and HQC samples. The stability for LQC and HQC samples of each analyte were found in the range of 94.36–97.56 %.

ii. Freeze thaw stability

After four freeze thaw cycles, the stability for LQC and HQC samples of each analyte were in the range of 94.76 to 101.69% .

iii. In-injector stability

The stability for LQC and HQC samples of each analyte kept in auto-sampler at 10 °C for 22 h were in the range of 96.83–99.45 %.

iv. Wet extract stability

The stability for LQC and HQC samples of each analyte after 7 h at 25 °C were in the range of 95.98–103.27 %. Accepted range for all the abovementioned stability studies is that the mean concentration for stability samples should be 85–115 % of the mean concentration of freshly prepared samples. Thus, all the analytes were stable during the analysis process. Results of the stability evaluations were presented in Table 5.

Extended precision and accuracy run

Extended precision and accuracy run was performed by processing and analyzing one set of CC and 40 sets of LQC and HQC as a batch (total 90 samples). Results of precision and accuracy were presented in Table 6.The precision and stabilityfor fedratinibwas 4.2 and 98.87% at LQC level and 1.61 and102.81% at HQC level.

CONCLUSION

A fast, sensitive, and specific LC–MS/MS method for determination of fedratinibin human plasma was developed and validated. It also utilizes a more selective LLE technique, offering consistent and reproducible recoveries for analyte and IS with insignificant interference and matrix effect. The method was validated as per the FDA guidelines over the concentration range of 1.5–5000.00 ng/mL for fedratinib with correlation coefficient value of 0.9994. The intraday and interday precision were within 4.32% and the assay accuracy was 95.31–104.06% of the nominal values. Matrix factor ranges from 94.25– 104.85% with a %CV of 4.61 for analyte at LQC level and at HQC level, the matrix factor range was 94.62–103.88% with a %CV of 4.02. Stabilities revealed that the method has high degree of stability. The developed method can be utilized in the bioavailability and bioequivalence studies for the quantification of fedratinib in biological matrices.

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FIGURES

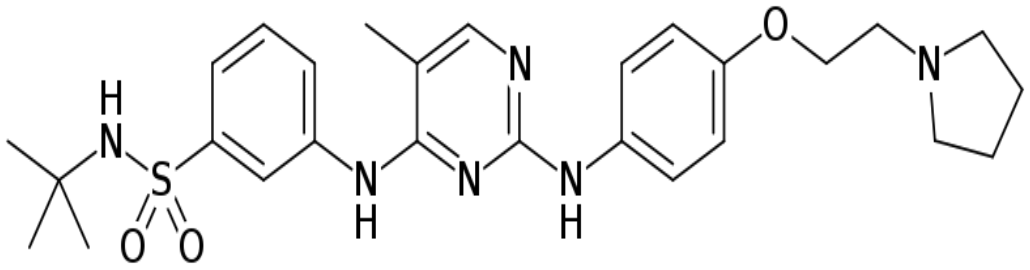

Fig.1: Structure of Fedratinib.

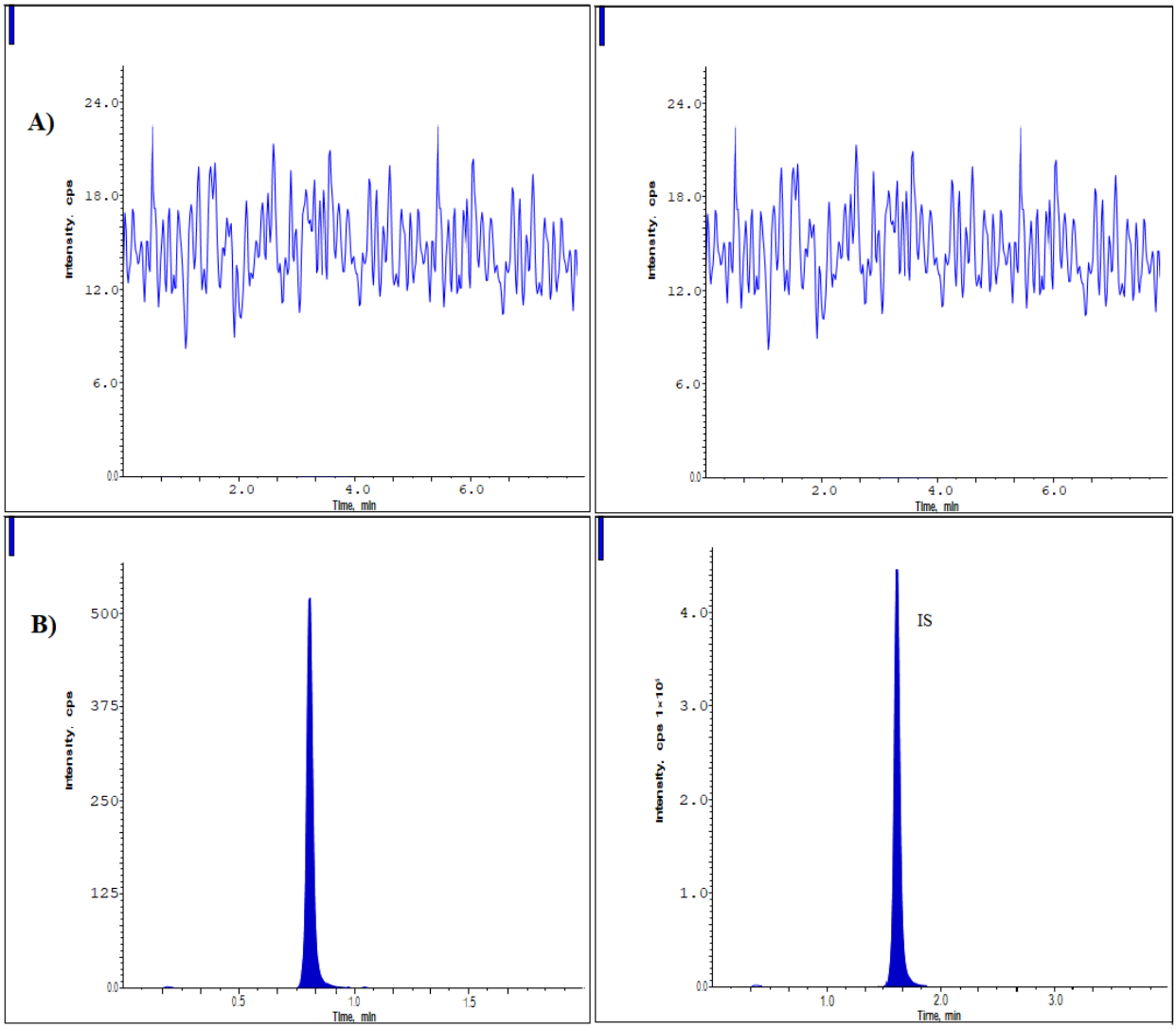

Fig. 2: Chromatograms of Blank (A) and LLOQ (B) samples.

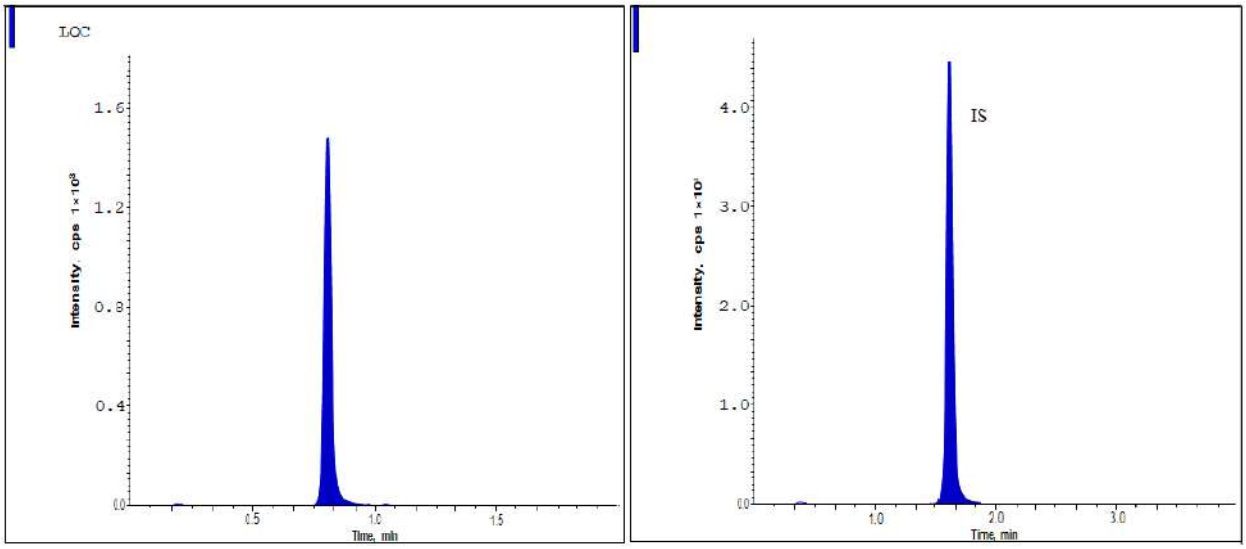

Fig. 3: Chromatograms of Fedratinib at LQC level.

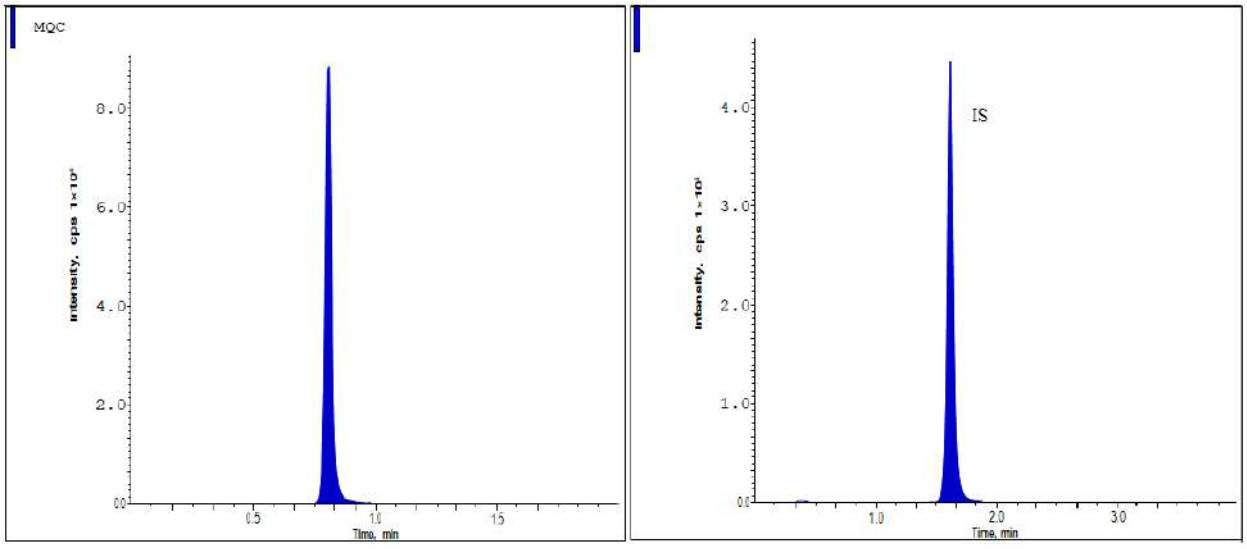

Fig. 4: Chromatograms of Fedratinib at MQC level.

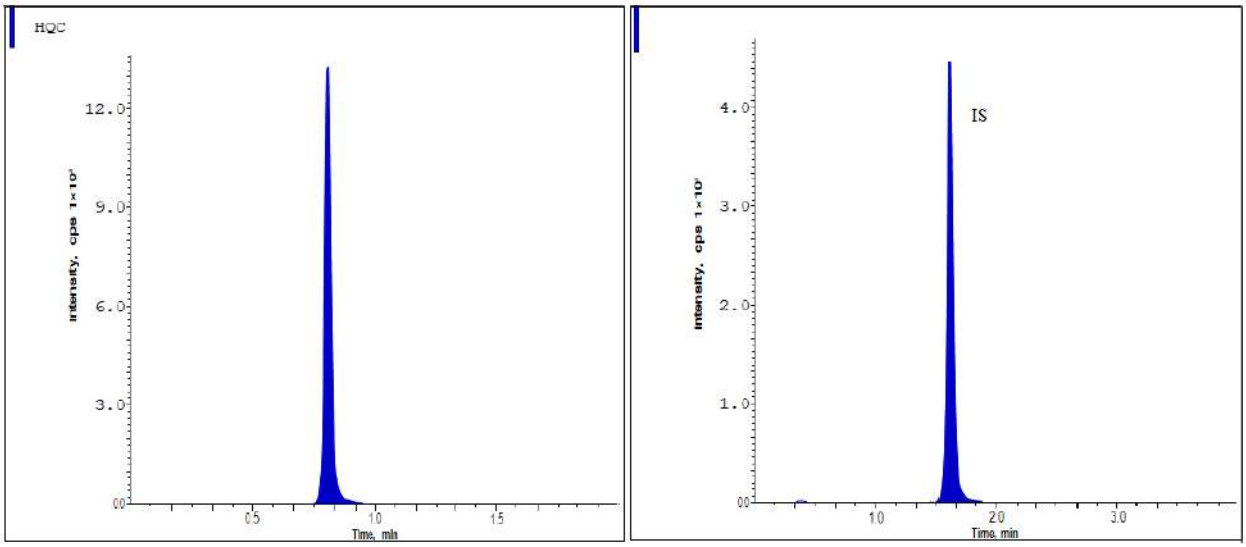

Fig. 5: Chromatograms of Fedratinib at HQC level.

TABLES

Table 1: Optimized mass parameters for fedratinib and internal standard.

Analyte/ IS	Declustering potential (DP) (V)	Collision activated dissociation (CAD) (psi)	Dwell time (ms)	Entrance potential (EP) (V)	Curtain gas flow (CUR) (psi)	Collision cell exit potential (CXP) (V)	Collision energy (CE) (V)	Ion source voltage (V)
Fedratinib	30	8	400	10	30	17	18	4500
Ledipasvir	35	8	400	10	30	12	20	4500

Table 2: Extraction Recovery Rates of Analytes

Concentration level	X	Y	% Recovery	% Mean recovery	%RSD
LQC	1485	1412.235	95.61	95.57	0.843

MQC	875354	846467	96.42
HQC	1324862	1257294	94.93
IS	452161	440857	97.75

X, mean recoveries of unextracted samples; Y, mean recoveries of extracted samples.

Table 3: Intra-batch and Inter-batch Precision and Accuracy

Concentration level	Nominal concentration (ng/ml)	Intra-batch			Inter-batch		
		Amount found[a] (ng/ml)	% Accuracy	%RSD	Amount found[a] (ng/ml)	% Accuracy	%RSD
LLOQ	1.5	1.463	97.52	4.32	1.429	95.31	3.15
LQC	4.2	4.042	96.24	2.89	4.307	102.55	2.54
MQC	2500	2593.75	103.75	3.21	2466.75	98.67	3.91
HQC	3750	3613.5	96.36	1.75	3902.25	104.06	4.11

a:Average of 6 replicates; RSD, Relative standard deviation.

Table 4: Matrix factor for analyte at LQC and HQC levels.

S.No	LQC			HQC		
	Concentration in absence of matrix	Concentration in presence of matrix	Matrix factor	Concentration in absence of matrix	Concentration in presence of matrix	Matrix factor
1	4.0173	3.812016	94.89	2510.48	2390.98	95.24

2	3.9606	3.8623771	97.52	2481.88	2374.41	95.67
3	4.12503	3.9740539	96.34	2472.69	2530.55	102.34
4	4.5066	4.2474705	94.25	2326.15	2416.4	103.88
5	4.0005	4.1945243	104.85	2306.75	2248.62	97.48
6	4.1559	4.3075904	103.65	2556.97	2419.4	94.62
Mean			98.58			98.21
± SD			4.55			3.95
% CV			4.61			4.02

Table 5: Stability Results of Fedratinib

Parameter	**QC level**	**X**	**Y**	**%RSD**	**%Stability**
Freeze–thaw stability	LQC	4.2	3.92	3.9	94.76
	HQC	2500	2542.40	4.01	101.69
In-injector stability	LQC	4.2	4.15	2.85	96.83
	HQC	2500	2446.69	2.43	99.45
Benchtop stability	LQC	4.2	4.09	3.75	97.56
	HQC	2500	2359.20	4.16	94.36
Wet extract stability	LQC	4.2	4.29	4.21	103.27
	HQC	2500	2477.92	3.73	95.98

X, nominal concentration (ng/mL); Y, mean concentrations (ng/mL) of analytes

Table 6:Extended accuracy and precision analysis

Analyte	QC level	A	B	%RSD	%Stability
Fedratinib	LQC	4.2	4.15	4.2	98.87
	HQC	2500	2570.31	1.61	102.81

A, Original concentration (ng/mL); B, mean average concentrations(ng/mL)

UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGY FOR SECONDARY STUDENTS

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ABSTRACT

For a variety of factors, secondary education is becoming more relevant in developed countries. The speed at which developed countries reach compulsory primary enrollment would create immediate demand for secondary education. Nobody today debates the critical importance of Information and Communication Technologies (ICT) in our society; in reality, Use Information Technology is one of the key skills of today's students. For educational theory and reality, the usage of ICT in education is becoming increasingly important. The introduction of emerging technology into our daily lives has allowed for a significant growth in the usage of ICT in education in recent years. ICTs have been increasingly important in our society, with a diverse range of uses in industries as diverse as film, management, robotics, schooling, and all types of businesses. Information and communication technology (ICT) has been increasingly relevant to schools and colleges over the last few decades. There has been a lot of studies done to look at and review the usage of ICT in high school learning and teaching. The usage of ICT by secondary school students is examined in this article.

Keywords: Information and Communication Technologies, Secondary School Students, etc.

I. INTRODUCTION

The advancement of ICT will increase education efficiency, which would have a beneficial effect on young students' preparation. There are many ways to improve the educational advantages of incorporating ICT. The advancement of ICT will increase education efficiency, which would have a beneficial effect on young students' preparation. There are many ways to improve the educational advantages of incorporating ICT. According to previous research, the educational potential of ICT is being underutilized since many teachers are unfamiliar with it and do not use it in their classrooms. According to some sources, the issue is that teachers do not believe that using ICT has obvious advantages for students. According to some sources, one of the potential barriers to wider usage of ICT in the classroom is the need for better technological assistance and infrastructure maintenance.

The significant growth in social usage of ICTs, as well as their immense effects, is an element of education that cannot be overlooked. For new teachers and students in the school, ICT is now becoming a necessary method.

The most used technologies in the classroom are:

- **Planning through tools:** calendars and task managers are very useful to schedule exams, deliveries, create workflows, etc.
- **Blogs and social networks:** it gives us the possibility of creating work groups where students expose or discuss different topics, publish content related to the subjects, etc.
- **Digital whiteboards and interactive tables:**Whiteboards enable you to project and manipulate photos from a tablet, take notes and remarks, and save and/or email the screen. The interactive tables enable students to communicate directly with the surface of the display.
- **Data storage in the cloud:**It gives us the ability to collaborate when operating from any computer and from any place. Office packages, packaging, and other tools are examples of tools that utilize this technology.

II. SECONDARY EDUCATION

Secondary education is the conventional second level of formal education. Secondary school acts as a transition between primary and secondary education, preparing young people aged 14 to 18 for higher education. The distinction between elementary and secondary education has steadily faded, not just in terms of curricula but also in terms of organisation. Because of the abundance of middle schools, junior high schools, and other divisions, programs of more than two levels have emerged.

Every nation strives to have basic education, but each country's structures and terminology are distinct. Secondary schooling is usually supplemented by further school, technical education, or jobs following six years of primary education. “Secondary education, including primary education, is compulsory in most nations, at least until the age of 16.’’About the age of 11, children reach the lower secondary process. Compulsory schooling will last up to 19 years.

Secondary education is described as the transfer for minors from primary school to tertiary, post-secondary, or higher education. High schools, primary schools, gymnasia, lyceums, middle schools, sixth-form, sixth-form colleges, vocational schools, and preparatory schools can be renamed secondary schools, high schools, gymnasia, lyceums, middle schools, sixth-form colleges, vocational schools, and preparatory schools, depending on the structure, and the precise definition of each of these differs between the systems.

In 1950-51, there were 7,416 secondary schools in India, compared to 1,16,820 in 1999-2000. However, this figure is insufficient to accommodate the increasing number of out-of-school children and upper primary school dropouts. Since the inception of the National Policy on Education (NPE) in 1986, there has been no structural reform in the configuration and

organization of the secondary and higher secondary education system during the Ninth Plan era. Several centrally-sponsored schemes were initiated as a result of the Policy, and national level institutions for school education were established/strengthened. In the secondary education market, ten nationally funded programs are in place. The need to adjust and improve these systems has been reinforced by the experience of implementing the programs, as well as numerous evaluations and assessment reports.

Secondary education is becoming particularly important in developed countries, which have previously focused on pursuing universal primary education. Secondary education plays a critical role in the educational landscape of the region. It is the nexus of primary and secondary education. Primary education is designed to meet the bare minimums for survival, while secondary education prepares an individual to participate fully in a complex society. Government schools continue to provide free education, though private schooling is becoming increasingly popular at the secondary level.

Secondary education services have vastly changed over time. The bulk of high schools have their own structures (69 per cent). At the intermediate and upper primary stages of schooling, significant change has been achieved. Despite all of these notable accomplishments, the target of compulsory elementary enrollment remains a long way off. Universal secondary education would not be possible until universal primary enrollment is completed first.

III. INFORMATION AND COMMUNICATION TECHNOLOGY

The use of computers to store, retrieve, transfer, and manipulate data, or records, is known as information technology (IT). IT is often used in the sense of a company or other organization. An information system, a messaging system, or, more simply, a computer system – containing all infrastructure, applications, and auxiliary devices – run by a small number of users is referred to as an IT system. The concept is sometimes used interchangeably with computers and data networks, but it often refers to other forms of knowledge processing such as television and telephones. IT is a branch of ICT (information and communication technology) (ICT).

Information and Communication Technologies (ICTs) is a broad term for Information Technology (IT), which encompasses all communication technologies such as the internet, wireless networks, cell phones, computers, software, middleware, video conferencing, social networking, and other media applications and services that enable users to access, retrieve, store, transmit, and manipulate data.

ICT refers to both the internet-connected world and the mobile world fuelled by cellular networks. It also incorporates antiquated technology like landlines, radio, and tv broadcasting, which are still commonly employed today alongside cutting-edge ICT parts like artificial intelligence and robotics. ICT, on the other hand, usually refers to more than a list of elements. Which also includes the implementation of all of those different modules. It is here that ICT's true ability, force, and danger can be discovered.

ICTs include far more than just information control or computer technologies, as suggested by traditional discussions of the information haves and have-nots. ICTs influence how a person, a family, a business, or a country accesses knowledge, people, resources, and technology. Tele-access is a term that describes how information and communication technologies (ICTs) influence access to a broad range of social and economic services, both electronically controlled and unmediated.

ICTs transform ways of engagement between individuals, knowledge, cultures, and organisations. They not only have access to more knowledge and more entities, many of which an individual may not normally be in contact with. It is the most rapidly rising research sector and a sustainable source of income. It is the unification of telephone and computer networking in a single cabling device that allows for easy data collection, exploitation, control, and retrieval. Database administration, computer engineering, and app creation are all topics included.

Information and Communication Technology (ICT) is a broad subject with many applications. It covers a wide range of topics related to information technologies and how it affects other areas of human endeavor. It is the most rapidly rising research sector and a sustainable source of income.

IV.USE OF ICT IN EDUCATION SECTOR

The incorporation of information technology into most high school curricula is relatively recent. It has gained popularity, however, as some organizations have made it a required topic. This is due to the fact that it is recognized as cutting through all aspects of human enterprise, including education. It is also the fastest-growing sector in the twenty-first century.

ICT promotes computer learning or eLearning by combining database technologies with communications and collaborative programming techniques. Students from all walks of life will benefit from a self-paced experience in topic areas only constrained by the course designers' imaginations. Textbooks are anticipated to be phased out of classrooms in the not-too-distant future, with a soft copy available internationally to supplement them. The industrialized world is now well ahead of the curve, but this is not surprising to them. As a result, under this dispensation, being ICT compliant is a required tool for any practical learning. E-learning, e-commerce, and e-banking are also terms that are often used. As a result, it is incumbent on education curriculum creators to place ICT as a portal in which other disciplines revolve, if only because it is a forum for modern learning. Needless to mention, there has been a cultural change in public perception of how information is gained and disseminated.

Information and communication technology (ICT) in schools and colleges provides students with stimulating, immersive, and self-paced learning strategies that improve their flexibility and participation in the learning process whilst also increasing their technical maturity and machine literacy. Teachers and educators should apply their own ideas to ICT-powered learning programs while actively reviewing and tracking their students' development.

Courses should draw on experience and input from the highest levels of education and business, since there is practically a world of learning to select from. And, with internet connectivity becoming accessible in any way to people all over the world, ideas like the Massive Open Online Course, or MOOC, are introducing educational resources to people who would previously be unable to access them. Many of the classes on display come from several of the world's most renowned educational establishments.

ICT-based school management systems allow administrators to automate a variety of activities, such as analysis, library management, and general reporting, by using software and digital resources. The use of information and communication technology removes the need for paper records, as well as the duplication and bureaucracy that they generate.

V. USE OF ICT FOR SECONDARY STUDENTS

The bulk of teachers do use ICT as an instructional tool on occasion, although almost never for tutorial sessions. However, it is widely used in instructional practices such as class preparation and documentation. This shows that the majority of teachers utilize ICT as a technique outside of the school, indicating that the aim of integrating ICT into the classroom with students is still a long way off. In recent years, technology and information and communication technologies (ICT) have become key factors in re-engineering our culture and commerce. Some may argue that they have presented prospects for improvement that have resulted in one-of-a-kind advantages. We've seen leaders and early adopters, as well as schools who are sluggish and hesitant to embrace transition, much as we've seen in every industry.

It is important for secondary students to engage with ICT so that:

- Improves their attainment levels.
- Learn 21st-century skills and develop their ICT capability and ICT literacy.
- So that they learn the notion of using ICT as a tool for lifelong learning.
- Prepares them for an integrated society dominated by ICT developments.

Furthermore, ICTs are of great help in developing discernment. Being able to search for various sources and contrast them, as well as to structure information are some of the most notable skills that secondary students develop thanks to the use of ICT. But there are more advantages:

- **Interactivity**: The usage of ICT in the classroom encourages students to take a constructive and participatory role in their learning and to be the protagonist.

- **Their interest in learning grows**: Traditional topics are made more fascinating by the use of media such as photographs, websites, animations, and games. Multimedia material is an excellent medium for bringing various topics to students in a comprehensive and engaging manner.

- **They enhance creativity**: ICT tools stimulate the development of the imagination, as well as the initiative of all class members.

- **Collaboration between students**: Collaboration between students is clearly enhanced thanks to various digital tools. It is much easier for them to create team projects, cooperate and learn from each other.

- **Personalization and content up-to-date**: digital environments allow real-time updating of all information and resources. In addition, it is possible to adjust the tools and content to local and nearby realities.

- **Increased communication**: close communication between students and teachers is encouraged through various channels, in a more spontaneous and less formal way.

This are all capabilities synonymous with proactive growth and transformation, and they have direct ties to how industry and culture have evolved in recent years as ICT has been more integrated into their activities. ICT is much more important to education as a whole than it is to ICT as a separate knowledge-based matter, and it should be treated as such..

VI. CONCLUSION

ICT (Information and Communication Technology) is a broad concept that refers to all systems and facilities related to computers, data storage, telecommunications, and the internet. In view of the above, the world of Information and Communication Technology is a difficult one to research. Contrary to popular belief, without adequate preparation and retraining, it is not an all-comers matter. Secondary education in India developed independently of the primary education framework. ‘‘As a result, the creation of secondary schools became essential. Furthermore, the education provided in these institutions serves as a passport to government jobs.’’ It was mostly intended for upper-class students and used as a college preparatory course. Students are interested in emerging technologies and the tools it provides. They are forming their own partnerships outside of the classroom, something educators must not overlook. While the demand for specialists in this field is the, the importance of establishing a career in it by adequate preparation in a well-defined program to be completed in educational institutions cannot be overstated. Many countries around the world are following our example and implementing similar changes. However, we do have a long way to go to get the whole industry up to the same high standards of profit and result. There is also a shift mentality to fix, as well as a workforce that wants to be supported. We must be mindful not to throw away our legacy, but we must forge on, incorporating fresh challenges into the framework of previous achievements.

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REVIEW ARTICLE ON COVID-19 OUTBREAK PREDICTION USING MACHINE LEARNING ALGORITHM

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Abstract:

Towards Data Science is a Medium distribution essentially dependent on the investigation of information science and AI. We are not wellbeing experts or disease transmission specialists, and the assessments of this article ought not be deciphered as expert wellbeing exhortation. Nonetheless, this article will be center around how AI can be utilized to anticipate the spread of the pandemic. This paper is utilized to decide information investigation on COVID 19 by AI procedures. the primary methods are addressing the accompanying piece of this paper. This paper also represents the regression model analysis for determine the patient records based data analysis for COVID 19 DATASET.

Keywords: Machine Learning Techniques , COVID 19 data set, regression techniques, classification algorithms, etc.

I. NTRODUCTION:

Our general public is in the time of fantastic endeavors to battle upon the spread of this dangerous condition as far as foundation, money, business, fabricating, and a few different assets. Man-made consciousness (AI) analysts fortify their capability in creating numerical ideal models for exploring this pandemic utilizing cross country circulated information. This article means to apply the AI models all the while with the estimate of expected reachability of the COVID-19 over the countries by utilizing the continuous information

II. MACHINE LEARNING:

A typical meaning of machine learnedness is: "A PC program is said to gain for a fact E as for some class of undertakings T and execution measure P if its exhibition at errands in T, as estimated by P, improves with experience E." Basically, machine savviness is the capacity of a PC to gain for a fact. Experience is typically given as information. Taking a gander at this information, the PC can discover conditions in the information that are excessively unpredictable for a human to shape. Machine learnedness can be utilized to uncover a secret class structure in an unstructured information, or it tends to be utilized to discover conditions in an organized information to make forecasts.

III. COVID 19 DATA SET ANALYTICS CHALLENGES IN EDUCATION

The audit of the writing uncovered the LA challenges about information following, information assortment, and information examination, an association with intelligence sciences, knowledge climate advancement, arising innovation, and moral concerns in regards to lawful and security issues. This information comprises of day by day case reports and day by day time arrangement synopsis tables. In the investigation, we have chosen time-arrangement outline tables in CSV design having three tables for affirmed, passing, and recuperated instances of COVID-19 with six properties. For instance, area/state, country/locale, last update, affirmed, demise, and recuperated cases. The CSV information are accessible in GitHub archives.

Covid 19 spreads are sorted into four phases. The primary stage begins with the cases recorded for individuals who made a trip to or from influenced nations or urban communities, while in the subsequent stage, cases are accounted for territorially among family, companions, and gatherings who came into contact with the individual coming from the influenced nations. Subsequently, the influenced individuals are recognizable. Then, the third stage causes the condition seriously as the tainted individual gets imperceptible and straightens across the people who neither have any movement records nor came regarding the influenced individual. This condition obliges prompt lockdown the country over to lessen the social contacts between people to quantify the development of the infection. At last, stage four beginnings when the transmission converts to endemic and wild. China is the principal country that felt under stage four of the COVID-19 transmission, while the majority of the created nations are currently in this phase of the transmission and bearing a further number of pestilences and misfortunes contrasted with China.

AI calculations assume a fundamental part in the pandemic examination and anticipating. Besides, AI procedures help to uncover the plague designs. Accordingly, a quick reaction may be set up to forestall the spread of the infection (Kalipe, Gautham and Behera, 2018[1]; Singh, Singh and Bhatia, 2018[2]). Also, AI models are used to perceive aggregate conduct along with the expectation of the normal spread of the COVID-19 across the general public by utilizing the ongoing information

IV. COVID 19 DATA ANALYTICS USING TOOL AND TECHNIQUES.

The challenges faced in processing Big Data technologies are overcome by using various techniques. The most popular techniques used in educational data_mining are listed below.
Regression – Regression is used in predicting values of a dependant variable by estimating the relationship among variables using statistical analysis

Nearest Neighbor – In this technique the values are predicted based on the predicted values of the records that are nearest to the record than needs to be predicted.

Clustering – Clustering involves grouping of records that are similar by identifying the distance between them in an n-dimensional space where n is the number of variables.

Classification – Classification is the identification of the category/class to which a value belongs to, based on previously categorized values.

Open Source Tools:
Several Open source tools exist which help in taming Big Data [9] some of the top tools are listed below.

Mongo DB is a cross platform document oriented database mgmt. system. It uses JSON like documents instead of a table-based architecture.
Hadoop is a framework that allows distributed processing of big datasets across clusters of networked computers using simple programming models.

V. MACHINE LEARNING TECHNIQUES: COVID 19 DATA ANAYSIS SYSTEMS.

V.I. REGRESSION MODELS

Regression models involve the following variables:

- The **unknown parameters**, denoted as **B**, which may represent a scalar or vector.
- The **independent variables**, denoted as **X**.

- The **dependent variable**, denoted as **Y**.

In various fields of application, different terminologies are used in place of dependent and independent variables.

A regression model relates **Y** to a function of **X** & **B**.

Y=f (X , B)

The approximation is usually formalized as **E(Y/X) = f(X ,B).** To carry out regression analysis, the form of the function **f** must be specified. Sometimes the form of this function is based on acquaintance about the relation between **Y** & **X** that does not rely on data. If no such acquaintance is available, a flexible or convenient form of f is chosen.

Assume now that the vector of unknown parameters B is of length k. In order to perform a regression analysis, the user must provide information about the dependent variable Y:

Formula of applied regression analysis:

Y dependent variable = F.* (x independent variable, θ) + *e.
Y= COVID ANALYSIS =F.X1PATIENT RECORDS+X2.POSITVE PERCENTILE+X3. DEATH RATIO+X4.RECOVER PATIENT RECORDS+X5.ADMIITED HOSPITALIAZE RATO OF PATIENT++_____-Qn.

VI. PREDICTION AND ANALYSIS:

Coronavirus spread has conducted the society under the edge of loss in social lives. Additionally, it is crucial to investigate the transmission growth ahead and predict the future occurrences of the transmission. In concurrent, state-of-the-art mathematical models are chosen based on machine learning for a computational process to predict the spread of the virus, for instance:

- **Support Vector Regression[5] (SVR)**
- **Polynomial Regression[6] (PR)**
- **Deep Learning regression models**
- **It is also involving:**
- **Artificial Neural Network[7] (ANN)**
- **Recurrent Neural Networks[8] (RNN) using Long Short-Term Memory[9] (LSTM) cells.**

Machine learning and deep learning strategies are performed using the python library to predict the total number of confirmed, recovered, and death cases extensively. This prediction will allow undertaking specific determinations based on transmission growth, such as expanding the lockdown phase, performing the sanitation plan, and providing daily support and supplies.

COVID DATA ANALYSIS: predicted by regression model. This model represents the data analysis by simple linear multiple regression. the overall percentile ratio is used to determine the covid 19. Data set records and analysis determined.

VII. CONCLUSION

This article intended to employ the machine learning models for pandemic analysis through a dataset from Johns Hopkins. In conclusion, the method of Polynomial Regression (PR) generated a minimum Root Mean Square Error (RMSE) amount over other methods in projecting the COVID-19 transmission. However, if the spread mimics the prognosticated trend of the PR model, then it would lead to extensive loss of lives as it presents the incredible growth of the transmission globally. As perceived in China, the increased case of COVID-19 can be degraded by lessening the number of sensitive individuals from infected people. This new normal is obtainable by becoming unsocial and supporting the lockdown regulation with control.

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UNDERSTANDING THE IMPACT OF FORGIVENESS ON COPING AND MENTAL HEALTH IN PEOPLE

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ABSTRACT

There are such things as repentance and healing of human life. Both are linked to feelings of remorse and hurt. From the standpoint of emotional and physical wellbeing regeneration, forgiveness is critical. In recent years, scientists have been increasingly interested in the topics of forgiveness, beliefs, and life significance. By practicing reconciliation, the transgressed person will minimize their rumination, which reduces their feelings of rage, bitterness, and hatred. Humans are fully living beings with physical, mental, moral, and social facets of their souls. Since psychological factors may influence an individual's physical condition, every human being has the right to be mentally prosperous. This individual would be an ideal human being if the psychological and physical functions go well. Psychological well-being is a multifaceted phenomenon under which people successfully carry out their psychological roles. Forgiveness is one of the causes that influences psychological well-being.

Keywords: Forgiveness, Psychological Well-being, Humans, Good Mental Health, etc.

I. INTRODUCTION

Interpersonal hurts and abuse against individuals are common, and they're linked to a slew of long-term psychiatric issues. There is an increasing body of evidence demonstrating the effectiveness of forgiving counseling in strengthening various facets of psychological wellbeing of people who have been injured, abused, or traumatized. Understanding the psychological prerequisites to forgiving and how children interpret the construct of forgiveness is critical for schools to successfully foster forgiveness.

II. FORGIVENESS

Forgiveness is a continuum of cognitive, motivational, and emotional transformation that has been characterized as a 'strong psychological reaction to interpersonal loss.' The scientific analysis of forgiving will help us learn more about the psychological mechanisms that underpin transgressions and the situations and circumstances under which forgiveness happens. According to research, forgiving may be a therapeutic resource for well-being that helps us respond positively to another person's negative actions.

Forgiveness should be interpreted as a progression of different levels of forgiveness and can be calculated according to the degree of genuineness "(Enright, & North, 1998)." Genuine forgiveness necessitates humility, goodness, and love for the perpetrator, as well as the surrender of the right to vengeance, anger, and indifference. It is obvious that forgiveness is necessary as a potential means of resolving tension in relationships. To comprehend how forgiving works, consider the three causes of forgiveness: another individual, oneself, and a condition or scenario. It has both interpersonal and intrapersonal purposes. Forgiveness is a solution to emotional violation, and the one who forgives does it in the context of another individual.

2.1 Benefits of forgiving

If you've been hurt by others, especially a person you loved and trusted, you might be angry, confused or even miserable. If you focus on unpleasant memories or negative feelings, those feelings will develop. You will become dominated by feelings of bitterness or deprivation if you allow negative feelings to overtake the good ones.

It is human nature to give others the benefit of the doubt. Anyone can change, if they are willing to put in a little effort.

Letting go of grievances and irritability will allow for better overall well-being and a greater sense of security. Forgiveness will contribute to the following results:

- Improved mental health
- Healthier relationships
- Lower blood pressure

- Less anxiety, stress and hostility
- A stronger immune system
- Fewer symptoms of depression
- Improved self-esteem
- Improved heart health

III. COPING AND FORGIVENESS

Coping mechanisms may be defined as either compulsions or mindless behaviors, and they allow an individual to control his or her distress in a given circumstance. It is incorrect to assume that all forms of distress are dysfunctional or unhealthy. Of course, addiction exists on all levels.

Forgiveness is believed to be a successful therapeutic method because it reduces tension, enables greater feelings of freedom, unleashes non-restrained frustration, and decreases resentment. To be creative, one must shift one's thinking. Resentment is considered a central to the term ‘forgiveness’. InnWhen we empathize for someone, we're no longer eager to hurt them, yet on the contrary, we want to see them to succeed. Letting go provides for creativity.

Individuals which use other ways to deal with adversity; nevertheless, there have been studies that propose that empathy is one of the most healthful choices. In other words, if the survivor can manage the burden created by the offender's lack of forgiveness, the resulting detrimental impact on wellbeing can be compensated for. Forgiveness, as with regard to a number of psychological theories, has both a condition and a trait component. The trait of forgivingness is termed ‘forgiveness’ and have higher levels associated with state forgiveness. To put it another way, the disposition to forgive is thought to lower the level of tension. Forgiveness may be a helpful in keeping depression and illness apart.

It is not easy to forgive. It can be a long, complex process that takes time to realize. Don't be too quick to forgive: Forgiveness will fluctuates. You may never be able to get to fully atone for the damage they have done to you, however you should strive to draw nearer to that individual. Instead of indicating vulnerability, forgiving takes a lot of work and effort. Whether you are holding a depressive thinking, emotion, or behaving against the transgressor, you have to make a concerted effort to drop the negativity. To really move on, you must first recognize and understand the suffering.

IV. FORGIVENESS INFLUENCE ON MENTAL HEALTH

According to a study, forgiving has been associated with mental wellbeing benefits that include decreased anxiety, depression, and other maladies such as lower mortality.

Researchers studied the long-term impact of tension on a person's mental wellbeing, and found that those who were more forgiving did well. They asked over one hundred and forty-eight-eight youth participants to complete questionnaires that evaluated their levels of tension, rage, and their thoughts on forgiveness, and their health and wellbeing.

The findings were entirely predictable: individuals who experience greater levels of tension all their life ought to have poorer health. Additionally, it was found that if individuals are tolerant of both themselves and their peers, tension almost ceases to exist.

The sin of mortals is human; the virtue of gods is eternal. We see over and over and over in Scripture that those who pardon those who trespass against them are considered to be almost as merciful as those who sin against them. An argument for this proposal is that forgiveness is innate among all human beings. Many scholars have chosen to ignore the forgivingness because it is grounded in religion, according to the ostensible definition; and come to conclude it does not have empirical support, if so, in creative However, the rise of the ‘positivity’ culture’ movement has put a greater focus on researching the effect of forgiveness on emotional wellbeing and social systems.

In other words, forgiveness involves rage, terror, betrayal, and sadness in order to be relinquished, along with empathy and regret to take its place. Time offers an opportunity for reconciliation between the abused victim and offender. Forgiveness can arise even if an individual does not overlook the offense, rationalize the transgressor's behavior, or acquit the transgressor, as long as there is a fundamental difference in how they feel about the perpetrator

Like for other individual characteristics, there are certain individuals who are more forgiving. Although he has observed in his study that more lenient personalities are accommodating, he has also found that they have lower tendencies to be disagreeable and cynical. Holding a grudges seems to lessen the likelihood of forgiving. When people have confidence, they often seem to have a compassionate nature. Forgiveness contends, ‘all the big denominations consider forgiveness as valuable.’ It is still a smart idea to have a sense of sympathy towards others. For him, writing is a diary or journaling is an effort to be more empathic. Enraged because of the boss' Consider what she may be thinking.‘‘She may be under extreme stress.” It isn't working as planned. Since I'm not flawless, he encourages me to tell them in an empathic way.

Many trials have been done to see whether forgiveness treatment helps people suffering from a variety of different psychiatric illnesses, and in a few instances if it even helps with appreciation, self-esteem, optimism, and well-being in marriage. While meta-analyses have shown these approaches to be successful in reducing depression, anxiety and tension, they have shown that these results have not been shown to apply to subjective well-being. However, previous study has only assessed the results of group-based manual approaches, and far less have looked into whether these techniques enhance people's overall well-being.

V. CONCLUSION

A good standard of life is essential to overall well-being. A psychologically well person is someone who sees him or herself and others in a good light, is willing to take control over his own actions, is dedicated to a cause, and has personal significance. When we analyze the data, we find that forgiving seems to have a positive impact on cognitive, physical, behavioral, and social well-being, it may be that it's the foundation of these three foundations. Despite this, forgiveness deserves a study in depth. Scientists have shown that forgiving others has been linked to less discomfort, more optimistic thoughts, happier moods, better fitness, and greater life satisfaction. Forgiveness frees you from a betrayal's stresses. Going on instead of focusing on the past is for meaning. Psychologists should analyze factors such as age, meaning, and others that are particularly significant when measuring the effect of forgiveness

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Review Article on Education Analytics Based on Machine Erudition.

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Abstract:
The course proposal framework in e-learning is a framework that recommends the best mix of subjects wherein the understudies are intrigued. In this paper, we propose a structure for suggestion of courses in the E-learning framework. In our methodology we gather the information for instance understudy enlistment for a particular arrangement obviously. Subsequent to getting information, we utilize diverse blend of calculation and we investigate the appropriateness of mix applied for proposal. Information Mining is the extraction of concealed prescient data from huge data set which can be utilized in different business applications like bioinformatics, Ecommerce and so on Affiliation Rule, characterization and grouping are three distinct calculations in information mining. Course Recommender System assumes a significant part in recognizing the conduct of understudies keen on specific arrangement of courses. We gather the information in regards to the course enlistment for explicit arrangement of information. For gathering this information, we utilize the learning the board framework like Moodle. In the wake of gathering the information, we apply the distinctive mix of information mining calculation like grouping and affiliation rule calculation, bunching and affiliation rule calculation, affiliation rule mining in characterized and bunched information, consolidating bunching and arrangement calculation in affiliation rule calculations or just the affiliation rule calculation. Here in this paper we use ADTree arrangement calculation, Simple K-implies Algorithm and Apriori Association Rule calculation as various AI calculation. So we propose the five unique techniques to track down the best blend of calculation in prescribing the courses to understudies in E-learning.

INTRODUCTION:

There are various ways that instructive investigation (2007) characterized scholarly examination that will help workforce and guides become more proactive in distinguishing at reacting likewise. Along these lines, the outcomes maintenance. Scholastic examination centers around measures that happen at the office, unit, or school and college level. This sort of investigation doesn't zero in on the subtleties of every individual course, so it very well may be said that scholastic examination has a large scale viewpoint. Considered a sub-field of instructive examination. Characterized instructive investigation as "an arising discipline, worried about creating techniques for investigating the interesting kinds of information that come from instructive settings, and utilizing those strategies to all the more likely get understudies, and the settings which they learn [3].

Their definition doesn't specify data_ mining, open to investigating and creating other insightful related information. Likewise, numerous teachers would not realize how to utilize data_mining instruments, in this manner there is a need to make it simple for instructors to direct progressed examination against information that relates to them (like online CMS information, and so on) Exploration in Higher Education Journal Educational information mining research, Page making measures. Associate revelation and data_ mining can be considered as apparatuses ational adequacy. The intricacy of data_mining to build up a standard interaction for data_mining exercises. The Cross Industry Standard Process for Data_mining (CRISP-DM) is a day to day existence cycle measure investigating data_mining models. The CRISP significant on the grounds that it gives explicit tips and procedures on the best way to move from understanding the business information through arrangement of a data_mining model. Fresh DM has six stages, incorporate business understanding, information understanding, information planning, demonstrating, assessment, .

The advantages of CRISM-DM are that it is non-restrictive and programming merchant nonpartisan, and gives a strong structure to direction in data_mining. The model likewise remembers formats to help for examination. This cycle is utilized in a number may not be expressly expressed all things considered. Data_mining has its foundations in machine_erudition, man-made brainpower, software engineering, . There are a wide range of data_mining strategies and approaches, like grouping, arrangement, and

affiliation rule mining. Every one of these methodologies can be utilized to quantitatively break down huge informational indexes to discover covered up importance an ata mining is an exploratory cycle, however can be utilized for corroborative examinations. It is not quite the same as other looking and examination methods y exploratory, where different investigations are commonly issue While data_mining has been applied in an assortment of enterprises, government, military, retail, and banking, data_mining has not gotten a lot of consideration in instructive setting Educational data_mining is a field of study that dissects and applies data_mining related issues. Applying data_mining this way can help specialists and experts find better approaches to uncover examples and patterns [4].

APPROACHES OF DATA_MINING IN EDUCATIONAL DATA

Data-mining is the field of computer science that aims to find out different potential factors and patterns to help decision making.

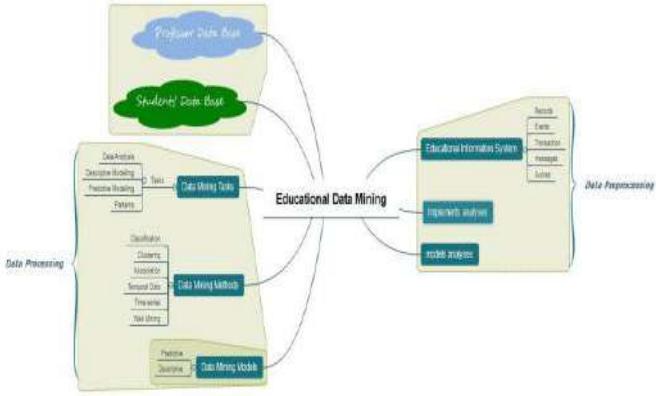

Figure 1.1. Intelligent System Model for Educational analytics

II. CLUSTERING TECHNIQUES

I. Clustering can be defined as the identification and classification of objects into different groups, or more precisely, the partitioning of a data set into subsets (clusters) so that the data in each subset (ideally) share some common trait of similar classes of objects (figure 1.2) The model in Fig.1 means to plan the Educational Data_mining. Along these lines, Data_mining can work with Institutional Memory. Data_mining [25], likewise prevalently known as Acquaintance Discovery in Databases, alludes to extricating or "mining" associate from a lot of information. An instructive framework regularly has an enormous number of instructive information. This information [26] might be understudies' information, educators' information, graduated class information, asset information, and so on EDM centers around the improvement of strategies for investigating the novel kinds of information that come from an instructive setting. These information come from a few source, including information from customary vis-à-vis study hall climate, instructive programming, online courseware, and so on Data_mining strategies are utilized to work on huge volumes of information to find covered up examples and connections accommodating for dynamic. Different calculations and strategies, for example, Classification, Clustering, Regression, Artificial Intelligence, Neural Networks, Association Rules, Decision Trees, Genetic Algorithm, Nearest Neighbor strategy and so on, are utilized for colleague disclosure from data sets.

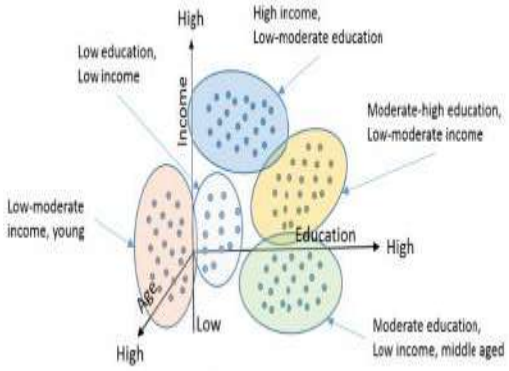

Figure.1.2. Example of K means clustering using R

III. MACHINE ERUDITION:

A typical meaning of machine savviness is: "A PC program is said to gain as a matter of fact E concerning some class of undertakings T and execution measure P if its exhibition at assignments in T, as estimated by P, improves with experience E." Basically, machine intellect is the capacity of a PC to gain as a matter of fact. Experience is normally given as info information. Taking a gander at this information, the PC can discover conditions in the information that are excessively unpredictable for a human to frame. Machine education can be utilized to uncover a secret class structure in an unstructured information, or it very well may be utilized to discover conditions in an organized information to make expectations.

ERUDITION ANALYTICS CHALLENGES IN EDUCATION

The review of the literature revealed the LA challenges about data tracking, data collection, and data analysis, a connection with erudition sciences, erudition environment optimization, emerging technology, and ethical concerns regarding legal and privacy issues.

Data tracking

The digital tracking of information is a technique used by analysts to determine how best to present new erudition opportunities as the wave of education continues to move forward into the second decade of the 21st Century. The tracking of big data represents the monitoring system. Current trend tracking indicators regarding the delivery and dissemination of instruction depend on the erudition mgmt system used by the institution. Platforms such as Moodle, Canvas, EPIC, and Blackboard have the capability to track the

number of times an individual logs into the course room. These platforms also provide significant documentation to determine how involved the student was upon their login. Such tracking provides those who plan and implement new educational programs with valuable information. The monitoring reveals how engaging the curriculum presented is, as well as identifying areas that cause confusion. Data collection. The collection of data can be a challenge when looking at LA. Nonetheless, it represents an important component in planning for continued implementation of educational program growth. Educators must consider several elements. They must consider the availability of resources at a venue. Next, instructors must establish a viable social platform as it directly relates to interactions between learners to synthesize the educational content. Finally, instructors must discriminate whether the learner population possesses the requisite suitability for this type of erudition environment and acquaintance acquisition. Besides these challenges, gaps exist because of the inability to share proprietary information gathered by the institution. Further, another problem emerges because the creation of the ideal framework to disseminate educational curriculum takes teamwork, especially among the organizations bidding against one another to capture the learner population who want to engage in this type of erudition experience [5].

IV. EDUCATION ANALYTICS USING TOOL AND TECHNIQUES.

The difficulties looked in handling Big Data innovations are overwhelmed by utilizing different strategies. The most mainstream methods utilized in instructive data_ mining are recorded underneath.

Relapse – Regression is utilized in foreseeing upsides of a dependant variable by assessing the relationship among factors utilizing measurable investigation

Closest Neighbor – In this strategy the qualities are anticipated dependent on the anticipated upsides of the records that are closest to the record than should be anticipated.

Bunching – Clustering includes gathering of records that are comparable by distinguishing the distance between them in a n-dimensional space where n is the quantity of factors.

Arrangement – Classification is the ID of the class/class to which a worth has a place with, in light of recently ordered qualities.

Open Source Tools:

A few Open source apparatuses exist which help in restraining Big Data [9] a portion of the top instruments are recorded underneath.

Mongo DB is a cross platform document oriented database mgmt system. It uses JSON like documents instead of a table-based architecture.

Hadoop is a framework that allows distributed processing of big datasets across clusters of networked computers using simple programming models.

MACHINE LEARNING TECHNIQUES: E – LEARNING SYSTEMS.

REGRESSION MODELS

Regression models involve the following variables:

- The **unknown parameters**, denoted as **B**, which may represent a scalar or vector.
- The **independent variables**, denoted as **X**.
- The **dependent variable**, denoted as **Y**.

In various fields of application, different terminologies are used in place of dependent and independent variables.

A regression model relates **Y** to a function of **X** & **B**.

$$Y=f\ (X, B)$$

The approximation is usually formalized as **E(Y/X) = f(X ,B).** To carry out regression analysis, the form of the function **f** must be specified. Sometimes the form of this function is based on acquaintance about the relation between **Y** & **X** that does not rely on data. If no such acquaintance is available, a flexible or convenient form of f is chosen.

Assume now that the vector of unknown parameters B is of length k. In order to perform a regression analysis, the user must provide information about the dependent variable Y:

Formula of applied regression analysis:

$$Y \text{ dependent variable} = F.(\text{x independent variable}, \theta) + e.$$

The following hypotheses regarding variables impacting one **Education analytics:**

- **Aptitude skills.**
- **Communication skills.**
- **Mental ability test MAT.**
- **Core subjective skills.**
- **Reasoning skills.**
- **presentation skills.**

1. The importance of quality in higher education institutions for employability

2. To know the actions required for implementation of Quality Mgmt. Improved
3. To determine the success of Total Quality Mgmt. actions through various measures.

CONCLUSION

In this paper we have concluded that regression analysis for using e learning system. The paper concludes that tools and techniques which is used to determine the machine learning techniques using education analytics. The clustering and classification techniques also mention in this paper. The various parameters also find out for regression analysis .

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CHALLENGES FACED BY THE VISUAL IMPAIRMENT STUDENTS WHILE INDUCING ASSISTIVE TECHNOLOGY

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Abstract:

The study aimed at exploring barriers to the use of computer assistive technology among students with visualimpairment at special schools for the visually challenged in the state of Telangana. A case study design was adopted and the purposive samplingtechnique used to select 55 participants for the study. The gathered qualitative data using an in-depthinterview guide to investigate challenges to the use of keyboarding skills and Job Access with Speech (JAWS).Datawere transcribed and analysed thematically. That is the key themes were identified in the conversations and thesewere drawn and discussed. This was done using both the narrative methods and opened quotes from interviews.The findings indicated that challenges limiting effective use of assistive technology in the schools weremore personal than external influences. This was because most of the challenges were due to the individualresponse to the training and familiarity in developing theircompetencies in using assistive technology.

Based on this, it was recommended that efforts should be made to stock the laboratory with additional computers.Directly in line with the firstrecommendation, it was further suggested that more practice time should be createdfor the students with visual impairment to maximize computer use. And adapted computer keyboard (with Braille signages) should be made available to children with visual impairment. Also, Licensed JAWS must be acquired by the schools to advancestudents' competence in using assistive technology. A number of the challenges were expressed by thestudents on their non- familiarity with the JAWS. As a result, it was recommended that instructors and trainers atthe schools should engage the students in revised lessons on introduction to computer. This will help to refreshthe minds of students with visual impairment.

Keywords: Visual Impairment, Assistive Technology, Keyboard, Job Access with Speech, adopted computer keyboard.

Introduction

The use of assistive technology has captured the attention of students with visual impairment.Specifically, assistive technology has given visually impaired people ever-expanding opportunities forpersonal and professional growth (Sah, 2013). Obviously, the success in getting information in our society today,demands computer literacy. Besides the braille, it appears that, no invention has enabled visually impaired people tocommunicate as effectively assistive technologies that have made computers and the Internet accessible.Assistive technology is involves both assistive technology devices and assistive technology services (Presley &D' Andrea, 2008). In fact, an assistive technology device, whether acquired commercially off the shelf, modified,or customized, which is used to increase, maintain, or improve the potential capabilities of children with Special Needs (Kotani& Sharma, 2010). The visually impaired learns about their environment mostly through thesense of touch and hearing unlike other disability groups (Smith, 2008). Without the skills in the use of assistive technology, these students may find it difficult to access the computer and explore maximally. As computer users with visual impairment, the ability to use the computer keyboard to bothget around and issue commands is critical. Particularly, if they use a screen reader, they would rely on keyboardcommands instead of a mouse in order to get their computer work done. The ability

to utilise informationtechnology is important in most other aspects of life, such as, email for correspondence, online-banking,access to public libraries, access to read E-Books, like Sugamya Pusthakalaya and Daisy books. As such, information technology, computer literacy and information access areimportant to every-one in modern society, the visually impaired not excluded. To make such a highly visual environmentaccessible to those unable to see a computer monitor, assistive technology enables users to read all onscreencontent, whether emails, spreadsheet columns and application tool bars. Assistive technology also provides ameans to navigate one's keyboard and desktop, open and use programs, and browse the web.

The technology that makes this navigation possible is the Job Access with Speech and Screen magnificationsoftwareprograms (Gerber & Kirchner 2007). These Screen readers give voice to computers throughapplications that synthesize written words and keyboard commands into human-sounding speech for the visuallyimpaired to hear and visualise what is written on the computer screen. Thus, the use of assistive technology hasbecome a part of the core curriculum in junior high schools in Telangana State. In Telangana State quest to equip students withthe needed competencies in computer usage, many professionals have been trained to help the visually impairedstudents gain adequate knowledge in information technology programs. Among the reasons for this is that most studentswith visual impairment at one point in time find themselves in environments where the use of computer will beneeded to make a living and gain independence. In spite of these benefits, students with visual impairment arelikely to encounter some problems in usage of assistive technology. Some of these problems are that students with visualimpairments appear to exhibit errors in keyboarding skills. This appears to be due to student's inability toremember keyboard shortcuts, as well as difficulties in having access to license speech software and inability todiscrimination voice of Job Access With Speech (JAWS). Challenges to the use of assistivetechnology do not only pertain to developing state like Telangana. In fact, a study conducted in other states and countries suggests that individuals with visual impairment are not fully benefiting from the use of assistive technology at house, school and community (Gamble &Hirsch, 2003). Again, it appears that there are also inadequate qualified personnel with regard to teaching assistive technology. Furthermore, it seems the difficulties faced by persons with visual impairment inthe usage of assistive technology in school is due to lack of adequate computers to meet the needs ofstudents with visual impairment. Besides, it appears that the huge impact of technology has not impacted on teaching andlearning of those with visual impairment. Many professionals appear to understand, at least anecdotally, thatcomputer use could make a tremendous difference in the lives of students with visual impairments byimproving their educational, vocational and employment opportunities, enhancing their social networks and facilitatingtheir independence, yet, little research has been conducted todocument the challenges to computer usage amongstudents with visual impairment.Such information or data is important for planning appropriate intervention for the optimum utilizationof assistive technology thereby improving the quality of life in students with visual impairment.

Methods

Participants and data collection:55 students with visual impairment at special schools for the visually challenged in the state of Telangana, made up of 33 males and 22females were purposively sampled for the study. The students were chosen because they have attainedsome degree of mastery in computer use. A self-designed in-depth interview guide was used to collect data fromparticipants.

Results

Challenges on keyboarding skills:

About 75% of students indicated their unique challenges in keyboarding. In relation to the first challenge namely,the arrangement of keys on the keyboard, the students explained that they found it difficult (without braille signages) to identify some ofthe keys on time particularly, the alphabetic keys. Specifically, they

were un-impressed with the arrangement ofthese keys on the keyboard which deviates from their conventional knowledge in the flow of alphabetic count.This is typified in the following expression by one student;“I have difficulty in identifying the letters on the keyboard because the alphabets do not follow the normalarrangement of A, B, C… X, Y, Z”

Directly linked with the arrangement of keys, another challenge was the spacing of keys on thekeyboard. Accordingly, the students opined that the location of the keys on the keyboard is so close that thisaffects their competence in the speed and accuracy of constructing sentences. Whereas it is true that consistentpractice and use of the keyboard helps a user to develop familiarity with the spacing between keys, thisfamiliarity has not been fully developed among the respondents. Again, even though the class had computerlessons thrice a week, the students perceived the amount of time spent as being limited. In expressing aviewpoint on this, one student states.“There is inadequate time for practice and this has affected my typing skills. Therefore I could not type fast andaccurately”Consequently, most of the respondents therefore complained that it takes extended practice time forthem to develop familiarity with the various keys.

Another challenge that was raised on keyboarding skills was the difficulty in remembering shortcuts. Itis well known that computer usage comes with an added benefit of employing shortcuts to navigate a documentor carry out other processes. However, most of the students with visual impairment indicated that they found it difficult to remembermost of these shortcuts. While it is undeniable that remembrance of these shortcuts does not come handy, ourstudy found out that the students with visual impairment’ inability to remember shortcuts is directly linked with their difficulty witharrangement and spacing of keys on keyboards.Lastly, some respondents also had difficulty of developing motor skills. This is because, they havedeformity on their wrists (fine motor skills) and this may have affected their finger positioning and ability tonavigate swiftly across different parts of the keyboard.

Challenges on the Use of Job Access with Speech:

Our study also found that about 75% of the students at special schools for the visually challenged in the state of Telangana. have challenges in using the JAWS software as assistive technology. It was as found that, there is always malfunctioningand sometimes sudden failure of the JAWS application as it is being used and the students believed this retardsprogress in their studies. In expressing this frustration, one of the students indicated:“At times, the JAWS could stop working while being used hence reducing efficiency”Upon further interaction, they explained that the type of JAWS that is being used in the schools isunlicensed and is thus limited in some of its applications or functions. The students are therefore limited toaccess other uses of JAWS because they use the “cracked version” coupled with it inefficient functioning.Some of the visual impaired students had the challenge of adjusting from the use of mouse to the use of shortcuts. Thischallenge was faced by a number of the students who initially had their sight and were thus, familiar with the useof the mouse. But when they later lost their sight and were brought to the school for the blind they haddifficulties adjusting from their knowledge of the use of mouse to memorizing and using shortcut as required bythe JAWS application.

Strategies to Address Challenges associated with Assistive Technology Use Keyboarding Skills:

Respondents in this study outlined a number of strategies that they thought could help address the challengeshindering their competence in keyboarding skills. In the first place, it was found that mental drill as a strategycould be adopted by the Information and Communication Technology teacher to address the challenge of remembering numerous shortcuts. Onerespondent explained that,“There is fifteen (15) minutes

mental drill conducted by the Information and communication Technology teacher on keyboard shortcuts and this has helpedus to memorize more shortcuts in order to improve our competence".Secondly, to address difficulty of visual impaired students with the arrangement and spacing of keys on the keyboardthe way forward has been in developing their familiarity. In this regard, one visual impaired student indicated that:"The teacher has been encouraging them to have additional computer classes during vacations. He emphasizedthat when they are able to do that then they can practice more to help themselves develop familiarity withlocation of the keys on the keyboard"Directly linked with the above, another visual impairedstudent pointed out that,"During computer lessons each of us is given the opportunity to show the positioning of various parts ofkeyboard. And this has helped us to develop familiarity(adopted braille signages computer keyboard) with the positioning of the keys, especially thearrangement of the alphabetic keys"

JAWS Application Use:

To address the challenge of voice recognition, the visual impaired students indicated that, their teacher always encourages themto listen carefully to the speech of the JAWS in order to become familiar with the voice. A student said that,"We are often given ten (10) minutes to listen to the speech and explain our understanding to the teacher andthis has helped us to understand the accent".Other respondents also expressed that, the teacher has been helping them with some of thepronunciations to have a better understanding of voice recognition in the JAWS application. There is also amental drill on the JAWS usage and the visual impairment students stated that in order to get good marks, they have to listen keenlyand this has also contributed to enhancing their familiarity with JAWS software use.As it was noted earlier, special schools for the visually challenged in the state of Telangana has an unlicensed version of JAWS whichmalfunctions and fails at times. When asked what was being done to address this challenge, one respondent said:"The Parent-Teacher Association and benevolent individuals and philanthropists have been encouragedto help the schools obtain licensed JAWS for the computer laboratory".

Discussion:

Challenges associated with assistive technology use among students at special schools for the visually challenged in the state of Telangana.There are numerous benefits of assistive technology among students with visual impairment. It isparticularly noted that through the use of these devices and software's , students with visual impairment gain independence andautonomy concerning information management and access to communication, just like their peers with normalvision (Caparos, 1994). That notwithstanding, a number of challenges exist to the successful and effective use ofassistive technology devices among people with various disabilities in schools. This is evident in the fact that75% of the students at special schools for the visually challenged in the state of Telangana highlighted various challenges which hamper theircompetencies in keyboarding and JAWS application use.

However, the results of the study show that, the challenges mentioned by the visual impaired students are related topersonal response to assistive technology use rather than external influence. These challenges arise dueto the individual response to the training and familiarity by the students with visual impairment in developing their competencies inusing assistive technology. This however excludes the malfunctioning and failure of JAWS application.This challenge has an external influence and its manifestation is linked with limited financial resources, highcosts of equipment and eligibility issues for possessing devices (Fifield & Fifield, 2002), as well as a lack ofknowledge and support from teachers (Alper & Rahrinna, 2011) the case of the students at special schools for the visually challenged in the state of Telangana is however different. This is because the various strategies that the visual impaired students highlighted as being usedto address

their challenges demonstrate knowledge and support from their Information andcommunication technology teacher.

In another study, Johnson (2011) indicated that a lack of knowledge and awareness among people withvisual impairment, reluctance to use the devices, poor device performance, changes in needs or priorities, andfeelings of stigmatization are major reasons for underused assistive technology devices. Our study results seemhowever, to suggest that there are effective strategies that are being adopted by the Information and communication Technology teacher at special schools for the visually challenged in the state of Telangana to address their challenges. The students' competence in using assistivetechnology has been affected by the malfunctioning and sometimes failure of JAWS.

Implications and recommendations

The study showed that, the challenges mentioned by the visual impaired students are related to personal response to assistive technology use rather than external influence. In other words, these challenges raised are likely, due tothe individual response to the training and familiarity by the students in developing their competencies in usingcomputer assistive technology. Because the Information and communication Technology laboratory is stocked with desktop computers demanding directpower supply this study recommends that efforts should be made by management of the schools and otherbenevolent individuals and philanthropic organizations to help procure power stabilizers for power managementin the case of interrupted power supply. A number of the challenges expressed by the visual impairment students on their nonfamiliaritywith the JAWS. As a result, we recommend that instructors and trainers at the schools should engagethe visual impaired students in revised lessons on introduction to computer. This will help remedy their difficulties in the use ofJAWS and Keyboard. We further suggest that additional time should be allocated to ICT lessons on the timetable to maximise student's potential in the use ofassistive technology and also obtaining license JobAccess with Speech (JAWS).

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Usage of Technology in Education of Hearing Impaired

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It is essential to provide proper and high-quality schooling to hearing-impaired people in order for them to live a self-sufficient existence. Conventional educational methods are insufficient for hearing-impaired people's education. Education for hearing disabled people has become increasingly beneficial as a result of the use of new technologies. When looking at the scholarly literature, it is clear that there are few reports on the systematic usage of technology in the schooling of hearing-impaired people. The aim of this research is to survey the technology utilized in the education and training of hearing-impaired people in this context. The survey approach was used as a qualitative analysis method in this report. The study's results were viewed as innovations that aid in the advancement of hearing-impaired people's academic skills.

Keywords: Hearing Impaired individuals, Technology, Education.

INTRODUCTION

Individuals who are deaf or hard of hearing need special education. There are some guidelines for classifying hearing impairments; they are based on the degree of hearing loss, which is assessed by audiological measurements, and they are diagnosed as minor, severe, or serious hearing loss after hearing test rehabilitation programs begin. Hearing disabled people are unable to detect words, and as a result, they are unable to learn voice and vocabulary, preventing vocal contact. Hearing disabled students' special education programs are investigated, and it is discovered that their needs are diverse. Hearing impaired students can experience a variety of challenges in school and in their social lives. A child's learning development may be hampered by a hearing disability, particularly when it comes to interpreting and producing spoken language. Although there have been several opinions on which methodology being the most successful through the years, specialists believe that the instructional process should be tailored to the particular student's skills, desires, and personality. In the schooling of hearing-impaired people, technology plays a critical part. Teachers must respond to each student in their class, and dealing with hearing disabled students necessitates certain changes to standard teaching methods. New methods, on the other hand, are helping students and teachers to transition to formal schooling more smoothly. With the exponential advancement of information technology, the holes in fields where the traditional approach for educating people with special needs is inadequate are being filled. Items that were impractical to solve with the traditional approach are still challenging to accomplish with these technologies. Students with disabilities would be forced to learn in a more relaxed environment as a result of this. Shortening the length of training,

maintaining interest, encapsulating abstract ideas, providing practical interactions, and generating further learning needs are all benefits of training technology. Computers are being used to help students with autism in special education improve their learning skills by helping certain aspects of growth such as hand-eye coordination, imitation, and language production. Educators also use computer educational tools to teach adolescents with disabilities general problem-solving techniques such as algebra and reading. Computer training systems have been shown in several research to improve academic knowledge, vocabulary, arithmetic, reading, and intelligence in children with disabilities, as well as their attention span and learning efficiency. Students with hearing impairments may interpret documents produced on computers using computer programs and modified equipment. Computer-assisted training is a teaching approach that consists of a learning system in which students study in a computer environment, which increases the teaching process and student engagement, and which learners may use at their own pace. Individualization in schooling is made possible through computer-assisted teaching. A machine is used as a medium in computer aided training to teach a lesson. Students who study how to use computers with instructional software do so at their own speed and skill.

Individualization and self-improvement, immediate guidance, reliable corrective mechanism, repetition without coercion, immediate reinforcement, step-by-step instruction, repeated reaction by children, inspiration, psychological satisfaction, and constructive learning in education are all advantages of utilizing software for computer-aided training in special education, according to Ari and Bayhan [4]. The introduction of technology in special education would make it possible for teachers and people who need special education to grasp and utilize emerging technologies, as well as to stay up with advances to ensure that courses are aligned with technical advancements. Tablet computers are one of the most prominent technological advancements in recent years. Mobile computing devices, such as mobile phones, laptops, and tablets, as well as the usage of Personal Digital Assistants, are all accessible (PDA). Tablets have the ability to link to wireless networks as well as most devices [24]. Tablets were found to be favoured as instructional instruments in education as a result of research undertaken with them. Tablets are preferred because they offer a rich educational and training experience for students and instructors, which makes students enhance their curiosity and desire in the class, as well as aids their learning. To address the challenges in utilizing technology, these students and teachers can obtain ongoing guidance and instruction based on their competencies in using Tablet PC [33]. Tablet computers can be used when demonstrating aim skills, teaching self-care skills, acquiring freedom skills, and applying for prizes in visual applications, according to teachers' opinions [20]. Teachers stressed the value of visual communication opportunities for students with hearing disability in another study, as well as the usage of electronic instructional tools such as computers, the internet, tv, videocassettes, and computer floppy disks. Similarly, Tassel-Baska et al. [35] recommend incorporating technologies into training systems.

The usage of technology in training applications has been shown to improve performance by Gersten and Baker [14].

Individualized Education Programs for special needs adults can be evaluated by creating a practical timeline, which is well established. An assessment of assistive devices that are either utilized or may be used by special needs adults should be included in the IEP [31]. “At least one member of the IEP team should be familiar with assistive technologies.” It is critical that at least one member of the IEP team present services to the meeting in the form of books, catalogs, or websites in order to determine which auxiliary technology are accessible or needed. To be prepared to deliver assistive technology equipment or facilities, the IEP staff must have a thorough understanding of how this technology can be accessed, used, and tested. In the most basic level, to be able to provide an assessment of assistive technologies in IEP meetings, the evaluation should be listed as follows: identification of the student's needs, student learning of how to use assistive technologies, education of family members and staff, and determination on how and when to provide technical assistance on the use of assistive technologies. Since infants born with hearing disorder do not develop linguistic and speech abilities for a variety of factors, including not hearing enough voices, not perceiving vocal input, and not being able to use their mother tongue every day, these students are at least five years late in their learning. The rapid increase of educational innovations, focusing on teachers, is vital for the advancement of schools. Providing technological assistance to schools of hearing impaired people so that the challenges faced in hearing challenged schooling can be changed, and the rapid rise in educational technologies, reflecting on teachers is important for the growth of schools. Looking around the globe, it is clear that technologically assisted research to improve the standard of education in hearing disabled schools lead to school improvement [34, 41, 42]. It is very effective to promote awareness and ability teaching through visual means as far as possible, to organise instructional environments, and to enable peer participation in the education of hearing-impaired children. Furthermore, after contemplating the value of learning by doing and the learners' long-term retention, the significance of constructive learning dependent on experience in the curriculum of the deafeningly deafeninglydeafeninglydeafeninglydeafeninglydeafeninglydeafeningly This aids students' learning by the their curiosity and desire in the lesson [2-9-18-19]. To address the challenges in utilizing technology, these students and teachers can obtain ongoing guidance and instruction based on their competencies in using Tablet PC [33]. Teachers' perspectives on the use of tablet computers suggest that they can be used when teaching target skills, self-care skills, independence skills, and applying for awards in visual applications [20]. In another study, teachers emphasized the importance of visual education tools for students with hearing impairment in proposals related to educational tools. Similarly, Tassel-Baska et al. [35] recommend incorporating technologies into training systems. The usage of technology in training applications has been shown to improve performance by Gersten and Baker [14]. Individualized Education Programs for special needs adults can be evaluated by creating a practical timeline, which is well established. An assessment of assistive devices that are either utilized or may be used by special needs adults should be included in the IEP [31]. At least one member of the IEP team should be familiar with assistive technologies. It is critical

that at least one member of the IEP team present services to the meeting in the form of books, catalogs, or websites in order to determine which auxiliary technology are accessible or needed. To be prepared to deliver assistive technology equipment or facilities, the IEP staff must have a thorough understanding of how this technology can be accessed, used, and tested. In the most basic level, to be able to provide an assessment of assistive technologies in IEP meetings, the evaluation should be listed as follows: identification of the student's needs, student learning of how to use assistive technologies, education of family members and staff, and determination on how and when to provide technical assistance on the use of assistive technologies. Since infants born with hearing disorder do not develop linguistic and speech abilities for a variety of factors, including not hearing enough voices, not perceiving vocal input, and not being able to use their mother tongue every day, these students are at least five years late in their learning. The rapid increase of educational innovations, focusing on teachers, is vital for the advancement of schools. Providing technological assistance to schools of hearing impaired people so that the challenges faced in hearing challenged schooling can be changed, and the rapid rise in educational technologies, reflecting on teachers is important for the growth of schools. Looking around the globe, it is clear that technologically assisted research to improve the standard of education in hearing disabled schools lead to school improvement [34, 41, 42]. It is very effective in the education of hearing-impaired children to support knowledge and skill teaching with visual means as much as possible, to organize educational settings, and to enable peer interaction. Furthermore, when considering the importance of learning by living and the learners' permanence, the importance of active learning based on practice in the education of hearing-impaired children is very important. The level of schooling for children with hearing disability is highly influenced by the community in which they are educated. Isolation in the classroom, appropriate facilities and devices, and children's inclusion in individual-group hearing aids and educational programs are all important. Hearing impaired children may feel embarrassed and hesitant when they fail in the classroom. Atthis point, computer-aided materials that hearing-impaired individuals can use on their own initiative provide the opportunity to repeat and provide an individual learning environment, thus providing the individual's self-confidence and influencing learning positively [13]. It is emphasized that effective materials to be prepared for hearing impaired individuals should be paintings and animations that are front-panel, visual rich, and games-based [21]. As a result, the aim of this research was to group the technology utilized in hearing-impaired people's training under one heading and present them as technologies for promoting vocabulary, voice, and academic skills. In this background, researchers in Turkey looked at the usage of technology in the education of hearing-impaired children. This research is expected to shed light on the widespread usage of technology in hearing-impaired teaching, as well as the growth in experience and expertise in utilizing these technologies.

2 Method

The survey form was used in this analysis. In historical and qualitative analysis, the survey approach is used. Then, the relevant records are read, and the knowledge obtained is coded.

Later, the coded papers were gathered, and the findings that were provided within the framework of the analysis were deleted.

2.1 Data Analysis

As a result of the analysis of the data, the findings were collected and examined under two categories as the categories used to support the language, speech and academic skills of the hearing impaired.

3 Results and Discussion

3.1 Techniques used to support academic skills in hearing impaired

Schools with the responsibility of managing hearing-impaired people can pursue reform, creativity, and growth research in the era of knowledge and technology, due to the demands of the times and the needs of community. Significant functions, such as arranging and organizing different instructional events, come under the supervision of the schools in this respect. The exercises that will be introduced to the students are those that will challenge their brains, make them consider, build a cause-and-effect relationship, and it is predicted that they will have the characteristics of reconciling concepts and reality in various ways, as well as understanding the significance of societal principles [30]. Around the same period, schools should reap the benefits of the twenty-first century's technological advancements. It is safe to assume that students who have difficulties are successful in addressing these problems because of the technologies utilized in the teaching of autistic students, the hurdles, and hence the learning [29]. Demirhan [10] set out to investigate the impact of technology on the schooling of students with hearing loss. According to the findings, students in the application community learned lessons earlier, allowing them more opportunities to perform and repeat [10]. It was discovered that students who gained from the class's technology had higher course performance than students who received traditional instruction, and also had better outcomes than students who had certain difficulties but were not ineffective. Technology has been shown to have eliminated the diversion issue and students with hearing difficulty have strengthened their participation in the lessons as they have become more enjoyable to understand. The computer-aided teaching material created has effects on the written speech abilities of students with hearing disability, such as the ability to form sentences and use timing correctly, according to Ciftci [8]. The study's aim was to uncover the views of Language and Literature teachers regarding resources developed by students with hearing impairment. The study's findings revealed that computer-assisted instructional materials had a significant impact on students' written language abilities, such as composing sentences and correctly utilizing past, current, and potential periods. We tried to use information technology and distance education in the Cal [6] research to reduce the difficulties in interpretation and comprehension that individuals with hearing disability face in our society. In conclusion, it is claimed that the devices utilized would benefit students with hearing impairments in any way. In 2008, researchers conducted a report named Utilization of Computer-Assisted Animations in the Process of Education of Hearing-Impaired Individuals [21]. In this research, we looked at the usage of computer-assisted animations in the education of hearing-impaired people.

The views of the teachers at the hearing disability school were taken into consideration, and a solution plan was presented on which elements could be included if animations were to be included. Teachers also stated that if hearing-impaired students have strong computer and technology abilities, computer-aided instruction should be required in all classrooms, and a program for hearing-impaired students should be developed, hearing-impaired students will be more competitive in class as a consequence of this study. Furthermore, it was stressed that appropriate applications for students with hearing impairments, artistic richness, paintings and graphics, front-line voice, and games-based software be equipped. This research will help teachers in the area of special education pay heed to what they can do while creating apps [22]. Furthermore, Kot, Sonmez, Yikmis, and Ince [26] discovered that the Touch-Math methodology is useful in teaching addition skills to people who are deaf. A web page for the education of the hearing disabled was created in another report, and it was concluded that hearing-impaired individuals were repeatedly educated at distance education with the aim of achieving permanence [6], and Akdemir [12] completed a Computer Assisted Instruction in Private Instruction a Three Case Studies. The aim of this research is to look at how three people with developmental disabilities, hearing impairments, and orthopaedic impairments utilize computers at a special education and recovery center. As a consequence, it has been decided that in special education and therapy settings, instructors tend to utilize instructional gaming devices in conjunction with instruction and rehearsal software. Individuals of hearing disability master words better using machine aided learning than they do with traditional approaches. The use of graphics in computer-assisted instruction to illustrate unfamiliar terms (object, context, etc.) found during reading-writing instruction for people with hearing loss reduces the amount of time spent on the topic. In addition, Karal, Silbir, Bahcekapili, and Atasoy [23] argue that graphical icons should be used as instructional content in hearing-impaired students' classrooms, and Alternative Communication Systems should be used. Individuals who are deaf or hard of hearing will learn and enjoy visuals. Yaman, Donmez, Avci, and Yurdakul [43] studied the impact of utilizing mobile applications in the literacy training of hearing-impaired students and discovered that integrating mobile applications into the learning environment improved the hearing-impaired students' participation and encouragement. In today's environment, technology provides a plethora of possibilities and conveniences for any human being. Flexibility, cost-cutting, performance, and individuality are also important factors in the contribution of knowledge and communication systems to educational and training processes. In particular, it appears that the main features that hearing impaired people need in the educational process are the planning of individual differences ineducation and the potential to provide a vital opportunity for hearing impaired peoplewhen information and communication technologies are used correctly, which will bethe visuality presented by the right technique. This research was conducted to determinehow information and communication technologies are used in Hearing ImpairedPrimary and Secondary Schools.

In the study, 40 students and 14 teachers from SweekarUpkar Special School for Deaf's primary and secondary schools took part. In terms of the scope and intent of the analysis, it was planned as a review of qualitative testing techniques. Data was compiled using data collection techniques, and data diversification was conducted to improve the validity and

reliability of the data. The data was analyzed using descriptive survey methods. According to study, information and communication technology are the key instructional methods preferred by teachers in the primary and high school teaching process for hearing impaired persons. Teachers have claimed that Information and Communication Technologies (ICT) aided in the delivery of lessons and boosted student engagement. The key issue is that the technological equipment is outdated, and the students regard it as a video game instrument. Students have reported that they did not research using a screen. Teacher interviews were used to develop a program for hearing disabled students as well as provide technical material for the curriculum. The findings would aid in the educated use of information and communication technology in the curriculum of hearing-impaired students. Yildirim and Saban [44] looked at the influence of computer-assisted geometry teaching on students' Van Hiele geometry thought and geometry achievement based on their hearing condition, and found that computer-assisted geometry teaching has a significant impact on students' academic achievement. Furthermore, applicants Teke and Gezgin [39] performed a report on the evaluation of educational software and writing tailored for the usage of hearing-impaired students in their Turkish language education, and discovered that applications in which educational software contributes to the teaching of Turkish, well-designed resources such as visual and film, are beneficial.

3.2 Techniques used to support language and speech skills in hearingimpaired individuals

Learning Environment Design for Improving the Ability of Hearing-Impaired Individuals to Use Additional Abilities in Turkish was conducted in a research conducted in 2009 [22]. In this research, a learning atmosphere facilitated by knowledge and communication technology was created to help hearing-impaired people develop their communication skills. The aim of this study is to see how a computer-assisted content will help learners learn to use literacy adds in addition to literacy skills and to teach the principles of accumulated time. The beneficial impact of visual objects provided by hearing disabled people on their reading abilities have been reported as a consequence of the study. It has been determined that technology-assisted applications will target multiple senses, thus the the focus and performance rate of hearing-impaired persons. In order to transcend sensory deficits, the conditions in which hearing-impaired individuals are taught can be filled with adequate visuals for a more extraordinary degree of growth. Subtitles are used as an alternative to sign language for speech recognition technology, particularly in live broadcasts, for hearing disabled persons. In a video broadcasted live on a web page with the aid of a media server, Koruyan [25] demonstrates how to translate texts and instant texts utilizing a web-based Web Speech API, which is sponsored by Google. The web application is written using JavaScript and PHP programming languages, as well as the jQuery library, and the video feed on the web page is supported with the video feature that the HTML5 language brings. Hearing-impaired individuals interact with one another through sign language. Individuals who do not recognize sign language find it difficult to interact with the deaf. The aim of this study was to use emerging software technologies to solve this issue. Text-to-speech systems and a host of other applications have been combined to provide an automated framework. A mobile

application running on the Android operating system converts users' conversations into texts and sends them instantly to a remote server as part of a system called Writing Tracking of Voice Lessons . Web pages and Android phones with asynchronous data exchange (AJAX) software can track the conversation texts stored in the database on the remote server in real time. An open Web-based course management framework was created as part of the thesis, and all of the courses mentioned can be accessed later [5]. Turgut, Bozanand Turgut [38] Turgut, Bozanand Turgut [38] Turgut, Bozanand Tur The aim of this study was to look at the contact patterns of hearing-impaired people and their regular hearing colleagues on social media. When the social media use, frequency, length, social media channel, use intent, and platform variables used by normal hearing and hearing-impaired individuals involved in the research are combined, it is possible to conclude that social media is an effective connectivity mechanism for students and that it is widely utilized for communicative purposes. In addition, Uysal, Yilmaz, Eken, and Sayar [40] determined the degree of disruption in pronouns (r, s-!, z) isolated on a mobile basis, as well as several listening activities. It's been suggested. The sound will be taken again at the conclusion of the related levels, and the standard will be measured according to the real need, and if it can be restored, it will be elevated to the upper level (from the beginning to the middle level). As a result, it aims to aid the growth of people who have difficulty pronouncing words.

4 Conclusions and Recommendations

The technologies used in hearing impaired education and preparation was investigated in depth in this research, and the results of studies in the language and academic skills areas were explored. The study findings were divided into two categories: academic abilities and language and speaking skills. The results of the study indicate that hearing-impaired people's training technologies have been used to improve the most language skills as well as academic knowledge. There have also been studies on mathematical abilities. The findings revealed that the usage of technology in the schooling of hearing disabled students is still prevalent, as well as the desire to improve student motivation. When technology is used to develop language and speech abilities, it is commonly seen as an alternative to traditional methods of communication improvement. Web-based or smartphone apps created as a substitute for sign language are popular, according to the findings.‘‘Furthermore, the usage of hearing-impaired people to support listening abilities has resulted in the process of translating a dialogue into a statement.” As a consequence, the following proposals for more study and implementation in the direction of the research results are presented:

- For hearing-impaired people, it may be advisable to develop more mobile applicationsin accordance with the Android and IOS operating system.
- Other academic skills besides reading and writing may also be developed.
- It can be suggested that the developed technologies should be done considering thediagnosis level of hearing-impaired individuals.

- Teachers' knowledge and skills about using technology-supported applications forteaching of hearing-impaired students can be increased by organizing in-servicetraining and seminars.

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Disease Prediction Model Using Clustering Classification Techniques for Diabetes Mode in Data Mining: Review Paper

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ABSTRACT:

People are the most composite living beings on this globe. It is difficult to imagine how billions of minuscule parts, everyone with its own personality, cooperate in an arranged way for the benefit of the all-out being. A framework is an association of different organs masterminded together with the goal that they can complete complex capacities for the body. Body capacities are the physiological or mental elements of body frameworks. Endurance is the body's most significant desire and it relies upon the body's looking after homeostasis. Homeostasis is a circumstance of relative consistency of body's inner climate and it relies upon the body's doing numerous activities in an organized way constantly. Its significant activities or capacities are reacting to changes in the body's current circumstance, trading materials between the climate and cells, utilizing food sources, and incorporating the entirety of the body's assorted activities. In the event that there is any change in the homeostasis illnesses set in [1]. A sickness is an unusual circumstance influencing any piece of the body. Infections are generally grouped into transferable and non-transmittable illness.

General Terms—*Medical data mining, clustering, rule based classification using M-tree, K-means, Weka.*

Keywords— *K-means clustering, Categorical data, rule based classification, M-tree, Pima Indian Diabetics.*

I. INTRODUCTION

The information mining functionalities are utilized to determine the sort of examples to be found in the information mining task. The information mining functionalities fundamentally incorporate affiliation rule mining, arrangement, forecast and grouping. Affiliation investigation is utilized for finding fascinating relations between factors with regards to huge information bases, which in given as rules to client. Order predicts the class marks. Expectation is utilized to get to the worth of a property that a given example is probably going to have. Bunching is the way toward gathering the information into classes or groups so that articles inside a group have high closeness in contrast with each other, yet are unlike items in different bunches. Grouping is managed learning calculations in stands out from bunching, which are unaided learning calculation [1]. Arrangement is a regulated model, which maps or orders an information thing into one of a few predefined classes. Information arrangement is a two-venture measure. In the initial step, a model is constructed portraying a foreordained arrangement of information classes or ideas. The most widely recognized grouping information mining procedures are Case-Based Reasoning, M tree, Back spread neural organization, Radial premise neural organization, Bayesian arrangement, Rough set Approach, Fuzzy Set Approaches, and K-closest neighbor classifiers. In this paper a fell K-implies bunching and M tree has been utilized to sort diabetic's patients. Writing review of grouping of diabetic informational collection is advised in segment 2. For culmination M - tree and K-mean bunching have been momentarily clarified in segment 3 and 4. Preprocessing of diabetic informational index and working of fell K-implies bunching and M tree classifier is clarified in area 5, trailed by results and end in segment 6 and 7 individually.

II. MEDICAL DATA MINING

Information Mining for Healthcare Management (DMHM) is a promising field where scientists from both scholarly community and industry have recognized the capability of its contact on improved medical care by designing examples and patterns in a lot of complex information produced by medical services exchanges. Information mining likewise assists with finding appealing business bits of knowledge to help settle on business choices that can influence cost productivity but keep a top notch of care. Medical services the board has gotten thousand arrangement of consideration in current occasions and use of information mining methods to this field is ahead expanding ubiquity [15].

The information rich nature of the medical services area has made it an ideal air, where information on information mining ought to likewise must be expanded further for the expanding need. However, the theoretical idea of implied medical services information has brought about the under-use of a particularly major segment of the overall medical services conveyance system[3]. There are numerous calculations for these issues, however they are not severe and exact. Patient Reported Outcomes (PROs) in clinical examinations have continuously improved in recurrence, for their significance in assessing treatments and maturing treatment plans. Because of the phenomenal development pace of Health Care information, which is being gathered, stacked and put away through the World Wide Web and got to electronically in practically all fields of human undertaking, there is an imperative requirement for modern apparatuses and strategies that can switch amazingly enormous numerous information

III. RELATED WORK ON DIABETIC DATA SET

CLASSIFICATION TECHNIQUES: MACHINE LEARNING TECHNIQUES

Diabetics: -Disease description

Diabetes mellitus diabetes is an infection wherein the body can't deliver or incapable to appropriately utilize and store glucose (a type of sugar). Glucose upholds in the circulation system causing one's blood glucose or "sugar" to ascend excessively high. There are two significant sorts of diabetes. In type 1 diabetes, the body totally quits creating any insulin, a chemical that empowers the body to utilize glucose found in food sources for fuel.

Individuals with type 1 diabetes should take day by day insulin infusions to endure. This type of diabetes typically creates in kids or youthful grown-ups, yet can happen at whatever stage in life.

Diabetes: Type 2 (likewise called grown-up beginning or non-insulin-subordinate) diabetes results when the body doesn't deliver sufficient insulin as well as can't utilize insulin appropriately (insulin obstruction). This type of diabetes normally happens in individuals who are more than 40, overweight, and have a family background of diabetes, albeit today it is progressively happening in more youthful individuals, especially teenagers [2], [3].

World Health Organization (WHO) report had shown a stamped expansion in the quantity of diabetics and this pattern is required to fill in the following years and years. In the International Diabetes Federation Conference 2003 held in Paris, India was named, as "Diabetes Capital of the World," as of around 190 million diabetics around the world, in excess of 33 million are Indians. The overall figure is relied upon to ascend to 330 million, 52 million of them Indians by 2025, generally because of populace development, maturing, urbanization, unfortunate dietary patterns and an inactive way of life. Ineffectively oversaw diabetes can prompt a large group of long haul complexities among these are coronary episodes, strokes, visual impairment, kidney disappointment, vein illness.

IV. LITERATURE REVIEW OF CLASSIFICATION OF DIABETIC DATASET: -

A great deal of examination work has been done on different clinical informational collections including Pima Indian diabetes dataset. Grouping exactness accomplished for Pima Indian diabetes dataset utilizing 22 distinct classifiers is given in [4] and utilizing 43 unique classifiers is given in [5]. The exhibition of proposed fell model utilizing k-means and M tree is contrasted and [4] and [5]. The consequences of [5] and [4] are appeared in Table 1 and Table 2 separately. The precision of the majority of these classifiers is in the scope of 66. 6% to 77.7%. Mixture K-means and M tree [6] accomplished the grouping precision of 92.38% utilizing 10 overlay cross approvals for constant information. Further fell learning framework dependent on Generalized Discriminate investigation (GDA) and Least Square Support Vector Machine (LS_SVM), showed precision of 82.05% for determination of Pima dataset [7]. Further creators have accomplished arrangement precision of 72.88 % utilizing ANN, 78.21% utilizing DT_ANN where M tree C4.5 is utilized to distinguish pertinent highlights and given as contribution to ANN [8], 79.50% utilizing Cascaded GA_CFS_ANN, important component recognized by Genetic calculation with Correlation based element determination is given as contribution to ANN [9], 77.71% utilizing GA improved ANN, 84.10% utilizing GA enhanced ANN with significant highlights distinguished by M tree and 84.71% with GA advanced ANN with applicable highlights distinguished by GA_CFS[10]. Creators have accomplished a precision of 96.68% for diabetic dataset utilizing fell k-means and K-closest neighbor [11].

M-TREE: PROPOSED ALGORITHM

M-tree represents a supervised approach to classification. A M tree is a simple tree structure where non-terminal nodes represent tests on one or more attributes and terminal nodes reflect M outcomes. The basic M-tree induction algorithm was enhanced The WEKA classifier package has its own version of known as J4.8. Information gain and gain ratio measures are used by as splitting criterion respectively. The summary of M tree algorithm is given

i. Choose an attribute that best differentiates the output attribute values.
ii. Create a separate tree branch for each value of the chosen attribute.
iii. Divide the instances into subgroups so as to reflect the attribute values of the chosen node.
iv. For each subgroup, terminatethe attribute selection process if:

(a) The members of a subgroup have the same value for the output attribute, terminate the attribute selection process for the current path and label the branch on the current path with the specified value.

(b) The subgroup contains a single node or no further distinguishing attributes can be determined. As in (a), label the branch with the output value seen by the majority of remaining instances.

© For each subgroup created in (iii) that has not been labeled as terminal, repeat the above process.

K-MEANS CLUSTERING:

K-implies [15] is one of the easiest solo learning calculations and follows dividing strategy for grouping. K-implies calculation takes the information boundary, k as number of groups and segments a dataset of n objects into k bunches, so the subsequent objects of one group are unlike that of other bunch and like objects of a similar bunch. In k-implies calculations starts with arbitrarily chose k items, addressing the k introductory group place or mean. Next each item is doled out to one the group dependent on the closeness of the article with bunch focus. To relegate the item to the nearest focus, a nearness measure specifically Euclidean distance is utilized that evaluates the idea of nearest. After every one of the articles are disseminated to k bunches, the new k group places are found by taking the mean of objects of k bunches separately. The interaction is rehashed till there is no adjustment of k bunch communities. K-implies calculation targets limiting a target work to be specific amount of squared mistake (SSE). SSE is characterized as Where E is amount of the square mistake of items with bunch implies for k group. p is the article have a place with a bunch Ci and mi is the mean of group Ci .The time intricacy of K-implies is O (t*k*n) where t is the quantity of cycles, k is number of bunches and n is the absolute number of records in dataset. K-implies dividing calculation: (Input is k is the quantity of groups, D is input informational collection. Yield is k groups).

i. Randomly pick k items from D as the underlying group places.

ii. Rehash

iii. Dole out each item from D to one of k bunches to which the article is most comparative dependent on the mean worth of the articles in the group.

iv. Update the group implies by taking the mean worth of the items for every one of k bunch.

v. Until no adjustment of group implies/min blunder E is reached.

K-MEANS AND M-TREE: COMPARISION ALGORITHM

Data preprocessing: -

The PIMA diabetic information base comprise of two classes in the informational collection (for example Tried positive, Tested Negative) each having 8 highlights : Number of times pregnant, Plasma glucose fixation a 2 hours in an oral glucose resistance test, Diastolic pulse (mm Hg), Triceps skin overlay thickness (mm), 2-Hour serum insulin (mu U/ml), Body mass file (weight in kg/(stature in m)^2), Diabetes family capacity and Age (years]. The information is profited from UCI Machine Learning the information preparing procedures, when applied before mining, can generously improve the general nature of the examples mined as well as the time needed for the real mining. Information preprocessing is a critical advance in the information disclosure measure, since quality Ms should be founded on quality information. An aggregate of 768 cases are accessible in PIDD. 5 patients had a glucose of 0, 11 patients had a weight record of 0, 28 others had a diastolic pulse of 0, 192 others had skin crease thickness readings of 0, and 140 others had serum insulin levels of 0. In the wake of erasing these cases there were 392 cases with no missing qualities (130 tried positive cases and 262 tried negative) [16].

V. WORKING OF PROPOSED METHOD: -

In the main phase of proposed model, basic K-implies grouping (with k = 2) of Weka apparatus, is applied to 392 diabetics patient's examples as gotten in area 5.1. The wrongly ordered examples are wiped out to get last 299 examples.

As a piece of preprocessing the persistent information is changed over to downright frame by rough width of the ideal stretches, in light of the assessment of clinical specialists as demonstrated in table 3. At long last, in the subsequent stage, the effectively characterized tests from first stage and the downright information is given as contribution to M tree C4.5 (weka J4.8). The information is parceled utilizing (a) 60-40 proportion dividing strategy (preparing test) and (b) 10-overlay cross approval. For fulfillment not many of the exhibition measurements have been talked about. Genuine positive (TP) compares to the quantity of positive models accurately anticipated by the classifier. Bogus negative (FN) compares to the quantity of positive models wrongly anticipated as negative by the classifier. Bogus positive (FP) relates to the quantity of negative models wrongly anticipated as certain by the classifier. Genuine negative (TN) relates to the quantity of negative models effectively anticipated by the classifier. The genuine positive rate (TP rate) or affectability is the negligible portion of positive models anticipated accurately by the model. TP Rate = TP/(TP+FN). The bogus positive rate (FP rate) or Specificity the small part of negative models anticipated as a positive class. FP Rate = FP/(TN + FP). Accuracy is the negligible portion of records that really ends up being positive in the gathering the classifier has pronounced as a positive class. Accuracy = TP/(TP + FP). Review is the small amount of positive models effectively anticipated by the classifier. Review = TP/(TP + FN). F-measure is utilized to inspect the tradeoff among review and exactness. Measure = 2*TP/(2*TP+FP + FN).

VI. RESULT ANALYSIS AND COMPARISON:

Cluster instances	%	accuracy
M-TREE	69.0	8.990
K-MEANS	255	33.2031

Accuracy	k-means	Proposed model
Goodness of fit(%)	67.318	92.032

VII. RESULT ANALYSIS:

The result analysis is based on two parameters on the basis of data set records considered. The comparison analysis on k-means and M-tree algorithm performed as given follows:

1. Accuracy of k-means and M-tree proposed algorithm on disease data set.
2. Goodness fit ratio of prosed algorithm and K-means algorithm result determined.

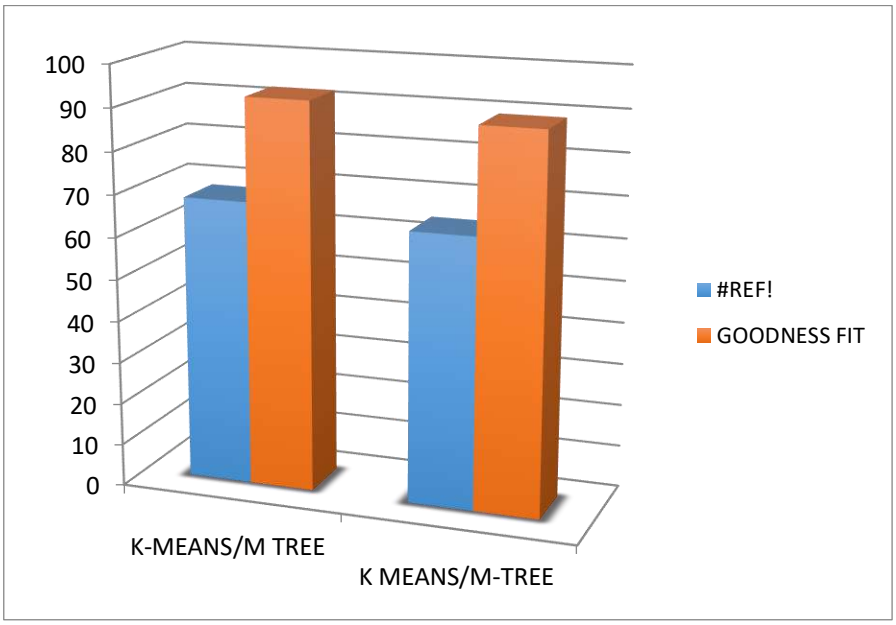

FIG 1.0 RESULT COMPARISION BETWEEN KMEAND AND MTREE ALGORITHM

VIII. CONCLUSION WORK

The exhibition of characterization calculation relies upon the nature of information. The K-implies grouping is utilized to distinguish and dispose of erroneously ordered cases. Further the nonstop information is changed over to clear cut information by counseling clinical master's recommendation. The accurately arranged case by k-implies is utilized as contribution to M tree after transformation of constant information to straight out information. The proposed fell shows improved arrangement of 92.33% for PIMA diabetic dataset utilizing 60-40 % preparing testing parceling technique with preprocessed information. Further outcomes showed that the exhibition of fell model with absolute information created relatively less number of rules which are not difficult to decipher contrasted with rules produced by M tree with natural information. The arrangement correctness's got by the proposed fell K_ implies grouping and M tree classifier is probably the best outcome contrasted and the aftereffects of M tree revealed in the writing. The M-tree calculation proposed model of diabetes is exceptionally precision of positive trial of diabetes patient

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Modelling of Geosynthetic-Reinforced unpaved Roads by Finite Element Method

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ABSTRACT

Geosynthetics are used for mechanical stabilization of soil. Unpaved roads have granular bases. Geosynthetics improve the performance of such roads by reducing permanent vertical deformation such that service life can be extended. Finite Element Method enhances the analysis of unpaved roads with and without Geosynthetics considerably repeated wheel traffic and uneven wheel load.

INTRODUCTION

The main advantage of using geogrid in the flexible pavement is reduced rutting and minimal lateral displacement of granular material. The stiffness is increased and reflection is reduced due to the reflected wheel loads.

Generally, geosynthetics cover geotextiles, geogrids, geo nets, geo strips & geo membranes. Geo synthetics are eminently suitable for the flexible pavement as reinforcement material. Being composed as polymers there are designed to give flexible solution. The additional adhesive sheet resistance results in better load carrying capacity. Moreover, geotextiles react to the applied wheel loads due to increase in elastic module reflective cracking in the pavements can be prevented by geo synthesis. Lateral drainage is also improved [] A pattern of geogrid as shown in fig1.

For the source of analysis, flexible pavement section has 4 types of surface layer is of asphalt concrete. The sub-base layer is of sand. The surface layer is clay. The pavement section is subjected to static loading as per IRC: 37-2010. The thickness of pavement layer is also determined by this. PLAXIS 2D finite element is used for studying the effect of different. Axial stiffness of the geogrid on vertical deformation subgrade is 500mm, sub-base is 300mm, base is 250mm & surface layer is 150mm. geogrid layer is placed at the interface of sub-base & base

course. A 600K P load is applied on single lane bases. A triangular pattern of nodes is selected for analysis. Geogirds of different type was used for studying the stiffness factor.

METHODOLOGY

The steps of finite element are:

a) Selection of suitable field variables and elements.

b) Discretization of continua

c) Selection of interpolation points.

d) Element properties.

e) Assembling element properties to obtain global properties

f) Implementation of boundary condition.

g) Solution of the system to get nodal unknows.

h) Additional calculations to get the required vales.

The basic equation

$$[K]_e\{\delta\}_e = \{F\}_e$$

$[K]_e$ is the element stiffness matrix $\{\delta\}_e$ is the nodal displacement vector, $\{F\}_e$ is the nodal force vector.

The element of stiffness K_{ij} gives course in direction 'I' due to unit displacement in coordinate 'j'. there are four methods to formulate the element properties.

a) Direct approach

b) Variational approach.

c) Weighted residual approach

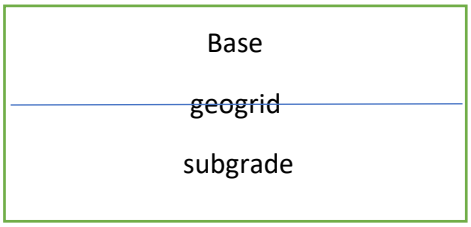
d) Energy balanced approach.

Variational approach is employed to assemble stiffness matrix and nodal force factor for consistent load.

Element properties are used to assemble global properties / structural properties to get system equation. The boundary conditions are imposed. The solution of simultaneous equation gives the nodal unknows. Utilizing the nodal values additional calculations are made to get the required values like stresses, strains and movements.

PRINCIPLES: Shell elements were selected for the base course and subgrade layers .

The reinforcement element are base-subgrade interface can be considered as a truss element having thickness of 0.003meter.



1) The model is constrainedat the bottom . displacement in X direction & rotation in y and z are prevented on 2 vertical faces.

2) To have heavy vehicular traffic, a cyclic load of triangular type with cyclic repetition equal 1000 was applied over a circular area having radius of 0.152m. amplitude 40KN (pavement pressure of 550kpa) frequency =0.5Hz. this amplitude is one half of an axle load from equivalent single axle load.

3) In unpaved structure, relativity large deformation occurs under traffic load due to elastic plastic behaviour of base and subgrade layer. Drucer-prager method gives hyperbolic yield criterion

   Let p be the initial hydro static tensile strength of the material.

   ψ= soil diltary angle, β = slope.

4) For the geogrid, elastic model can be used

   For geographic, y(kpa)=3000

   From the table thickness=0.003, E=400Mpa

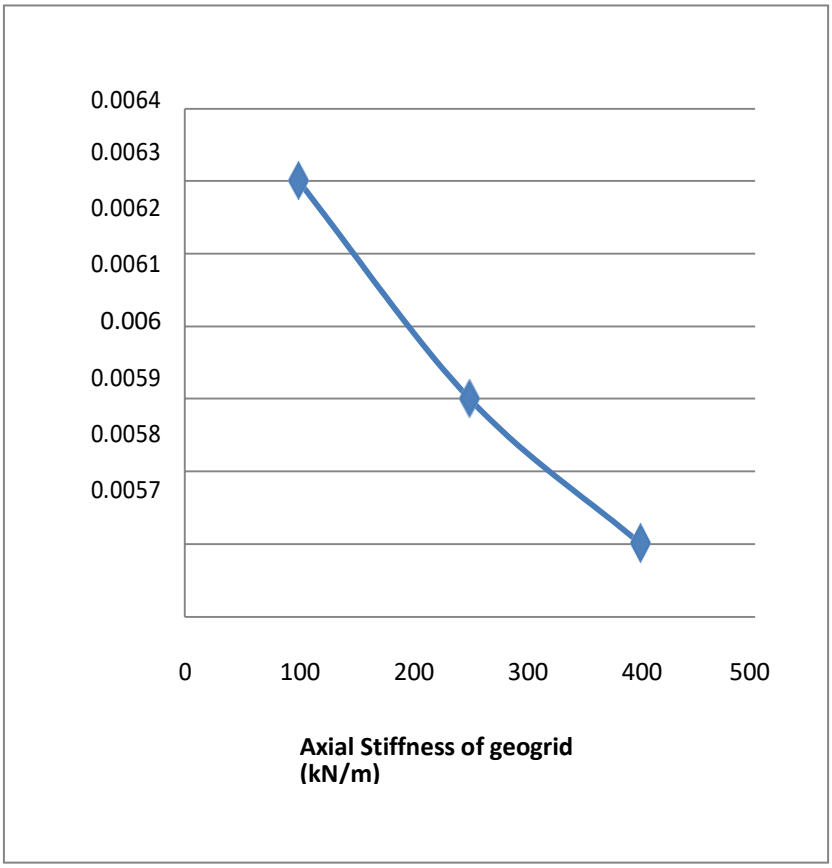
5) Two interfaces are: 1) between ABC & geogrid

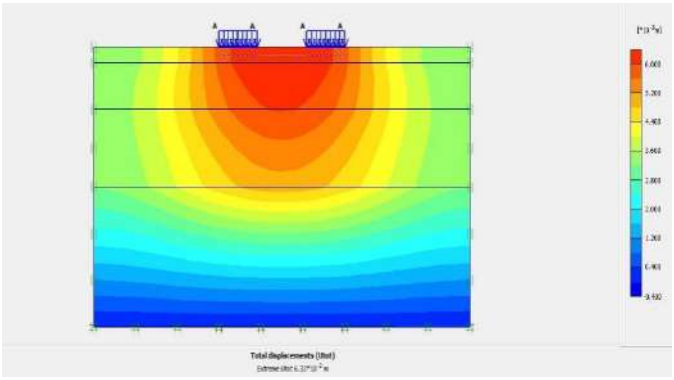
   2) geogrid & subgrade

   One interface is between ABC & subgrade

   Compact surface is quite distributed.

Material	Surface	Base Aggregates)	Subbase	Subgrade
Type of model	Linear Elastic	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb
Thickness (mm)	100	250	300	500
Dry unit weight (kN/m3)	23	22	15	14
Saturated unit weight (kN/m3)	-	24	16	16.2
Cohesion (kN/m2)	-	1	1	1200
Angle of internal friction	-	42	40	5





ASSUMPUTIONS

RESULTS

1) Reduction in vertical deformation is observed in increase in stiffness.
2) Vertical deformation in geogrid reinforcement is less.
3) Stiffness deformation is quite less for higher

Result show that this method is effective.

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A Review of"PERFORMANCE MANAGEMENT IN CONSTRUCTION INDUSTRY"

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Abstract:

Improving construction efficiency by means of Time and Cost effectiveness would surely contribute to cost saving. Projects are organized to accomplish complex tasks that cannot be handled by individuals but by team experts in the construction industry. Project success in Construction Industry depends on how well the team members can work effectively to accomplish objectives within scope, Time, cost and quality constraints. Therefore, this research aims to identify the importance of performance management and its influence on the Infrastructure Projects for managing and integrating organizational and employee performance. In past the contributions of the, researches" shows things were done for an effective performance management system in the construction industry based on the faults in the existing systems adopted globally.

Most of the reviews are based on the question and surveys shows only the Performance in different aspects as present practices takes in to account the performance from the Project Managers to the Site Engineer or even in case of Productivity to know the unit quantity of work and the unit amount of cost required to complete by the unit quantity of work force and some studies are based on the appraisal which does not contribute the reality of the Performance Management.

The performance of a successful project team is measured by these factors; such as technical success according to agreed project objectives; Performance on project schedule; Performance on budget. The main assumption is that by managing the performance of the individual and team, departmental and organizational performance will follow and by improving the individual and team performance levels, organizational performance will also improve.

In India, as per Ministry of Statistics and Programme Implementation, out of a total of 1420 public infrastructure projects which are worth 150 crores and above, more than 25% of the public sector projects have cost overruns and time escalation to the tune of 3.58 lakh crores & with an average time delay of 45.95 months due to bad Performance of the project. Delays and cost overruns have substantial impact from economic as well as political point of view. Due to lack of Performance Management in project implementation, the people and the economy must wait for the provisions of public goods and services longer than is necessary. Thus, Performance Management limit the growth potential of the economy. and reduces competitiveness of the economy. The purpose of the proposed research is to find the Importance of Performance Management and minimize its effect on infrastructure project

INTRODUCTION:

Construction organizations both in developed and developing countries are operating rapidly. A rapidly changing and competitive business environment which impacts on their strategies andPerformance management and measurement (PMM) systems/frameworks. Changing demands and the technologies advances are some of the most important factors in the past has shown that impacted on effectiveness of the PMM within business organizations (Yadav-Sushil and Sagar, 2015). These environmental factors have caused Construction organizations to constantly modify or revise their strategies and PMM Systems to reflect the changing factors (Munir and Baird, 2016; Pekkola et al., 2016). Over the decades, the evolution of the business environment has brought a Project Management revolution (Neely, 1999), which has led to a change. The revolution of the Project Management has moved the Construction Industries to an incremental pace (Deng and Smyth, 2014).

In view of this, contemporary performance measurement and management CPMM is being adapted and implemented by several construction organizations to drive performance improvement (Horta et al., 2012). Over the past few years, many studies were conducted on PMM in construction (Yang et al., 2010) and most of them have focused on the project-level performance (Ali et al., 2013; Jin et al., 2013).

Earlier studies conducted on PMM in construction at organizational level has increased (Yu et al, 2007; Jin et al., 2013). In past few studies have been attempted to develop conceptual studies for the performance evaluation of industry, and there have been few follow-up studies (Yu et al., 2007).

Earlier Studies

Ms.B.Kaviya, Ms.C.Hema published the “Performance Management in Construction”within the International Journal of Innovative Research in Science, Engineering and TechnologyVol. 4, Issue 4, April 2015.

The main objective of the study was to frame the aspects of a project required for the efficient performance in construction industry, which are vital that Project managers and site engineers should be aware of. Which was done via questionnaire survey.The data collected will be used to interpret results and suitable suggestions to improve the performance management.

Explains the need in the present scenario of the construction industry it is vital to measure the performance of the engineers to check whether their work as per the strategies of the Industry. It is not being followed in many companies andexpects a positive financial turn over regardless of the performance of their employees.

The study involves in identifying various aspects of a project for the measurement of performance of the project managers and site engineers.

The study is groundedon performance management and identifying the methods in practice and the different features of a construction project with respect to those methods which are framed out. Then a questionnaire survey is prepared. which can be used to collect data from project managers and site engineers of various companies. A survey is done to know the awareness among the staff and weighted scale type questionnaire is prepared data obtained is analyzed and results are obtained. Based on

the result suitable suggestions are made to enhance the performance of the engineers.

The Authors explains the evaluation, measurement of the Performance Management as below categories.

PERFORMANCE MANAGEMENT:

a. An overview of performance management:
b. Performance Evaluation and Development:
Encourage and improve communication between employee and supervisor.
c. Timing of Performance Evaluations:
The performance evaluations will be conducted:
d. Measurement of Performance Management:
The performance management cycle:
Defining objectives and evaluating achievements
PerformanceMeasurement by using financial measures can only identify the past performance but not what is done to achieve that performance.

PERFORMANCE MEASUREMENT METHODS
a. Balanced scorecard:
b. Performance metrics:
c. Performance Process Framework:
d. The last planner system:

Aki Pekuri, HarriHaapasalo, MailaHerrala has published the "Productivity and Performance Management" in International Journal of Performance Measurement, 2011, Vol. 1, 39-58.
Which deals with Productivity and Performance Management and the Managerial Practices in the Construction Industry The purpose of the study was to clarify the meanings of different terms related to productivity. It aims to form an understanding of prevailing shortcomings. A Macro level analysis study performed, and the results shows that the rate of productivity development in construction industry has been moderate at best, leaving behind the best of its international counterparts.
Author describethe Productivity and Profitability with different characteristics measurements and the Productivity analysis in Construction Industry.

Productivity:

Defines the Productivity a commonly used but a poorly defined term that appears in both academic and practical discussions.
Characteristics of productivity measurement at different levels of analysis,productivity has predominantly focused on labor productivity; and more often, productivity is expressed and measured in monetary units per input (Stainer, 1997).
Productivity analysis of the construction industry EU KLEMS Growth and Productivity Accounts are financed by the European Commission to analyze productivity in the European Union at the industry level. The database is mostly based on data gathered

from national statistical institutes and is processed according to agreed procedures.

The emphasis of productivity management in construction industry should be on identifying and understanding the impact of variation and the relationships between various resource inputs to outputs here where performance measurement comes into question.
Performance Management:

He explains the Performance Management asa broader concept that covers both the economic and operational aspects of an industry. Performance refers to valuewhich includes profitability and productivity as non-cost factors, such as quality, speed, delivery and flexibility.
Performance measurement in the construction industry

Internal benchmarking is the examination of an individual organization's current processes and practices for identifying improvement targets that relate to how the organization does business and how its customers evaluate their services. Performance of the projects is based on the project benchmarking in which the organization is involved; its aims are meeting customer requirements, measuring productivity rates, and validating and maintaining its estimating databases.
External benchmarking deals with the selection and implementation of managerial and technological advances developed by other industries,to generate significant improvement in construction.
The dispute regarding performance indicators.
Key performance indicators: an evaluation.
Finally, the author explains to make an effective use of the results of performance measurement, an organization must be able to make the transition from measurement to management asthe latter which provides the opportunity to enhance and improve activities.

RESEARCH GAP

As many authors have used analysis packages and contributed their work during their research work. Literature survey showed that most of the work is concentrated on study of the need of Performance Management and its measurement at the corporate level for an example Project Managers and its subordinates like Site Engineer or the other studies shows only the part of productivity and Performance Management defining their relationship but no work shows the main contribution of the bottom level that's the work force.
As the work force is the main and large contribution towards project success its not the Project Manager or site staff but the field workers who contributes their performance towards the profit and loss of the project but also towards the organization.
Since the problems are work force performance at the construction site which plays a vital role for the overall project and company's Performance Management, the research study requirement to focus on specific area of Infrastructure Project. Judging from the state of research, there is a need to identify Performance management in infrastructure

project through a Site assessment collecting direct and indirect evidence and recommending proposal for Performance Improvement.

OBJECTIVES OF THE PROPOSED RESEARCH

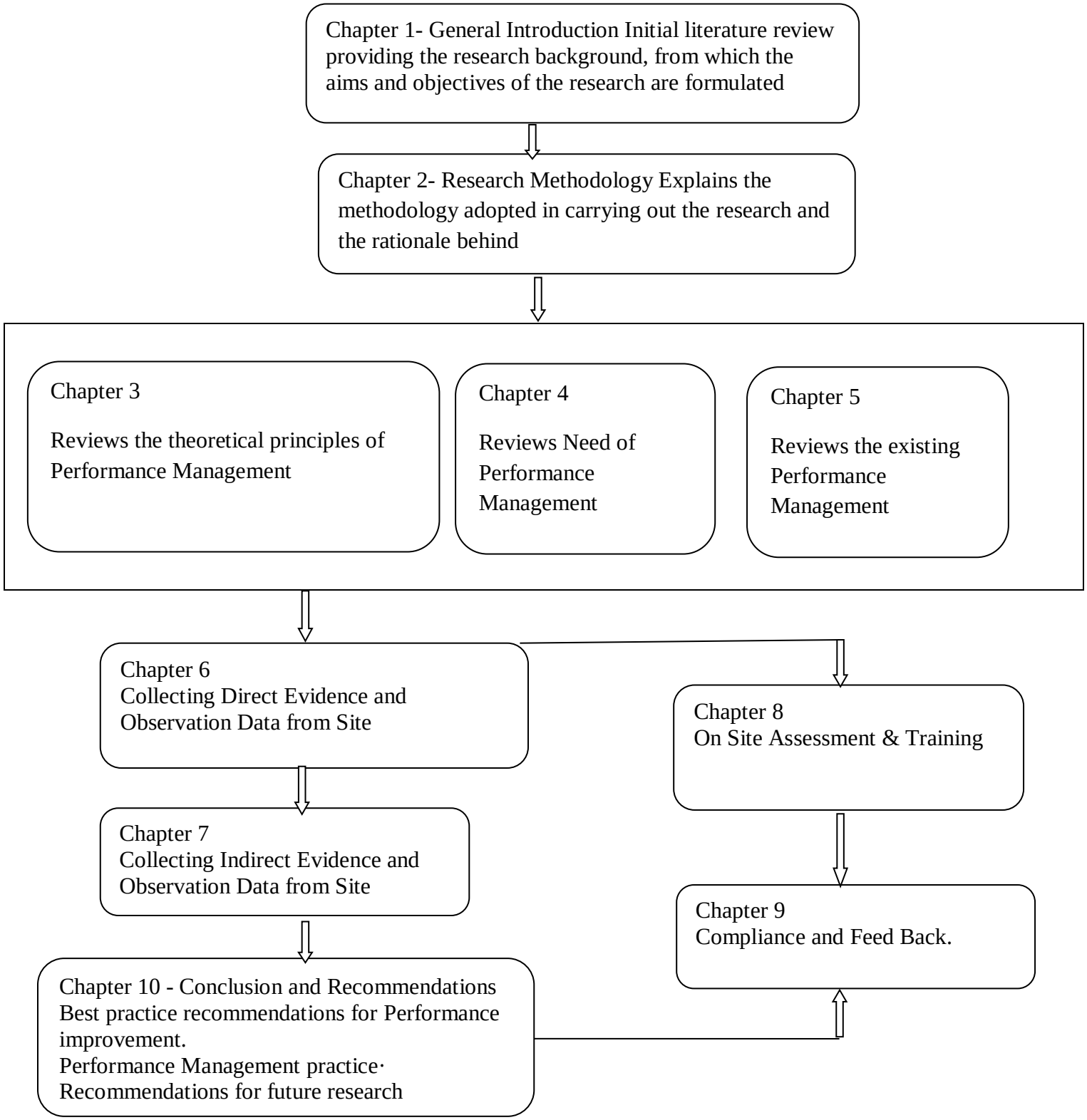
The proposed objectives of the study can be summarized as follows:

- To identify and evaluate the importance and the influence Performance Management in infrastructure project execution.
- To assess and collect the Direct and Indirect evidence and observation of Performance of the workworkforce and there behavioralcarrying out at infrastructure project.
- To investigate how the Performance Management can be improved. Factors effecting Performance on project delivery in infrastructure projects can be studied further by incorporating qualitative factors which can be solved by Risk Identification techniques such as brain storming, Interviews, etc.

PROPOSED RESEARCH FRAMEWORK

The proposed research work shall be divided into ten chapters; introduction and research methodology shall be presented in chapters 1 & 2 respectively. Literature review shall form chapters 3,4 & 5.The analysis of Performance Management and Measurement shall be done and discussed in chapters 6, 7 & 10. On Site Assessment Training (OSAT) and Compliance and Feed Back results shall be dealt in chapters 8 & 9. The following flow chart below depicts the proposed research frame work.

Flowchart showing researchframework methodology



Conclusions:

The Performance Management and measurement in Construction as a vast study conducted on the performance management and the various performance methods being used in the construction industry. Every method has its own Pros and Cons. For an effective performance the organizations should give more importance to the non-financial measures than the financial.

Performance measurementshould be done from multiple perspectives as high productivity is the outcome of many well-executed aspects.

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SIMULTANEOUS ESTIMATION AND VALIDATION OF MICONAZOLE AND MOMETASONE FUROATE IN BULK AND PHARMACEUTICAL DOSAGE FORM BY USING RP-HPLC

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ABSTRACT

The simple, sensitive, rapid, specific, precise, and accurate RP-HPLC method for simultaneous determination of Miconazole and mometasone furoate was developed and validated. Chromatographic separation was achieved on C18 column (250×4.6 mm-5µm p.s) using methanol and water in a ratio (85:15 v/v) as a mobile phase at flow rate of 0.8 ml/min. detection was done by PDA detector at 244 nm. The peaks obtained were sharp with retention time for Miconazole and mometasone furoate as 6.20 min and 9.38 min respectively. The % accuracy results were found to be 99.87 % and 99.71% w/v respectively. The proposed method showed good linearity, accuracy, precision and was successfully applied for determination of the drugs in pharmaceutical dosage forms. The current method was statistically validated according to the ICH guidelines and this method was subsequently developed and applied successfully to determine the levels of Miconazole and mometasone furoate in a combined formulation.

KEYWORD: Miconazole , Mometasone furoate, RP-HPLC, UV-Spectroscopy.

INTRODUCTION

Miconazole is used as an antifungal and enzyme inhibitor drug. Chemically, it is (1-[2-(2,4- dichlorophenyl)-2-[(2,4-dichlorophenyl)methoxy]ethyl]imidazole;nitric acid. [1]

Miconazole is available in the market with the brand names Atmofine, dactarine, Lamisil, micogel etc. Various methods have been reported in the literature for the determination of Miconazole, in particular those using chromatography. The earlier reported study of this drug was mainly performed by RP-HPLC methods on long columns with higher particle size, which were more time consuming.

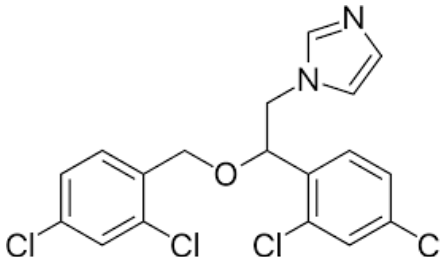

Fig 1: Chemical structure of Miconazole .

Mometasone furoate is a glucocorticoid having anti-inflammatory activity and chemically it is 9,21-Dichloro-11β-hydroxy-16α-methyl-3,20-dioxopregna-1,4-dien-17-yl furan-2-carboxylate and it is also useful treatment of dermatological diseases.[2] Miconazole is a antifungal drug and Mometasone furoate is a glucocorticoid. Both the drugs are marketed as combined dose cream formulation in the ratio of 10:1 of TH: MF. Literature survey reveals that Miconazole can be estimated by spectrophotometrically, by HPTLC and by HPLC individually or with other drugs in bulk drugs and in human plasma[4,5], while Mometasone furoate can be estimated by spectrophotometrically, HPLC and HPTLC in combination with other drugs.[7,8] But, there is no analytical method reported for the simultaneous estimation of TH and MF in a combined dosage formulation. Method validation was done according to ICH Guidelines.[3,6]

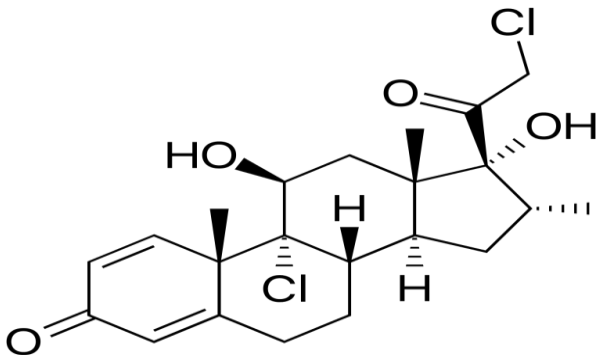

Fig 2: Chemical tructure of Mometasone furoate.

Miconazole is well absorbed orally with a Cmax of approximately 1 mg/L at 2 hours after a single 250 mg oral tablet. Bioavailability is 70% and food delays absorption by about an hour, but does not affect bioavailability. Kinetics are linear between 125-750 mg doses and steady state plasma is reached after 10-14 days in healthy volunteers with 125 or 250 mg daily doses. It is 95% plasma protein bound and tissue concentrations are higher in skin and nails, than in plasma. It is extensively metabolised in the liver, partly first pass, and oxidised by CYP enzymes. There are nearly 15 known inactive metabolites. Although it inhibits CYP2D6, its metabolism by multiple enzyme pathways means few interactions, other than anti-mycotics and important interactions with tricyclic antidepressants.

MATERIAL AND METHOD

Instrumentation

HPLC: Binary Gradient System equipped with HPLC Workstation Software, UV-3000 - M Detector, injection volume: 20µl/min, column: Cosmosil C_{18} (250 × 4.6 mm) 5µm, flow rate: 0.8 ml/min, detection wavelength 244 nm, final optimized chromatographic conditions are (85:15 v/v) as mobile phase**.**

Materials

Standard gift sample of Miconazole and Mometasone furoate was provided by Orichem pharmaceutical PVT. LTD. Mumbai. Methanol and water (HPLC Grade) procured from market.

Preparation of mobile phase

Mobile phase was prepared using methanol & water in ratio 85:15 in volumetric flask.
It was filtered under vaccum filtration.

Preparation of Stock solution

Standard stock solution of 1000µg/ml of Miconazole and 100µg/ml of Mometasone furoate were prepared by dissolving 100 mg of Miconazole and 10 mg of Mometasone furoate in 100ml of mixture of 85:15 v/v of Methanol: Water.

Preparation of Standard solution

From standard stock solution 25ml of the solution is taken and further diluted to 50 ml with methanol to get mixed standard solution containing 500µg/ml of Miconazole and 50µg/ ml of Mometasone furoate.

Selection of analytical wavelength

Accurately weighed quantity of Miconazole and Mometasone furoate 10 mg dissolved in 100 ml volumetric flask and volume was made upto the mark to get 100 µg/ml. Solution was scanned using UV-Visible Spectrophotometer in the spectrum mode between the wavelength 400 nm to 200 nm. The wavelength selected was 244nm.

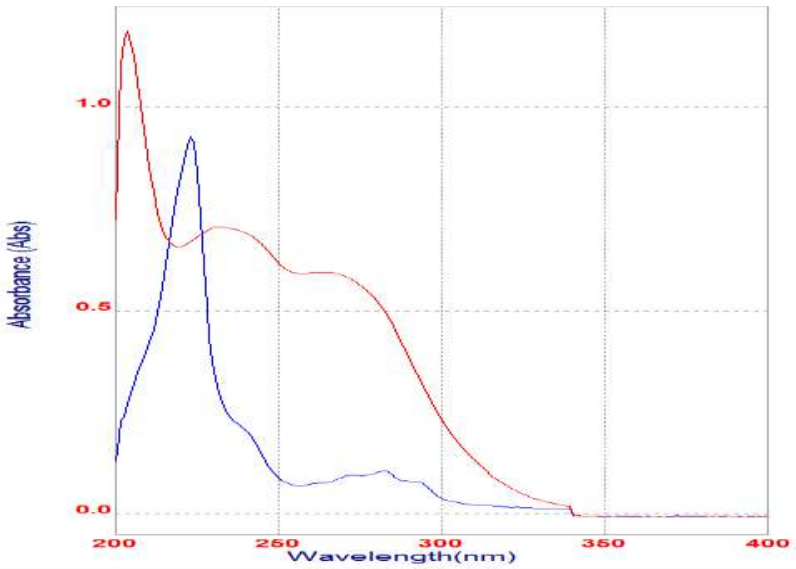

Fig 3: Wavelength of Miconazole and Mometasone furoate.

Optimized chromatographic condition

In the present study the separation of Miconazole and Mometasone furoate was achieved by using column Grace C18, (250×4.6mm,5µ)with mobile phase consisting of mixture of methanol and water in the ratio of 85:15 at a flow rate 0.8 ml/min with uv detection wavelength of 244 nm at ambient temperature. The run time for Miconazole and Mometasone furoate found to be 7.07min.

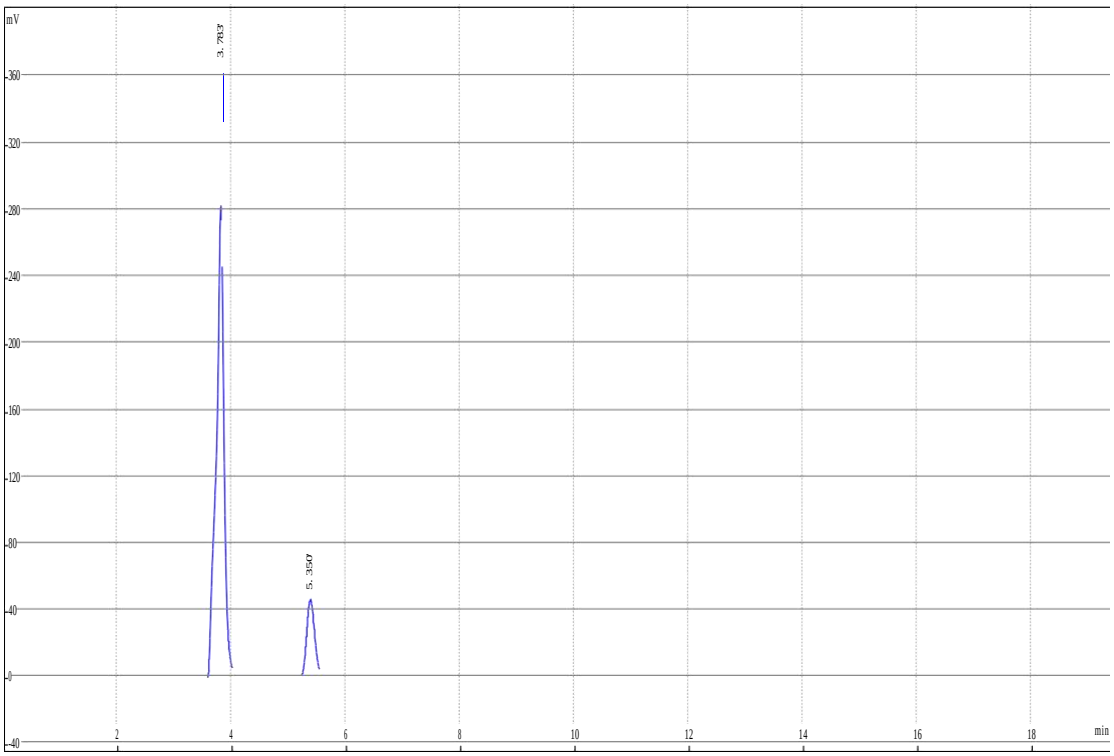

Fig 4: Chromatogram for sample solution.

Table 1.

Name of drug	Time	Area	Resolution	Th. Plate	Asymmetry
Miconazole	3.783	2729490	5.95	7735	1.09
Mometasone furoate	5.350	475751	0.00	6252	1.17

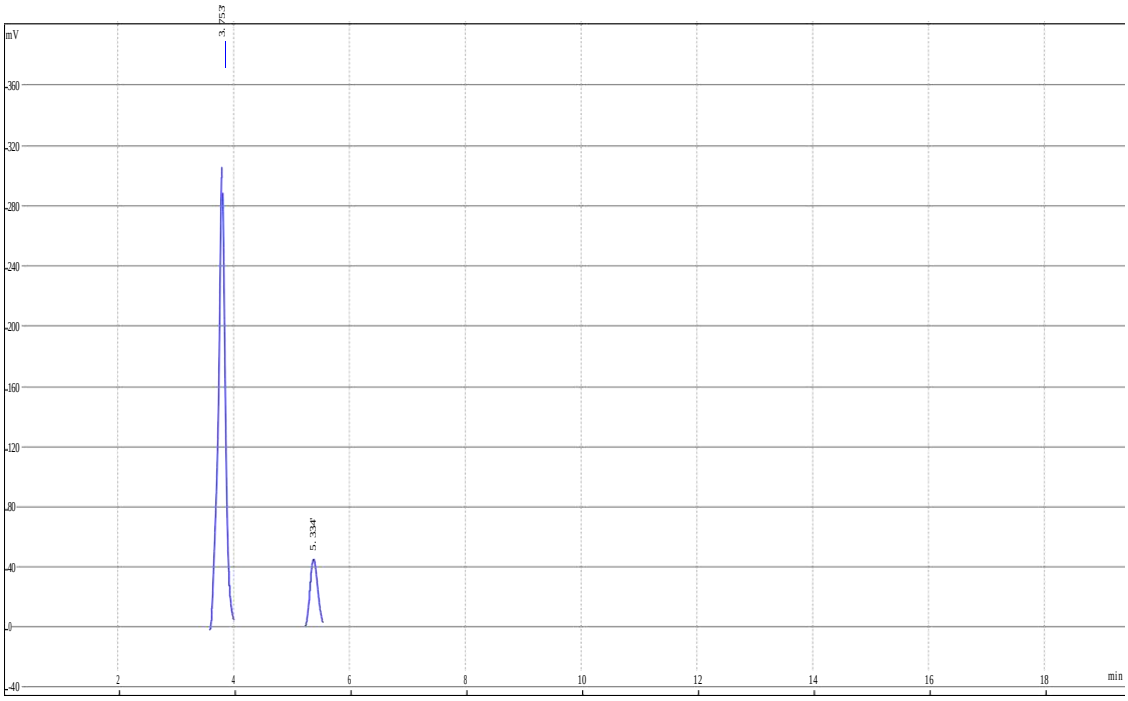

Fig 5: Chromatogram for standard solution.

Table 2.

Name	RT(min)	Area	Resolution	Theoretical plate	Asymmetry factor
Miconazole	3.753	2737281	6.40	7533	1.07
Mometasone furoate	5.334	479149	0.00	6579	1.17

RESULT AND DISCUSSION

Validation of the Developed Method

A. Linearity

The calibration curve of this current proposed method is achieved obtained by analysis of samples with analyte concentrations across the claimed range. Area is plotted graphically as a function of analyte concentration. Percentage curve fittings are calculated.

Table 3: Result of linearity.

Conc. of Miconazole(µg/ml)	Area	Conc.of Mometasone furoate (µg/ml)	Area
10	370179	1	70674
20	907583	2	175279
30	1579009	3	275370
40	2162055	4	380379
50	2737281	5	479149

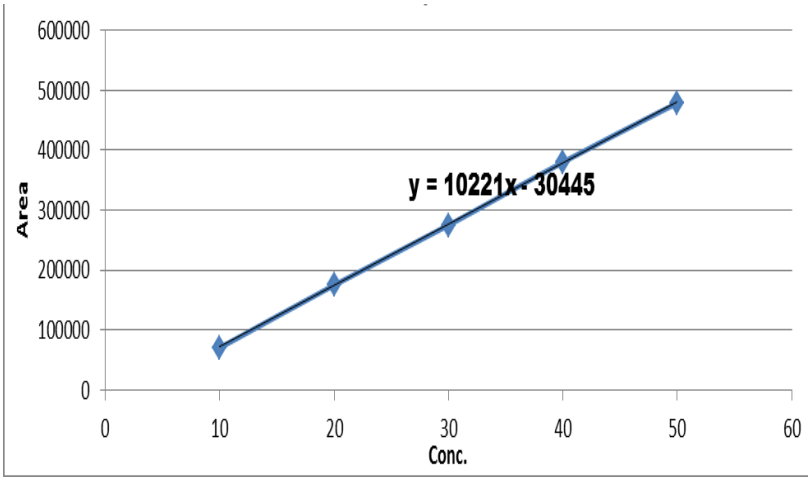

Fig 6: Linearity graph for Miconazole .

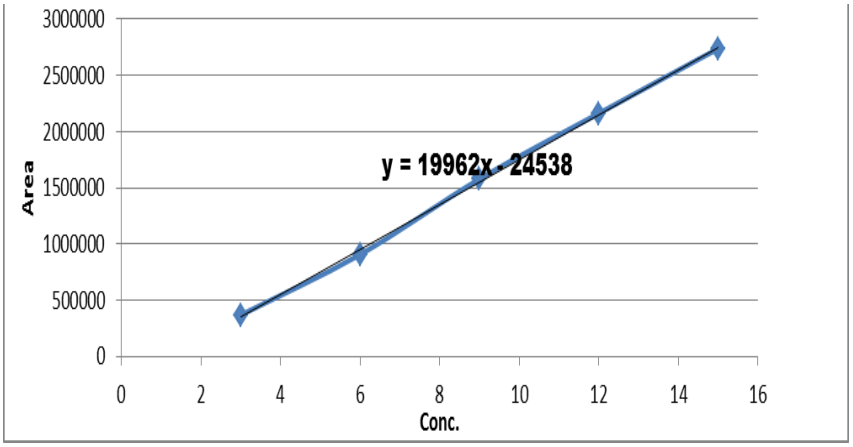

Fig 7: Linearity graph for Mometasone furoate.

B. % Recovery

The accuracy was done by recovery studies and results were mentioned in below table.

Table 4: % Recovery data for Miconazole and Mometasone furoate.

Drug	% Composition	% Recovery	% RSD
Terbinafin HCL	50	99.64705711	0.52
	100	99.87844898	0.15
	150	99.71537449	0.12
Mometasone Furoate	50	99.81951556	0.93
	100	99.56858817	0.30
	150	99.29082603	0.49

C. Robustness

The robustness values were mentioned below table and deliberate changes in sample along with standard solutions were injected under various chromatographic conditions as shown below.

Table 5: Robustness Data.

(At different Flow Rate)

Drug sample	Conc.	Area(m^2)	Mean	SD	% RSD
Miconazole	10	907583	907333	1552.17	0.171069
	20	905671			
	30	908745			
Mometasone Furoate	1	175279	175326	899.421	0.512999
	2	174451			
	3	176248			

Table 6: (At different wavelength).

Drug sample	Area(m^2)	Mean	SD	% SD
Miconazole	907583	909916	2099.31	0.23071441
	911652			
	910514			
Mometasone Furoate	175279	174871	931.254	0.53253881
	173805			
	173528			

E. Detection of limit and Quantitation of Limit:

Limit of detection

LOD was found to be 0.1458 µg/ml for Miconazole and 0.4187 µg/ml for Mometasone furoate.

Limit of quantitation

LOQ was found to be 0.3416 µg/ml for Miconazole and 1.2690 µg/ml for Mometasone furoate.

Table 7: Result of LOD and LOQ.

Drug	LOD (µg/ml)	LOQ (µg/ml)
Miconazole	0.1458	0.3416
Mometasone furoate	0.4187	1.2690

Table 8: Ruggedness data for Miconazole and Mometasone furoate.

Conc.of Miconazole(µg/ml)	Area	Conc. Of Mometasone Furoate (µg/ml)	Area
10	366792	1	71737
20	911652	2	173805
30	1580844	3	276593
40	2159070	4	379242

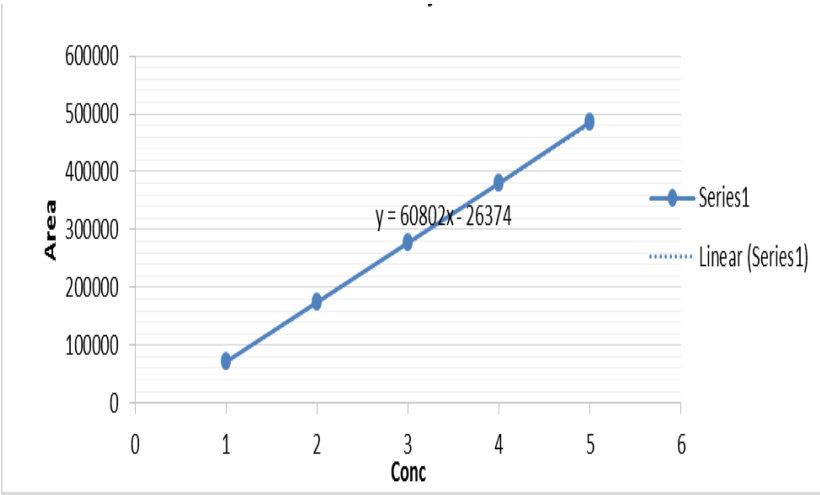

Fig 8: Ruggedness graph for Miconazole .

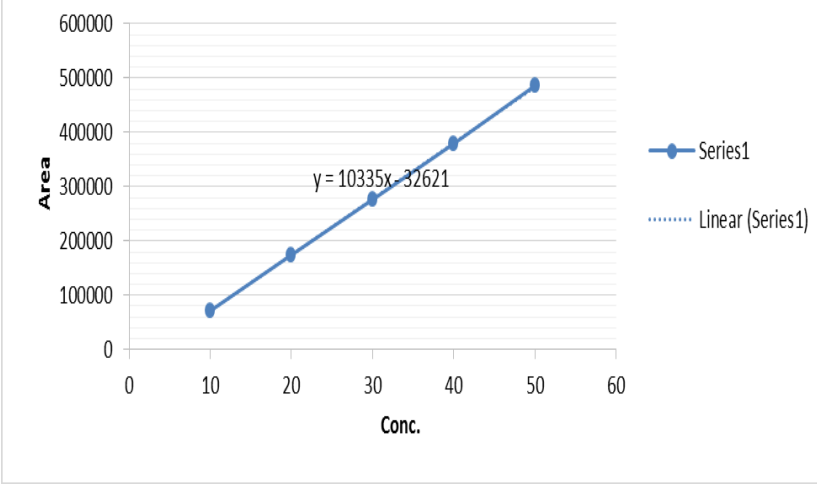

Fig 9: Ruggedness graph for Mometasone Furoate

Table 9: Data for assay of sample of Miconazole and Mometasone furoate.

Drug Name	Area of Std.	Area of Sample	% Assay
Miconazole	1582747	1579009	100.237%
Mometasone Furoate	2737281	2729490	100.557%

CONCLUSION

The proposed simultaneous estimation and validation method was found to be simple, precise, accurate and rapid for the determination of Miconazole and Mometasone furoate. The correlation coefficient values were obtained within acceptable ranges. The % recovery values were obtained in acceptable range. The relative standard deviation of main peak area, tailing factor and therotical plate is well within the acceptable range. Hence the precision of given method is confirmed. Thus from the above result of the individual method it is concluded that the analytical method is validated and found to be satisfactory.

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COMPARATIVE STUDY & STRUCTURAL BEHAVIOUR OF TELECOMMUNICATION MONOPOLE TOWERS WITH AND WITHOUT CAMOUFLAGED UNDER THE INFLUENCE OF WIND LOAD

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Abstract: The purpose of the proposed research is to study the structural behavior of monopole towers with and without camouflaged with different heights of towers 30m and 35m for the basic wind speed of 44.44m/s,39m/s as per latest current code ANSI/TIA 222-H.Most studies and research have shown only structural behavior of monopole towers with other type of lattice towers.Proposed research is very important due to the fact that the structural engineer faces the challenging job of designing and constructing telecommunication towers to support all loads in open weather with high degree of reliability. Free standing lattice towers are generally used in all over the world. As per the recent surveys, mobile towers in the world are likely to grow very fast due to the introduction of 5G technology which requires more antennas on the towers, with existing monopole towers already occupied with lot of antennas with no structural capacity to withstand extra load on towers. New camouflaged designs in monopole are going to study in this research to improve monopole structural capacity and structural behavior to withstand new loads. Environmental and economic pressures have initiated to seek improved design approaches to make communication towers more environmentally acceptable and cost effective. Since monopole structures have smaller dimension and require lesser space for installation, they can be used as a suitable alternate for lattice towers. Some researchers observed in their study that monopole towers have higher lateral displacements and lesser monopole structural capacity than self supporting towers. In this proposed research a new camouflaged technical design is developed to study the structural behavior of monopoletowers. This research shall be helpful for determining lateral displacement(tilt)of monopole, monopole capacity and effect of wind speeds for different heights of monopole towers with and without camouflaged under the influence of wind load.

Keywords:*Staad Pro V8i, monopole tower, antenna loads, basic wind speed, lateral displacement (tilt), monopole capacity, camouflaged cladding.

1. INTRODUCTION

With the sudden and exponential growth in cell phone use, the telecommunication industry and telecommunication towers have received a lot of publicity in recent years. Nowadays, everybody has a cell phone, and the need for telecommunication services has risen. Telecommunication towers are the only way to increase network reach and reliability. The towers that protect the panel antennas, telecommunication devices, platforms, and their foundations are analyzed and designed by civil engineers. Many of the devices, such as mounts, antennas, and other components, are installed on the tower, which necessitates civil engineering experience. Applied loads such as wind load, dead load, and construction strength of structural steel members on superstructure, including ties and base, are used in tower structural estimates. Telecommunication towers are divided into various categories depending on their structural action, cross-section, section types utilized, and tower placement. "Based on their structural action, they are known as Monopole, Self-Support, or Guyed Towers.'' Monopoles are the most cost-effective for heights under 55 meters and are a feasible alternative for room constraints. As a result, monopole towers are in high demand in the telecommunications industry.

Most previous study has focused on structural activity of 3-legged and 4-legged lattice towers, guyed towers, and researchers have not given Monopole towers enough time. Owing to the current

difficulties in locating land for the construction of traditional lattice towers, monopole towers are gaining prominence for connectivity purposes around the globe, and its study is critical in the current scenario. Monopole towers will accommodate both antennas at heights of 30 to 50 meters, extending the structure's reach. Monopole towers are versatile among structures due to their multipurpose use in contact, lighting, and other fields. Structure research can help a structure work better and last longer. A thorough examination of a monopole using modern technologies will result in an improvement in its structural capability.

REVIEW ON PREVIOUS RESEARCH

There is currently a lack of studies available concerningthe monopole structural behavior and capacity to withstand new loads with new camouflaged technology this subject requiresmore in-depth analysis which is to be researched upon.

2. LITERATURE SURVEY

Following are some theories and researches carried out till now:

- Riy Joseph ISSN2395-0095 &jobilvargese 2005 observed in their study that Telecommunication towers are tall structures installed at a specific height usually designed for supporting parabolic antennas. The structure engineer has the difficult task of planning and installing telecommunication towers that can reliably accommodate all loads in open air. Lattice towers that stand alone are often seen all around the world. According to recent surveys, the number of cell towers will possibly exceed 5 lakh by 2020. Land for the construction of these traditional lattice towers is very challenging to come by in densely populated metropolitan areas. The steep rise in land valuation has necessitated the creation of an environmentally friendly alternative to traditional lattice towers. Environmental and economic stresses have prompted researchers to look for new ways to build contact towers that are both environmentally friendly and cost efficient. Monopole systems may be seen as a better alternative to lattice towers since they have reduced dimensions and need fewer room for construction. The study of monopole mobile towers is the focus of the study. ANSYS finite element program is used for the study. The ANSYS model is used to predict monopole behavior when they are used as a coordination tower. The efficiency of the monopole tower is assessed using finite element results.

- M.Pavankumar,P.MarkhandryaRaju,M.Navyal and GT Naidu(2017):The two popular forms of telecommunication towers used in the building industry are monopole and self-supporting towers. For simple wind speeds of 33m/sec, 47m/sec, and 55m/sec, this paper compares Monopole and Self-Support style Towers with different heights of 30m, 40m, and 50m. STAAD(X) Tower program, which is specifically designed for analyzing Telecommunication Towers, is used to accept dead loads and wind loads when examining the antenna. Self-Support Towers have smaller lateral displacements than Monopole Towers of the same height with the same volume of building, according to this report. This is due to their increased stiffness. However, for a given tower height, wind speed, and loading, the steel quantity needed for Self-Support Towers is roughly 2 times that of Monopole Towers. However, due to their rigidity, Self- Support Towers have more load carrying capacity than Monopoles. For towers of height below or equal to 40m, Monopoles might be preferred. But, with the increase in height beyond 50m, Self-Support Towers are recommended. This is because, in case of any unexpected and abnormally high wind speeds during cyclones, the structural rigidity will be intact

3. AIM&OBJECTIVES OF THE PROPOSED RESEARCH

The aim of the proposed research is to review the comparative study & structural behavior of telecommunication monopole towers with and without camouflaged under the influence of wind load.

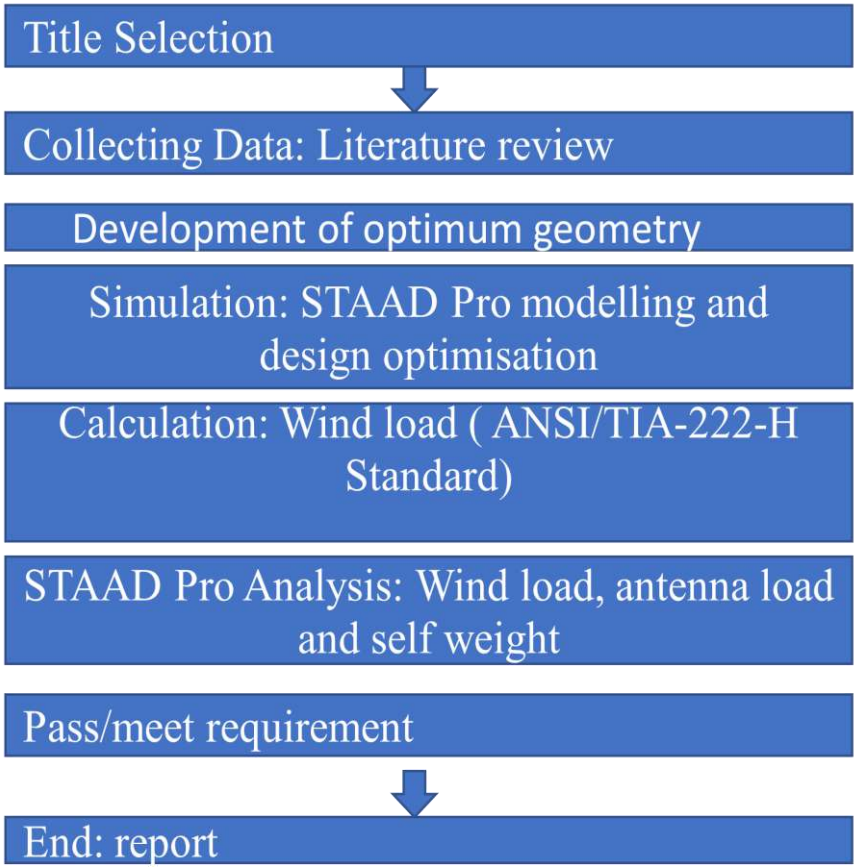
To achieve such aim the followingobjectives have been considered for the research work.

1. The first part studies which includes:
   (a) To designthe sectional properties of monopole for the analysis and design of monopole structure with and without camouflaged.
   (b) Analyze towers using latest code ANSI/TIA-222-H for structural standards and for the analysis and design of telecommunication monopole structure with and without camouflaged.
   (c) Design of camouflaged portion.

2. The second part studies are the analysis and design of camouflaged monopole structure which includes:
   (a) To develop a finite element model for the analysis of monopole structure with and without camouflaged using staad pro v8i structural analysis software.
   (b) Analysis and design of monopole are going to performed for two different heights with two different wind speeds and compared.
   (c) The problem is assumed to be a linear-static problem and analysis are going to performed for basic wind speeds of 44.44m/sec, 39m/sec and heights of 30m and 35m

3. The third part provides to validate the results by a suitable software simulation/statistical package.

4.RESEARCH METHODOLOGY



5. RESEARCH DESIGN

Step 1:to conduct literature review on structural behavior of monopole with and without camouflaged after referring many journals and internet references.

Step 2:to investigate the structural behavior of telecommunication monopole towers that have been camouflaged and those that have not. STAAD PRO V8I structural analysis software was used to create 3D computer models for each structure, and these models were used to analyze towers under wind loads.

Step 3: Following the preparation of two versions, wind analysis will be carried out using the most recent code for antenna towers, ANSI/TIA-222-H Structural Standard for Antenna Supporting Structures and Antennas, which is highly respected and widely utilized by both local and international tower designers for their designs and structural parameters.

- Basic wind speed = 160 Km/hr. (3sec-Gust).
- Limiting Monopole deflection to 1.0 degree under operational wind speed = 120 Km/hr.(3sec-Gust).
- Exposure category: C.
- Structural class: II.
- Topographic Category: I.

Load Combination

- According to ANSI/TIA-222-H, Minimum design load combinations for structures
- 1.2 D.L + 1.26 W.L (for section design)
- 1.0 D.L + 1.0 W.L (for serviceability)

Wind loads

Wind load on the camouflaged monopole structure concealing the following Loads

- Loads:
- 6 Nos. of Octaband antenna (2.769 x 0.369 x) at Top.
- 3 Nos. 5G Antenna (0.860 x 0.395x 0.190) at Top.
- 24 Nos. RRUs as mentioned in STA.
- 2 Nos. of 0.60 Dia MW antenna at Top.

was used for the structural analysis and design of towers under wind loadings. And design of steel member as per LRFD.

Step 4: comparative study is evaluated after analyzing two models with and without camouflaged to investigate the lateral displacement (tilt of monopole) and monopole structural capacityfinally, the results of analysis under wind loads were compared.

6. IMPORTANCE OF THE PROPOSED RESEARCH

The proposed study is critical since structural engineers face the difficult task of building and building telecommunication towers that can accommodate all loads under all environmental conditions with a high degree of durability. Lattice towers that stand alone are often seen all around the world. According to recent surveys, the world's mobile towers are expected to grow very quickly as a result of the introduction of 5G technology, which necessitates more antennas on the towers, with existing monopole towers already occupied with a large number of antennas and no structural capacity to withstand additional load on towers.‘‘New camouflaged designs in monopole are going to study in this research to improve monopole structural capacity and structural behavior to withstand new loads.”Environmental and economic stresses have prompted researchers to look for new ways to build contact towers that are both environmentally friendly and cost efficient. Since monopole frameworks are smaller and take up fewer room to erect, they can be seen as a viable alternative to latticetowers.

7.CONCLUSIONS

- Steel monopole systems are found in a variety of applications. This have a narrower plan dimension and are made up of a limited number of elements. In terms of property costs, they are more cost-effective. STAAD PROV8I was used to model the structure. The ANSI TIA/EIA 222-H code was used to calculate the load. Displacements and pressures may be investigated. Variation of findings with changes in model and the addition of camouflaged would be investigated. For the analysis, two different-height towers were used.
- Analysis and design of new monopole with camouflaged is a challenge.

8.ACKNOWLEDGMENT

The authors wish to acknowledge the consulting & design engineering consultancy and my external and internal research guides for providing data which is used in this research. Also, anonymous review of this paper is gratefully thanked.

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A Comparative Study On Academic Achievement of Normal Children and Hearing-Impaired Children in Inclusive Education at Primary Level

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ABSTRACT

The aim of this research was to compare the academic performance of hearing impaired and non-hearing impaired students in inclusive primary schools. A total of 60 students were chosen for this analysis using a purposive sampling technique. The research centers on the academic needs of hearing-impaired students. To integrate them into society, they must be mindful of their special needs. The study's findings showed that hearing disabled students' academic performance would be poor owing to a language barrier and other factors. They will still perform well in academia if the void is filled by qualified and experienced teachers and by following methodologies and pedagogical methods relevant to educating the hearing disabled.

Keywords: Academic achievement, Hearing impaired students, normal students, language development

Introduction

Education is the method of transforming a person into a responsible, purposeful, imaginative, artistic, and useful individual. It seeks to maximize an individual's inherent potentials so that he may be beneficial to himself and the community in which he finds himself. Special schools operate alongside standard schools for students who have one or more challenges or impairments (special needs learners).

Inclusive curriculum has been described in a variety of forms to meet the learning needs of children who are differently abled. Inclusion is an attempt to ensure that diverse learners – people with disabilities, those that speak various languages and cultures, those who come from varying backgrounds and families, and those that have varied preferences and learning styles – are included. Inclusive curriculum refers to the inclusion of all children in formal education, regardless of their abilities and shortcomings. It is evident that India's education

strategy has shifted to a greater emphasis on children and adults with special needs, with comprehensive education in standard schools being a key policy goal.

Richardson and colleagues (2000)warned that their findings would not extend to deaf students in various school environments, and literature shows that the same students (whether deaf or hearing) may have different attitudes to learning in different contexts.

Inclusive curriculum is a method of improving the educational system's ability to reach out to all students. The goals for "Education for All'' were set at the Jometin World Conference in Thailand in 1990, and it was declared that every individual (child, adolescent, and adult) should be able to profit from educational opportunities that meet their specific learning needs. Inclusion is a theory and instructional methodology that gives all students more opportunity for academic and social success. This covers a wide variety of educational, recreational, arts, athletics, music, day care and afterschool care, extracurricular, faith-based, and other programs. Particularly when these children face challenges in the classroom when it comes to learning and engagement. When general education classes become increasingly complex, teachers recognize the importance of accepting each pupil as an individual. Teachers customize activities to involve all students in meaningful multicultural initiatives, even though their particular priorities are different. We've discovered that providing an inclusive curriculum is a better way to ensure that all students excel. According to studies, as pupils are introduced to the breadth of the general education program, they understand and do well. Children perform well academically in inclusive environments, according to an increasing body of study, and inclusion offers resources for children to build relationships. Friendships, coping abilities, personal values, trust level for individuals with special needs, and nurturing classroom experiences are only a few of the advantages. Friendships have the primary purpose of making people feel cared about, valued, and safe. Low-achieving pupils may get additional assistance in an inclusive school environment even though they do not apply for special education. In inclusive classes, classmates with students with disabilities also improve in social cognition and become more mindful of the needs of others. To address the needs of students with special educational needs, a community-based service staff can build plans for the whole school. This group can also serve as a forum for teachers who are having difficulties with their classrooms. The school is in charge of assisting adolescents in learning with their usually emerging peers. An inclusive school must be prepared to adapt its educational processes, systems, and methodologies to address the needs of all students,

particularly those who experience the greatest challenges in fulfilling their right to education. In comparison to their listening counterparts, Powers (2007) reflects on the various causes of deficits in academic performance of hearing-impaired students. Reading is one of the most influenced scholarly practices, according to his findings. **Mitchell (2008)** named their paper Academic success among deaf students. According to the findings, there is a significant difference between deaf students and their non-disabled peers. This discrepancy means that further instruction is needed to comprehend the program.

Review of Literature

The academic achievement of students is at the heart of the educational system. Any institution's performance or loss is determined by the academic excellence of its students as calculated by their exam results. Many studies indicate that hearing-impaired students' academic performance suffers as a result of their verbal skills gap **(Lang, 2003).** However, the majority of deaf students have natural intellectual ability and do well in nonverbal tests. Hearing deficiency is not a limiting factor in assessing their skills. The majority of studies have shown that students with hearing impairments have natural reasoning abilities, and it has been consistently shown that their nonverbal intelligence test scores are almost identical. **Norris et al., 1997.** Despite having a typical quotient, students with severe hearing loss fall behind hearing deficient pupils by around three years on math performance tests **(Traxler, 2000).**

Powers (2007) focuses on the various causes of hearing-impaired children's learning performance deficits in comparison to their hearing peers. His findings indicate that reading is one of the most effected learning tasks, as hearing-impaired students achieve just a third of their hearing peers' reading progress. The other learning field where hearing deficiency has an effect is mathematics.

Mitchell (2008) Academic success of deaf students, they wrote in their article. According to the findings, there is a significant difference between deaf students and their non-disabled peers. This discrepancy means that further instruction is needed to comprehend the program.

Majid and Rehman (2015) The research included 52 primary school pupils, their parents, and teachers in their paper titled the impact of early detection of hearing loss on school

success of children. The findings show that when students who have been deaf since infancy are diagnosed early and provided appropriate guidance, they will do well.

Mwanyuma (2016) Many more factors that influence the academic achievement of hearing-impaired students are discussed in their paper titled factors influencing the academic achievement of deaf learners in Kilifi Country, Kenya: A Case of Sahajanand School for Deaf.

Naz (2017) Academic performance by hearing disabled, physically challenged, and orthopedically affected upper senior secondary school students, they wrote in their study. Children with early signs of speech–language pathologies are more likely to struggle academically in their youth (Lewis et al., 2015; Watson et al., 2003; Young et al., 2002). Despite the fact that many states strive to make critical language screening and early intervention available to all children in the first two years of childhood, many children are only recognized after they reach an early education environment or kindergarten. Reading, comprehension, and conversation stages in grade two, puberty, and adulthood are also closely linked to impairments in early spoken language abilities **(Johnson, Beitchman, &Brownlie, 2010; Lewis et al., 2015**; Snow, **2016; Tomblin, Zhang, Buckwalter, & Catts, 2000).** Fundamental language skills, in particular, are needed for the effective growth of reading and comprehension skills early in life. Foster and Miller (2007) discovered that children who did not know phonics when they started school did not completely learn this skill until third grade, while their peers who knew phonics when they started school had already begun language decoding and comprehension. The failure to keep up with the primary school reading program maintains an initial disparity in skills, such as in early speech and vocabulary **(Justice, Invernizzi, & Meier, 2002).** A particular preschool age is extremely predictive of later results in a broad variety of academic fields such as comprehension, algebra, and multiple developmental difficulties and loss of basic skills, in addition to general literacy deficits (e.g. phonological awareness, alphabet knowledge, letter sound knowledge, etc.)

Rose and Cole (2002) Inclusive Education in the United States: Beliefs and Practices Among Middle School Principals and Teachers is the topic of my study. The countrywide research looked at school policy issues that included inclusive curriculum. Principal respondents expressed a strong degree of input as it came to preparing for children with disabilities who were serving in general classrooms.

Cole (2002)A Comparison of Teachers Attitudes Towards their Included Students with Mild and Severe Disabilities, according to the report.

Smith (2004) conducted a study on Teachers' Preparation for Inclusive Education. The training of teachers for the implementation of the new policies received a lot of attention in this study.

Methodology

The participants in this research were 30 children with hearing disability who were enrolled in comprehensive schooling in primary schools. The descriptive procedure is used to pick the samples for the analysis. The sample's primary purpose is to encourage researchers to perform studies on individuals chosen from the community so that the findings can be used to draw conclusions that extend to the whole population. This study employs the technique of purposive sampling.

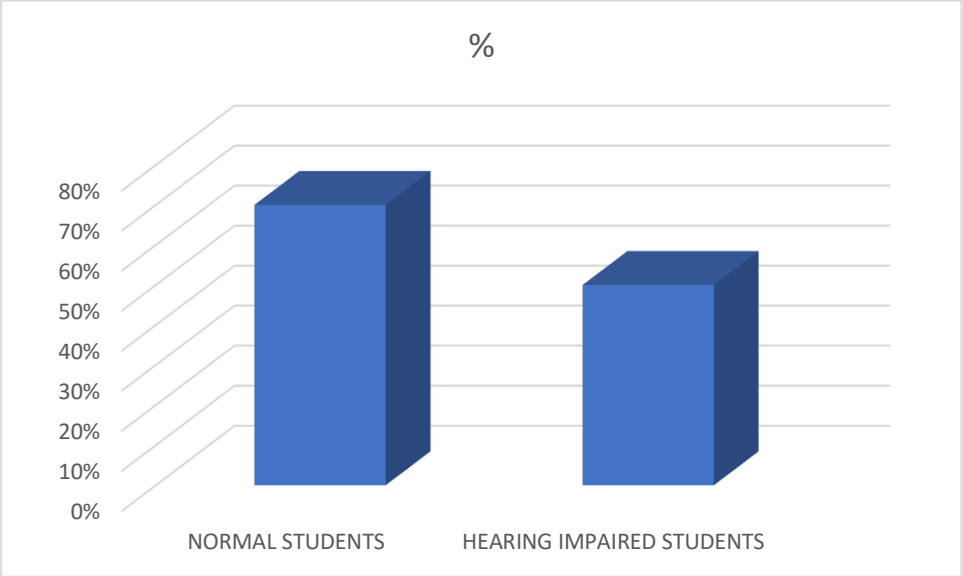
Research tools.

General Achievement Test in the Classroom Students with hearing impairments were offered Formative and Summative Assessments as well as General Classroom Achievement tests. Thirty students with hearing disorder and thirty students with natural hearing took part in the test. The English achievement test, the mathematics achievement test, and the environmental sciences achievement test are the three parts of this examination. The evaluation included both question and objective types. Each paper had a score of 50 points.

Results and Discussion

Academic performance was shown to be poor in 30 Hearing Impaired students. The poor academic performance of these HI children may be attributed to a number of factors. Over the past two years, innovative methodologies and pedagogical methods have been implemented, as well as the appointment of qualified and professional instructors. ‘‘For example, teaching simple academic vocabulary, adjusting material to their needs, simplifying the language, explaining new phrases, utilizing more visual aids, and smart board teaching with video lessons for easy intellectual comprehension.” The academic output of 30 students with hearing disability who are enrolled in regular schools improved by 20 to 30% after

introducing both of these strategies. It is possible that if the HI children's self-confidence and willpower are intertwined in them, they would also demonstrate academic excellence. Participation of co-curricular programs has been shown to be beneficial to overall personality growth. To raise academic achievement rates, parents, instructors, and institutional heads must use appropriate techniques.



The graph represents that the comparative study between the academic performance of students with hearing impairment and the normal hearing students.

Significance

There have been relatively few reports on the academic performance of students with hearing disability. They, like us, are pillars of our community, but we must concentrate on improving their academic performance so that they may contribute their utmost to society. Through the aid of this report, the researcher hopes to demonstrate that by improving special educator competencies and modifying content through various methodologies and pedagogical methods, hearing disabled students can attain academic success.

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METHOD DEVELOPMENT AND VALIDATION FOR ESTIMATION OF BRINZOLAMIDE HYDROCHLORIDE AND BROMINIDINE TARTRATE IN EYE DROPS BY RP-HPLC

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ABSTRACT

Objective: An accurate and precise HPLC method was developed for the determination of Brinzolamide HCl and Brominidine Tartrate in ophthalmic solution. **Method:** Separation of the drug was achieved on a INERTSIL ODS 3V 150x4.5 column using a mobile phase consisting of buffer and methanol in the ratio of 50:50v/v adjusted pH of 7.5. The flow rate was 1.0 mL/min and the detection wavelength was 276 nm. **Results and conclusion:** The linearity was observed in the range of 20-100 ppm for Brinzolamide and 5- ppm for Brominidine with a correlation coefficient of 1.0 and 1.0 respectively. The proposed method was validated for its linearity, accuracy, precision and robustness. This method can be employed for routine quality control analysis of Brinzolamide and Brominidine in Ophthalmic solution.

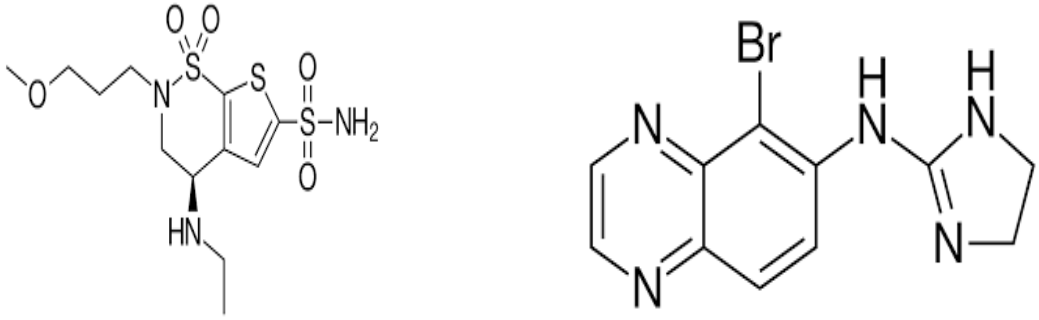
KEYWORDS: Brinzolamide HCl and Brominidine Tartrate, HPLC, Validation, Retention time.

INTRODUCTION

Brinzolamide (hydrochloride) (4R)-4-(ethylamino)-2-(3-methoxypropyl)-1,1-dioxo-3,4-dihydrothieno[3,2-e]thiazine-6 sulfonamide, , a potent and selective inhibitor of human carbonic anhydrase, is topically used for reduction of elevated intraocular pressure.[1,2] Brominidine (Tartrate), 5-bromo-N-(4,5-dihydro-1H-imidazol-2-yl)quinoxalin-6-amine;2,3-dihydroxybutanedioic

acid is a nonspecific b-adrenergic blocker. It was the first b-blocker used as an antiglaucoma agent, and since then none of the newer b-blockers have been found to be more

effective than Brominidine (Tartrate). The two drugs are often combined in eye drops for the therapy of glaucoma.



A **B**

Figure: 1.0: Chemical structures of A) Brinzolamide hydrochloride B) Brominidine

Literature methods for the determination of Brinzolamide hydrochloride are mainly based individually on HPLC with UV detection under atmospheric pressure, chemical ionization tandem mass spectrometry in human serum and urine[3–5] and capillary electrophoresis.[6] There are several reports on the determination of Brominidine Tartrate, individually or in combination with pilocarpine, including GLC[7] and HPLC of plasma samples,[8,9] HPTLC[10] and, with Brinzolamide hydrochloride, spectrophotometry.[11–15] More recently, dorzolamide hydrochloride has been marketed in combination with Brominidine Tartrate in eye drops. Brinzolamide hydrochloride is not yet official in any pharmacopoeia. To the best of our knowledge, no HPLC method has been described for the simultaneous determination of both drugs in eye drops. The aim of this work was to develop a rapid, sensitive and specific method for this purpose using HPLC, with simultaneous detection by a diode array detector. This method should be transferrable to quality control laboratories for the determination of both drugs in the presence of each other. The proposed method should require no separation of Brinzolamide hydrochloride and Brominidine Tartrate before analysis.

MATERIALS AND METHODS

Brinzolamide hydrochloride and Brominidine (Figure-1) were obtained as gift sample from MICRO LABS, Bangalore. High purity methanol, water (Milli - Q system, Millipore, Bedford, MA, USA), All chemicals were high purity grade.

Conditions of chromatography

Separation and estimation was performed using HPLC with PDA detector), Inertsil ODS-3V (150mm x 4.6 mm, 5µm) column used in the experiment. The mobile phase was prepared by

mixing of Phosphate buffer and Methanol in the ratio 50:50 (pH is adjusted after the mixing of mobile phase upto 7.5 with diluted OPA) and it was filtered and degassed and detection was at 276 nm. The retention times of Brinzolamide and Brominidine were 2.91 min and 4.19 min with the total run time of 10 min.

Preparation of diluent

Prepare required volume of water and methanol in the ratio of 70:30 mix well and sonicated for 30mins for degassing.

Preparation of standard stock solution

Brinzolamide standard stock

Weigh accurately 28.0 mg of Brinzolamide HCl working standard into a 25 ml volumetric flask, dissolve in 10 mL of diluent with the help of sonication after complete dissolving make upto the volume with diluent and mix well.

Brominidine Tartrate standard stock

Weigh accurately 34.0 mg of Brominidine Tartrate working standard into 100 ml of volumetric flask, dissolve with 30 ml of diluent, sonicate and dilute to volume with diluent and mix well.

Standard preparation

Pipette out 4 ml from each standard stock solution into 20 ml clean, dry volumetric flask and make up to the volume with diluent and mix well.

Sample preparation

Weigh accurately 1.0 gm of sample solution i.e equivalent to 20 mg of Brinzolamide and 5 mg of Brominidine from pooled sample solution of 2 to 3 vials into a 100 ml clean, dry volumetric flask and dilute the sample with 30 ml of diluent vortex for few minutes after obtaining clear solution make upto the volume with diluent and mix well.

Method validation

Validation of the method

After the development of RP-HPLC method for the estimation of drug in a dosage form, validation of the method was performed. This section describes the procedure followed for validation of the developed method.

System suitability

System-suitability tests are an integral part of method development and are used to ensure adequate performance of the chromatographic system. Retention time (tR), number of theoretical plates (N) and tailing factor (T) were evaluated for six replicate injections of the drug at a concentration of 60µg/ml, 15µg/ml.

Linearity

Prepare a series of standard solutions (not less than 5 is recommended) in the range of 20µg/ ml-100 µg/ml of Brinzolamide standard and 5µg/ml-25µg/ml of Brominidine standard injected. A plot of average peak area versus the concentration in µg/ml or mg/ml is made and from this the correlation coefficient, y-intercept (const. of regression) and slope (coefficient of regression) of the regression line were calculated.

Precision

The precision of the test procedure was evaluated for Brinzolamide and Brominidine by injecting the six standard solutions. The Relative Standard Deviation of six injections were calculated. The result of Precision studies is given in Table.1.

Specificity

Specificity is the ability of a method to discriminate between the analyte(s) of interest and other components that are present in the sample. A study of placebo interference from excipients was conducted. Equivalent weight of placebo taken as per the test method and placebo interference was conducted in duplicate.

Accuracy

To validate the test method can accurately quantify Brinzolamide and Brominidine, prepare samples in three times for higher and lower levels, in triplicate for other levels by spiking Brinzolamide and Brominidine active material with equivalent amount of placebo and perform CU as per test procedure. Prepare samples at levels 50%, 100% and 150% of the target assay concentration i.e. 50% of the lowest strength initial concentration to 150% of the highest strength initial concentration level. Table-1.0 shows the results for accuracy of Brinzolamide and Brominidine.

Robustness

Robustness of the method is performed by altering the chromatographic conditions such as pH of the buffer, Wavelength, Mobile phase composition and observed the variation of the results which should be within the acceptance criteria.

Limit of detection (LOD)

The detection limit of an individual analytical procedure is the lowest amount of analyte in a sample which can be detected but not necessarily quantitated as an exact value.

1. Based on Signal-to-Noise for LOD (3:1), LOQ (10:1)
2. Based on the Standard Deviation of the Response and the Slope

Limit of quantitation (LOQ)

The quantitation limit of an individual analytical procedure is the lowest amount of analyte in a sample which can be quantitatively determined with suitable precision and accuracy. From the linearity data calculate the limit of detection and quantitation, using the following formula.

$$\text{LOD} = \frac{3.3\,\sigma}{S},\ \text{LOQ} = \frac{10\,\sigma}{S}$$

σ = standard deviation of the response

S = slope of the calibration curve of the analyte.

LOD and LOQ of Brinzolamide and Brominidine are performed by spiking of known concentrations of the sample into the placebo of formulation and inject the sample the results are estimated by signal to noise ratio.

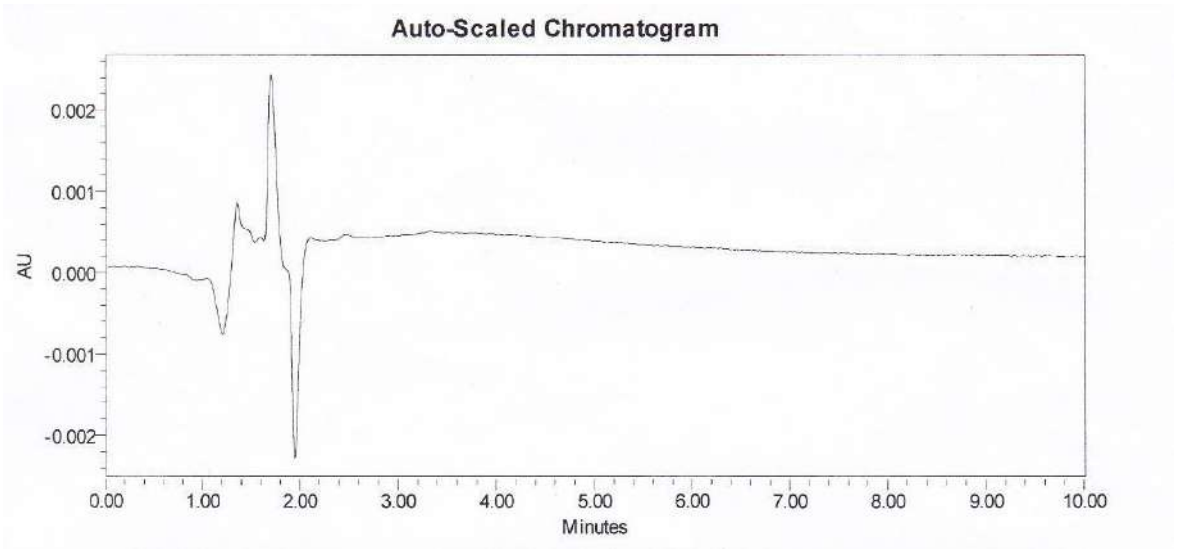


Figure 1.0: Blank chromatogram.

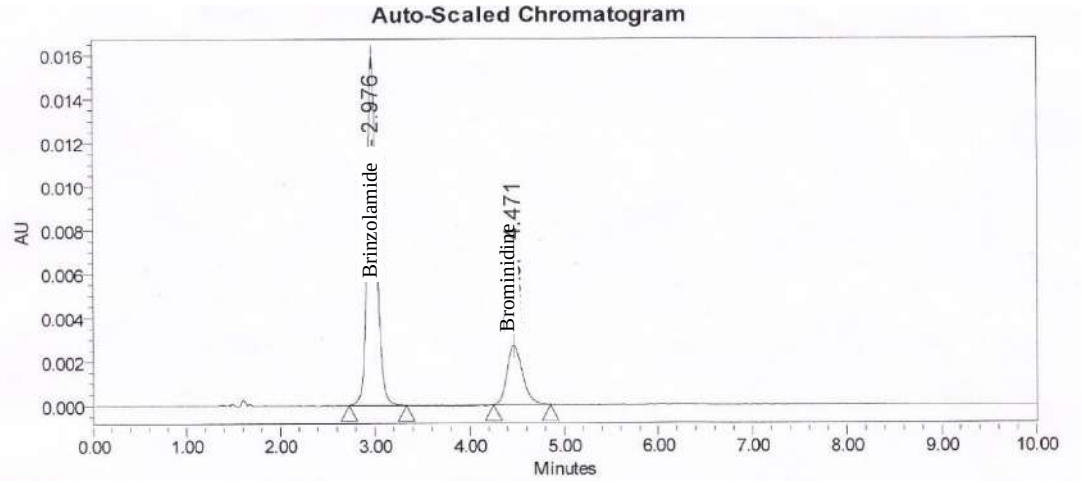


Fig. 5.0: Chromatogram of Brinzolamide & Brominidine.

Table 1.0: Summary of validation parameters.

Validation	Parameters	Brinzolamide	Brominidine
System suitability	Tailing factor	1.1	1.2
	%RSD	0.1	0.1
	Theoretical plates	3245	3127
	Resolution	5.2	N.A
Linearity	Correlation coefficient	0.999	0.999
	Slope	5450	6309
Precision	%RSD	0.1	o.2
Accuracy	Mean % recovery for 50, 100, 150% respectively	99.06 97.03 97.84	103.61 100.60 101.716
Specificity		No interference	No interference
Robustness	1. Flow (± 10%), wavelength (± 5 nm), organic variation in mobile phase (±2%), Column Oven Temperature (±5^{0}C), and P^H (± 0.2 units)] at which robustness studies were performed. 2. The system suitability criteria is meeting the requirement for all variable conditions. 3. The test method is robust for all the variable conditions except flow variation (-10%).		

Assay of Brinzolamide and Brominidine is performed by weighing method. Wt/mL for the formulation is performed in a clean and dried specific gravity bottle (pycnometer) and its value implemented in the calculation of assay.

$$\frac{\text{Wt}}{\text{mL}} = \frac{\text{W3}-\text{W1}}{\text{W2}-\text{W1}} \times \frac{\text{Weight}}{\text{Volume}}$$

W1= Weight of empty specific gravity bottle (10mL)

W2 = Weight of bottle with water

W3 = Weight of bottle with ophthalmic solution.

Assay formula

$$= \frac{At}{As} \times \frac{Ws}{Ds} \times \frac{Dt}{Wt} \times \frac{PA}{100} \times \frac{Mol\ wt.1}{Mol\ wt.2} \frac{Wt}{mL} \times \frac{Labelled\ claim}{Amount\ obtained}$$

At = Area of sample, As = Area of standard

Ws = Weight of standard, Wt = Weight of sample (1.013gms) Dt = Dilution of sample, Ds = Dilution of standard

PA = Potency of standard (Brinzolamide =99.5%, Brominidine=96.5%)

Weight/mL =1.0154gm/ mL

Table 2: Results of %Assay of Brinzolamide and Brominidine.

	As	At	Wt. taken mg	Mol.wt$_1$ gm/mol	Mol.wt$_2$ gm/mol	%Assay
Brinzolamide	1190424	1216813	26.99	324.4	360.9	98.9
Brominidine	421432	442451	33.6	316.43	432.49	99.8

RESULTS AND DISCUSSION

In the present work, an attempt was made to provide a newer, sensitive, simple, accurate and low cost RP-HPLC method. It is successfully applied for the determination of Brinzolamide and Brominidine in pharmaceutical preparations without the interferences of other constituent in the formulations.

In HPLC method, HPLC conditions were optimized to obtain, an adequate separation of eluted compounds. Initially, various mobile phase compositions were tried, to get good optimum results. Mobile phase and flow rate selection was based on peak parameters (height, tailing, theoretical plates, capacity factor), run time etc. The system with Methanol: Posphate Buffer (50:50v/v) with 1.0 ml/min flow rate is quite robust.

The optimum wavelength for detection was 276 nm at which better detector response for drug was obtained. The average retention time for Brinzolamide and Brominidine were found to be 2.89and4.20.The linearity was observed in the range of 20-100 ppm for Brinzolamide and 5-25 ppm for Brominidine with a correlation coefficient of 0.999 and 0.999 respectively. The low values of % R.S.D. indicate the method is precise and accurate. The mean recoveries were found in the range of 99.0 – 99.9 %.

Sample to sample precision and accuracy were evaluated using, three samples of five and three different concentrations respectively, which were prepared and analyzed on same day. Day to day variability was assessed using three concentrations analyzed on three different

days, over a period of three days. These results show the accuracy and reproducibility of the assay. %Assay of Brinzolamide and Brominidine in ophthalmic formulation is found to be 98.9 %and 99.8% are with in acceptance criteria 95-105%.

CONCLUSION

The chromatographic method developed for Brinzolamide and Brominidine is said to be rapid, simple, specific, sensitive, precise, accurate and reliable that can be effectively applied for routine analysis in research institutions, quality control department in industries, approved testing laboratories, bio-pharmaceutics and bio-equivalence studies and in clinical pharmacokinetic studies.

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EFFECT OF RADIO FREQUENCY WAVES ON MEMORY AND SLEEPINYOUNGADULTS

Abstract

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Introduction

The cell phone safety regulations throughout the world permit amaximumallowableSpecific AbsorptionRate(SAR)ofbetween1.6 W/kg(USA)and2 W/kg(mostoftheworld)forcellphonesheld closeto thehead.The brain tissue is the closest part of the human body to the mobile phone, the impact ofmobile phone radiation on the brain tissue may be most drastic and alarming. A five degree increasein temperature on the surface of the brain can damage the cells. Acetylcholine and monoamines areimportantneurotransmitterssecretedbythebrain,andtheycanregulatebody'sphysiologicalfunctions REMsleepfunctionsandmemory.Thepresentstudyisaimedtoinvestigatetheeffect of exposure of Radio Frequency Waves on memory by studying the AChE enzyme activitiesandGlutathioneactivity.

METHODOLOGY

The study is designed for the assessment of working memory in healthy youngadultsof 18-23yearwith 200 medical students of the same Institute divided intosubjectsandcontrolgroups. The short term memory or working memory will be evaluated in 3sessionsofverbal,visualand writtenwords.The scores will be evaluated as to how many words each subject could recollect correctly

I HematologicalparametersRBCcount,WBCcount,HCT,PLTcount,andDifferentialcount measuredinanautomatichematologyanalyzercellcountmachine.

II. BIOCHEMICALSCREENING of Cholinesteraseactivity , Glutathione activity andSerumElectrolytes estimated

III. EvaluationofSleep and memory is done

Statistical analysis data is analyzed using analysis of variance (ANOVA), to evaluate thevariations between groups and for multiple comparisons among different groups. The results expressedasthemean+SD.Valuesofp≤0.05isconsideredstatisticallysignificant.

Results: There is significant differences memory and sleepwith radio frequency waves. During sleep there were significa interaction effects between groups and condition (means [standard errors] low-non exposed group and EMF exposed grou . There was also a significant interaction for memory quality non exposed EMF and exposed EMF

Conclusion:-EMF exposure significantly altered several neurophysiological mechanisms. EMF potential risk factor causing headaches and other negative psychological factors like lack of attention, sleep disturbances, irritability isnoted.

Key words . EMF,Cholinesterase,Glutathione,REMSleep Memory

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ELEMENTARY EDUCATION IN RURAL ODISHA: A NEGLECTED SECTOR

DR. KAPILENDRA DAS

Executive Summary:

This article aims to provide an overview report on elementary education of rural Odisha with relevance to physical facilities, and quality of education. Since independence, there has been a major thrust on elementary education in Odisha. To achieve the goals of Universalization of Elementary Education (UEE), Odisha being one of the poor states in India has been implementing the Right to Education (RTE) Act, Right to education for free and compulsory education, and Sarva Siksha Abhiyan. There has been some progress only in terms of enrolment, retention, dropout but as far as ensuring the quality of education in terms of students' learning has one of the biggest challenges for the government of Odisha. Although the government of Odisha is providing more impetus towards its overall education growth due to various socio-economic factors, Odisha's education program continues to be up to no good. Of the biggest victims of the elementary education system are those living in rural areas. The Policies, programs and schemes being implemented, but the process in an effective way has been the lacuna of the entire system.

Education is the mirror to society and is the seed as well as a flavor of socio-economic development. The present situation of rural Odisha education is that the seeds of education are planted in the children in the schools but it does not go much further than the school system.

The public in general and rural people in particular, often think of schools as a place for teachers to instruct children on reading and writing. Schools are not considered as places, where the students are taught many life skills that will help them succeed in their future endeavors.

Many enrolled children of rural Odisha are first-generation learners, who come from illiterate, poor, and poverty families. Thus, they have to single-handedly grapple with school life, mastering the language and cognitive skills without parental help and guidance.

One of the main problems that rural Odisha faces nowadays is that all pedagogical innovations that are being made are fit for improving the quality education of urban children but the rural learners, as well as their education, are largely neglected, with more than 80% of people are residing in the rural past of Odisha, education deserves a lot more attention especially when it is having so many problems and challenges. To boost access to elementary education in a rural area of Odisha particularly for girls, scheduled caste, scheduled tribes, and the disadvantaged group is the most pressing challenge. The scale of operation of elementary education involved ensuring quality education for rural Odisha children is unique and also challenging. Elementary Education in Odisha witnessing a rapid transformation.

Above all elementary education in rural Odisha that Odisha is providing to its children aged between 6 to 14 years come from impoverished families proves to be a neglected sector.

(Key Words:- Overview, elementary, education, relevance, physical, quality, independence, universalization, implementing, compulsory, enrolment, retention, dropout, challenges, impetus, system, lacuna, economic, instruct, endeavors, poverty, cognitive, unique, neglected, sector)

BACKDROP :

1. **Universalization of Elementary Education in India :**

India is one of the biggest, densely populated, and developing countries in the world. In the modern age, no nation can march on the road to progress without making its people educated. Because education is a great force and powerful means for the all-round development of a person. Education plays a vital role in the growth and development of the people of India and the nation as a whole. It is a cornerstone of economic and social development. Education has an immense impact on human society and is an essential instrument for the emancipation of humankind.

In India, we have elementary, secondary, higher secondary, higher education, vocational, and professional education. But it is the only elementary education that refers to the first phase of compulsory education that children obtain during the few years of starting schooling. This education has specific goals that meet the special needs that children have. The benefits of this education cannot be underestimated. This education gets universally recognized. Therefore elementary education is very essential and beneficial not only to children but also to the nation at large. It is the foundation of advanced learning and gaining basic knowledge without which the dream of children will become impossible.

In a conference of Mahabaleswar held on May 31, 1929, Dr. B.R. Ambedkar, a prominent educationalist addressed that "The freedom of the spread of elementary education is the most dominating one. It needs to implement a compulsory act of elementary education". As such "Right to Education" and "Provision for early childhood care and education to children below the age of six years" have been incorporated under article 21-A and article – 45 into the constitution of India. The constitution (86th Amendment) Act, 2002 added a new article 21A after article 21 and made education for all children of the age of 6 to 14 years a fundamental right. It provides "The state shall provide free and compulsory education to all children of the age of 6 to 14 years in such manner as the state may, by law, determine". Following the principle of equality and liberty education is free and compulsory for all and sundry. There are no special schools. Every child irrespective of social status will go to the school situated in the proximity. In India, conditions are much different.

Children are the supreme assets of the nation. Today's children are key to the future. Their quality and personality will determine the kind of destiny that beckons the

nation. Elementary Schools (primary and upper primary) provide children with safe environments to grow in, as well as equipping them with motivation and skills that enable them to handle individual circumstances. A school is a happy place for children where they can explore new ideas.

In 1993, the Supreme Court of India declared education up to 14 years of age to be a fundamentals Right of children in India. Hence the elementary education became the compulsory component of education in India.

After sixty-three years of independence, the Government of India felt that the base of elementary is weak and realized the important thoughts of Dr. B.R. Ambedkar and wanted to bring them into reality. Thoughts of Ambedkar on elementary education has been reinforced in the provisions of the right of children to free and compulsory education – RTE Act, 2009, which came into effect in India in April 2010, enshrining in law for the first time the rights of all Indian children aged between 6 to 14 years to free and compulsory elementary education irrespective of caste, class, gender, and religion, etc. This Act is referred as to RTE Act-2009.

India has 28 states and 8 union territories. Although education is under concurrent list (i.e. legislation about education could be made by both the union and the state), school education is mostly control by the states and union territories. To carry forward the constitutional commitment of strengthening the social fabric of democracy by providing equal educational opportunity to all, efforts to reach out were intensified through several schemes and programs being implemented in partnership with the state Government of India has accepted Universalisation of Elementary Education (UEE) as a national goal. Both central and state governments are making strenuous efforts to achieve this goal. But in our country Universalisation of Elementary Education is a dream which has not been fulfilled to this date. The various problems (poverty of parents, tremendous increase in population, lack of finance, illiterate and orthodox parents, small and scattered habitation, alienation of schools, the ineffectiveness of teachers, inappropriateness of curricular inertia in administrative and supervisory machinery, unemployment) are responsible for not achieving the goal of UEE. There are various remedial measures – No-formal Education (NFE), Early Childhood Care and Education (ECCE), Operation Black Board Scheme, District Primary Education Programme (DPEP), Sarva Shiksha Abhiyan (SSA), Mid-day Meal Programme (MDM), EGS, RTE Act-2009 are being implemented which can help in solving the problems of UEE. Over some time, significant efforts have been made to universalize elementary education, but the goal remains elusive and far a distant dream.

2. Universalization of elementary education in Odisha:

Education is state jurisdiction in India. Odisha is one of the states in India that is committed to the universalization of elementary education in the state to fulfill the constitutional obligation with the assistance and support of the Government of India. To achieve the goals of universalization of elementary education, in Odisha there has been the implementation of schemes and programs- National Education Policy (NEP),

Operation Black Board (OB), Non-formal Education (NFE), Early Childhood Care and Education (ECCE), District Primary Education Programme (DPEP), Right to Education Act-2009, Mid-day meal (MDM), Education Guaranteed Scheme (EGS), Sarva Sikhya Abhiyan (SSA), Kasturba Gandhi Balika Vidyalaya (KGBV), free and compulsory education to the children in age group 6 to 14 years, etc. These schemes and programs have been implemented in the state of Odisha with the assistance of the government of India. For smooth implementation and management of these programs related to elementary education, the Odisha Primary Education Authority (OPEPA) came into existence as a registered society on 30th. January 1996 and have been functioning under the School and Mass-Education (S & ME) Department in the Government of Odisha.

Despite the implementation of the above schemes and programs for universalization of elementary education in the state of Odisha and the sincere efforts of the authorities, educators, and teachers when it comes to rural education, the present scenario and outcomes paint a grim picture.

In Odisha there are 35, 928 Primary and 20, 427 Upper Primary Schools to provide education at the elementary level. More 491 new primary and 490 Upper primary schools opened under Sarva Siksha Abhiyan (SSA) to provide schooling to unsaved areas. Around 66 lakh children of 6-14 years of age group are in school. Around more than 80% of children from rural areas are getting elementary education. To improve access to elementary education and to achieve 100% enrolment and to check dropout and retention, the government of Odisha has relaxed the norms of opening new primary schools especially in KBK Districts and tribal sub-plan areas, inhabitations having at least 25 children provided there is no primary school within one KM. of such habitations. Added to this government of Odisha has open many seasonal hostels for the children in rural areas whose parents are migrants.

<u>Outcomes of quality of education.</u>

The Annual Status of Education Report (ASER) (Rural) – 2018 revealed that only around 58% of children studying in class V know class II texts. The report claims that 3.2% of students studying in standard V cannot identify numbers from 1 to 9, while only 13.8% of students can recognize numbers from 1 to 8, and only 33.1% of students can recognize numbers between 10 and 99. While only 24.5% of students in class V know subtraction. Only 25.4% of students can divide. Among class III students, the 2018 survey revealed that only 30.9% of students can do subtraction as compared to 33.9% in 2016.

The fact on the field is that a student promoted to class VII fails to read an odia book of class III properly. The students of class VI do not know English and do not know additions and deductions.

Affecting factors in elementary education in rural Odisha.

1. **Basic Infrastructure:-**

   In rural Odisha most of the elementary schools have a shortage of classrooms, do not have electricity, drinking water, playground, and toilet. In some schools, students of different ages are made to sit in one room. In some school primary schools, the schools have single/two teachers. It became very difficult to manage five classes. The upper primary schools in rural Odisha are also meeting the same fate.

Civil facilities in government elementary schools, Odisha

1.	No Toilet	Girls	7497
		Common	12364
2	No. Electricity		43386
3	No. Playground		41643
4	No Ramps		17060
5	No Drinking Water		1714
6	With Computer		3715

Source – DISE 2013-14

Elementary School Scenario

	PRIMARY	UPPER PRIMARY
GOVT.	33,996	17,598
SSD	468	826
LOCAL BODY	NIL	02
AIDED	285	1523
PVT. UNAIDED	600	1213
OTHERS	454	27
CENTRAL GOVT.	04	19
UN RECOGNISED	592	737
TOTAL	36,399	21,945

SOURCE – DISE 2013-14

At least around more than 9000 primary schools in Odisha have one classroom while more than 17,000 schools have only two classrooms. Hence there is a huge shortfall of classrooms at primary and upper primary schools.

However, in the context of Odisha, it is unfortunate that even after 72 years of Constitutional Governance we failed to ensure the basic infrastructure for our elementary schools where we are engaged in shaping the future generation.

2. **Quality of education curriculum :**

   When it comes to the quality of education in rural Odisha, the outcomes paint a grim picture.

Children in rural Odisha continue to be deprived of the quality of education owing

to factors like lack of competent and committed teachers, lack of teaching-learning materials, poor teaching quality, absenteeism of teachers, irrelevant curriculum, etc.

The rural primary teacher occupies the lowest position hierarchy. Apart from teaching, the teacher is expected to bear the burden of much national work. Schools having single/two teachers when going on leave or remain absent functioning of the school is affected, further discouraging children, who are in the absence of support at home, need much more attention.

Lack of motivation on the part of teachers who generally are academically low qualified and have chosen this profession as a last resort is a serious problem. Added to this the teacher is burden with an irrelevant curriculum, dismal working conditions, and lack of recognition of their efforts.

In rural areas, there has been more deterioration in the quality of teaching. The teacher–training institutes are not providing quality training. This is because the government of Odisha has a provision of Odisha Teacher Eligibility Test (OTET) but only around 25% of aspirants could clear it. Therefore lack of poor teaching quality is also a major concern in rural Odisha.

The absenteeism of teachers in rural schools has remained a concern in rural Odisha. Many criteria that influence teacher absenteeism include tenure at school, political, social involvement, etc. in comparison to a male teacher, the absenteeism rate of the female teacher is more.

In Odisha, many ad-hoc/sikshya sahayak teachers rather than permanent are appointed in the rural schools. They are paid very poorly. These issues make the teachers in rural schools dissatisfied with their jobs and the result is they leave these jobs and move to a permanent ones. The consequence is the lack of teachers in rural schools.

Another major drawback is that the curriculum prescribed in the textbooks to great extent is found to be 'irrelevant to the closer lives of rural people. In the name of relevance, most of the context taught in the school is irrelevant to the prevailing situations of the rural children. In Odisha the elementary curriculum was teacher-centered. In recent years, there have been attempts to charge the elementary curriculum to make it more child-centered, joyful, and activity-based. However, in most cases, there have been mere cosmetic changes accompanied by much 'song and dance' with no radical restructuring in the content and design.

In real fact quality of education for survival and sustainability in a rural environment is the need of the hour. It can enhance the standard of living, control

migration to urban areas which leads to an organized labor sector, and provide critical ability to diagnose and control the decisions affecting the lives of rural people.

SUGGESTION :

- **School supervision and inspection should be considerably strengthened in rural Odisha.**
- **In each primary and upper primary school, irrespective of roll strength at least five and eight teachers to be posted and appointed respectively.**
- **Poverty eradication program to be adopted**
- **Basic and good infrastructure facility to be developed for building a quality learning environment.**
- **Every village and habitation with primary/upper primary school in Odisha to be digitally connected.**
- **E-education can bring a revolutionary change in the elementary education system with its innovative and involving technology will go far ahead for bringing equity and equal opportunity to all the students.**
- **The government, the concerned authorities, and the teachers must have an obligatory duty to carry out the motto in letter and spirit.**
- **The government of Odisha will have to take a calculative decision about investment in education in the coming future time.**

CONCLUSION:

It is a fact that the rural Odisha having a large concentration of marginalized section still have a long way to go to quality education for its children. The poor outcomes show the negligence of the government, concerned authority, and teachers as well. Around 80% population of Odisha lives in rural regions and mostly a state of Odisha lives in rural regions and mostly in a state of poverty. Only education has a major role to play in helping the individual in the rural areas to cross the hurdle of the poverty trap.

If educational facilities are to be fully utilized by the target group of population (rural and marginalized people), they need the develop a qualitative school program with adequate human and materials resources is paramount, only then can appropriate outcomes be ensured.

Children are the supreme assets of the nation. Today's children are key to the future. Their quality and personality will determine the kind of destiny that beckons the nation.

Gabriel Mistral, the Nobel Laureate said :
" We are guilty of many errors and faults but our worst crime is abandoning the children neglecting the foundation of life. Many of the things we need can wait. The child cannot, right now is the time his bones are being formed, his blood is being made and his senses are being developed. To him, we cannot answer "tomorrow". His name is "today".

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AN ANALYSIS OF TRENDS AND PATTERN OF PUBLIC SPENDING ON HEALTH SERVICES IN MIZORAM, INDIA

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Abstract

The State Government of Mizoram has shown commendable efforts towards the provision of healthcare facilities among the people. Several government medical institutions have been established in different parts of the states especially after 1987 when the Mizoram was elevated to the full fledge state. By analyzing the growth trends and pattern of public spending on health service during 1981-2014, the present study revealed that public expenditures on health services in Mizoram have shown gradual increase both at current and constant prices. For instance, the plan expenditure on health services at current prices have increased with CAGR of 15.26 per cent while the corresponding non-plan expenditures have increased with the CAGR of 10.52 per cent during the same period. At the same time, the constant prices of plan and non-plan expenditure also increased with the CAGR of 8 per cent and 3.46 per cent.The study also found that the significance of all factors under consideration in determining public spending, both in terms of total expenditures and per capita expenditures with acceptable *R-square*. It is noteworthy that the estimated coefficients or elasticities are found to be significant and positive in all cases implying that the public expenditures on health services will increase with an increase in income, population and total budget size of the state. At the same time, the estimated constant terms are negative in all cases which imply zero (or near zero) expenditures in the absence of these factors.

Keywords: public expenditure, determinants, growth trends, health services.

Introduction

Expenditure on health servicesis an important determinant of the health status and economic development of a nation. It has revealed that countries which assign due recognition to this aspect have healthier and more productive human capital. This in turn raises the GDP of a nation, in contrast to countries which spend less on health sector (Sengupta:2015).The Constitution of the World Health Organization which came into effect in 1948 also recognized health as a basic human right and states that "*the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition*"(WHO:2005,2014).For instance,health is considered a "*positive*

concept, emphasizing social and personal resources, as well as physical capacities"(Goodman:2014). This concept leads to the idea of health promotion as a process of enabling people to increase control over, and to improve, their health(WHO:1984).

Objectives of the study:

(i) To analyze the trends and patternof public expenditure on health services in Mizoram during 1981-2014,
(ii) To analyze the determinants of public investment on health services in the state.

Hypothesis:*Public expenditure on health services increases with an increase in GSDP and population*.

Sources of Data and Methodology

(a) Data Source: The study is based on Secondary data which are collected from different sources like Annual Financial Statement(various years), Demand for Grants, Finance Department, Government of Mizoram; Economic Survey-various issues, Department of Planning and Programme Implementation: Government of Mizoram; Statistical Abstract and Handbooks-various issues, Government of Mizoram ; Annual Report of Health and Family Welfare (various years),Government of Mizoram; Census Reports-various years, Government of India.

(b) **Analytical Tools:**Data collected from various sources are analyzed by using simple statistical techniques such as averages, percentages. The Compound Annual Growth Rate (CAGR) was also calculated by estimating log-linear regressions. A Wholesale Price Index (WPI) which is obtained from the website of the Office of the Economic Adviser, Ministry of Commerce, Government of India is used to convert the data into one series with a common base year (i.e.,1981-82=100). For this, the study covers 33 years i.e. from 1981-2014.

Simple log-linear regression model is adopted to examine the determinants of public expenditures on health. This model is adopted to avoid the likely econometric problem of multicollinearity due to the limited degrees of freedom and apparently same trends shown by the explanatory variables which may manifest in high correlation. The advantage of using log-linear regression is its applicability on heterogeneous measurement units and its showing of constant elasticity. So, the regression model has been estimated on each of the selected variables to test their significance on public investment in health:

$$\log(Y) = \alpha + \beta \log X + u$$

Where Y denotes the dependent variable (public expenditure/investment on health), X is the explanatory variable (determinant), u is the random disturbance term, and α and β are constant and estimated coefficients respectively. Further, β indicates the constant elasticity of public expenditure.

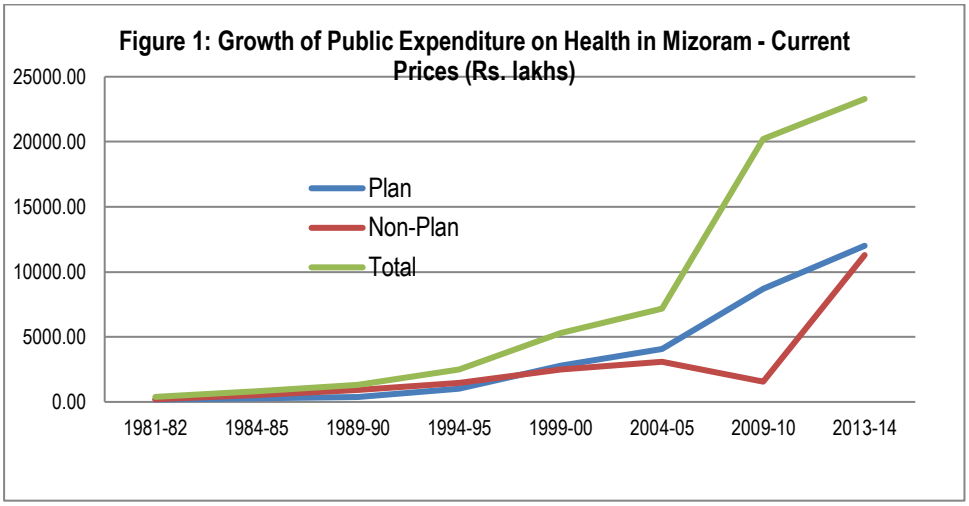
Socio-Economic Profile of Mizoram

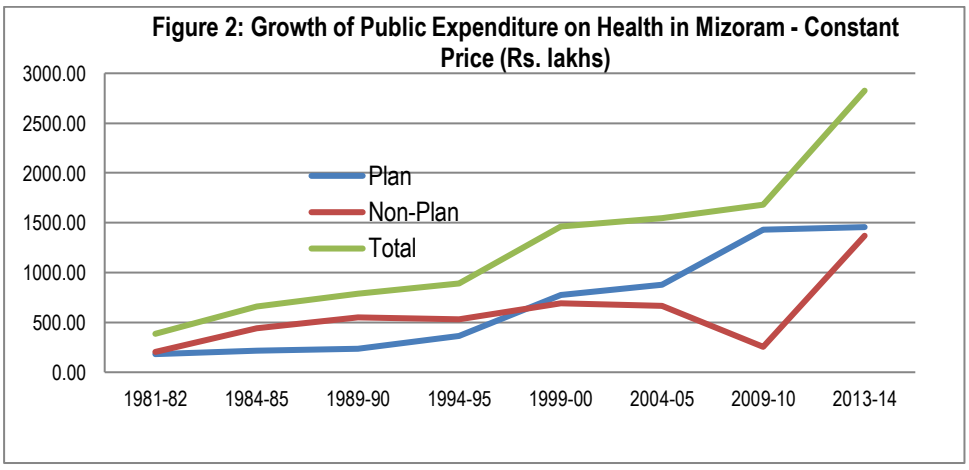
Mizoram, situated in the North-Eastern region of India, is a small state with a total area of 21,081 sq. km. It is bounded by Myanmar in the East and South, Bangladesh and Tripura in the West, Assam and Manipur in the North. The state has been divided into 11 Districts, 26 Rural Development Blocks, 23 Sub-Division and 3 Autonomous District Councils. The total population of Mizoram according to 2011 census is 10,97,206.

Trends and Pattern of Public Spendingon Health Services in Mizoram

In Mizoram, the State Government has shown commendable efforts towards the provision of healthcare facilities among the people. Several government medical institutions have been established in different parts of the states especially after 1987 when the Mizoram was elevated to the full fledge state. It may be noted that the modus operandi of providing health care infrastructure changes with the changes in the administrative set up of the state

The trends of public investment on health services through budgetary expenditures in Mizoram are presented in Figure 1 & 2 and Table -1.The study reveals that there has been a continuous growth in health expenditure both in term of current and constant prices. In general, the pattern of the growth rates was more or less stable till the year 1994-95, but shows a relatively higher rate of growth after this till 2004-05 and further increase afterwards. Interestingly, a similar consistent growth pattern have witnessed with both plan and non-plan expenditure till 2004-05.But a downward trend of non-plan expenditure is seen during 2005-09 and improved afterwards. There has been a significant jump on the over-all health expenditure after 2009-10 onwards, due to the implementation of major Centrally Sponsored Scheme like National Rural Health Mission and National Health Mission in the state. In fact, the contribution of these Central programmes for the improvement of health status in the states is commendable.





Data incorporated in Table-1 reveals that both the plan and non-plan expenditures increased over the period. In terms of current prices, the plan expenditure was significantly improved from Rs.181.77 lakhs in 1981-82 to Rs.12003.68 in 2013-14 with CAGR of 15.26 percent while the corresponding non-plan expenditures shows the same trends from Rs.204.08 lakhs to Rs.11288.68 with CAGR of 10.52 percent during the same period. In terms of constant prices, both the plan and non-plan expenditures increased with CAGR of 8 per cent and 3.46 per cent over the same period. The total heath expenditure in constant prices was calculated with an increase of 5.76 per cent while it was 13.2 per cent in term of current prices.

Table 1: Growth of Public Expenditure on Health Services in Mizoram

Year	Current Price (Rs. Lakh)			Constant Price (Rs. Lakh)			Budget Share (%)
	Plan	Non-Plan	Total	Plan	Non-Plan	Total	
1981-82	181.77	204.08	385.85	181.77	204.08	385.85	4.22
1984-85	262.79	532.57	795.36	218.81	443.44	662.25	2.96
1989-90	391.00	914.08	1305.08	235.97	551.65	787.62	3.80
1994-95	1014.85	1473.52	2488.37	363.72	528.10	891.82	4.20
1999-00	2781.98	2493.81	5275.79	772.66	692.62	1465.28	5.20
2004-05	4067.35	3105.87	7173.22	876.34	669.18	1545.52	4.65
2009-10	8688.91	1536.41	20225.32	1431.17	253.07	1684.23	6.31
2013-14	12003.68	11288.68	23292.36	1456.33	1369.58	2825.91	3.00
CAGR (%)	15.26	10.52	13.2	8	3.46	5.76	

Source: Demand For Grants (Various Issues), Finance Department Government of Mizoram & Economic Survey (Various Issues), Mizoram

Another interesting area for the researcher is to analyze the budgetary outlay for the health services in the state. As shown in Table-1, the share of health expenditure in the total state budgetary outlay hovers between 2.96 per cent to 6.31 per cent during 1981-2014. This further indicates that the health services were not given a priority by the state government. Moreover, there was a stagnating share over the period and this can be taken as negligence on the part of the state government. As healthy workers leads to more productivity, it is quite necessary to scale up the budgetary expenditure with the pace of economic development for the improvement of health services in the state.

Determinants of Public Health Expenditures

By considering the most reasonable determining factors such as GSDP, total budget and population, we analyzed the trend and pattern of the health expenditures in the state. Here, the estimates of log-linear regression are adopted to test the level of significance of these factors. By using the same model, it is also analyzing the sensitivity of health expenditures per person we called *per capita budgetary expenditure.*This is worked out by dividing the total expenditure on health by projected population in Mizoram. The analysis is expected to test our research hypothesis that "*public expenditure on health services increases with an increase in GSDP and population*". The result is presented in Table 2.

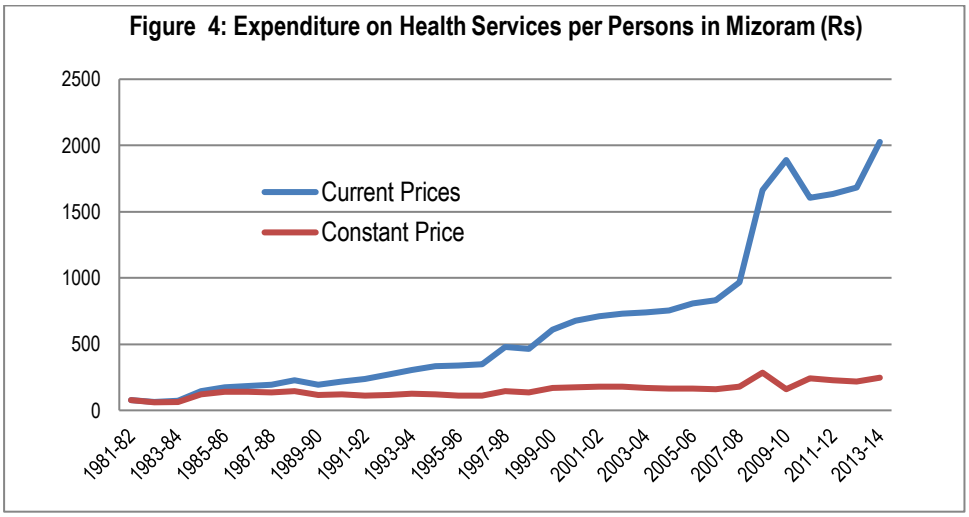


Table 2: Results of Regression of Health Expenditure on GSDP, Budget and Population

Independent Variables	Constant	Coefficient	R-Square
Total Budgetary Expenditures			
GSDP	-2.06***	0.89***	0.98
Total Budget	-3.87***	1.06***	0.97
Population	-57.94***	4.96***	0.98
Per Capita Budgetary Expenditure			
GSDP	-2.04***	0.71***	0.97
Budget	-3.51***	0.84***	0.96
Population	-46.42***	3.86***	0.97

***significant at 1 percent level

The values of statistical units in Table-2 shows the significance of all factors under consideration in determining public expenditures, both in terms of total expenditures and per capita expenditures with acceptable R-square. It is noteworthy that the estimated coefficients or elasticities are found to be significant and positive in all cases implying that the public expenditures on health services will increase with an increase in income, population and total budget size of the state. *The result is in conformity with our research hypothesis as stated above.* At the same time, the estimated constant terms are negative in all cases which imply zero (or near zero) expenditures in the absence of these factors.

In addition, the magnitude of the estimated coefficients has further interpretation. It is found to be highest for population at 4.96 and 3.86 for total and unit expenditures on health services respectively. Thus, public health expenditure in Mizoram increases with an increase in population by significantly more than proportionately, and it is most sensitive to the change population size. At the same time, total budgetary expenditures with respect to the total state's budget is almost one (1.06) that it will change more or less proportionately with the change in the total budget size. Interestingly, public expenditure on health increase less than proportionately with an increase in the state income (GSDP).

The result may have an interpretation on the state's inability to scale up its health expenditures according to the increase in income and resources.

Findings and Conclusion

Based on our analysis, we may draw the following findings andconclusion:

- The study found that both the plan and non-plan expenditures increased over the period. In terms of current prices, the plan expenditure was significantly improved from Rs.181.77 lakhs in 1981-82 to Rs.12003.68 in 2013-14 with CAGR of 15.26 percent while the corresponding non-plan expenditures shows the same trends from Rs.204.08 lakhs to Rs.11288.68 with CAGR of 10.52 percent during the same period.
- In terms of constant prices, both the plan and non-plan expenditures increased with CAGR 8 per cent and 3.46 per cent over the same period. The total heath expenditure in constant prices was calculated with an increase of 5.76 per cent while the corresponding it was 13.2 per cent in term of current prices.
- The share of health expenditure in the total state budgetary outlay hovers between 2.96 per cent to 6.31 per cent during 1981-2014. This further shows that the health services were not given a priority by the state government. Moreover, there was a stagnating share over the period and this can be taken as negligence on the part of the state government. As healthy workers leads to more productivity, it is quite necessary to scale up the budgetary expenditure with the pace of economic development for the health services in the state.
- The estimated coefficients or elasticities are found to be significant and positive with all the three determining factors implying that the public expenditures on health services will increase with an increase in income, population and total budget size of the state. *The result is in conformity with our research hypothesis.*
- It also reveals that the estimated constant terms are negative with all the determining factors such as income, population ,budget size- which imply zero (or near zero) expenditures in the absence of these factors.
- Public spending on health services is found to be most sensitive with the population growth as 4.96 and 3.86 for total and unit expenditures on health services respectively. So, public health expenditure in Mizoram increases with an increase in population by significantly more than proportionately.
- The total budgetary expenditures with respect to the total state's budget is almost one (1.06) which further explains that that it will change more or less proportionately with the change in the total budget size.
- Public spending on health services increase less than proportionately with an increase in the state income (GSDP). The result may have an interpretation on the state's inability to scale up its health expenditures according to the increase in income and resources.

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UTILIZATION OF ARTIFICIAL INTELLIGENCE IN BANKING, WITH REFERENCE TO FINANCIAL SERVICES IN BANKS

Veeranjaneyulu Veerla

ABSTRACT

According to today's banking news, artificial intelligence (AI) is extremely common, but those headlines have outpaced today's realistic banking truth. At this stage, only a few banks have started development or even full-fledged analysis. Artificial intelligence has infiltrated a variety of industries, including finance. The primary goal of this inquiry was to determine the effect of AI on modern banking. The controversy about how to ensure that citizens at the bottom of the economic spectrum become financially involved is increasingly focused on digital financial inclusion. The deployment of these innovations in developing markets helps financial service companies to further simplify their business processes and use modern and big data sources to address barriers that hinder certain consumers from receiving financial services, such as the high cost of servicing rural and low-income clients and establishing customer identities and creditworthiness. The use of Artificial Intelligence in Banking is examined in this report, with a focus on Financial Services in Banks.

Keywords: Artificial Intelligence, Banking Industry, Banks, Financial Services, etc.

I. INTRODUCTION

Intelligence is one of the distinguishing characteristics of being human, and it manifests itself in a variety of ways, including linguistic, physical, statistical, and emotional intelligence. Isdom can be described as the ability to absorb and benefit from experiences; it is the ability to communicate with and solve issues, as well as the ability to adjust to new circumstances.

According to our new primary analysis, AI is going past experimentation to become a strategic differentiator in financial services, providing a hyper-personalized consumer experience, optimizing decision-making, and increasing operating performance. Artificial intelligence advantages for financial inclusion are contingent on prudent acceptance by businesses, stable market settings, and sustained expenditure in the appropriate infrastructure. To keep up with more forward-thinking players, many financial services businesses would need to intensify their efforts to integrate AI around the value chain while also planning for the next wave of evolutionary neural network technology.

AI software should be used by any company to make financial and accounting choices. The benefits of AI are still being created, meaning that the system will be with us in the future.

Learning to use the new technologies and making progress would be critical for companies and the world as a whole. Companies may need to incorporate AI to remain successful, and workers will need to change their ability sets to keep their employment.

II. ARTIFICIAL INTELLIGENCE

AI is a broad term that refers to technological advances that allow machines to become intelligent. In 1956, John McCarthy invented the word artificial intelligence. Deep learning, artificial learning, image detection, natural language processing "(NLP)", semantic computing, cognitive augmentation, machine augmented intelligence, and augmented intelligence are only a few of the words used to describe AI. Many of these concepts are used in AI as it is included here.

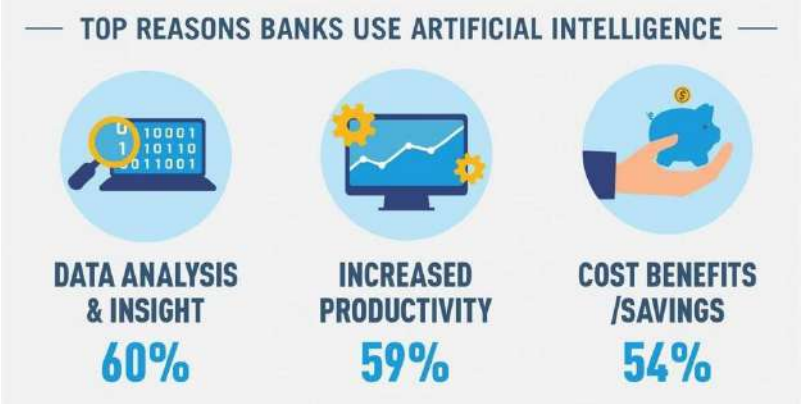
Artificial intelligence is a collection of innovations that, when combined with adaptive predictive capacity and autonomous learning, significantly improve our ability to:

- Anticipate future events
- Recognize patterns
- Communicate with other people
- Make good decisions
- Create good rules

This advancements are increasingly altering what it means to run a profitable financial services company.

The aim of AI is to create a machine that is intelligent and self-contained. ML is an AI subset that allows a machine to learn and develop its understanding without having to program it explicitly. There are two ways AI works: one is symbolic, while the other is data-driven. Before the computer will learn on the data base side, named ML, we must feed it a large amount of data. Machines can learn in a far wider range of dimensions. Machines may deduce trends from large amounts of high-dimensional data. Once these models are mastered, they will generate predictions that humans are unable to match.

III. BANKING AND ARTIFICIAL INTELLIGENCE



Banks who will revisit their approaches to staff and systems are the most likely to profit from AI. There is a need to evolve at size and speed, which necessitates the use of humans and artificial intelligence to improve organizational and process efficiency. Through both consumer and employee interactions, AI applications can generate growth.

According to the AI in Financial Services global survey, 85 percent of all respondents are currently using AI to improve performance and quality, with 77 percent claiming it is one of their most significant investment areas in the future.

Artificial intelligence isn't the potential of banking; it's still here. Banking is undergoing a transition as more data becomes accessible and emerging technologies such as quantum, edge, and cloud computing begins to disrupt the industry. Now is the time for all financial companies to invest in AI solutions. The days of waiting to see how customers respond are no longer with us. Any service that people use should provide them with unique experiences and outstanding service. If their banks are unable to do this, there are several exciting fintech solutions available.

Banks must bring together staff, systems, to data and have them all function together. The finance sector would welcome AI's transformative potential in a new age of AI-driven businesses.

3.1 Need for Adoption of AI

- **Data collection:** To take advantage of AI's enormous potential, an organization needs to invest in the creation and storage of a large amounts of data to train AI algorithms. The dividends yielded by AI are related to the quality and the quantity of the data that has been recorded or stored by these companies.

- **AI strategy:** In order to successfully adopt disruptive technologies, organizations need to have a clear vision on what they want this technology to achieve; how they want to integrate it within their organization; the feasibility and impact of the technology; and its possible consequences for the internal dynamics of the organization.

- **Developing safe systems:** The banking ecosystem functions on trust. This makes it imperative for banks to invest in cybersecurity and to develop AI systems. Due to the sensitive nature of data stored by banks, they are prone to data breaches by online hackers. Banks need to increasingly invest in cybersecurity collaborations with technology firms to identify and plug potential threats.

- **Talent creation:** Acquisition of talent is one of the biggest challenges to AI adoption. To gain advantage in AI, most organizations either hire AI experts or train them. Due to competition among firms for AI experts, and the unique needs of each organization, most companies prefer to develop their own talent pools.

- **Internal digitization:** A large impact of AI on business is in the improvement and streamlining of cumbersome internal processes. Organizations that are looking to adopt AI should undertake internal digitization, promote a pro-technology culture and familiarize their employees with emerging technologies.

IV. ARTIFICIAL INTELLIGENCE AND FINANCIAL SERVICES

The consumer financial services industry, as well as customers' interactions with the financial services environment, are being transformed by artificial intelligence. This transition has been fueled by the maturation of AI algorithms, increased AI spending, increased competitiveness, and dramatic shifts in customer tastes for AI-assisted digital financial goods. Artificial intelligence (AI) and machine learning (ML) are increasingly evolving and transforming emerging economies' political, technological, and social landscapes. As a result, AI-based technologies are expected to emerge as a game-changer with significant consequences for increasing financial access to the vulnerable. Because of the high processing costs and costly systems associated with making small loans to these customers, typical banks are unwilling and reluctant to support small-scale borrowers such as low-income people and small businesses.

AI has crept into financial services under various titles, aided in no small part by associated innovations including digitalization, immersive voice response, image detection, and data mining for personal identity validation. Many of the early AI projects centered on chatbots and other conversational interfaces to improve customer experience by encouraging consumers to converse in their natural language rather than having to choose from preset menus.

Not only by automating jobs, but even by inventing better ways to complete them, AI can boost efficiency. The following are few examples of possible applications:

- Amelia by IPSoft is a cognitive agent that can cover a wide variety of service desk roles and transform the customer experience using natural language in applications. For example, it can help customers open new bank accounts.

- MasterCard Labs uses Kasisto, a financial services AI platform, to support more natural interactions within a messaging app. Specifically, the company is developing

MasterCard KAI (text-based AI) for messaging platforms such as Facebook Messenger.

- Swiss Reinsurance Co. is working with IBM's Watson to develop a range of underwriting solutions and achieve more accurate risk pricing. Cognitive computing helps them leverage unstructured information around risk to make better informed decisions.

- Blend Labs is accommodating complex rules and regulations changes in its mortgage loans process with intelligent and automatic compliance features.

- For Credit Suisse, Narrative Science's Quill has helped to summarise information by scaling investment research with natural language generation (NLG). This AI technology has enabled people to augment human intelligence with consistent and comprehensive research summaries.

That the financial services sector is heavily supervised. Regulators would not tolerate a black box, or applications in which the scientific methods are inaccessible and unable to justify themselves. A degree of transparency—one that enables users to inspect decisions taken by intelligent systems—is needed for AI to work broadly in the financial services sector. Although some AI innovations, such as deep learning, lack clarity, others, such as natural language generation, a subfield of AI that converts structured data into explanatory language, are making steady progress. Transparency will begin to increase in value, and any financial services institution contemplating building or adopting AI technology now or in the future should include it in their protocol preparation.

4.1 AI-powered predictive analytics

For several years, financial institutions have employed predictive analytics by making human researchers utilizing mathematical modeling and data analysis to detect trends and create forecasts. AI is already being used to take predictive analytics to the next stage. Existing AI systems will recognize and test any mixture of factors, such as consumer characteristics and product functions, that a team of human analysts might be unable to do. Analyses may provide a broad range of nontraditional data points, including newspaper reports, social media updates, consumer feedback, and government filings, among others, through using NLP. The whole financial services value chain is being impacted by AI-powered predictive analytics. Several fields where these developments as having a significant impact are mentioned below.

Investment products & trading: Many FIs are already applying AI to the design of investment products and to trading decisions. These applications analyse and act on vast troves of information more accurately and quickly than any human trader. AI tools are being used to assess the significance of a wide variety of alternative sources that are relevant to the value of a stock.

Financial advice: Robo-advisors provide customers with automated, algorithm-driven financial planning services, typically at low cost. They can suggest an appropriate asset allocation based on a client's needs and risk tolerance, automatically rebalance a client's portfolio and prompt a human financial advisor to call at the appropriate time to offer assistance, if required.

Risk management & compliance: AI tools are being used to identify potential instances of inappropriate behaviour that can open a bank to substantial regulatory fines as well as significant damage to its reputation. The fintech firm Digital Reasoning has received investments from major FIs such as BNP Paribas, Barclays and Goldman Sachs. Its technology, Synthesys, uses ML and NLP to analyse huge volumes of data in order to identify potential instances of market manipulation, unauthorized trading and insider trading.

Collections: Traditional debt collection strategies are time-consuming and only work 20% of the time. Many of the customer lawsuits filed with regulators are related to debt management activities. ML apps will focus collection efforts on the most indebted borrowers, as well as determine the best contact medium, time of day, and communications for each borrower.

It can be inferred that AI software can be used by any company to make financial and accounting decisions. ‘‘The benefits of AI are still being created, meaning that the system will be with us in the future.” Learning to use the new technologies and making progress would be critical for companies and the world as a whole. Companies may need to incorporate AI to remain successful, and workers will need to change their ability sets to keep their employment.

V. CONCLUSION

Learning about AI and adjusting to it is a trip. It's a ride of fiscal, social, and political transition as headwinds and tailwinds. It's also a trip that no company can undertake alone. The opportunity to truly profit from emerging technology is critical to the success of financial services. AI is a disruptive platform that can transform front- and back-office processes, trigger big changes in financial market structure and policy, and pose crucial problems for society to address. Only a collaborative approach would be able to overcome these obstacles and unleash AI's advantages for the good of industry and community. Many decision-making functions would be taken over by intelligent systems from individuals in the coming years, thanks to AI's beneficial influence.

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RTE,2009: IMPLICATIONS IN INDIAN EDUCATION SYSTEM

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Abstract:
The importance of education cannot be denied in one's life. It sustains the human values which contribute to the individual and collective well-being. It forms the basis for lifelong learning and inspires confidence to face challenges. It provides the skills to individuals to become more self reliant and aware of right opportunities. It also enhances the ability of individuals to act more responsible and more informed citizens and have a voice in politics and society, which is essential for sustaining democracy. It is essential for eradicating poverty and it allows people to be more productive and playing greater roles in economic life and earning a better living. The education is the key which allows people to move up in the world, seek better jobs, and ultimately succeed in their lives. So education is very important, and none should be deprived of it. The importance of primary education has been neglected by India since independence knowingly or unknowingly. However, Government of India now is willing to improve primary education by bringing legislation i.e. Right to Education. The paper tries to bring out the meaning of much awaited Right to Education (RTE) 2009, act and tries to bring out the critical appraisal of the Act after three years since its passage.
Keywords: Education, Right to Education Act, promises of the act, consistent political will and attention

I. Introduction and Literature Review:

Education is now widely valued not only for its intrinsic value in enriching the lives of individuals but also for its functional value in the development of the human capital of a nation. Educational investments in children have been shown to have high private and social returns. The private returns are associated with increased productivity and earnings in adulthood, and with further non-pecuniary gains arising from the greater efficiency with which educated individuals are able to acquire and process information (Rosenzweig 1995). The social premium to education over and above the private value includes further productivity increases arising from knowledge spillovers, gains in health for one generation that flow from gains in education for the previous, and the improved functioning of civic society and democracy. These examples illustrate that widespread education not only helps growth through productivity effects, but is also crucial to distribution of the gains from growth. Growth in a society in which most people have a basic education is most likely more pro-poor than growth in a society in which the educated are the elite few. Also, there is widespread evidence of an inter- generational correlation in educational attainment (Becker and Tomes 1986), at least some of which is thought to becausal (e.g. Lleras-Muney 2001, Chevalier 2004). To the extent that the impact of parental education on child education is causal, there are significant knock-on effects of public investment in education. In other words, they payoff to policy immediately goes up because investments in education at any one time have a multiplier effect, yielding additional benefits in the future. In summary, education is a powerful tool for reducing poverty, unemployment and inequality, improving health and nutrition and promoting sustained human development led growth (World Bank (2004), p.69).

One of the Millenium Development Goals (MDGs) agreed in September 2000 at a UN summit of world leaders is the achievement of universal primary school
Attendance for boys and girls, this, of course, implies a complete closing of the gender gap. It also requires a 100% primary school completion rate, that is, that all students entering grade 1 are retained until grade 5. The MDG couched in these terms reflects recognition of the importance of basic (primary) education. This is particularly pertinent in India where primary education has historically been neglected by the state, with educational expenditures being concentrated on the tertiary sector (e.g. Dreze and Sen 1995). As a result, there are vast inequalities in educational attainment in India, a remarkable degree of illiteracy coexisting with frontier research in science and technology. India is also marked for being one of the group of countries in South Asia and Northern Africa where outcomes tend systematically to be better for boys than for girls, suggesting gender discrimination or at least undesirable gender differentiation. A further reason that India offers an interesting case study is that it exhibits striking diversity in educational indicators across its states that, in further work, we will exploit to consider more carefully the sorts of policy interventions that are likely to be effective. With India being such a large country, sample sizes available for statistical analysis are large, allowing more general pursuit of heterogeneity in the data- for example by religion (Muslims have lower educational attainment than Hindus) or by caste (scheduled castes and tribes exhibit lower educational attainment than the higher-castes).

Right to Education Act: Background and Meaning

Every child between the ages of 6 to 14 years has the right to free and compulsory education. This is stated as per the 86th Constitution Amendment Act added Article 21A. The right to education act seeks to give effect to this amendment. The government schools shall provide free education to all the children and the schools will be managed by School Management Committees (SMC). Private schools shall admit at least 25% of the children in their schools without any fee. The National Commission for Elementary Education shall be constituted to monitor all aspects of elementary education including quality.

 December 2002

86th Amendment Act (2002) via Article 21A (Part III) seeks to make free and compulsory education a Fundamental Right for all children in the age group 6-14 years.

 October 2003

A first draft of the legislation envisaged in the above Article, viz., Free and Compulsory Education for Children Bill, 2003, was prepared and posted on this website in October, 2003, inviting comments and suggestions from the public at large.

 2004

Subsequently, taking into account the suggestions received on this draft, a revised draft of the Bill entitled Free and Compulsory Education Bill, 2004.

 June 2005

The CABE (Central Advisory Board of Education) committee drafted the „Right to Education" Bill and submitted to the Ministry of Human Resources and Development (MHRD). MHRD sent it to NAC (National Advisory Council). NAC sent the Bill to Prime Minister for his observation.

 14th July 2006

The finance committee and planning commission rejected the bill citing the lack of funds and a model bill was sent to states for the making necessary arrangements. (Post-86th amendment, states had already cited lack of funds at State level) July 19, 2006

Campaign against Child Labor (CACL), National Alliance to Fundamental Right to Education (NAFRE), CABE invited Indian Literacy Project (ILP) and other organizations for a Planning meeting to discuss the impact of the Parliament action, initiate advocacy actions and set directions on what needs to be done at the district and village levels.

Present

The present Act has its history in the drafting of the Indian constitution at the time of Independence. However, are more specifically to the Constitutional Amendment that included the Article 21 A in the Indian constitution making Education a Fundamental Right. This amendment, however, specified the need for a legislation to describe the mode of implementation of the same which necessitated the drafting of a separate Education Bill. The rough draft of the bill was composed in year 2005. It received much opposition due to its mandatory provision to provide 25% reservation for disadvantaged children in private schools. The sub- committee of the CABE which prepared the draft Bill held this provision as a significant prerequisite for creating a democratic and egalitarian society. Indian Law commission had initially proposed 50% reservation for disadvantaged students in private schools. The government drafting this piece of legislation, however lost the elections, and the new government came up with its own version. This passed the approval of the cabinet on November 1, 2008, was tabled in Parliament in 2008 and passed in 2009.

II. Research Methodology

The study is based on Primary and Secondary data. Various techniques of data collection such as observations, interviews and online questionnaires were administered. The random sample of 200 people mainly educational administrative authorities, principals, teachers of primary schools was interviewed. Online questionnaires were administered on the service class people. The sampling used is random and convenient sampling. Published reports, news reports of news channels, articles in journals and newspapers, websites, blogs were used.

Findings

1. **Age Group in RTE:** RTE talks about the age group which starts from the age 6. However, in India the elementary education starts with the age of 2 and half years of age. The schools take the kids in pre-nursery if they are three years of age. A child who has an early schooling since the age of 3 will be far ahead from the child who enters the school at the age of 6. Therefore, the act does not take care of the age below six. The age taken can not be justified and right. The act should be reviewed again and the age should be revised in this regard.
2. **Promises of RTE:** RTE promises a lot as said before, however the challenges to achieve the objectives and promises are many. Some of the main challenges brought forward are as follows:

- **Financial Challenges:** Government of India is already beset with various financial hurdles and challenges because of the implementation of RTE. According to Act the fiscal burden has to be shared between the center and the states in the ratio of 55:45 and 90:10 for the

North-Eastern States. This project involves funds to the tune of Rs. 15,000 crore. Many states of India like Bihar, Uttar Pradesh and Punjab have already expressed their incapability to mobilize funds that they would not be able to implement the Act in the absence of funds from the center and a situation of dispute has raised between the center and the states. The state of Orissa wants the same status as by the North Eastern states with respect to the Act. The achievement as far as the financial matters are concerned largely depends upon the co-operation between the states and the center. It has been reported that the striving project is already falling short of around Rs.7, 000 crore in the very commencing year. In view of the fact the Act involves improving the infrastructure of schools, training of teachers, creating more facilities in the schools besides the manifold increase in intake, big investments would be involved and it is an uphill task to predict how the economics of it all will be worked out.

Challenge of Hiring Qualified Teachers: The scarcity of good and qualified teachers for government schools is going to be one of the hardest tasks to be achieved in implementing the act. The teachers are considered to be the backbone of education, in their absence the act can not achieve the goals.

Quality in Education: Human Resource Minister has paved the way for huge challenges ahead by promising quality education to all. As it has already been brought out that it will be difficult to do so in the absence of good teachers. The Act says that no student would be dropped from school or not passed till the age of 14. The starkest finding of three consecutive annual statuses of education reports published by Prahtam, a community-based organization, reveals more than half of class V students across India‟s government primary schools, can‟t read basic class II text book. This raises the quality issues being compromised through the act.

Enforcement of 25% Quota for Weaker Sections: The act gives a clause of reservation of 25% of seats for weaker sections by private unaided schools turns out to be a boon or a bane. By this clause the government itself accepts that the government schools are not capable of giving good quality education. Meanwhile, confront is to define weaker sections.

The Teachers of Primary School Should be Free from Extra duties: According to the teachers of primary schools in Mohali city the teachers are involved in many other duties other than teaching for example, the maintenance of building, to supervise the construction work and supply of the material, to check the preparation of mid day meal and to send the correspondences. All these disturb the main function of the teachers. Their main duty is to provide education to the children. Therefore, it is suggested that the teachers should be involved into their basic duties of imparting education.

Active Youth, NGOs and Civil Society's Participation: The awareness through civil society, youth, and NGOs has to be made for the weaker section to avail the rights and to accept them as a part of our society. All of us have to accept them with open heart to study with our kids‟ disregard of the fact of their socio economic background.

III. Conclusion

Therefore, in the concluding remarks it is wished to state that passing an act is not sufficient. The need of hour is to implement and monitor the act properly. The consistent monitoring and intention of the political will is a must to make it successful. According to the UNESCO‟s „Education for All Global Monitoring Report 2010‟, about 135 countries have

constitutional provisions for free and non-discriminatory education for all. The much awaited Right to Education (RTE) Act which has been passed by the parliament of India should play an important role in achieving universal elementary education in India. The success and failure of RTE would largely depend on consistent political attention. Budgetary allocation of funds should be sufficient in this respect. The youth and civil society in India should come forward and spread the usefulness of education to illiterate parents who are unable to appreciate the relevance of education in curbing the social evils. Social inequalities and monopolization by any group should not be permitted at any cost. Education which is free of cost up to a certain age must be accessible to all. . The right to education is a fundamental right and UNESCO aims at education for all by 2015. India along with other countries of the world should also put sincere efforts to make this goal a real success.

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FLUID DYNAMICS AND ITS PRINCIPLES

A STUDY OF MATHEMATICS APPLICATION

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ABSTRACT: This study will cover the baseline to assess the efficiency of fluid dynamics and its principles as well as its mathematical applications. This study will describe an incompressible fluid flow and its characteristics depending on a control parameter, namely Reynolds number for geometrical shapes and its boundaries. The study will take some preposition and proof them.

INTRODUCTION

Fluid is a material that is infinitely deformable or malleable. A fluid may resist moving from one shape to another but resists the same amount in all direction and in all shapes. The basic characteristic of the fluid is that it can flow. Fluids are divided in two categories, incompressible fluids (fluids that move at far subsonic speed and do not change their density) and compressible fluids [7].

There are Generally three types of fluid motion: Laminar flows Laminar-Turbulent transition flow and Turbulent flows. Laminar flow fluid particles following smooth path in layers, while the flow of wind and river is generally turbulent in this sense, while the laminar-turbulent transition concerns unstable flows. In order to indicate the path of the fluid element in the flow over the certain period, we can use the streamlines. So, streamlines are these show the direction in which a massless , fluid element will travel at any point in time.

But today, because of the power of modern digital computers, there is yet a third way to study fluid dynamics: computational fluid dynamics, or CFD for short. In modern industrial practice CFD is used more for fluid flow analyses than either theory or experiment. Generally difficult and expensive, as computing costs have continued to decrease, CFD has moved to the forefront

in engineering analysis of fluid flow, and any student planning to work in the thermal-fluid sciences in an industrial setting must have an understanding of the basic practices of CFD if he/she is to be successful. Dynamics generally require considerable simplification of the equations of the fluid motion mentioned. We will present these equations in our study. The version we give is somewhat simplified, but it is sufficient for our present purpose [2-5].

REVIEN OF LITRATURE

The fluid is anything that flows, usually a liquid-liquid flow in similar to gas-liquid flow in many respects as both of them are characterized by a deformable interface. These motion and state can be specified in terms of the velocity u, pressure p, density p, etc evaluated at every point in space X and time T. Molecule in the element divided by the volume of the element.

Considering the velocity, pressure, etc as functions of time and position in space is consistent with measurement techniques using fixed instruments in moving fluids. It is called the Eulerian specification. However, Newton's laws of motion (see below) are expressed in terms of individual particles, of fluid elements, which move about. Specifying a fluid motion in terms of the position X (t) of an individual particle (identified by its initial position, say) is called the Lagrabgian specification. The two are linked by the fact that the velocity of such an element is equal to the velocity of the fluid evaluated at the position occupied by the element:

$$\frac{dX}{dt} = u[X(t),t]$$

The path followed by a fluid element is called a particle path, while a curve which, at any instant, is everywhere parallel to the local fluid velocity vector is called a streamline. Particle paths are coincident with streamlines in steady flows, for which the velocity u at any fixed point x does not vary with time t. We desire to know the velocity of the fluid. The diameter of this volume is smaller than the mean free path, and as a consequence it contains only a few molecules. Moreover, none is actually at the desired point, and they are all moving in different directions. It is clear that if we are to measure velocity (or any other characteristic of the fluid) at the molecular scale we will obtain a result only at particular instance in time when a molecule is actually at the required location. Furthermore, it can be inferred from the figures that such measurements would exhibit a very erratic temporal behavior, and would likely be of little value for engineering analyses.

RESEARCH METHODOLGY

Research methodology is a technique to scientifically solve the research problem. IT may be understood as a discipline of studying how research is done logically.

RESEARCH PURPOSE

The purpose of present research is to study the Fluid dynamics and its principles in terms of Symmetry, Similarity Principle and Group-Theoretic Criteria.

The researcher will identify its influences regarding mathematical applications, Hence the purpose of this research is illuminating the concept if Fluid dynamics and its principles as well as its mathematical application.

RESEARCH DESIGN

This study will cover title of the study, significance of the study, aims and objectives of the study, research hypothesis and research design. This research has designed based upon descriptive study as it aims to identify and elaborate the concept of Fluid dynamics and its principles and its mathematical applications. The research design contains the following steps:

. Literature review

. Theoretical and experimental analysis.

Consequently, the following hypothesis will be invented

H1: The symmetry and similarity principles have positive effects in flood dynamics.

H2: The Group-Theoretic Criteria correlates with flood dynamics.

- **DATA COLLECTION**
  This study combines the secondary research method. Thus, gathering and analyzing the data will be done on the basis of existing research.

- **SAMPLE, TOOLS AND TECHNIQUES**

SPSS statistical packages of data analysis will employ to analyze the quantitative data.

- **SCOPES OF THE STUDY**
  This study will cover the baseline to assess the efficiency of fluid dynamics and its principles and its mathematical applications.

CONCLUSION AND FUTHURE WORK:

In this study we develop the basic equation of fluid mechanics. These equation are derived from the conservation laws of mass, momentum, and energy. We will begin with the simplest assumptions, leading to Euler' equation for a perfect fluid. These assumptions are allowed for viscous effects that arise from the molecular transport of momentum.

Throughout the study we emphasize the intuitive and mathematical aspects. Consequently the main objective of study is as follows-

. To study the application of mathematical to fluid dynamics

. To study Symmetry, Similarity and Group-Theoretic Criteria in fluid mechanics

. to study equation of motion (For ex- Euler's Equation) and its signification in fluid dynamics

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Forecasting Stock Market Returns using Artificial Neural Networks: Novel approach…

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ABSTRACT:

During the last few years there has been growing literature on applications of artificial neural networks to business and financial domains. In fact, a great deal of attention has been placed in the area of stock return forecasting. This is due to the fact that once artificial neural network applications are successful, monetary rewards will be substantial. Many studies have reported promising results in successfully applying various types of artificial neural network architectures for predicting stock returns. This research reviews and discusses various neural network research methodologies used in various journal articles that attempted to forecast stock returns. Modeling techniques and suggestions from the literature are also compiled and addressed. The results show that artificial neural networks are an emerging and promising computational technology that will continue to be a challenging tool for future research.

Neural Network and Convolutional Neural Network (**Artificial Intelligence)** is used for detection of Forecasting Stock Market Return. It is observed through empirical experiments that the selected input variables were effective to predict stock market returns. The forecasting stock market is used by Neural Network and the Convolutional Neural Network to detect the return percentile. In this research we will describe the prediction of stock return by performing Artificial Intelligence on Jupiter simulation tool by using Implement the neural network. This research work is proposed for for casting and prediction of stock market return on the basis of artificial intelligence based data set and values for used as prediction value.

We are executing the research on the basis of last year's data set of stock market returns both positive and negative so that we will apply the prediction model using artificial intelligence techniques and generate for casting report of stock market retunes for all particular client those who want to investment.

Keywords: Finance, Artificial intelligence, artificial neural network, , CNN, Jupiter anaconda navigator tool, WEKA, tensor flow, statistical analysis, prediction model, case study of various stock market return, regression analysis Etc. .

INTRODUCTION:

Nowadays, the most significant challenges in the stock market is to predict the stock prices. The stock price data represents a financial time series data which becomes more difficult to predict due to its characteristics and dynamic nature. Accurate prediction of stock market returns is a very challenging task because of the highly nonlinear nature of the financial time

series. In this study, we apply an artificial neural network (ANN) that can map any nonlinear function without a prior assumption to predict the return of the index.

This would help the investor to take better business decisions such as buy or sell stock. Stock Exchange (NSE), Stock Market Prediction. Prediction of a stock's prices would return significant profit. Model suggests trend of stock index based on historical prices.Therefore there is no sense in predicting future stock prices using previous values. In the case of stock prices, one has to take into account events that are external to the market. Probably, it would not be possible to predict such events using a neural network.

Stock market prediction is the act of trying to determine the future value of a company stock or other financial instrument traded on an exchange. The successful prediction of a stock's future price could yield significant profit.
AI has been used in many industries including trading. Most companies such as hedge funds, use AI-powered analysis to get investment ideas and build portfolios. AI makes it easy to analyze data and execute trades at the best price. Through AI, analysts can be able to forecast markets with more accuracy.

LITERATURE REVIEW: SLR.

Koswarik et al (2020) explored A great part of the ongoing work on programmed creator profiling dependent on grouping has included managed learning systems, for example, grouping trees, Naïve Bayes, bolster vector machines (SVM), neural nets, and outfit strategies. Grouping trees and gullible Bayes approaches give great interpretability however, will in general be less exact than different strategies.

L kruguer et.al (2019) examined the Feature extraction plays a prominent role machine learning, especially for text, image, and video data. Text and many biomedical datasets are mostly unstructured data from which we need to generate meaning full structures for use by machine learning algorithms.

M vas germin et .al (2018) study the Neural Network (NN) or Artificial Neural Network (ANN) is a paradigm to process information specifically fortified by the biological neurons (like in human nervous systems). It attempts to find fundamental relationships in datasets by using the series of processor that imitates the way the human brain works. The significance of this paradigm – it comprises numerous extremely interrelated processing elements (artificial neurons) operating mutually to solve particular problems. A neural network usually encompasses numerous tier-wise arranged processors operating in parallel. Raw input is injected to the first tier, whereas the output from each preceding tier is injected as input to the succeeding tier. Eventually, the last tier generates the final output.

Malik kizarhayat et.al (2019) Deep learning (DL) has attracted increasing attention on account of its significant processing power in tasks, such as speech, image, or text processing. In order to the exponential development and widespread availability of digital social media (SM), analyzing these data using traditional tools and technologies is tough or even intractable. DL is found as an appropriate solution to this problem. In this paper, we keenly discuss the practiced DL architectures by presenting a

taxonomy-oriented summary, following the major efforts made toward the SM analytics (SMA). Nevertheless, instead of the technical description, this paper emphasis on describing the SMA-oriented problems with the DL-based solutions. To this end, we also highlight the DL research challenges (such as scalability, heterogeneity, and multimodality) and future trends.

Majumder (2012) analysed observationally the between linkage among framework and provincial improvement in India. Utilizing Multidimensional methodology and composite list the paper found a critical connection among infrastructural and improvement, which is diverse for areas at various phases of advancement. His discoveries likewise propose that distinguishing proof of explicit prerequisites of various areas and infrastructural extension are significant necessity of adjusted local turn of events.

Kim y et.al (2012) the author proposed that CNN method. the convolutional neural network works on gender detection on social networks using classification techniques based on fram-work model for designing of programming approach along with data predictive and detection method.

AIM AND OBJETIVES:

In this study, we apply an artificial neural network (ANN) that can map any nonlinear function without a prior assumption to predict the return.

(1) To improve the effectiveness of prediction algorithms, we propose a new set of input variables for ANN models.

(2) To verify the prediction ability of the selected input variables, we predict returns for the Nikkei 225 index using the classical back propagation (BP) learning algorithm.

(3) Global search techniques, i.e., a genetic algorithm (GA) and simulated annealing (SA), are employed to improve the prediction accuracy of the ANN and overcome the local convergence problem of the BP algorithm. It is observed through empirical experiments that the selected input variables were effective to predict stock market returns. A hybrid approach based on GA and SA improve prediction accuracy significantly and outperform the traditional BP training algorithm.

(4) To analyses the spatial disparities in the availability of stock market data storage on networks as well as detection and prediction on stock market returns very fast accessible.

(5). To analyses the artificial intelligence AI based algorithms performance on stock market returns forecasting of data categories like data set on social networks.

(6). To asses and compare the overall facilities available at artificial intelligence techniques implementation for prediction of stock market returns accurately.

(7). To compare and analysis of various algorithms neural network, convolutional neural network, tensor flow on stock market data and determine accuracy, efficiency of AI technologies.

RESEARCH METHODOLOGY:

Research Design

This study will employ expressive analysis method. The descriptive research method will be adopted to analyses the availability and accessibility of stock market data on social networks. The basically research work design in this way for implement prediction of stock market data on networks.

SCOPE OF WORK:

In this study, we have used variations of ANN to predict the stock price. But the efficiency of forecasting by ANNs depends upon the learning algorithm used to train the ANN. we have used variations of ANN to predict the stock price. But the efficiency of forecasting by ANNs depends upon the learning algorithm used to train the ANN.

EXPECTED OUTCOMES:

The Jupiter navigator anaconda tool perform the simulation work details of machine learning algorithms like supervised algorithms. The supervised algorithm will take process on drone images data set which is convert into CSV files real data set for implementation work on Jupiter and simulation tool. The main result will generate is given below:

- The performance plots help us to identify the number of iterations (epochs) at which the mean squared error become least or stops changing.
- The network performance is validated through regression plots. Thus, the network output regarding targets for training, validation, testing, and overall datasets are displayed by the regression plots.
- represent the testing data, green bars represent validation data, and blue bars represent training data. The error range (maximum negative error to maximum positive error) is divided into 20 bins, and the plots are drawn.
- the data of past 30 business days used. A more extensive dataset can be used to bring in seasonal and annual factors that affect the stock price movement. Also predicting the minute by minute data can reduce dataset size by 70% and may be able to give comparable results while allowing us to use historical data of a more significant period.
- Recurrent Neural Networks may provide better predictions than the neural networks used in this study, LSTM (Long Short-Term Memory). Since statements and opinions of renowned personalities are known to affect stock prices, some Sentiment Analysis can help in getting an extra edge in stock price prediction.

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Smart health care monitoring system based on IOT framework using Low power wireless wearable devices: Novel Approach.

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Abstract:

Prosperity has prime importance in our regular day to day existence. Sound prosperity is essential to achieve the step by step work suitably. With gigantic measures of new human administrations advancement new organizations, IoT is rapidly adjusting the social protection dili-gence. IoT Based Patient Monitoring System using ESP8266 and Arduino. Prosperity checking is the significant issue nowadays. Heart-beat rate and inward warmth level readings are recorded over Thing Speak and Google sheets with the objective that calm prosperity can be checked from wherever in the world over web. we have organized the IoT Based Patient Health Monitoring System using contraptions. This IoT device could scrutinize the beat rate and measure the incorporating temperature. It continually screens the beat rate and incorporating temperature and updates them to an IoT stage. We are obser-ving various boundaries of the patient using web of things. In the patient checking system reliant upon Internet of things adventure, the continuous boundaries of patient's prosperity are shipped off cloud using Internet accessibility. These boundaries are shipped off a far off Internet territory so customer can see these nuances from any-place in the world.

There is a huge qualification among standard and IOT based patient noticing outline work. In IOT based casing work, nuances of the patient prosperity can be seen by various customers. The exp-lanation for this is the infor-mation ought to be seen by visiting a site or URL. However, in GSM based patient checking, the prosperity para-meters are sent using GSM through SMS. Wellbeing is the most pixie ortant part of any human's existence without wellbeing it is pointless to any prize of life. Most people carry on with a bustling life wherein going to a specialist for week after week or even month to month test is an incomprehensible errand. Without checking your wellbeing it is beyond the realm of imagination to whether you are a solid or debilitated individual. This issue prompts the plan of an item which mon-itors your wellbeing consistently without going to a specialist. In this paper, a framework is planned as a model for checking cautioning dependent on the soundness of an individual. This framework is completely auto-mated practically no human assistance is required. Any specialist can mon-itor this individual from anyplace through the web.

Keywords: Artificial Intelligence (AI), Healthcare, Internet of Things (IoT), Machine learning algorithms Systematic literature review, low power wireless wearable devices, etc.

Introduction:

Web of things has been a steady entertainer in the business market just as the medical services market, it has become an every day part of life for the vast majority of the current age and there is no big surprise to say that it will stay reliable with the ages to come. There may be various explanations behind the IOT worldview all through its excursion can be accepted to rely upon the improvement in the fields of wearable sensor organization (WSN), equipment industry, psychological or AI, etc. The public pay is unequivocally attached to public medical care consumption which can be essentially controlled with the use of IOT use cases in medical care. This section plans to address the accompanying inquiries with a specific accentuation on intellectual learning:

- What is the present status of utilizing psychological learning in IOT based medical care
- What are the drivers and difficulties for utilizing psychological learning in IOT based medical care. Conventional.

HEATH CARE MONITORING SYSTEM WITHOUT IOT.

- Diagnosing with the assistance of a specialist
- Conventional gadgets that can just gauge a specific boundary
- Devices that must be associated intrusively to get estimations
- No mechanized framework exists
- Smart watches are costly and not explicitly for medical services

IOT BASED HEATH CAFRE MONITORING SYSTEM.

- system for 24x7 human wellbeing observing is planned and executed
- In this framework, the Arduino gadgets utilized for gathering and preparing all information
- Different sensors are utilized for estimating various boundaries
- All this information is transferred to thing represent far off investigation
- An ESP8266 module is utilized for associating with the web
- A sunlight based force framework is accommodated controlling every one of the sensors

This framework is extremely successful in checking an individual's wellbeing ceaselessly on the grounds that it is completely robotized. It tends to be tried effectively with any individual. This framework is an awesome illustration of far off wellbeing checking.

ORIGIN OF IOT:

The term Internet of Things was first conceived by [7], the creator of the Auto-ID center at the Massachusetts Institute of Technology. Auto-ID is used to portray a wide scope of measures to perceive and improve applications, for instance, work automation, capability redesign, screw up decline, and so on In 2003, the Auto-ID center released the electronic thing code (EPC) coordinate. The EPC enables following things moving beginning with one territory then onto the following.

This gives a thought for the IoT pixie lemen-tation, where central processor can be utilized to make an organization for standard business implies [4]. The radio fre-quency recognizable proof (RFID) execution further concretes the chances for building up the IoT as another IT worldview in both scholastic and modern environ-ments [8]. In the 2005 report of the International Communication Union, the IoT was favorable to acted like a coordinated effort of processing and sensor-based tech-nologies, like sensors, remote organizations, implanted frameworks, object identifiers and nanotechnologies. This blend empowers the items to be labeled, detected and con-savaged over the organizations. The IoT is viewed as a brush ination of techno-logies planned to give collaboration and correspondence among connected gadgets [8]. A few undertaking frameworks, like medical services, the modern area, etc, in view of IoT applications have likewise been created [9]. Agricultural nations likewise appear to be definitely keen on the IoT. The previous Chinese President initiated a public IOT research focus in 2009 and conveyed a discourse about the requirement for cutting edge innovative work in the IoT field [10]

PROPOSED METHODOLOGY

An essential application locale of the IoT is the therapeutic administrations part. The IoT has accepted a basic occupation right currently improving assistance quality while reducing costs. It is possible to follow prosperity boundaries, for instance, BP, blood glucose, inner warmth level, and so forth, dynamically by using distant sensors. The progression of improved sensors, better data taking care of advances and pattern setting developments for distant correspondence has provoked the growing utilization of the IoT in the human administrations territory. The headway of wearable body sensor frameworks (WBSNs) to reliably screen patients‟ practices is another accomplishment for the execution of the IoT. As a piece of this examination we will be seen as the segment of the applications on Edge Computing in IOT generally speaking, while con-centrating on Health-care advance-ments close by AI strategies.

IOT Challenges:

The prin-iplechall-enges around IOT arrange-ments are:

1The measure of infor-mation produced by the sen-ors are immense. Extrac-tion of pertinent data from the caught inform-ation is a test. This exer-tion requires improvement of a calculation that can separate variations from the norm in caught inform-ation for body sensor sys-tems. There have significant research scopes in field of AI and testing cal-culations.

2. De-centralization of cal-culation. With an ever increasing number of gadgets being IOT able, calculation at one point will make bottleneck in organize assets. The calculation should be disseminated and Task Level Parallelism should be accomplished. Calculation and asset circulation calculations are zones of significant research enthusiasm for this field

3. The cal-culation should be con-veyed and Task Level Parallelism should be accom-plished. Cal-culation and asset conveyance calculations are regions of significant research enthusiasm for this field Security of the IOT gadgets.

4. Power Consump-tion at End Point Devices. Battery utilization is one of the significant worry in IOT gad-gets as charging these gad-gets may not be a simple issue. This issue is commonly fathomed by off-loading assign-ments to a back-end server and sparing battery power that would have been in any case required for in-house figuring. This gave a significant catalyst to look into in the spaces of decentralization of calculation.

5. Sec-urity of the IOT gad-gets.

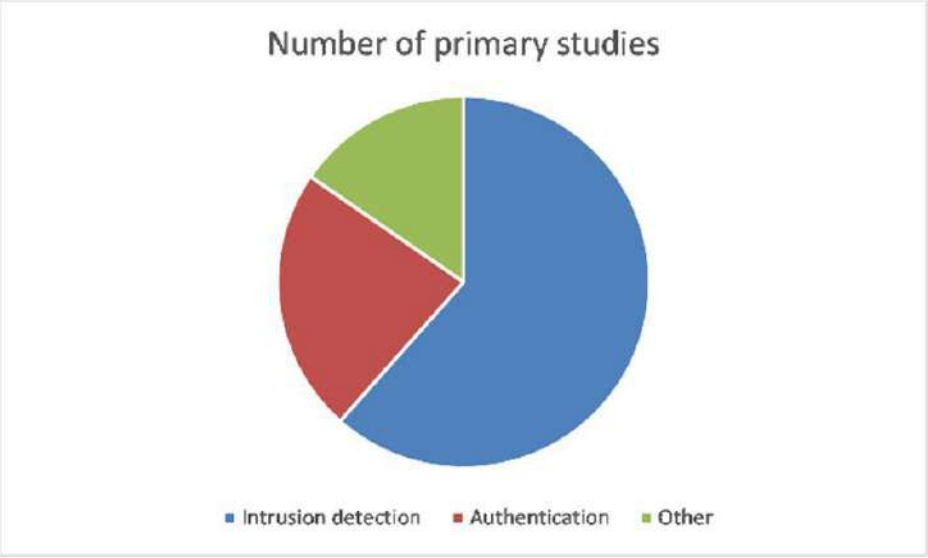
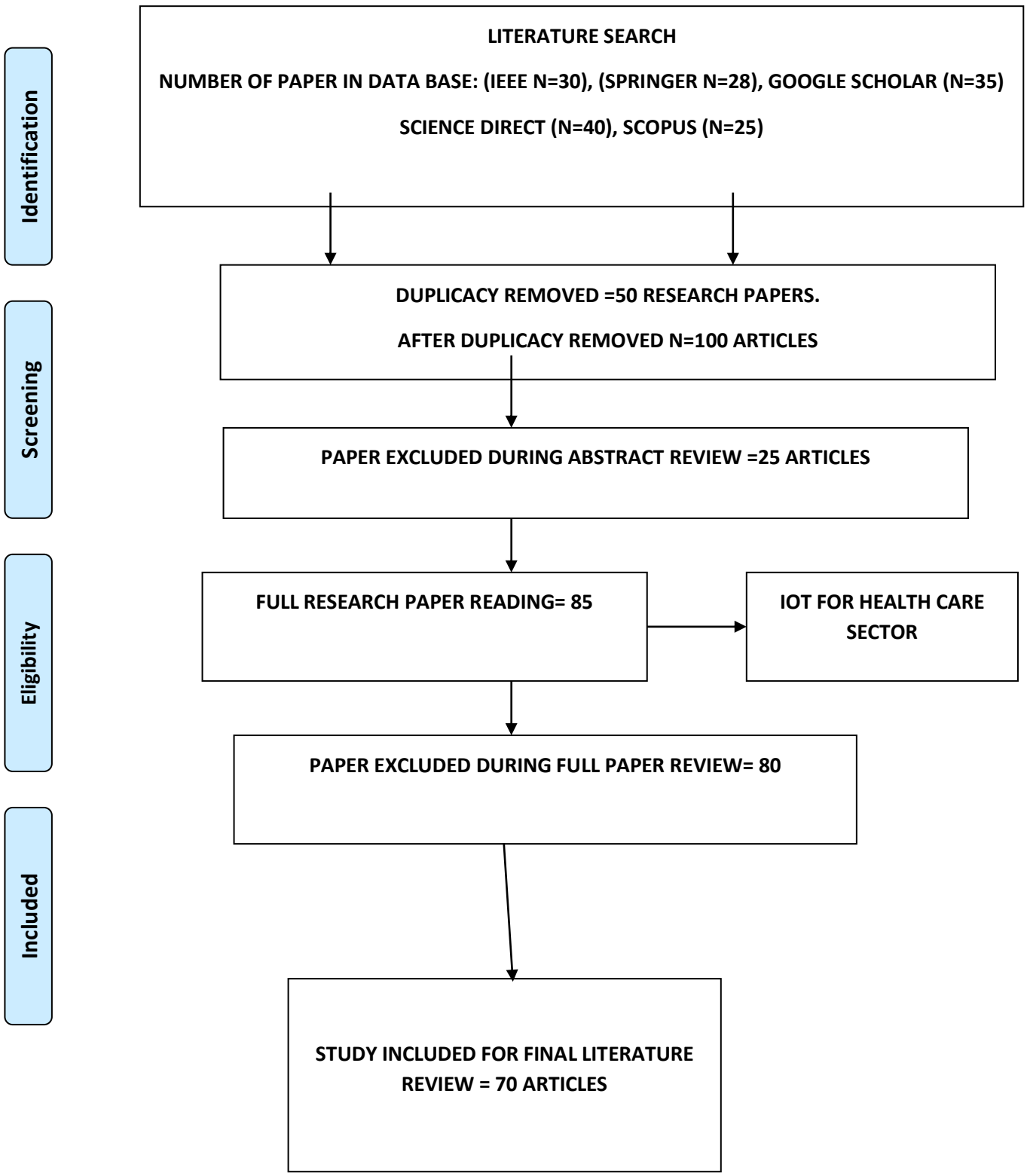


Figure 1: Classification of machine learning techniques

PRISMA Methodology for IOT healthcare system



Literature Review:ROL.

A fundamental application region of the IoT is the restorative organizations part. The IoT has acknowledged an essential occupation right presently improving help quality while decreasing expenses. It is feasible to follow success limits, for example, BP, blood glucose, internal warmth level, etc, powerfully by utilizing removed sensors. The movement of improved sensors, better information dealing with advances and example setting improvements for far off correspondence has incited the developing usage of the IoT in the human organizations domain. The progress of wearable body sensor systems (WBSNs) to dependably screen patients‟ rehearses is another achievement for the execution of the IoT. As a piece of this assessment we will be viewed as the section of the applications on Edge Computing in IOT as a rule, while con-centrating on Health-care advance-ments nearby AI procedures.

Literature Review: ROL.

THIS LIT-REATURE REVIEW BASED ON IOT FRAMEWORK FOR WEREABLE DEVICES. Currently, communication and sensing wearable devices and their respective software have become versatile for healthcare-IoT systems. A wide range of good decisions made by these systems is driven by the use of the following IoT-enabling technologies.

1. Related work based on devices and connectivity using IOT in health care system.

. Konstantinidis et al. (2015) give a short diagram of effectively accessible, generally ease, and simple to utilize controllers for old consideration mediations, including the WiFi remote controller, weight sensors, and Kinect sensors utilized for gaming and wellness following. These gadgets can be coordinated with Smart TVs, which can progress toward becoming center points for unpretentiously observing the status of older individuals, conveying alarms to wellbeing experts, and helping individuals practice through games, in this way empowering day by day life the board and autonomous living. Besides, ceaseless checking, remote determination and information sharing through versatile wellbeing gadgets and applications are basic for maladies, for example, strokes, rest issue, and epilepsy (Sun et al., 2016).

Shahmiri (2016) talks about inalienable dangers related with wearables, including hacking of gadgets and information, absence of clear and compact client understanding and security arrangements, absence of client information insurance enactment, which could deflect across the board selection of these gadgets. Thus, shoppers' worries with respect to wearables wellbeing impacts, precision and unwavering quality, information gathering and capacity, and protection are featured in an investigation by Marakhimov and Joo (2017). The creators find that shoppers respond emphatically to these issues and that future innovation needs to deliver them so as to be fruitful. It isn't amazing these worries exist, since there is an absence of guidelines checking IoT gadgets. Actually, a few analysts guarantee that in spite of the fact that IoT has indicated incredible guarantee for human services, it has not been as fruitful true to form as a result of the absence of solid and predictable

2. Related work on detection and treatment procedure using IOT for health care system

Today, doctors can analyze and treat considerably more illnesses than before examined work. Even following quite a while of training, they can at present battle to make the right determination effectively. This is the place advancements, for example, IoT and AI can assume a key job in giving dependable help to deciding a determination and the best course of treatment. Simulated intelligence innovations, for example, neural systems can rapidly break down the broad measure of data accessible to doctors, streamline the analytic procedure, and help stay away from mix-ups by coordinating both recorded information and explicit patient data (Amato et al., 2013). This is critical as tremendous measures of social insurance information are beginning to be accessible from an assortment of sources – including IoT therapeutic gadgets that can create constant information - making human example recognition and translation progressively troublesome. We know, for instance, that screening procedures, for example, X-Rays and CT sweeps rely upon the capacity of the radiologist to effectively translate the outcomes. In any case, by and large, 10% of mammography screenings have uncertain outcomes for bosom malignancy, and require further biopsies which can regularly cause major mental and physical distress for patients (Keleş et al., 2011). A comparable issue is looked with screening of the thyroid, where 20% of biopsies bring about further medical procedure so as to acquire a more clear determination (Paydar et al., 2016). In spite of the fact that not a trade for prepared doctors, AI frameworks can give extra help to specialists by giving more clear pictures, featuring suspicious locales, giving better investigation devices and individualized hazard assessments for every patient, which thus diminish the requirement for obtrusive techniques (Keleş et al., 2011, Paydar et al., 2016).

ANALYSIS OF LITERATURE REVIEW:

1. there have been extraordinary headways in figuring, avail-ability and detecting advance-ments as of late. Minimal effort Health groups fit for dete-cting human body cond-itions (Body Sen-sor Net-works) are presently fueled with abilities of regist-ering and avail-ability. A great deal of human services app-lications are put toge-ther presently based with res-pect to IOT world-view.

2 .For some continuous applications "distributed computing" is an over-head because of its h-gh and err-atic system inac-tivity and hence-forth edge regis-tering that carries cal-culation closer to the User Device is picking up in ubiquity. It may be noticed that by and large "edge registering" is an enhancement and not a sub-stitution of "dis-tribu-ted com-puting"

3. Setting mindful calculations are getting significant in IOT based arrangements.

IOT Applications in Healthcare:

Right now, will consider the prior articulations composing related to edge figuring and IOT applications in human administrations is given underneath:

IoT has app-lications in human services that advan-tage patients, families, doc-tors, clinics and insurance agencies. They can follow patients' adherence to treat-ment plans or any requirem-ent for guaran-teed clinical con-sideration. IoTem-powers social insurance experts to be pro-gressively attentive and associate with the patients proac-tively. This recommend-dation is for an in-significant exertion tenacious human administrations checking system model reliant on lightweight wearable sensors. These recognizing center

points are used for cease-less revelation and examina-tion of human adminis-trations data of patients. The devices are expected to have the alternative to accumulate and share the collected data among themselves thusly promising information examination and limit. This moreover sheds manual in-efficiencies at the same time. For understanding data assembling, an Audrino PI controller based wearable contraption with Body Sensor Networks is proposed.

The web of things in human services: The IoT is portrayed as a system of physical gadgets that utilizes network to empower the trading of information. Under-takings, for example, remote patient checking, treatment progress perception, and the lod-ging of immuniza-tions are for the most part capacities of clinical gadgets with in-corporatedIoT. The present innovation in social insurance and a general act of medication gets improved with the IoT frame--work. Experts reach is growing inside an office. The different informa-tion gathered from enormous arrange-ments of certi-fiable cases increments both the precision and size of clinical information. The exactness of clinical consideration conveyance is additionally imp-roved by fusing increase-ingly mod-ern advances in the human services frame-work.

PRO--POSED WORK:

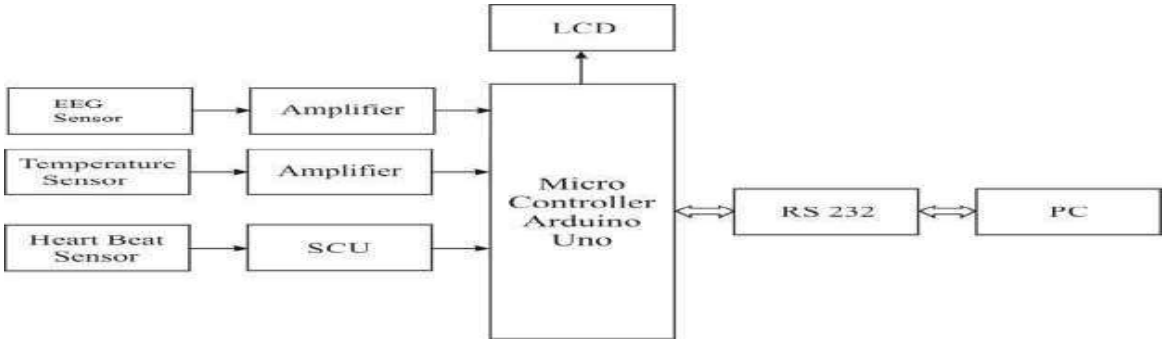


FIG 1.1 BLOCK DIAGRAM OF IOT.

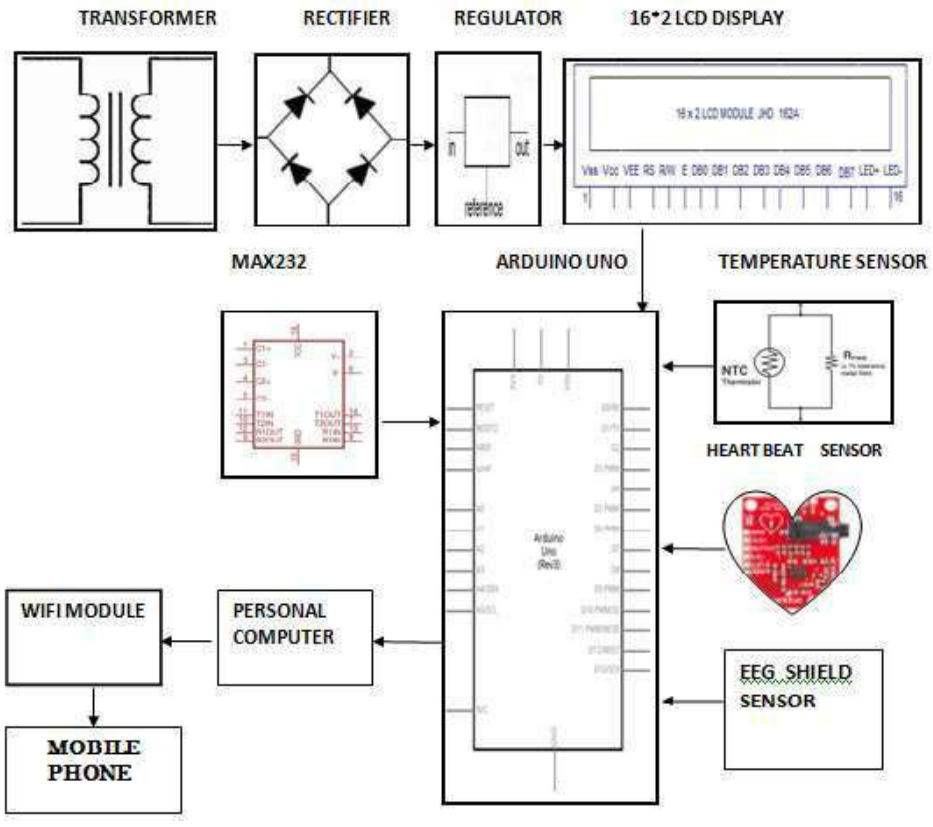
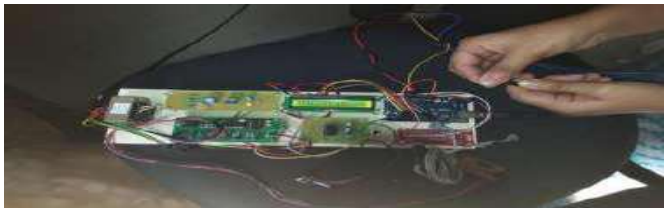


FIG1.2 HEALTH CARE MONI-TORING SYS-TEM USING IOT

Sim-ulation and result ana-lysis:



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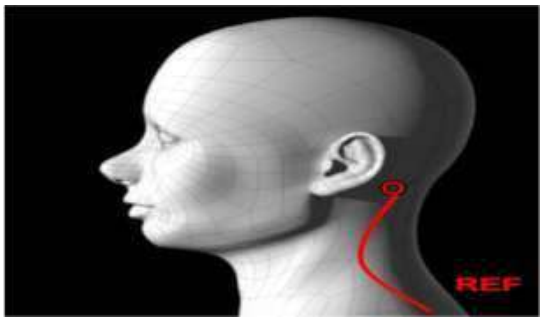
2. 

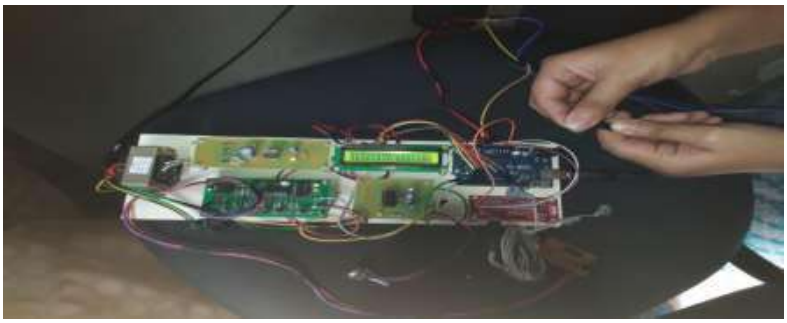
IOT MOBILE BASED:

The yield is shown through string in a specific interim of time. The app-lication is basic as it just shows the simple qua-laities followed by an announce-mentport-raying the sort of signif-icant worth showed.

Output displayed in the mobile application device

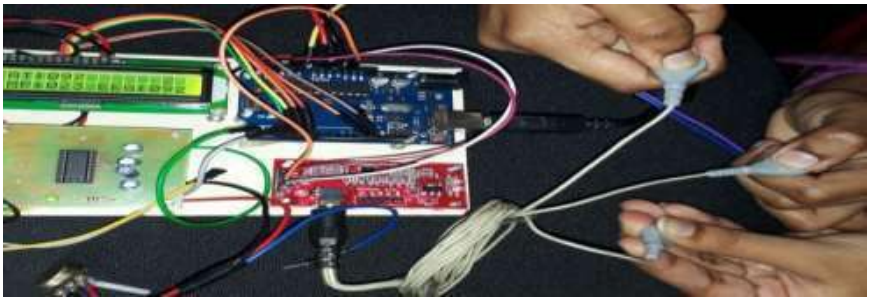
Test-ing and find-ings health ca-re unit:

1 Temper-ature Find-ings



2. EEG Find-ings

The EEG sen-sor is used with elec-trodes with error rate indi-cating the status as ac-tive or in-active.



SIMULATION AND RESULT ANALYSIS:

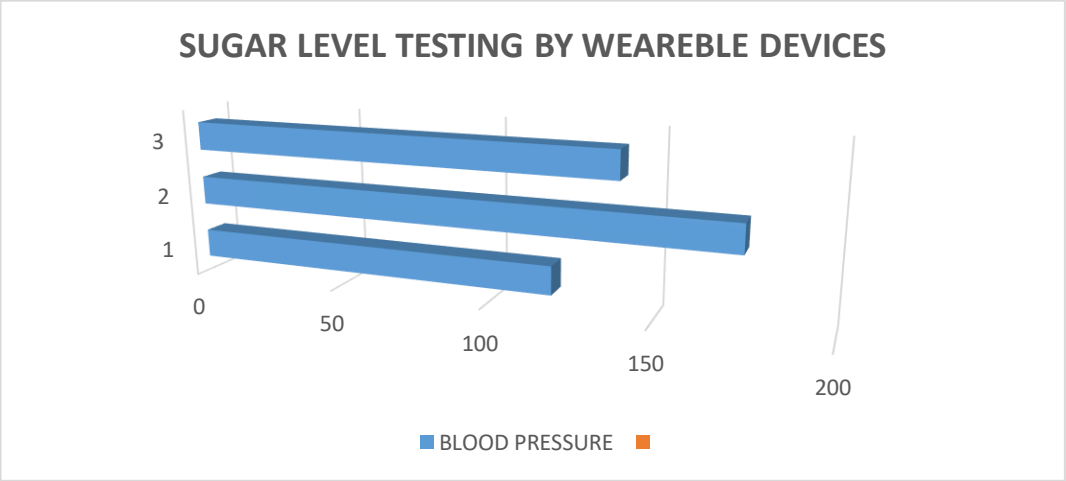
Resul-tant and graph for mea-suring various para-meters: WEA-REBLE DEVICES.

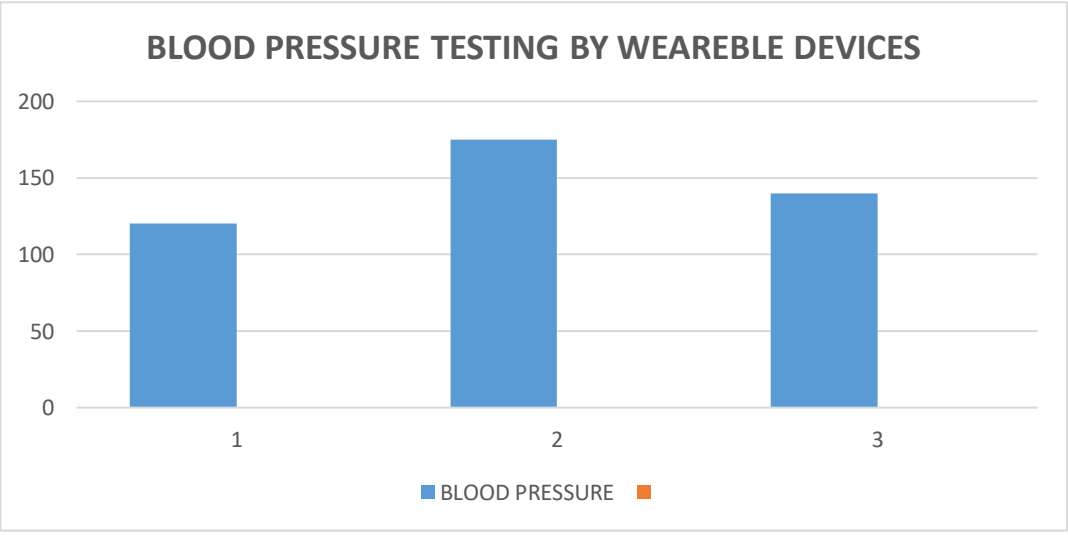
- **blood sugar mea-sure by rasp-berry pi cont-roller:**

IOT DE-VICES	PATIENT 1	PATIENT 2	PATIENT3
BLOOD PRE-SSURE	120	175	140

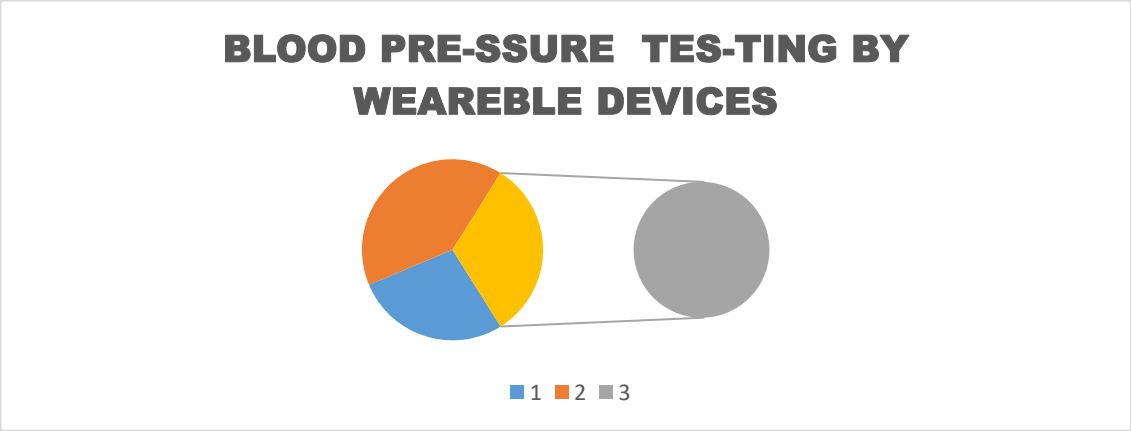
- **Temp-erature measure graph: rasp-berry pi con-troller:**

HEALTH PARA-METRS	22.05	22.1	22.2	22.25	22.3	Tem-perature mea-sures	
BODY tem-perature	23	23	24	23	24	temp	23
BODY tem-perature	23	23	24	23	24	temp	24





IOT DEVICES	PATIENT 1	PATIENT 2	PATIENT3
BLOOD PRESSURE	120	175	140



Conclusion:

The consistently pixie erative para-meters, for instance, heart_beat, body temp-erature, EEG signs can be dis-played in the crowd ile phone and the comparable can be ship off the expert during emer-gencycircum-positions. The expert introduced sys-tem of patient prosperity moni-toring can be especially used in emer-gency conditions as it will in general be step by step monit-ored, recorded and set aside as a data base. In future the IOT device can be com-bined with the distri-buted com-puting so the illuminate ation base can be dad taken in every one of the centers for the raised consideration and treatment. Tireless Health mo-nitoring using IoT is a development to em_power seeing of patients out_side of conventional clinical settings (for instance in the home), which may construct admittance to mind and decrease social protection con-veyance costs. This would altogether be able to improve an individual's very own fulfillment. It licenses patients to keep up indepen-dence, thwart comp-lications, and cutoff singular costs. This edge work facili-tates these goals by con-veying care right to the home. In addition, patients and their rel-atives feel com-for-braid understanding that they are being checked and will be sup-ported if an issue emer-ges.

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IOT Technology for Pandemic Situation

Sayali Karmode Yelpale

Abstract

IoT is a well developed technology. We can say with the help of iot everyday work get easy, we can see iot is everywhere. IoT is playing a major role in automated industry, smart home, smart cities everywhere. Now the turn comes of health care industry. Iot is playing crucial role in the medical field also. As this world is suffering from the pandemic, we can see how iot can help in this pandemic. We can use iot technology to fight battle with covid 19. This paper examines the role of IoT-based technology in COVID-19.

Keywords: Internet of thing, COVID-19, IoT, Healthcare, Pandemic, Wearable device, IoT Technology, Challenges

Introduction

In offline mode communication of patients and doctor were possible on phone calls and text messages only. Even there were few apps with the help of which all things are possible i. e meeting with doctors. But now in this pandemic as we know the incubation period of covid patient is 14 days, and if symptoms are found then treatment is possible. But in case of asymptomatic case its not easy to find covid cases and put them quarantine. In all this situation we can take help of technology. IoT is the best option here, with the help of Iot and cloud technology we can win this war. Most of the companies are working with iot professionals to invent technology to fight with this battle[1].

Also, we can say giving treatment to patients by conventional method is smart way to deal with this pandemic. Avoiding contact with patients while treating them and while diagnosis process is the need of the current situation.

Most of iot company has started working on iot gadget which we can use to win battle against covid 19. Important thins is here diagnosis. Here, we can use wearable with the help of which patients temperature can be collected, and analysis can be performed. As our country is facing new issue where oxygen level is low in most of the covid cases, so we can use few

wearables so that oxygen level and other factors can be analysed very well[2]. Other than wearable also new gadget can be invented with the help of which patient monitoring and treatment is possible without direct interaction. Good sensor, cloud technology and with the help of advance algorithms and by integrating them by professionals we can fight the battle of covid 19. We will see throughout this paper, IoT Technology how can help to fight battle of covid 19 remotely, wearable gadget and how they can work and in last challenges while implementation of iot in health care field.

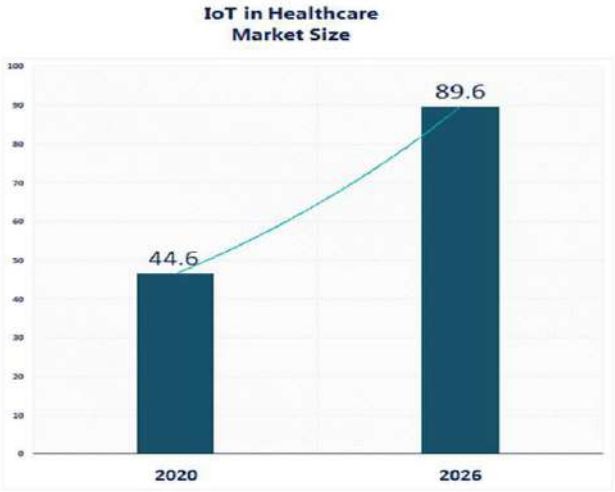

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Fig 1: IoT in Healthcare Market

IoT Technology for Pandemic

Telemedicine

Telemedicine where all information of the patients is collected remotely. We can say here with the help of telecommunication and electronic gadget all details of patients like temperature, oxygen and everything can collected without any physical attendance of doctor. Telemedicine is additionally found to be efficient because it eliminates the price of travel and it will increase patient engagement[4].

We can use various wearable gadgets to fight with this pandemic. We can use wearable like wrist smart watch and smart finger ring to check blood pressure and heart rate in

asymptomatic and pre-symptomatic cases.An also smart mask can be used to monitor breathing pattern of an individual and may more gadgets can be invented.

Patient Monitoring(Patient Examination) – to observe patient's blood pressure level, sugar level, temperature and oxygen level

Heart rate monitoring – For measure pulse rate accurately of patients

Mood Monitoring – to grasp a patient's psychological state.

There are also other devices are available in the market like smart eye lense which we can use for various types of monitoring

Contact tracing of patients

Incubation period of covid is 14, person can spread virus easily, transmission is fast and unknown if the person is asymptomatic so it's very important to trace people with whom the symptomatic/asymptomatic have met in the period. For this we can say iot device plays a vital role[5].

It can work like that:

1) Iot wearable will collect all information like temperature of patients, and other vital parameters from the patient

2) With the help of AI and few advance algorithm analysis can be performed on this information and decision will be taken

3)With the help of this, most of the areas can be traced where large number of patients are found.

4) Real-time location system like RFID if using with iot wearable then it will be helpful to track patients throughout his quarantine and recovery period by providing proper treatment remotely.

And also this type of gadget can be used to for analysis purpose and for study of new behaviour of the virus

Healthcare-related IoT revenues area unit expected to succeed in over $135 billion (€111.13 billion) by 2025 with seventy-five billion actively connected devices across the world [6].

Sanitising hospitals and affected areas using drone and robots

Drones are playing major role since long time in our country for security purpose in military.Drone Technology can be more powerful with the help of AI and advance algorithm in future days[7]. To convey message or information related to covid drone can be used in the city. Also for street surveillance drone can be used in lockdown days. Already few countries have implemented the use of the drone for temperature checking. Also for food delivery in contaminated zone and for disinfectant spray purpose drone can be used.

Once this method is complete, the automaton notifies the staff that the space is currently safe to be used. Robotic disinfection methods double measure proving to be extremely effective, whereas ancient medical care ways were restricted to the surface[8].

Challenges : Data privacy and protection in healthcare

IoT is using data collection strategy where data is stored on cloud and analysis is performed. While thinking about use of IoT in medical field security issue comes. As we know hackers are ready everywhere to stoles all information. Patients health is important along with that privacy also important. Patients data should be secure in case of implementation of iot in medical field. Here network security is challenging factor, we have to consider while working on IoT for the medical field in future days[9].

Conclusion

With the help of IoT Technology and its implementation in health care field we can fight battle of covid 19. With the help of wearable and few other gadget ways of treatment and effectiveness will be more advance in future days. Along with that data privacy will be the main challenging factor when implementing IoT in medical field**.**

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Skilled Manpower requirements in the Solar Energy Sector and Veteran Recruitment

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ABSTRACT

Solar energy ranks as one of the best forms of energy for the sustainable development of the world, due to its renewable, reliable, clean and green nature. The recognition of this fact has encouraged many countries to adopt solar energy focus in their respective energy policies. Hence, nations are competing with each other to promote the solar energy sector and increasing their solar energy capabilities, resulting in the emergence of the solar energy sector as a potential source of employment for future generations. Various factors affect the growth of the solar energy industry, worldwide. Among these, an important concern is the acute shortage of skilled and employable graduates in this field. The growth of the solar energy market has created a huge demand for skilled employees and the future holds a promise of providing significant employment to skilled manpower. However, due to various factors, unless new recruitment and training strategies are adopted globally, it is not possible to exploit the massive potential for employment that the solar energy sector can generate, in the next few decades. This paper reviews the recruitment of veterans and training them with the skills needed to discharge various duties in the solar energy sector, as a method of addressing the problem of skilled manpower shortage in the solar energy sector.

Keywords: Recruitment, training, employment, veterans, skills, renewable, solar, energy

Introduction:

In recent times, due to the large scale deployment of solar energy both at the domestic level and the industrial level, every country has been able to harness solar energy in a big way. This has paved the path for sustainable development through solar photovoltaic and solar thermal technologies which are practically free from emissions, economical in the long run and easy to install, operate and maintain. The increasing rate of growth in the solar energy sector is a welcome development as this offers an effective strategy for combating the consequences of climate change, and contributing significantly to energy conservation opportunities at every level and in every aspect of life influenced by solar energy, either directly or indirectly. To meet the human resource needs of the rapidly growing solarenergy industry which offers scope for large scale employment, adequately trained and dedicated professionals have to be provided for successful implementation of large scale and small scale projects alike.This paper suggests that the recruitment of veterans in the solar energy industry is a feasible solution to meet the shortage of skilled manpower being faced by many countries in the world. This measure will provide the solar energy sector with employees who are capable of hard work and willing to take up challenging tasks as well. The expertise, dedication and skills of veterans who have served the defence sector in the past, stands out as a strong reason for their potential to discharge their duties in the solar energy sector

Human Resource Requirements in the Solar Energy Industry:

There is a need for employees equipped with the skills and competencies that are required for efficiently managing, handling and servicing solar equipment in various type of applications ranging from stand-alone rooftop solar photovoltaic panels to grid integrated solar systems and large scale solar power generation plants. The current research practices in the solar energy sector are mostly focused on technical aspects like cell efficiency, energy storage, hybrid solar applications etc. Hence the world is not yet braced fully to cater to the human resource needs of the solar energy sector. In this light, some studies have been done, which have pointed out deficiencies in manpower planning for the future. Countries like India and China have a large population and a vast potential for human resources in the renewable energy sector. The current trends in solar energy suggest that there is an imminent need for catering to the manpower needs of the industry. However, a wide gap between the employment potential and the extent of skilled manpower available in the market, to meet the human resource requirements of the solar energy sector. The universities and training institutes have not been able to

produce graduates and trained manpower who can be employed by industries in the solar energy sector or who can establish themselves as entrepreneurs with support from the government and financial institutions. Hence various strategies are being adopted by different countries, to meet the growing demand for skilled manpower in the solar energy sector.

India's efforts to promote Solar Energy:

India launched Jawaharlal Nehru National Solar Mission (JNNSM) in the year 2010. This is a joint initiative by the central and state governments to promote solar energy in all parts of the country. The National Solar Mission which has been revised twice has been working towards a target of 100GW of solar photovoltaic power generation, by the end of 2022. This is likely to establish India as a world leader in the solar energy sector by promoting its deployment in all parts of the country. The National Solar Mission has three phases namely, Phase 1 (2010- 2013), Phase II (2014 - 2017), and Phase III (2017 - 2022). Phase III is in progress and is in tune with the 13th Five Year Plan. The cumulative target for grid-connected solar photovoltaic applications is 100,000 MW while the target for off-grid solar photovoltaic applications is 2000 MW.

Floating Photovoltaic technology (FPV technology) involves the installation of solar photovoltaic panels on water bodies. They offer several advantages when compared with ground-mounted solar plants. There are some associated environmental benefits too. There may be some challenges in maintaining FPV plants that can only be reached by boats, however. If given importance and necessary support, FPV technology can help in the cause of India's clean energy transition. It also has the potential to generate employment in many parts of the country. The Indian government has set a target of achieving 10 GW of FPV capacity by 2022. A small-scale FPV plant with a capacity of less than 1 MW, directly employs 58 people.

A study conducted by Ghosh, Arunabha et al (for 'Council on Energy, Environment and Water' in collaboration with the National Research Development Corporation (NRDC), Government of India) found that solar developers will need a large number of skilled personnel across every phase of a solar project. The key findings of the study include the following:

- India's target of generating 100 GW of solar power would generate more than 11 lakh jobs by the year 2022.

- Every year, nearly 81,000 highly skilled workers would be required to carry out annual and ongoing performance monitoring of solar projects scheduled for completion by the year 2022.
- An additional 1,82,400 workers would be needed annually by 2022, for low-skilled operation and maintenance functions in solar rooftop and utility-scale projects.
- To reach a 40 GW target for rooftop solar power generation by 2022, India requires 2,10,800 skilled site engineers and 6,24,600 semi-skilled technicians for construction.
- The availability of appropriately skilled manpower is a major challenge. The solar sector would benefit by recruiting workers from conventional labour markets with pertinent skill sets.
- Other key challenges include inadequacy of advertising platforms for solar energy-related jobs, low salaries, lack of local proximity to training institutes, deficiencies in existing solar power training programs etc.

Employment status of veterans in India:

In India, there are about 26 lakh ex-servicemen, and 60,000 widows seeking employment. They include junior Commissioned Officers, Non-Commissioned Officers, and other ranks, and about 14 per cent are officers as per Wikipedia.

A study conducted in Gurdaspur district by Panjab University inferred that there is a high degree of unemployment among ex-servicemen in India and that many of them are not able to lead comfortable lives after retirement. Intending to provide useful employment and help ex-servicemen in the country, the Indian government had established Directorate General Resettlement (DGR). Through the services offered by the Department of Ex-Servicemen Welfare (Ministry of Defence), the institution offers employment assistance facilities to ex-servicemen in India. Ex-servicemen only need to be registered in a District Sainik Board to avail employment assistance facility. This has been done to increase transparency and to empower ex-servicemen.

Categories of Ex-servicemen:

The definition of Ex-servicemen has been changing from time to time. At present, there are as many as four definitions for four different periods. The eligibility of the person to the status of ex-serviceman will be governed by the definition in vogue at the time of his discharge and will not be affected by the changes in the definition after his discharge.

The aforesaid four definitions for different periods are as under:-

Those released on or after 01 Jul 87

'An ex-serviceman' means a person, who has served in any rank whether as a combatant or non-combatant in the Regular Army, Navy and Air Force of the Indian Union and;

1. Who retired from such service after earning his/ her pension or

2. Who has been released from such service on medical grounds attributable to military service or circumstances beyond his control and awarded medical or other disability pension or

3. Who has been released/ retired or discharged at his request, but after having earned pension or as a result of a reduction in establishment; or

4. Who has been released from such service after completing the specific period of engagements, otherwise than at his request or by way of dismissal or discharge on account of misconduct or inefficiency, and has been given a gratuity; and includes personnel of the Territorial Army of the following categories, namely:-

(i) Pension holders for continuous embodied service,

(ii) Persons with disability attributable to military service, and

(iii) Gallantry Award winners

Explanation: The persons serving in the Armed Forces of the union, who on retirement from service, would come under the category of "Ex-servicemen" may be permitted to apply for re-employment one year before the completion of the specified terms of engagement and avail themselves of all concessions available to ex-servicemen but shall not be permitted to leave the uniform until they complete the specified terms of engagement in the Armed Forces of the Union.

Personnel of Army Postal Service: The personnel of Army Postal Service, who are a part of the Regular Army and retire from such service (that is, directly from the Army Postal Service itself without reversion to P&T Department) with a pension or who have been released from such service on medical grounds attributable to military service or

circumstances beyond their control and awarded medical or other disability pensions, come within the definition of ex-servicemen.

Those released on or after 01 Jul 79 but before 01 Jul 87

Any person who had served in any rank (whether as a Combatant or not) in the Armed Forces of the Union for a continuous period of not less than six months after attestation, if discharged for reasons other than at their request or by way of dismissal or discharged on account of misconduct or inefficiency and not less than 5 years of service if discharged at his request.

Those released on or after 01 Jul 68 but before 01 Jul 79

Any person who had served in any rank (whether as a combatant or not) in the Armed Forces of the Union for a continuous period of not less than six months after attestation and released therefrom otherwise than by way of dismissal or discharge on account of misconduct or inefficiency.

Those released before 01 Jul 68

Any person who had served in any rank (whether as Combatant or not) in the Armed Forces of the Union and has been released therefrom otherwise than by way of dismissal or discharged on account of misconduct or inefficiency.

Potential of Veterans in the Solar Energy Sector:

The fast-paced growth in the solar energy sector will serve as a springboard to success for veterans in every country. The following factors suggest that veterans have the skills required to be successful in the solar industry:

- During their tenure of military service, veterans are trained to lead, and given responsibility early in their career;
- Veterans are usually focused on their mission, and are committed to the successful completion of any job, on time;
- Veterans work well in teams, simultaneously completing their work and supporting their colleagues to reach the goal at hand; and
- The work ethics of veterans are of a high order. Veterans are accustomed to working for long hours in diverse environments.
- Veterans view climate change as a threat to national security. Working in solar is one way for them to continue in their service as defenders of our nation.

- Energy independence — particularly achievable through clean, domestic sources of power — is vital for any country's security.
- Working in the solar energy sector allows veterans to continue their powerful experiences of service to the nation.
- Many skills learned by veterans in the military service are just the skills they need to thrive in the solar industry.

Fig 1. Members of the military learn how to install solar panels at a Solar Ready Vets training program at Ft. Carson in Colorado. Source: Solar Ready Vets

Types of jobs in the Solar Industry:

Various types of jobs exist in the solar industry, for veterans from all backgrounds. Some of the important solar energy-related jobs are listed below:

- Solar photovoltaic installers completing installations of solar arrays by mounting the racking structures on rooftops, assembling the panels, and connecting electrical equipment.
- Solar system inspectors monitoring quality and ensure that all aspects of a solar energy system have been safely installed and meet established standards.
- Solar sales representatives working with potential solar customers, and communicate the benefits of clean energy for both residential and commercial projects.

- Solar electricians providing technical expertise to an installation team, incorporating safety measures and ensuring successful connections between the home and the panels.
- Solar system designers incorporating electrical and structural engineering concepts to create detailed and accurate plans for residential and commercial solar energy systems.

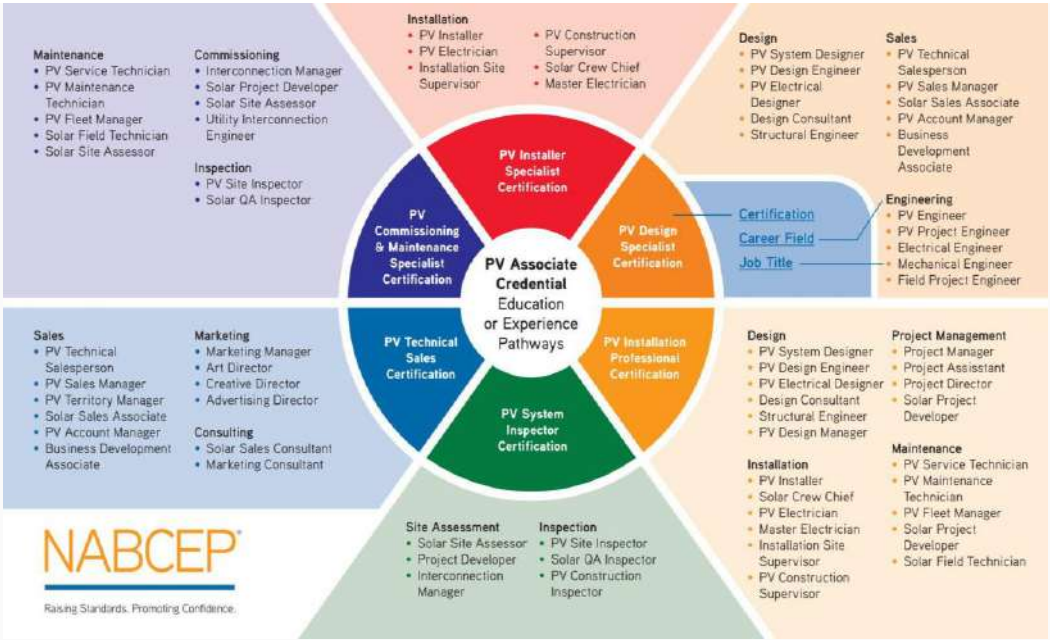

Fig 2. Employment categories in the Solar Photovoltaic Sector

Source: North American Board of Certified Energy Practitioners

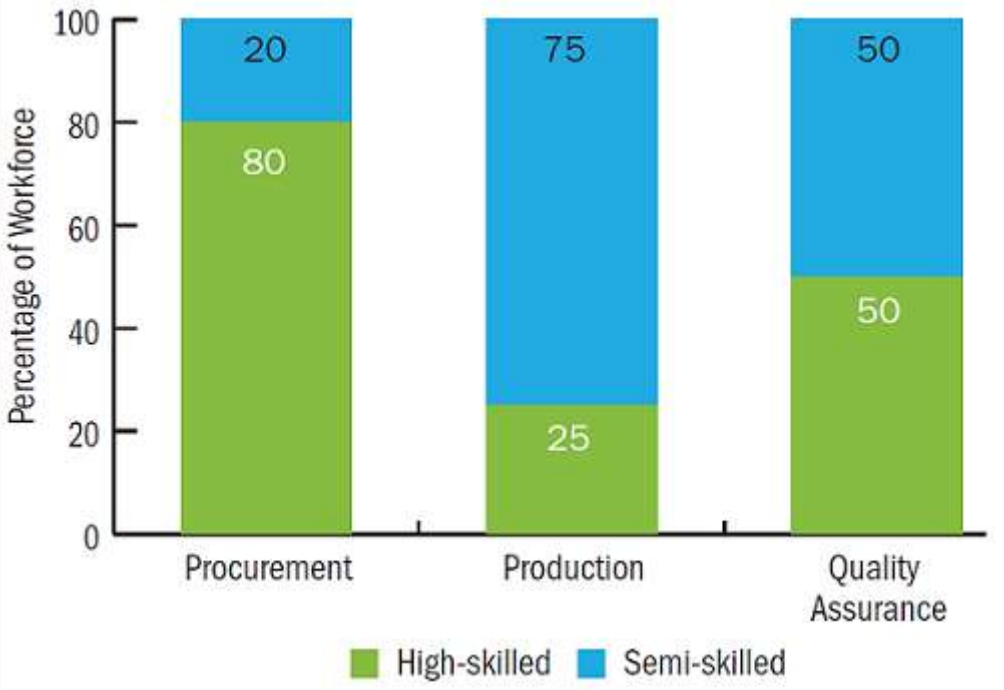

Fig.3. Relative Proportions of High-Skilled and Semi-Skilled Workers Engaged in the Production of a Mid-Scale Floating Photovoltaic Power Plant

Source: Council on Energy, Environment and Water

Conclusion:

The solar energy sector has been evolving and growing significantly during the last two decades; and continues to grow, owing to the numerous advantages that solar energy offers to the industrial world. It provides ever new opportunities for individual and organizational growth in our global pursuit of sustainable development. The recruitment of veterans in the solar industry is mutually beneficial, helping veterans find employment in jobs that will support the national economy, and helping rapidly expanding solar companies fill their new roles with competent, motivated workers. The skills that ex-servicemen acquire during their military service can easily be used by the industry, given the nature and extent of hard work involved in the jobs that are available in the solar energy sector. Many veterans have the opportunity of learning crafts and technical skills that can benefit the solar industry during their training schedules, in active duty. However, veterans acquire many assets which transcend technical skills. The intensive, well designed and scientific training that veterans receive during their service enables them to operate individually and also helps them to effectively work with each other as a team. This, along with their inherent and acquired leadership skills, makes many veterans suitable for challenging assignments in the solar industry. Hence, it is

concluded that the problem of manpower shortage can be addressed effectively, by enabling the recruitment of veterans, and providing them with the training and resources necessary for achieving high productivity, thus facilitating the attainment of solar power generation targets outlined in the national policy. The development of a veteran talent pipeline by any country calls for a sustained endeavour from different sectors of society. The skills and talents of veterans can be successfully utilized in the solar energy sector by the synergistic efforts of the governments of different countries, renewable energy companies, military organizations, ex-servicemen welfare associations, trade associations, and education and training partners in universities and colleges across the world. Veterans bring with them the important perspectives they learned during their tenure in the country's defence services — and these have the potential to reinforce a nation's security and build a bright energy future.

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Fighting Financial Crime: Accuracy versus Truth

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Abstract

Financialcrime in numerous social orders is a significant danger to the improvement of economies and their dependability.

The Financial Regulators and administrations implement enormous measures andcontrols to handle Financial Crime, anyway the scale and effect of the issue are tremendous, with criminals constantly developing their skills to misuse the current banking structure. This is on the grounds that the current administrative structure isn't sufficiently viable to engage banking foundations to battle the consistently developing organizations and system accessible to lawbreakers.

As per RBI orders, Banking and insurance agencies are characterized as monetary function, and accordingly, should have reasonable Customer due diligence (CDD) measure set up, including client personality check. While numerous laws areimplemented the across the board, but industry guidelines and practices have not yet up to speed to those of banking with regards to compelling misrepresentation counteraction and banking. That's where Bankers skills to identify truth in the documents provided by the clients.

Keywords

Financial crime, Financial Regulators, RBI, Banking and insurance, Customer due diligence, Client personality check

1. Introduction

Impact of Financial crimeare broad. High-profile fake documents and illegal tax avoidance cause monstrous financial misfortunes as well as frequently lead to prosecution costs because of resistance of different guidelines. Aside from monetary harms, institutions face unsalvageable hit to their standing and thus wind up losing possible clients. The lone reasonable arrangement lies in carrying out a solid combat system that secures institutions against multi-divert misrepresentation progressively.

Misrepresentation and Financial crime executed against back up plans are on the ascent. Albeit the financial business stays the essential course for tax evasion, stricter guidelines and improved AML controls inside that area have driven lawbreakers to different channels that might be more defenseless against illegal tax avoidance exercises. Protection suppliers, frequently less receptive to misrepresentation rehearses and with less assets committed to anticipation, are progressively enduring an onslaught..

2. Writing survey

There is developing agreement that the current worldwide structure for battling monetary wrongdoing isn't really compelling, and that all the more should be done at the worldwide, local and public levels to help distinguish and stem the progression of unlawful money – an actionwhich upholds a portion of the most noticeably awful issues going up against society today, including psychological warfare, sexual abuse, present day subjugation, untamed life poaching and medication sneaking.

The powerful and strong use of worldwide principles isone of the essential methods by which the Financial framework can be protected, and fraudsters can be foiled in their attempts to break the system. Conflicting application of rules can lead to confusion among rules and a breakdown in enhanced participation and enable stakeholders to achieve more effective outcomes.

It is not necessarily the case that progress has not been made around here.

The Monetary Activity Team (FATF), presently in it's 30th year, has driven the route in globally planned activity to diminish cross-line monetary guiltiness and keeps on doing as such in new furthermore, dynamic regions. Notwithstanding, a mix of administrative change, social change, the presentation of better approaches for working and the sending of new innovation could altogether improve the work of governments, law authorization and the monetary administrations industry in handling the dangers presented on a worldwide premise.

This paper recommends for both the general populationf, private sectors to consider; the fundamental strength and culturalimpacts of Financial Crime, impediments on the viability of the worldwide Financial Crimeimpact on the banking system and a way forward on improving that worldwide system.

These are based around seven 'empowering influences', where changesof a foundational or strategic nature would upgrade all-encompassing viability and would permit gradual improvement at pace, in request to proceed with the worldwide discourse on significant change. A feware now getting looked at or being followed up on through the FATF or in certain homegrown or provincial conditions and a solutions, notwithstanding, when taken together

worldwide, these have the ability to change how society battles Financial Crime.

3. Current issues with KYCprocess

As of now, the KYC process and customer information anddata processingisfragmented.Each system which is disconnected may hold data of the same client which may match, yet may likewise be conflicting, furthermore, inadequate, a shortcoming in the process which criminals can exploit all to misuse the banking system.

Second issue is KYC system is very operational in nature, which follows very standard operating procedures. This introduces the lack of trust in the data. This means banker relies on the documents submitted by the customer and there is no way by which banker and check the credibility of these documents.

Third issue in the KYC system is that there are multiple teams work on the KYC processes, these teams are disjoint and hardly have any communications. These teams follow their own standard operating procedures, this is heavily exploited by criminals are different level of the KYC process.

As mentioned in above paragraph, due to issues and limitations in the current process KYC team always go with the accuracy of the documents, and did not verify and establish the truth of these documents.

Due to lack of Truth in the documents, fraudsters Fraudster are doing Frauds by producing 100 per cent on completely fabricated documents to convince private investors, SEBI and bankers to loan them money and that they were more creditworthy there are no real jobs, no employees, no real contracts. Just pieces of paper that they produce out every day whole books of accounts – the records, invoices, expenses are fabricated.

4. Accuracy vs truth

The key lesson is, after you have looked at the accuracy of the documents, and whether they tie in together,Ask yourself not only “Are the documents accurate?” but also “Are they true?”.All fraudulent documents are accurate.

It is just you have to ask those other probing questions that have nothing to do, really, with the numbers, but have to do with the essence of what you are being asked to believe.

We should always be inquisitive, of why we should be prepared to ask the difficult questions, to probe that much deeper to go beyond simple accuracy and establish the truth.

Where it isn't now conceivable, expanding the accessibility of unified corporate data through helpful and provide the evidences to law enforcement specialists in the controlled area. This has to be done for all

areas and the more broadly would empower specialists to turn into a powerful insight in most difficult processes of the KYC cycle. Outcome will be improvement of KYC process and could further decrease loopholes in process and between banking establishments. This will also prevent misuse by lawbreakers.
Computerized identity proof (ID), at the individual and the corporate level as both a method for improving the proficiency and adequacy of the KYC and CDD measure is critical.

It is crucial all financial Crime prevention department– like AML, Cyber and Fraud teams – work together share undermine data and develop the models that will help in comprehensive understanding of criminals, and criminal threats. These department operate across thematic silos; they must join the forces to prevent and threats. Banks should put efforts to data sharing across department is a key success factor of an effective andefficient response to threats.

The advantageous effect of an uplifting outlook at work is boundless, remembering the height of expected freedoms and capital for terms of force and status. An inspirational perspective frequently has an effect, developing fine connections that lead to a more sure workplace and objective accomplishment. The right mentality is one that "tries to improve, is equipped for collaboration, and tries to be a can-do individual." A positive workplace advances high profitability and results-arranged participation. Great and negative sentiments coincide in the psyche. Awful considerations would ultimately show in bad sentiments, which would have an adverse consequence. Notwithstanding, by cultivating good sentiments, one will grow such a solid feeling of ability that they will actually want to overcome any hindrances that emerge. As an outcome, mind-set is totally dictated by sentiments.

5. Mitigating the inconsistent

The extent of administrative execution of Financial Crime requiresconsistently assessment both jurisdictional methodologies and global collaboration. The responsivity of making an interpretation of the FATF's suggestions into public guidelines lies with everynations where social, political and legitimate cacophony can subvert the execution of a

week administrative structure. In certain cases, worldwide bodies, for example, the FATF and the Basel Council have given overall direction and it is significant that this is followed up by proper mandates from public controllers to help eliminate irregularities in the global structure that can be misused by criminals.

It is also important for the public sector to characterize and administer administrative approach so that engages financial organizations to carry out processthose are in agreement with the public authority's general vision. And compliment the overall administrative system. Clear and predictable direction from the public sector that is executed consistently at the bank employee level is significant in such manner and should point towards moving away from check box activities to zero trust model.

5. Use of technology to combat illicit finance

New innovations have supported Bankingorganizationsto combat Financial crime and follow consistence approach and make sure that FIUs have more technical capabilities to find out the Truth. The public authority of the G20 having influence worldwide are helping nations to develop Banking innovations at all levels. These innovations where technology plays major role in implementing consistent approach and process to prevent Financial crime well in advance.

6. Recommendations

Internationally led reform on the facilitation of information sharing is urgently required. However, tactical measures coupled with regional/domestic initiatives will also improve the enabling environment and reduce barriers to the intelligence-led approach in fighting financial crime.

9. Conclusion

In this paper I tried to draws on, and analyses, themes and issues raised during a series of interviews with stakeholders in both the public and private sector. The authors would like to thank those who gave their time and input to what we hope is a useful summary of issues impacting the effectiveness of the financial crime risk management framework and the range of options that, if ideally taken together, would help to improve outcomes and reduce criminal abuse of domestic and cross-border finance.

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Significance of Soft Skills in Career Development in Hospitality industry: a view

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Abstract

Globalization has brought the world more together, and as a result, workplaces have expanded exponentially. Having a high level of workplace quality has been critical and mandatory. Everywhere, especially in the workplace, one can observe fast-paced rivalry. Numerous industry groups have argued that survival of the fittest is not only inevitable, but also the primary constraint on modern companies. At this point, the challenge is to retain a competitive advantage in the face of such exponential development, as well as to survive and maintain this rivalry. According to reports, employees must acquire skill sets in addition to domain expertise that can aid in their career growth and advancement. This paper examines the value of soft skills in the workplace and focuses on specific soft skills such as a positive disposition, teamwork abilities, maintaining work honesty, organisational ability, and time management abilities as being extremely important for improving job opportunities.

Keywords

soft skills, communication skills, positive attitude, teamwork, strong work ethics, time management skills

1. Introduction

We have all accomplished representatives at work who consistently drop by their associates' chambers to murmur, or who have definitely no feeling of dressing appropriately or for unique occasions, or who are regularly skeptical in their way to deal with an answer, or who continually connect forcefully with companions and others through verbal or nonverbal methods, or who continually pause. This is just an inspecting of such unacceptable delicate abilities that are frequently found in the working environment. Accepting something contrary to these situations, we are really discussing delicate characteristics and qualities. These abilities are fundamental for individual just as expert achievement. While the writing doesn't offer a solid meaning of delicate abilities, it gives definitions to perusers to comprehend. To improve comprehension of delicate abilities, recognize that words like fundamental abilities, relationship building

abilities, authoritative abilities, exchange abilities, business abilities, social abilities, hierarchical abilities, and employability abilities are regularly utilized conversely. "Notwithstanding the word, public talking or commitment is just about an essential at any stage. In the event that it's introducing position work, speaking with supervisors, customers, or associates, taking part in bunch gatherings or expert meetings, or simply making due in reality, people from varying backgrounds need indispensable delicate abilities". Hence, delicate abilities are inseparably identified with character qualities like social and enthusiastic insight, which influence our conduct with regards to building up or ending connections. Delicate abilities, as per ongoing reviews, are perhaps the most developing fields of study throughout the most recent couple of many years and are an absolute prerequisite, particularly in the work environment.

2. Writing survey

The idea of delicate abilities dates right back to 1918, when Charles Riborg Mann and different individuals from the Carnegie Foundation for the Advancement of Teaching distributed a release named A Study of Engineering Education in which they tended to the main gathering of the Joint Committee of the National Engineering Studies. A few architects were gotten some information about their accreditations and abilities considered suitable for accomplishment in the development designing calling. Extra proof demonstrates that human characteristics like sound judgment, morals, self-capability, and enthusiastic insight are similarly just about as significant as specialized information and capacities for an expert architect.

It was subsequently perceived that the investigation of delicate abilities isn't select to the designing business sector. Ongoing examination shows the basic idea of delicate abilities in various regions, including the executives, data innovation, schooling, organization, cordiality, nursing, and drug store. Delicate abilities selection in the working environment has produced adequate mindfulness, and the benefit of imparting these abilities into one's character has gotten evident. "Regardless of whether you work in the data innovation or retail areas, whether with a little or huge business, delicate abilities are vital to progress." Additionally, the developing worth of delicate abilities in an assortment of fields has supported the way that there are a wide range of types of delicate abilities that are vital and useful in the working environment. Consistently, endless classes, instructional classes, and corporate exchanges happen in workplaces where individuals from assorted foundations participate to accomplish a typical reason through the

ideal use of thoughts and abilities. In this interpretive circumstance, delicate abilities are significant.

Various specialists concentrating delicate abilities affirm that they are "essentially relationship building abilities—the non-specialized, theoretical, and character explicit capacities that describe a person's credits as a pioneer, audience, arbitrator, and arbiter of debate." Alex proceeds by expressing that there is another gathering of abilities called hard abilities, which are related with area or specialized abilities and are totally different from delicate abilities. He explains that hard abilities are "more in accordance with the data found on a resume—schooling, experience, and level of fitness." at the end of the day, hard abilities are specialized capacities acquired by instruction, preparing, and experience while seeking after a degree. A degree, then again, is not, at this point important to guarantee a fruitful vocation. Enrollment specialists today are looking for up-and-comers who will work and hold a scope of abilities important for explicit occupation jobs. In this manner, with the developing significance of delicate abilities, the facts confirm that "hard abilities alone can't be adequate for fruitful endurance." However, both hard and delicate abilities supplement each other.

Then again, delicate abilities fill in as useful empowering influences of touch and achievement. They are alluded to as connectors since they help with shutting openings and fortifying organizations between laborers, which brings about improved efficiency and execution. Delicate abilities go about as a scaffold between unmistakable authoritative units inside an association, advancing collaboration and achievement. Globalization has escalated the changing position climate, which puts an accentuation on delicate abilities; without them, enduring and enduring would stay a removed dream.

While various business aides, for example, Simplicable group around 87 delicate abilities into various subskills like correspondence, coordination, individual abilities, hierarchical abilities, and a few others, this paper centers around a couple of basic delicate abilities that representatives at working environments should learn to advance their business.

3. Bosses' non-specialized capacities

In regular daily existence, the expression "delicate abilities" alludes to the ability to support individual connections, structure practices, and execute advancement methodologies; their intimation is generally articulated in the working environment. Nonetheless, numerous work environment leaders see delicate abilities as unnecessary in light of the fact that they buy in to the broadly held conviction that while individuals are paid for their work, regard is good for nothing. They neglect to perceive that an absence of appreciation and appreciation infers an absence of abilities with respect to the representative, and that an absence of abilities brings about an absence of inspiration to build up one's character and profession at work. It is critical to build up sure working environment organizations with managers, clients, buyers, and collaborators to progress adequately in one's field and even expertly. Powerlessness to speak with others can obstruct professional success. Workers may arrive at the pinnacle of their vocations, yet on the off chance that they need indispensable delicate abilities, they might just re-visitation of the starting point. By fusing delicate abilities into the working environment, representatives can perceive their qualities and shortcomings, their capacities and insufficiencies, and how they can utilize them to vanquish the countless difficulties and accomplish the achievements that accompany vocation achievement. Accordingly, delicate abilities assume a vital part in surveying a representative's prosperity toward arriving at a work level. Moreover, a helpful air is significant for acquiring force and rising. A reasonable mien, encouraged by mental equilibrium, is the great spark for any vocation creation or hesitation. "The profession is influenced by your own prosperity and fulfillment. People that are adjusted perform well and work at a more serious level of execution. On the off chance that you need intellectual equilibrium, you can't dominate for most of work strategies". Studies directed by the Canadian Education and Research Institute for Counseling's (CERIC) "Public Business Survey" on 500 bosses in regards to the requirement for delicate abilities at work demonstrate that an uplifting outlook, relational abilities, cooperation abilities, and a solid hard working attitude are only a couple of the various abilities required. This exposition investigates and addresses in detail the various parts of occupation achievement related delicate abilities. This paper investigates the basic idea of keeping an inspirational perspective, solid correspondence capacities, sound work examples, cooperation, and time the executives capacities to accomplish productive profession improvement.

4. Uplifting outlook

Perceives a worker's positive disposition toward work. It permits the representative to work with a more significant level of trustworthiness and differentiation in their work. All in all, a positive mindset is an articulation

that communicates a craving for individual satisfaction through perception and appraisal of achievements. "An uplifting perspective is vital to an individual's prosperity." Since a representative's hopeful standpoint directs their degree of responsibility and scruples at work, a business may consider this to be profitable for vocation advancement. Positive reasoning advances good faith, a drive to change, and, therefore, a more noteworthy respect for work achievement. This is infectious on the grounds that it impacts and supports positive energies, imparting a triumphant soul in colleagues just as authoritative individuals. Albeit all capacities and capacities are significant for progress, attitude overcomes any issues between the two and fortifies associations between all people and vocations. Positive intuition "starts with confidence. Certainty improves capacity, pairs energy, builds up intellectual capacities, and expands power."

The advantageous effect of an uplifting outlook at work is boundless, remembering the height of expected freedoms and capital for terms of force and status. An inspirational perspective frequently has an effect, developing fine connections that lead to a more sure workplace and objective accomplishment. The right mentality is one that "tries to improve, is equipped for collaboration, and tries to be a can-do individual." A positive workplace advances high profitability and results-arranged participation. Great and negative sentiments coincide in the psyche. Awful considerations would ultimately show in bad sentiments, which would have an adverse consequence. Notwithstanding, by cultivating good sentiments, one will grow such a solid feeling of ability that they will actually want to overcome any hindrances that emerge. As an outcome, mind-set is totally dictated by sentiments.

5. Limit with respect to viable contact

Proficient listening abilities help to improve one's profession. Great correspondence is one of the various models for proficient accomplishment. Without suitable relational abilities, setting up, keeping up, and extending relational connections, particularly grinding away, gets troublesome. Correspondence is basic in work environments that incorporate a different scope of individuals both inside and remotely. Correspondence is the bond that ties us together. As indicated by research, the individuals who do not have an assorted scope of very much created relational abilities face critical obstructions to professional success. Compelling correspondence speaks with the collector in a predictable and responsible way, without contorting or misjudging the archive. As a result, it is important that the message is passed on precisely and that it is gotten and appreciated appropriately. Alongside talking and tuning in, essential relational abilities incorporate perusing and composing, as correspondence cultivates inspiration.

"Correspondence can be deciphered as an arrangement in which gatherings work to establish significance in a confiding in climate," as per investigation. Guidelines, suggestions, contemplations, subtleties, and influences ought to be communicated in a straightforward and justifiable way. Because of the effortlessness of audits, workers acknowledge what should be refined and how they can improve their presentation. Attractive intercession animates the objectives by inspiration. Without a doubt, "because of the challenges of applying inspiration hypothesis, a developing number of organizations perceive that correspondence is the connection among inspiration and execution improvement." Additionally, correspondence is the vital component for advancing and evaluating dynamic. Accordingly, great correspondence is a sort of craftsmanship that ought to be joined into workplaces to guarantee the creation of top notch results and the achievement of objectives. Successful communication generally settle debates by adjusting botches and building up a predominant status for all individuals from the work bunch. Maybe than interpreting, contemplates show that it is imperative to unravel the right message to continue with the correspondence convention.

Aside from verbal correspondence, nonverbal correspondence, or non-verbal correspondence, is likewise conceivable. As per Susanne Jones, partner educator of correspondence learns at the University of Minnesota, "around 65 to 75% of all correspondence is nonverbal in nature," which is the reason "nonverbal correspondence is significant for keeping up sure associations with people." One of the highlights that separate nonverbal cooperation from verbal correspondence is its strength over verbal correspondence".

Non-verbal communication, which incorporates position, development, looks, and presence while conveying or not imparting, is basic in correspondence, particularly grinding away. Consider that when somebody forestalls eye to eye connection or keeps up actual space, this is an obvious sign of aversion. This, however, probably won't be the situation. There is a likelihood that the individual is a loner. As an outcome, the circumstance in this case is seriously misinterpreted. Alongside non-verbal communication, paralinguistic highlights like pitch, tone, and musicality are significant. Regardless of whether not planned, an unforgiving tone may communicate prevalence or inconsiderateness. A light tone conveys good manners, while a profound tone imparts strength, etc.

Aside from the nonverbal parts of correspondence, another significant segment is self-assuredness, which profits by a positive development in our manner of thinking to speak with others effectively. Decisiveness is

inseparable from straightforwardness. As indicated by reports, emphatic individuals take responsibility for perspectives and put forth an attempt to impart effectively, despite the fact that their assessments or wants contrast from those of others [15]. In reality, contact gives off an impression of being a paltry movement yet is as a general rule titanic, similarly as "assuming liability for each other's correspondence is a wide test that incorporates numerous viewpoints like feelings, temperaments, relational abilities, and a few more." sooner or later, correspondence gets arbitrary, both regarding substance and mode. Self-assuredness assists with saving union and keeps correspondence from separating".

6. Maintaining an elevated requirement of hard working attitudes

In the most essential level, morals incorporates complying with word related norms, which require "persistent work, adherence to wellbeing and security rules, keeping a perfect and organized work environment, and being dependable and solid." To progress expertly, it is imperative to keep a more significant level of genuineness. At times, yet regularly, people participate in unscrupulous conduct to make progress. Then again, execution accomplished by misleading methods is transient. Being honest; constructing and safeguarding uprightness, faithfulness, and trust; and advancing common confidence all add to the worth of working environment connections and help in great dynamic during seasons of emergency. Consequently, morals is basically worried about the ideals or goodness or accuracy of things, sentiments, methods of reasoning, precepts, or qualities, while uprightness morals is principally worried about the ethics or goodness or rightness of items, musings, ways of thinking, teachings, or qualities.

Work environments with solid hard working attitudes are constrained to act in consistence with diligent objectives that fill in as moral guidelines for acts influencing the association's and society's prosperity. Subsequently, maintaining moral norms improves proficiency, urges individuals to keep up restraint, persuades representatives to stay faithful to their boss, and expands working environment fulfillment. Professional success is predicated on the foundation of general standards and development toward a helpful and esteemed local area.

7. Coordinated effort

Any association esteems the worth of a well-working crew. In fact, a "successful crew" is equipped for dealing with more troublesome undertakings and advancing cooperation through cultivating an environment helpful for open correspondence and coordinated effort among colleagues, consequently the group's as well as the association's general profitability. Cooperation includes having the proper character, information, and abilities to the table. While a group acquires importance at work since it is a blend of divergent social foundations, insights, musings, and assessments, it regularly holds the capacity to unite its constituents and work for a typical reason. In spite of the fact that mixing into a group is an overwhelming errand for some, it is an unavoidable situation in the work environment. What entangles matters more is a failure to utilize colleagues successfully, to the point that "one can end a vocation by neglecting the worth of group holding and fellowship." Additionally, each colleague is liable for doing, putting together, and helping out others on their undertakings, as collaboration is certainly not a joint ability yet a free obligation. As the essayists state, "cooperation" involves "coordinated effort with associates." Both being a decent group pioneer and a decent group director appear to have huge vocation benefits. Improved group achievement changes into improved authoritative productivity, and "the more serious the organization, the more possibilities for work satisfaction, professional success, pay raises, and representative advantages exist."

8. Time the executives that is effective

Time the executives has arisen as an imperative delicate expertise for work achievement and headway. One should welcome, adjust, and develop. There is a ton to accomplish at work, including setting cutoff times, accomplishing achievements, conveying results, and performing tasks inside a characterized time-frame. In this manner, one should oversee time shrewdly to amplify benefit, limit nervousness and disappointment, and advance errand accomplishment. To progress expertly, one should have an authentic enthusiasm for movement. "Compelling time the executives is an essential ability, a vocation expertise that we all need to do well in our new openings and advance our professions." Time the board envelops various powerful strategies that permit people to use their time viably and advance in their vocations. Tracy proposes that an appreciation for something energizes fun time the board. He refers to instances of leaders who are restless and fractious because of the work they have been given or their outcomes. Most gatherings of leaders, then again, "put their whole heart into their work since they epitomize their qualities and rarely experience pressure or burnout." With goals, a reason arises, rousing representatives; there is a

reliable progression of excitement, action, energy, and creative mind in managing job, and work moves precipitously under time requirements.

Time management that is effective enables good judgement and leads to job satisfaction. Thus, in order to build effective time management skills and a sense of supreme adequacy during career growth, business organisations put a premium on effective time management capability, which is described as the capacity to develop and use processes and resources at the highest possible level of efficiency, effectiveness, and productivity. It involves learning a variety of skills, including goal setting and planning, as well as time management in order to achieve optimal results. The main aim of time management is to keep an individual focused on the most important and meaningful tasks rather than on other things or events, thus assisting an individual in being "aware of how to use time as a single resource in preparing, prioritising, and advancing in an organisation in terms of all the strategic activities of start-ups and new projects."

9. Conclusion

This paper would examine in depth a number of the many soft skills and their importance in job growth. Inculcating soft skills has been critical for increasing productivity, optimising job efficiency, and advancing one's career. Developing soft skills enables individuals to turn obstacles into rewards, and further contribute to job growth. While goals can become more difficult to attain initially, with the use of the soft skills described in the article, one may attempt to progressively transcend the obstacles that contribute to career failure. By altering one's personality and expectations of jobs, objects, and circumstances, an individual may be able to differentiate himself or herself and rise in popularity. However, a healthy mindset, effective leadership skills, a solid work ethic, and coordination and time management abilities are not the only soft skills needed. The aim of this paper is to demonstrate the critical nature of such soft skills in progressing one's career and thriving in today's highly competitive environment. The paper suggests ways and methods for workers at workplaces to value the importance of thinking positively, communicating effectively, adhering to basic principles and ethics, working in teams, and managing time effectively in order to cope with tough individuals and circumstances, eventually providing them with a blueprint for success in their careers. In today's intensely competitive environment, mastering soft skills can not only make an individual stand out from the crowd, but will also improve partnerships, work success, and career development.

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Economic and financial crises' effect on human resource management

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Abstract
There is no uncertainty that the manner in which substances work and cooperate with each other, locally, broadly, and universally, will be significantly impacted by the accompanying variables: the monetary breakdown of country states; political joint effort on underlying change to address environmental change; the mix of web-based media into all parts of our correspondence; and the rise of a worldwide economy.

These are a couple of the elements that are impacting the development of human asset the board. The chances for critical authoritative change and the crossing point of society, shopper, and inventory network organizations give a huge chance to HR to rethink itself as a significant wellspring of inventiveness and headway in initiative and the executives. Our paper traces the means that any human asset pioneer should take to adjust to evolving conditions: reclassify our job's limits; be the proprietors and drivers of the brand that mirrors a promise to support toward staff, clients, providers, and the local area; be perceived expertly; take responsibility for abilities needed to function admirably at an essential level; be the idea chief. We should utilize our skill and associations with shed light on worldwide turns of events and hold a cautious position on labor force issues; we should develop inward certainty that empowers us to scrutinize the HR capacity's position, which has moved definitely very quickly. In three years, where will HR be as a calling?

Keywords:Financial recession, furniture firms, creativity, preparation, and inspiration

1. Introduction

Various addresses and exercises underline the expanding accentuation set on human asset the executives today, which is the aftereffect of knowledge, topical reflections, methodological commitments, and the advancement of choice help apparatuses. A large number of these angles join to make perceivability and raise a test for human asset the board in the association.

In light of rivalry and the current monetary and monetary emergencies, managers are zeroing in their endeavors on enlisting and recruiting human resources. Each organization wishes to enroll the best qualified human resources, yet work market rivalry coordinates human asset stream dependent on the venture's social profile and endeavors in territories like finance, proficient turn of events, work climate, and social environment.

Human asset the board cycles can be compelling just if organizations esteem and remember their labor force for key development. Associations should deal with their HR as per their own advancement bearings and, as indicated by Hendry and Pettigrew, 1986, they should incorporate the significance of preparation and an intelligent way to deal with planning and human asset the board, just as adjust the political exercises of human asset the executives with the venture's financial technique to acquire an upper hand.

Both information and correspondence are practises and means by which company workers gain knowledge of the enterprise's broad and specific goals. The enterprise's dynamic circumstance and chaos can be resolved by the organization's resilience and power. These organisational features necessitate ongoing human resource management adjustments and continual modelling of internal transitions through technical job strategic plans. External forces exert pressure on companies, which is seen as a disaster situation by their workers. This issue can be resolved by advancement and a change in professional identity, or by termination.

Fear of personal loss manifests itself in any behaviour of workers in the following ways:

- decreased product and service quality;
- absenteeism;
- sudden leave;
- lack of confidence in making enterprise-wide business decisions;
- interpersonal disputes.

Employees must develop the internal skills required to effectively navigate organisational changes. Defining the enterprise's strategic goals will result in the development of individual action plans aimed at improving workers' abilities to respond to rapid changes.

2. Collaboration between organisations and other partners that is innovative

Due to the unpredictable market climate, companies should prevent unnecessary interruptions and technical preparation to compensate for potential growing fluctuations in human capital availability. Motivating workers is a challenge for professionals as well as enterprise managers/owners. Motivating workers is critical, even more so in today's global competitive environment. Since advanced technology no longer has a viable strategic edge, it is past time for company sustainability and growth to be determined by considerations such as competitiveness and employee quality. We observe that the general trajectory from 2005 to 2009 is upward, with the exception of large companies (50-249 employees), who are projected to decrease their workforce in 2010 and 2011, until considering a small increase in 2012. By analysing results, we can deduce that human resources have an effect on an enterprise's flexibility, and that the majority of businesses are microenterprises (0-9 employees).

Interpersonal disputes can be avoided if the enterprise's complex challenges are approached with imagination.
These solutions will be dictated by the employee's objective principles, vision, standards, and abilities, as well as the enterprise's objective.
Advancement is a basic instrument for moderating the unfavorable impact of monetary and financial emergencies on human resources the executives - Dibrell et al., 2008; Fosfuri and Tribó, 2008; Lichtenthaler, 2009; Newey and Zahra, 2009; Spithoven et al., 2010.
Core competencies enable the advancement of new goods and services, thus serving as the enterprise's strategic tools. Alain Meignant, 2000, believes that individual expertise is critical in the area of strategic management of talents because it serves as structural resources and also contributes to workforce satisfaction in the form of human resource pay policy. It is important for the manager/owner to develop and communicate the overall project in order to combine strategic principles and staff capabilities successfully.

The method of evaluating expertise within organisations is dynamic and entails tracking technical career growth. Employees require differentiated training courses for each degree of competency. The final report will serve as a foundation for both a synthesis of the missing competencies and a new growth approach, allowing for the preparation of the steps necessary to learn new skills. Involving staff in job choices will benefit them and will reinforce their sense of trust in the company and its manager.
Nobody would claim that it is an easy operation, but in order to excel, we must combine employees' talents while still keeping into account the enterprise's realistic needs. The company's progress is contingent upon assembling the necessary means, competencies, and capital to complete the project necessary to resolve the restrictions imposed by the competition. Thus, by incorporating human resource management into the overall strategy of the organisation, Golding 2004 demonstrates vertical integration and leads to stressing employee competencies that result in competitive advantage development.

3. The growth of strategic human capital and the financial crisis
Our examination shows the connection between the accentuation put on human resources and the improvement of human asset systems inside associations. Defending the significance and need of an essential model for human asset the board would profit experts, however would likewise straightforwardly add to improving human asset execution in associations; it would likewise be a convenient solution for issues brought about by authoritative changes and work market vacillations, since it would be viewed as an association.
The aim of the human resource strategic model is to highlight the processes that affect individual and group success in response to the situational

constraints that serve as impediments to employees' competency growth. For example, during the recruiting and selection process, the critical components of the work are defined first, followed by the skills, skill, and other human characteristics that predict results, and finally, the means of evaluating these predictors are elaborated.
It is challenging for the recruiting and selection committee to achieve a set of conclusions about the selection process and the actual behaviour of applicants. If all of these conclusions are incorrect, the whole recruiting and hiring process fails and could even be jeopardised.

Another model is the endeavor's utilization of persuasive systems. The absence of association between inspirational switches both inside (the utilization of extraneous and characteristic motivator systems as per singular skills and business key HR) and remotely (the utilization of outward and inherent inspiration techniques as per singular capabilities and undertaking vital HR) (mulling over the negative marvels just as the monetary and financial emergency, the changing and confounding enactment, defilement).

In this sense, a HR vital administration worldview prompts the improvement of human asset works by fusing divergent human asset systems into a typical authoritative component dependent on institutional practices. In this manner, enlisting and choice, vocation improvement, and execution appraisal would all be able to be driven by a standard construction that characterizes the basic segments of the position and the individual, while additionally considering logical contemplations that can influence those human asset the executives rehearses.

The current public and worldwide monetary and social foundation is utilized to analyze human asset improvement, particularly innovative schooling. Business people or heads who comprehend the worth of human resources to their organizations will put forth an attempt to deal with their own specialists' selecting and obtainment, appraisal, commitment, arrangement, and advancement measures effectively. Taking everything into account, human asset the executives will fill in as an extension among rivalry and innovativeness for associations.

Because of headways in data innovation, human asset the executives rehearses have moved from easygoing to more formal, adding to the improvement of contact networks inside ventures. The advantages of data the executives lessen if the administrator/proprietor of the business doesn't effectively advance it.

With the utilization of data innovation, it is feasible to make certain momentary forecasts, as long as one year, in which one can assess, with a

little wiggle room, the reasonable degrees of activity and fundamental abilities. These expectations depend on more summed up standard situations and spotlight less on nitty gritty conjectures of interest and supply of labor and products from one viewpoint, and work on the other.

Considering these limitations, yet in addition the advantages of human asset arranging, we may presume that chiefs/proprietors should focus on human asset arranging since it can guarantee monetary and social steadiness for the undertaking through the nature of HR intended to give a genuine manageable upper hand, especially when we consider the way that pl In associations, authoritative exercises are regularly underlined to the detriment of key exercises, particularly where they are not represented by normalized rules and strategies and have a low level of normalization and formalization.

Romanian organizations likewise approach the e-picking up preparing plan. Since 1990, Kirrane 1990 has directed examination on the utilization of the Internet as a showing help, while experts like DeRouin and others, 2004, 2005; Gasco and others, 2004; and Oiry, 2009 have led research on the progression of web based preparing programs. This internet instructional classes are connected to the laborers' appraisal plot, empowering compelling assessment at continuous spans and from an assortment of sources (bosses, companions, clients, or potentially subordinates).

Because of an unstable market world portrayed by continuous and extended fiascos, organizations should get ready for a progressing vocation advancement program that can make up for a likely more noteworthy variance of human resources. The human asset improvement strategy will cultivate business venture culture and empower the sharing of best practices. Most of associations suggest that the preparation interaction be directed by an unbiased organization since it is accepted to have a more significant level of execution and better autonomy in utilizing the preparation stage's results.

Human asset planning procedures, related to instructive practices, give associations central devices for distinguishing, incorporating, and growing new capacities. The essential test that organizations face is making a progression of mastery that outcomes in the decrease of work market strains and the fascination of experts who decide to work in huge firms. In this sense, congruity in the space of inside compensation should be maintained to forestall an absence of worker inspiration.

4. Analysis of a case

Our contextual analysis analyzed the monetary and monetary emergency's impact on numerous organizations in the furniture business. Accordingly,

we directed meetings with directors from ten associations around there. The determination was made based on portrayal and the idea of their business connections. Consequently, every one of the ten organizations is a medium-sized business (59-249 workers) situated in a different space of the world.

The accompanying structure was utilized for the meeting guide:

1. The monetary and monetary emergency affect the association's HR:

1.1. Did the quantity of laborers in your organization vacillate somewhere in the range of 2008 and 2012?

1.2. Did any deliberate renunciations happen somewhere in the range of 2008 and 2012?

1.3. Were there any business related issues somewhere in the range of 2008 and 2012?

1.4. Does the work code have arrangements that advantage bosses?

1.5. Have you profited by EU-financed human asset improvement drives (POSDRU - Sectoral Operational Program Human Resources Development - style projects)?

2. The monetary and monetary emergency affected the association's monetary capital.

2. How did turnover change somewhere in the range of 2008 and 2012?

2. 2. Did you get cash from banks to do your business somewhere in the range of 2008 and 2012?

2. 3. Have you gotten help from territory saves money with the association's monetary recuperation endeavors?

2. 4. Was the association's activity supported by financial enactment?

Our examination set up that the monetary and monetary emergencies significantly affected the ten associations working in the furniture area.

The monetary and monetary emergency has majorly affected HR at all ten associations. Subsequently, somewhere in the range of 2008 and 2012, each of the ten organizations cut their labor force by somewhere in the range of 10% and 34%. Solicitations for intentional excusal expanded fundamentally

in 2009, yet diminished essentially in resulting years. None of the ten associations detailed any intentional abdications in 2011.

There were no work clashes; rather, chiefs accept that human asset law, particularly the work code, needs guidelines that regard bosses and laborers' autonomy. Only two of the ten associations profited by POSDRU human asset preparing projects. The leftover eight associations were never drawn nearer by different associations looking to select their laborers in instructional classes. While the turnover of the ten organizations expanded fairly, this was not because of expanded customer interest or work proficiency. These minor changes were required by cash swapping scale variances. Indeed, even as the ten associations' income has risen, they have loaned from banks, and their directors are disappointed with the banks' participation in the field. They accept that both interest and expenses are uninviting.

Directors expressed that monetary law, especially the amount of charges, is a critical obstacle to the association's development.

All in all, directors attest that it is significant for the public authority to work simultaneously on three levels:

• diminishing administration, particularly as far as human and monetary capital;

• diminishing fiscality and advancing speculation from European drives; and
• creating human and monetary assets by POSDRU projects.

5. Last Thoughts

The size of the association affects the public and institutional point of view on human asset the executives issues. Collaboration to achieve a common market objective is basic for the association's endurance and accomplishment in an unpredictable world portrayed by a worldwide monetary and financial emergency. Accordingly, no individual can be separated in the rationale of individual obligations, since hierarchical issues influence all specialists and can be settled simply by aggregate and unitary intercession.

This development can't happen without an essential audit of the representatives' abilities led by the venture's chief, who has the advantage of getting their workers and can activate them in a particular design, guaranteeing their supported presence. The mental agreement exists in this sense and significantly affects both the customer and the association as far as satisfying individual cravings comparable to add up to satisfaction.

Representatives rally in light of persuading elements, for example, pay guideline, style segment, or supervisor commitment advancement strategy.

The Financial Institution's role in promoting entrepreneurs of Online Education in Nashikcity.

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Abstract-Business people impact a country's monetary future by creating abundance and resources, selling labour and products, and raising income for governments. That is the reason business has been inseparably attached to the country's monetary turn of events. Business visionaries change thoughts into monetary freedoms through innovations, which are generally viewed as a basic wellspring of rivalry in an inexorably globalized world economy. India has been increasing at a sensibly fast rate lately and is on target to turn into the world's biggest economy by 2050. As per the 2002 Universal Entrepreneurship Monitor Report, India positions second among all countries as far as by and large innovative investment. Since 1991, the country's progression has opened the path for an enormous number of individuals to become business people. India and other non-industrial nations endeavour to be outward-looking widespread economies as opposed to internal looking nearby economies. This is just reachable with the support of banks and monetary organizations for youthful business visionaries. Business venture can be consummated among the present youth and deliberately settled with the help of banks and monetary foundations. The point of this examination paper is to look at business in online training in the city of Nashik.

Keywords- Entrepreneurs, Universal Economies, Banks.

1. Introduction

Business people make countries' monetary prospects by building assets and occupations, selling labor and products, and raising income for governments. That is the reason business venture has been inseparably attached to the country's financial turn of events. Business people change thoughts into monetary freedoms through innovations, which are painstakingly intended to be the essential wellspring of rivalry in an undeniably globalized world economy. India has been developing at a generally quick speed as of late and is on target to turn into the world's essential monetary framework by 2050. As indicated by the 2002 Universal Entrepreneurship Monitor Report, India positions second among all countries regarding in general innovative investment. Since 1991, financial advancement has made ready for an enormous number of individuals to become business people. India and other non-industrial nations

endeavourto be outward-looking all-inclusive economies instead of internal looking neighbourhood economies. This is just attainable with the support of banks and monetary establishments for youthful business people. Business venture can be supported in the present youth and set up in a precise way with the help of banks and monetary establishments.

Business and development have made considerable progress in India throughout the most recent couple of many years. Both the public authority and various assembling support and administration associations are taking huge steps to advance the development of youthful business visionaries keen on beginning independent ventures.

These exercises included growing outwardly engaging plans for acquiring financing and various different types of help, for example, innovative expertise, educating, etc. These works, it is asserted, have beneficially affected the improvement of these enterprises in the State. These days, a plenty of monetary establishments, for example, the Industrial Development Bank of India (IDBI), the Small Industries Development Bank of India (SIDBI), and various business banks take into account business people's subsidizing needs. The current paper puts forth an attempt to investigate business visionaries' monetary challenges and the job of monetary foundations in cultivating business in India.

India's Financial Issues

India is an enterprising country, yet its business people have confronted critical difficulties in building up and developing their trade projects. Acquiring money for an endeavor can be extremely convoluted, considerably more so when simply beginning. Banks are reluctant to loan cash to new organizations, and financial backers may try not to bud business visionaries who need past business experience. Most of business visionaries can't raise outside capital because of an absence of unmistakable security and credit in the business. The cycle for getting a credit is protracted, and its postponement frequently frustrates business visionaries. Absence of capital available to business visionaries is perhaps the main issues facing business visionaries today, particularly considering the worldwide downturn.

Business people face numerous troubles, including an absence of financing to begin an organization, marked down benefits because of rivalry, trouble in valuing labour and products, trouble in keeping up budget reports, severe duty laws, an absence of assurance for advance raises, trouble raising

capital by value, and dependence on little cash banks for advances for which they charge an expense. Both of these issues add to the troubles of raising capital through advances. The organization gives awards to organizations, however these sponsorships are insufficient because of the significant expense of financing.

The public authority has set up various organizations hence, yet the results have missed the mark concerning assumptions. The Industrial Finance Corporation of India (IFCI), the Industrial Development Bank of India (IDBI), the Industrial Credit and Investment Corporation of India (ICICI), and the Small Scale Industry Development Bank of India (SIDBI) are a couple of the public level (SFC) organizations helping Indian business visionaries. A few state-level foundations, for example, the State Financial Corporation and the State Industrial Development Corporation, are additionally operational (SIDC). These organizations give help the foundation of new activities and with the modernization and augmentation of existing ones, however their terms and conditions are very grave to meet. Various tasks, for example, the composite credit program, the little unit plot, and the plan for innovative business visionaries, are in progress, however they miss the mark concerning business people's assumptions. Raising assets from value is more hard for business visionaries because of an absence of monetary experience and a little monetary corpus, so advances are their essential wellspring of financing, which has demonstrated to be the most hindrance to business development.

India's Financial Institutions

Money is a basic part of an endeavor's production network. No organization can be set up without satisfactory financing. In India, both the focal and state governments advance an assortment of monetary foundations to prod financial development. Various limiting foundations set up by the bureaucratic and state governments help enterprising practices in an assortment of ways. The activities incorporate financing, specialized help, hardware support, enrollment, advancement, and endowment and award arrangement.

Monetary associations take part in a scope of limited time exercises to draw in imminent business visionaries, give counseling administrations to little to medium-sized organizations, and create programs for enrolled beneficent

associations committed to the monetary elevate of poor people. This include the development of entrepreneurialism and independent work. Monetary establishments' main role is to offer term credit help to little to medium-sized organizations for the procurement of fixed resources like property, structures, and hardware. Also, credits are stretched out for organization development, enhancement, innovative headway, and extension. The associations recorded beneath are accessible to give the above benefits.

1. India's modern improvement bank (IDBI)

2. Horticulture and provincial improvement public bank (NABARD)

3. India's fare import bank

4. India's little modern improvement bank (SIDBI)

5. India's mechanical venture bank

6. India's mechanical money organization (IFCI)

7. India's Industrial Credit and Investment Corporation (ICICI)

8. India's Industrial Reconstruction Bank

9. The monetary area and business banks in India

10. State-possessed monetary organizations

11. India's Life Insurance Company (LIC)

12. India's Unit Trust (UTI)

The Financial Institutions' Position in Indian Entrepreneurship

The Maharashtra State Financial Corporation (MSFC) was framed as per the 1951 Act on State Financial Corporations (SFCs). Since 1962, the Corporation has worked in Maharashtra, and since 1964 in Goa and the Union Territory of Daman and Diu. MSFC's essential job is to offer term credits to little and medium-sized organizations (new and set up) for the acquisition of fixed resources like property, structures, plant, and hardware. Assembling, gathering, overhauling, preparing, safeguarding, transportation, modern home turn of events, street development, little nursing homes, lodgings, eateries, the travel industry related exercises, clinical experts, and qualified experts are for the most part qualified businesses/exercises. The MSFC's significant plans incorporate general advances, hardware financing, little nursing homes, electro-clinical gear for clinical experts, inns, cafés, and the travel industry related exercises, qualified experts, MahilaUdyam Nidhi, and the National Equity Fund.

Business banks entered the market of aiding organizations in a significant manner not long after banks were nationalized. Before at that point, these banks loaned cash to dealers. Indian business banks have built up an Entrepreneurship support line to help imminent business people. Moreover, these banks help possible organizations in choosing a business, planning and assessing a venture report, leading statistical surveying, giving guidance at different stages, getting administrative endorsement, acquiring hardware and gear, and selling the endeavors' products. RBI asked business banks to dispatch exercises pointed toward expanding credit stream to little and medium-sized organizations. A bank may loan credit to a business visionary, giving that person more purchasing power than they would have with cash alone.

The State Bank of India has started a drive to advance business venture. The State Bank of India built up a program to give monetary help to business people who are expertly qualified or instructed. SBI has set up a Research and Development Fund to cultivate business. SBI dispatched a conceded installment ensure program for huge PC buys. SBI made asset and non-store related offices accessible through its plan. SBI assists designers with working capital. This educational plan endured one month and comprised of three phases.

• Awareness stage: creating interest in business openings.

• Process of development: Instruction in the improvement of motivation and administrative capacities

• Help stage: guiding, motivation, and infrastructural help with the foundation and activity of organizations.

Business visionaries for the development of web applications

As revealed by KPMG India and Google, arising nations, for example, India are in a superior situation to abuse late improvements like the crossover model, the consideration of new and strange themes, gamification, shared learning, and profile planning (Bansal, 2017). As indicated by a 2017 report directed by KPMG India and Google, India's online schooling foundation is right now worth US $247 million and has a normal of 1.6 million clients; it is projected to contact US $1.96 billion and have about 9.6 million clients by 2021. As indicated by KPMG India and Google, the essential drivers of on the web/mixed training in India are the accompanying: (a) huge development in Internet2 and versatile penetration3; (b) ease of online schooling; (c) carefully amicable government strategies; and (d) developing interest for proceeding with instruction by working experts and occupation searchers (Bansal, 2017).

Computerized India and Skill India are two of the numerous administration projects pointed toward expanding India's advanced proficiency. Extra models incorporate the making of pilot MOOCs (Massive Online Open Courses), NandGhars (computerized instruments as showing helps), SWAYAM (MOOCs dependent on the educational plan instructed in study halls from ninth to post-graduation), and India Skills Online (mastering entry for ability preparing). Plainly, government strategies contribute fundamentally to the additions of online training.

Business venture - Financial Growth Solutions

India needs to create 10-15 million positions each year for the following decade to guarantee that its young populace has beneficial work. Speeding up business and market development is basic for producing such tremendous measures of occupations. Moreover, business is portrayed by resourcefulness and will add to the age of answers for India's plenty of social difficulties, which incorporate admittance to great instruction, open medical services, sustainable power and waste administration, and monetary consideration. Moreover, pioneering drove monetary improvement is more comprehensive and doesn't really incorporate the extraction of characteristic capital. Admittance to fund is quite possibly the main snags confronting business people and independent companies in their arrangement, supportability, and improvement. To encourage business venture in India, monetary establishments other than the public authority can give low financing costs, adaptable advance projects, and improved subsidizing. There is a monetary establishment that loans backing to the current philosophy, however its numbers are decreasing. The blue chip monetary establishment could uphold youth business visionaries by furnishing them with a sizable advance at a low financing cost.

Last Thoughts

Business visionaries structure countries' monetary fates by building capital and work. India has been increasing at a sensibly fast rate lately and is on target to turn into the world's biggest economy by 2050. Business visionaries face a few difficulties, including an absence of funding to begin an endeavor. Business venture can be supported in the present youth and set up in a precise way with the help of banks and monetary foundations. Today, a plenty of monetary foundations, for example, the Industrial Development Bank of India, the Small Industries Development Bank of India, and various business banks, take into account business people's financing needs. A monetary establishment participates in a progression of advertising efforts to pull in youthful business visionaries. Admittance to back is perhaps the main hindrances confronting business people and independent ventures in their arrangement, manageability, and improvement. Indian business banks have built up an Entrepreneurship support line to help imminent business visionaries. Furthermore, business banks help likely business people in choosing an organization, planning and assessing a task report, leading statistical surveying, giving guidance at different stages, getting administrative endorsement, acquiring apparatus and gear, and selling the ventures' merchandise. The State Bank of India built up a program to give monetary help to business people who are

expertly qualified or taught. To cultivate business venture in India, monetary establishments other than the public authority can give low financing costs, adaptable credit programs, and upgraded subsidizing.

Globalization of e-instruction is unavoidable, similarly as globalization of email, internet business, and e-government has happened. World associations like the United Nations, the World Bank, and the World Trade Organization (WTO) should join this push to create solid rules for educating, accreditations, understudy screening, staff determination, and learning the executives frameworks. Ziguras (2001) investigated e-learning and authored "instructive colonialism," alluding to how transnational foundations expect understudies to stick to western instructive models while being unconscious of social standards. The paper focuses on the significance of being responsive to arising methods of schooling, like internet learning and its various indications.

A repetitive pattern in practically all nations is that the one-size-fits-all methodology has just fizzled. What we need is a decent way to deal with interpretation, social variety variation, and innovation, which incorporates Learning Management Systems, considering the shortage of capital and foundation in specific spaces of the world. Also, instructing last mile mentors and end clients on innovation is by all accounts a typical topic in virtually these reports.

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Factors influencing students' decisions to pursue online education: a case study in Nashik

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Abstract

During COVID-19, instructive organizations overall had to move from up close and personal guidance to online guidance. Before the abrupt episode of COVID-19, most of schools in Nashik were centered around eye to eye guidance. This exploration study assembled information from 145 respondents and dissected it utilizing the Structural Equation Model (SEM). Undergrad and postgraduate understudies from public and private colleges investigated web based during the pandemic. The objective of this examination was to find out the elements that impact understudies' goals to seek after online instruction. The discoveries show that institutional consolation and relative bliss (fulfillment) affect understudies' likely designs to gain proficiency with the course on the web. Seen joy (PE) affects web based learning aims (OLI), and PE is impacted by ICT innovation, web speed, and accessibility. Subsequently, this investigation presents another exploration segment called extraneous factors (ICT innovation and web access), which indirectly affects understudies' arrangements to learn on the web. With this present age's extended utilization of cell phones, it's a smart thought to consolidate versatile applications into web based learning, and QR codes can be one approach to do as such. Furthermore, to improve understudies' apparent delight in web based learning, instructors might be urged to impart and offer contribution to understudies through recordings, sounds, and texting. It is significant for colleges to anticipate likely emergencies of this sort. The investigation's discoveries would give significant understanding into how to effectively design online courses by considering the entirety of the factors influencing understudies' motivation and fulfillment.

Keywords :Coronavirus. Online instruction. Aims of understudies Perceived joy.

1 Introduction

1.1 Online training as a rule

There are many learning conditions accessible to students, including vis-à-vis guidance, distance schooling, face to face guidance, and online guidance. Albeit the terms internet learning and e-learning are regularly utilized

reciprocally, there is a differentiation between the two. E-learning is the way toward accessing electronic specialized assets that can be utilized in or out of the study hall (Maheshwari and Thomas 2017; Nichols 2003). Internet learning is a term that alludes to discovering that happens completely on the web, outside of the study hall, and is viewed as comparable to separate adapting yet uses online channels (Oblinger et al. 2005). Online appropriation modes can give successful and simple techniques to understudies contemplating on the web to meet their learning destinations (Junco et al. 2013). Various elements can influence the viability of web based picking up, including specialized angles, an easy to understand online interface, class encounters, and tests (Wijekumar et al. 2006; Shuey 2002). As the scourge of COVID-19 has provoked numerous organizations to go to online instruction as opposed to up close and personal educating, it is basic for foundations to consider what components will influence understudy fulfillment and their expected expectation to learn on the web. Organizations should be solid and steady for possible vulnerabilities. Subsequently, the essential target of this examination is to determine the factors that impact understudies' expected designs for web based learning.

1.1.1 Online instruction in Nashik

Coronavirus' first episode in Nashik happened in late January 2020, and from that point forward, the public authority has taken a solid position and shut every single instructive foundation. Following that, schools and universities were entrusted with changing to an online method of guidance (Pollack et al. 2020). For instructors and understudies the same, it was anything but a wonderful circumstance. For a few understudies and educators, this was their underlying openness to online instruction. Because of the pandemic, a huge extent of understudies in Nashik had to examine web based, including 58.8 percent of undergrad or specialized understudies and 39.1 percent of post-graduate understudies (B and Company 2020). As indicated by an overview led in Nashik, only 33% of understudies had any knowledge of internet learning before the episode of COVID-19 (B and Company 2020). Zoom, Microsoft Teams, and Google Meet were the three essential streaming channels utilized for web based learning in Nashik. Because of safety concerns, the Ministry of Education and Training (MOET) didn't support Zoom (B and Company 2020). Preceding COVID-19, understudies in Nashik utilized e-learning destinations to examine English or delicate capacity classes, and the e-learning worldview has been related with such courses in Nashik for longer than 10 years, however learning standard school or college courses is new in (Nashik Economic Times 2018). Web based learning has been recommended for quite a long while yet has gotten little eagerness from colleges, scholastics, and understudies in (Nashik Economic Times 2018). Just during the scourge were the colleges in Nashik compelled to create web based learning plans, and the pandemic has offered an incredible chance for colleges to

survey their ICT framework, the planning required for laborers to give content on the web, and a few different components (Nguyen and Pham 2020).

1.2 Online training is not, at this point an alternative; it is an absolute necessity.

Various spaces of the world were put on lockdown or stay on lockdown because of the episode of worldwide pandemic COVID-19, and the effect of a pandemic is felt in all business sectors, including tutoring. The two universities and schools worldwide have been influenced by the pandemic, and numerous instructive foundations have been compelled to try not to offer classes online because of the current circumstance. Thus, establishments had to make an overnight change from vis-à-vis tutoring to e-learning in this commotion. As the progress from advanced to web based encouraging instructive strategies happened rapidly, universities didn't totally execute content digitization. Thus, it has gotten basic for any instructive foundation to hold their encouraging quality while as yet supporting their understudy enlistments during this difficult and capricious period. Any college in the advanced period will battle to keep away from this shift away from customary schooling toward internet instructing; else, they will be not able to prevail in this field. Given this, it is significant for instructive establishments to consider the reasons that add to understudies' fascination and inspiration to keep taking on the web courses later on. For quite a long time, the planet has been tormented by flare-ups of different infections, for example, SARS, MERS-CoV, and Ebola (A Train Education 2020). To prepare for the vulnerabilities, colleges in Nashik and all throughout the planet should improve their ability and should start and for all time incorporate web based learning into their educational programs.

2 Analysis of the writing

2.1 Factors impacting on the web training

The virtual taking in experience is particular from that of conventional vis-à-vis homeroom meetings. The creation and execution of online courses significantly affect understudies' fulfillment, learning, and maintenance in online courses (Irani 2005). Three kinds of collaboration are basic for web based picking up, as indicated by the specialists: student association, student content cooperation, and student guidance communication (Moore 1989). As indicated by a BEAN investigation of undergrad and postgraduate understudies in Nashik who explored web based during the pandemic, the web's security and speed were refered to as the main components influencing understudies' web based learning encounters (B and friends 2020). The accompanying three significant variables affected understudies' internet learning encounters: a loose and calm learning air, educator help, and stage usability. Various extra factors, as talked about straightaway, can

impact students' learning experience and expected goal to contemplate on the web.

2.2 The technology acceptance mode(TAM) (innovation acknowledgment model)

The initial model to consolidate mental viewpoints into innovation appropriation was the innovation acknowledgment model (TAM), which inspected how individuals embrace and use innovation (Davis et al. 1992). Seen Usefulness (PU) and Perceived Ease of Usage are the two basic factors that impact a client's selection of innovation, as per the TAM model (PEU). Moreover, as per the TAM worldview, purchasers' endorsement impacts their choices to utilize innovation, which in a roundabout way affects apparent utility and saw convenience (Davis et al. 1992). Aside from execution suggestions, seen satisfaction (PE) is depicted as how much the shopper appreciates utilizing the innovation (Davis et al. 1989). Seen Usefulness (PU) alludes to how much a client accepts that a particular innovation can improve their presentation, while Perceived Ease of Use (PEU) alludes to how much the client accepts that utilizing the innovation will be easy (Davis 1989). Cap has become a typical apparatus for deciding the achievability of online business training, for certain investigations utilizing the underlying design and some utilizing the extended model, contingent upon the examination's evenhanded. Liu et al. (2010) utilized TAM to research the variables that impact the longing to utilize web based learning. They utilized online course plan, UI plan, earlier learning experience, and aim to utilize web based learning as informative factors and goal to utilize web based learning as an answer variable. Zhang et al. (2008) have utilized TAM to examine the factors that impact students' appropriation of electronic learning programs, with an inborn helper as the indicator. Bazelais et al. (2018) anticipated arrangement to utilize innovation utilizing the factors PU, PEU, and disposition toward innovation. In the accompanying piece of this article, a synopsis of the writing is led to help in the plan of the investigation's theory.

2.3 The examination's unbiased

Most of past research has focused on different parts of internet learning, like the incongruities in understudies' prosperity, mentalities, and level of fulfillment when taking classes online versus nearby. A few exploration analyzed how to plan fruitful internet learning exercises. Nonetheless, not many investigations, like the one directed by Tung and Chang (2007), have focused on deciding understudies' expectations to take on an online course, and this examination will add to the collection of information in this field. As referenced already, TAM has been utilized in an assortment of studies, yet the factors used to inspect Online Learning Intention (OLI), which is portrayed as an aim to start learning on the web later on, differed in those

examinations (like characteristic inspiration, online course plan, UI plan, past learning experi-ence, PU, PEU). Furthermore, this exploration utilizes a changed TAM with extraneous indicators (support for ICT organizations and internet providers like speed and access), inherent indicators (PEU and self-adequacy (SE)), and institutional help (IS) (Class learning exercises and instructors support). To the best of our agreement, the factors identifying with the outward measurement have not been utilized in some other models for considering understudies' expectation to participate in internet learning. Moreover, no investigations analyzing the variables affecting web based learning reason have been directed in Nashik to date, as not very many colleges in Nashik gave internet learning until they were constrained to do as such by COVID-19. This proposal looks to add to the expanding collection of skill by endeavoring to consolidate new examination factors identifying with outward impacts into set up models. The point of this investigation is to decide the impact of inherent components.

To learn understudies' expectations to consider online courses in future offers, underlying impacts, extraneous variables, PU, and PE (proportions of fulfillment) were utilized.

Inherent components are described as attributes of a character, for example, excitement and trust that are disconnected to their outside climate (Ayub 2010). Outward causes, then again, are those that impact a living being because of outside conditions like the outer world and culture (Ayub 2010). Area 2.2 characterizes PE and PU. PEU (as indicated in Section 2.2) and self-viability (SE), which is characterized as a person's trust in their capability to accomplish under given conditions, are viewed as natural factors in this examination (Zimmerman 2000). Extraneous contemplations in this examination incorporate ICT organizations and internet providers. Various hypotheses, which are introduced in the accompanying fragment, begun from the writing audit and are outlined around the focal inquiry of understudies' arrangements for internet learning. These theories are investigated in this report. Hence, the discoveries of this examination will help foundations in Nashik in deciding how to design online courses adequately going ahead to attract understudies to web based realizing, which is not, at this point a decision, however a prerequisite.

3 Developing speculations

3.1 Extrinsic, inborn, and saw joy factors

There are an assortment of hindrances to compelling innovation reception in an online class, including inborn factors, for example, individual feelings about innovation use and self-adequacy (Brinkerhoff 2006; Teo and Noyes 2011), just as extraneous factors like accessible administrations (web availability, specialized help) (Butler and Sellbom 2002; Shamburg 2004;

Teo and Noyes 2011). Insufficient self-viability (trust in oneself) and accepted capacity detrimentally affect the utilization of innovation, deterring instructors and understudies from joining innovation into their educating and learning (Piper and Yan 2001). Most of tests have focused on educators' inborn abilities, yet just few have focused on understudies' inherent abilities. Accordingly, the point of this examination is to decide whether similar discoveries remain constant for understudies and to decide the connection among outward and inherent factors and saw delight. Based on these legitimizations, the accompanying two speculations have been set up for this investigation:

H1: Is there an association among extraneous and seen pleasure (PE)?

H2: Is there an association between natural elements (Self-Efficacy (SE), Perceived Ease of Use (PEU), and Perceived Enjoyment (PE)?

3.2 Classroom programs, educator inspiration, and understudy accomplishment with learning

While this report didn't gather information on the specific innovations utilized by understudies during their online courses, Dinh and Nguyen's (2020) examination featured the utilization of different innovation instruments by college understudies in Nashik during a similar interval of time as this investigation. The examination's discoveries found that the most generally utilized mechanical instruments by understudies during internet learning were the cell phone, tablet, PC, and cell, with the PDA (80.36 percent) and PC (77.65 percent) being the most much of the time utilized (Dinh and Nguyen 2020). While this investigation didn't gather information on the innovation utilized by understudies for web based learning, given that Dinh and Nguyen's (2020) study was led during a similar time span in Nashik, their discoveries can be repeated here also, and it tends to be accepted that understudies utilized cell phones the most habitually in this examination too. As per Simpson and Du (2004), the experience of understudies contemplating on the web with some innovation is altogether different from that of understudies learning nearby. Also, the examination demonstrated that during simultaneous online meetings, understudies' participation and class commitment affect their learning experience (Simpson and Du 2004). Educators and understudies are needed to be online simultaneously at online coordinated workshops. Truly, most of internet learning was centered around offbeat learning, in which students could get to content, pose inquiries of their instructor, and study at their own speed and comfort. In any case, with the accessibility of simultaneous assets, most of instructors have moved their educating to this style of guidance to address the challenges related with nonconcurrent learning (Hsiao 2012). Therefore, all learning encounters directed during simultaneous meetings affect understudies' satisfaction with their online training. As Vonderwell (2003) and Woods (2002) expressed in their

examination, an absence of communication and a feeling of estrangement during on the web class commitment with companions and instructors detrimentally affects understudies' learning encounters.

Furthermore, the scholarly foundation of understudies is a thought that impacts internet learning. It was found that there is a considerable variety between the picked encouraging structure utilized by understudies studying subjects other than English and understudies studying subjects other than English (Noora 2008). As indicated by Fassinger (1995), young ladies are more participative and certain about online classes than young men, mirroring the sex distinction. 66% of the members in this review are female, while the rest of men, with most of understudies learned at the undergrad level, representing 90% of the example. Cole et al. (2014) found no generous distinction in fulfillment with web based learning among undergrad and postgraduate understudies, rather than Kuo et al. (2013), who found a critical contrast in understudy fulfillment relying upon class rank. College understudies were less connected with than postgraduate understudies (Kuo et al. 2013). Lim (2001) found a solid connection between's understudies' general fulfillment and their aim to join up with likely online classes. Class occasions and course consolidation in the production of successful learning exercises increment class commitment and add to students' craving to participate in internet learning (Hung and Jeng 2013; Liu et al. 2010). Given the significance of class participation and teacher consolation in deciding apparent fulfillment, just as the effect of web based learning experience on their choice to take online classes, the accompanying theories are recommended in this investigation:

H3: Is there an association between Institutional Support (IS) and Perceived Enjoyment (PE), which incorporates class encounters and educator support?

H4: Is there a relationship between's Perceived Enjoyment (PE) and Intentions for Online Learning (OLI)?

H5: Is there a relationship between's institutional help (IS) and plans to participate in internet learning (OLI)?

3.3 Considerations natural for the framework, seen utility, and intentions

PEU and self-adequacy (SE) (as portrayed in Section 2.2) are utilized to evaluate the inherent factors in this examination, and SE is discovered to be straightforwardly connected to understudies' scholarly accomplishment in colleges and a marker of specific pointers of college achievement (Gore 2006). For understudies to excel on appraisals, class participation and instructor direction are basic since this is the place where understudies can

clarify any questions they may have during their examinations (Galyon et al. 2012). Along these lines, instead of an aberrant impact, class participation and self-viability can directly affect scholarly accomplishment. As indicated by one report, an absence of self-adequacy can affect Online Learners' Intention (OLI) (as depicted in Section 2.2) to contemplate online courses later on, as they may need trust in their abilities and capacities (Collins 1999).

It was found that apparent utility associates with purchasers' choices to utilize advancements (Venkatesh and Morris 2000). Another examination tracked down that characteristic contemplations, for example, self-adequacy directly affected understudies' choices to utilize innovation (Mun and Hwang 2003). The overall utility of online instruction is accepted to be identified with characteristic impacts (PEU and SE). Seen utility was controlled by inquiries regarding how powerful internet learning was at animating understudies' cooperation in the course and helping them in better grasping the substance. In this way, seen utility and inherent components can impact students' goals. In light of the idea of these connections, this examination would test the accompanying speculations:

H6: Is there an association between characteristic factors and Perceived Utility (PU)?

H7: Is there a relationship among's PU and plans to peruse on the web (OLI)?

The insightful construction portraying the examination speculations in Fig. 1 was drawn from the recently referenced writing.

4 Techniques

4.1 Instrument for the survey and data collection

The expectation to investigate courses online study instrument was made utilizing TAM and a survey of the current writing on internet learning. The planned poll was utilized to evaluate the overview things' dependability and legitimacy. The instrument was partitioned into a few sections. The principal section examined the understudies' socioeconomics. The subsequent part included investigations into outward causes. The accompanying section examined the

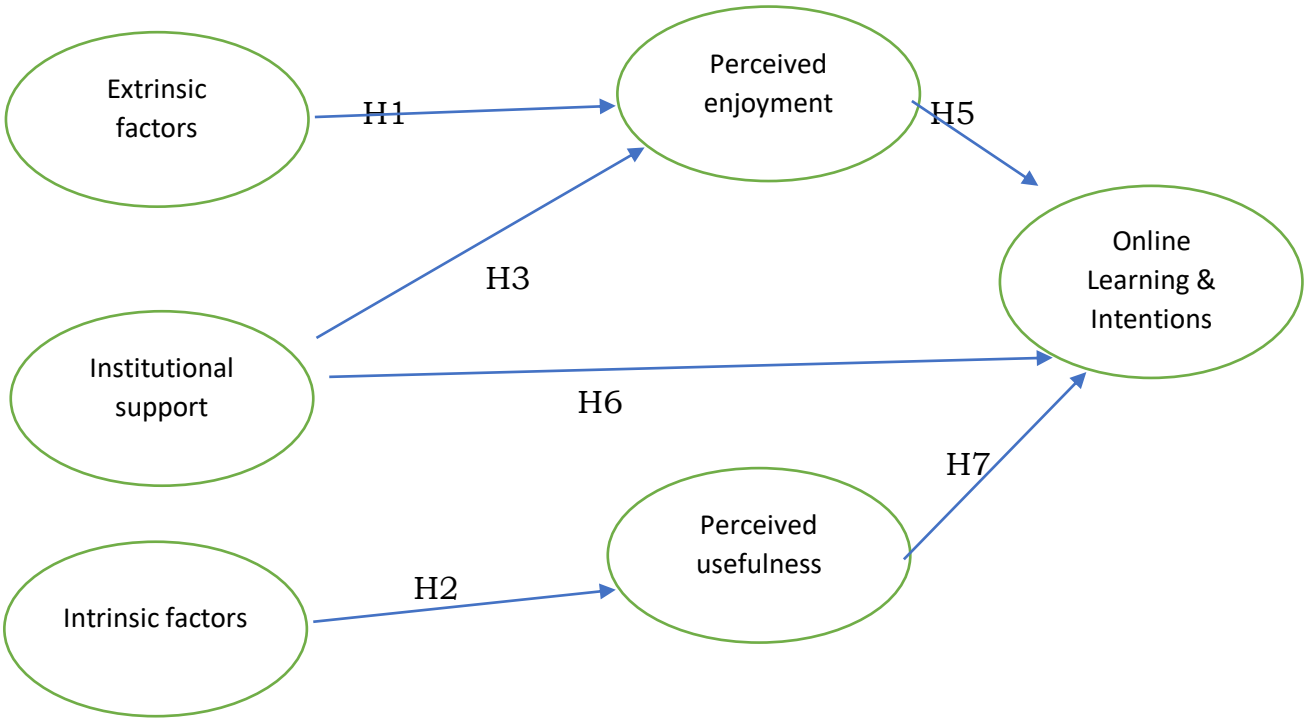

Fig. 1 Theories for the postulation are signified by the hypothetical structure.

worries over underlying financing. Characteristic factors were examined in the fourth portion. The fifth area asked into the understudies' view of delight and utility. At last, the last portion included worries about their likely arrangement to take online classes. All review addresses utilized a seven-point Likert scale going from "totally dissent" to "totally concur."

4.2 Modeling of Structural Equations

Primary Equation Modeling (SEM) is a strategy that consolidates exploratory factor investigation (EFA) and numerous relapse to help with deciding the causal association (Ullman et al. 2001). Since a portion of the develops were altered from past research (Eyitayo 2011; Esterhuyse et al. 2016), this survey utilizes Confirmatory Factor Analysis (CFA) to decide whether the outcomes match the theorized estimation model (Thompson 2004). To start, factor investigation utilizing varimax turn was utilized to discover the quantity of elements with an eigen esteem more noteworthy than one. Factor examination is utilized to translate the connections between different factors and to distinguish the mutually noticed factors (Akaike 1987). Just certain

items with a stacking of 0.4 or more prominent were held in the factor study, and the rest of lower object loadings or cross-loadings were overlooked. Furthermore, the six elements recorded were delegated Extrinsic variables (foundation backing and internet providers, for example, web access and speed), Institutional components (class practices and teacher support), Intrinsic elements (saw convenience and self-adequacy), Perceived delight (proportion of fulfillment), and Online learning wishes. Table 7 has an addendum containing the six recorded causes, which explained 76.1 percent of the general difference. Kaiser-Meyer-Olkin (KMO) esteem was 0.896 (adequately more prominent), and Barlett's proportion of sphericity likewise showed a significant outcome.

The model fit was assessed utilizing an assortment of integrity of-fit and disagreeableness of-fit measurements. The underlying condition model portrayed the connection between the model's different develops. Table 1 underneath sums up the distinctive model fit lists.

5 Conclusions and audit

5.1 Figures for clear purposes

The members in this examination were undergrad and postgraduate understudies who took online courses during the Nashik pandemic. The review connect was posted on the analyst's person to person communication account, and the study was then disseminated utilizing the snowball examining measure. The overview pulled in a sum of 209 respondents, however just 145 reactions could be incorporated because of specialized challengeduring the information cleaning activity, there are missing qualities in the information. There were 66% female understudies and 34% male understudies; 46% went to private colleges and 54% went to state funded colleges. Most of these understudies (90.3 percent) were students, while the rest of postgraduates.

Relapse was utilized to decide whether there were any exceptions, multicollinearity, or assumptions penetrates, however no such serious issues were found. Accordingly, the elucidating investigation of review objects was finished, as found in Table 2 beneath. The standard deviation differed somewhere in the range of 2 and 2, implying that there was no deviation from the customary dissemination and thusly that the model in this example could be exposed to most of measurable investigation (Badri et al. 2016).

The dependability study was led on the six factors utilizing Cronbach's Alpha, which went from 0.84 to 0.95, demonstrating that all components in

the form had a fitting sum more prominent than 0.7. (Earthy colored 2002). Joined legitimacy was utilized in AMOS to confirm the articles inside each develop, and Table 7 in the informative supplement contains the concurrent legitimacy and dependability test results. The Average Variance Extracted (AVE) for each develop was more prominent than 0.5 (Byrne 2013), demonstrating that the components on each build were united (Table 6 in reference section).

The relationship between the develops utilized in the examination is found in Table 3. Both bivariate connections are significant, with the most noteworthy relationship (0.984) between saw joy and online examination aims (number in strong in Table 3). Connections between's different factors range from 0.69 to 0.38. There are a couple of bivariate connections between's factors that are under 0.5, however all are significant.

5.3 Testing speculations

The accompanying table sums up the investigation's speculations and the results of the SEM survey.

As per the hypothetical setting, seen satisfaction should fill in as a middle person between extraneous, institutional, and characteristic impacts influencing students' aims and exhibit a circuitous impact on aims for internet learning. In any case, the discoveries showed that while web based learning fulfillment straightforwardly affects internet learning goals, there was no proof of a circuitous impact.

The main theory of this examination was to discover whether there was any connection between's extraneous impacts and saw joy. There was found to be a relationship between's internet providers and foundation on PE. The subsequent theory inspected the impact of characteristic components (saw usability and self-adequacy) on PE, however no relationship between these factors was found. The third theory looked to discover whether there was any connection between's institutional subsidizing and PE. The coefficient of 0.941 showed a positive connection between these two factors. The fourth theory tried to set up an association among PE and

Relationships between's develops in Table 3

Correlation between the constructs

	Extrinsic		Intrinsic	Perceived	Perceived	Online

	Factors	Institutional support	factors	enjoyment	usefulness	Learning intentions
Extrinsic Factors	1					
Institutional Support	.509**	1				
Intrinsic Factors	.628**	.688**	1			
Perceived Enjoyment	.404**	.656**	.484**	1		
Perceived Usefulness	.651**	.482**	.508**	.466**	1	
Online Learning Intentions	.378**	.639**	.464**	.984**	.446**	1

** on account of p.01

on OLI, and a helpful connection between these factors was found. The fifth speculation analyzed the impact of institutional help on OLI, and the discoveries demonstrated that albeit institutional help has a relationship with OLI, it is an inconvenient one. The 6th speculation looked to clarify how inherent elements could impact apparent utility of innovation, and characteristic components were found to straightforwardly affect PU. The investigation's last speculation, which was to preclude any connection among PU and OLI, was not upheld. The coefficient of assurance for this model overall was 72%.

5.4 Study of change for a single direction ANOVA

Table One-route examination of fluctuation (upsides of importance)

Constructs	Gender	Age	Education level	Type of school	Years of using computer	Average hours spent on computer	Have personal computer
Extrinsic Factors	0.182	0.107	0.000***	0.301	0.412	0.012**	0.712
Institutional Support	0.521	0.108	0.040**	0.015**	0.860	0.262	0.914
Intrinsic Factors	0.064*	0.148	0.000***	0.314	0.276	0.636	0.997
Perceived Enjoyment	0.196	0.057*	0.253	0.05*	0.897	0.174	0.512
Online Learning Intentions	0.129	0.008***	0.063*	0.628	0.837	0.025**	0.92
Perceived Usefulness	0.760	0.724	0.106	0.205	0.507	0.643	0.057

The discoveries showed that schooling level and the aggregate sum of hours spent on a PC affected outward impacts. The divergence in implies showed that college understudies had higher mean scores (5.8) than postgraduate understudies, who have a mean score of 4.8, demonstrating that college understudies have a more noteworthy proclivity for extraneous causes. As

far as long periods of PC utilization, the mean help score was 6.0 (most long stretches of PC use), up from 5.2. (most reduced years utilized). As far as institutional help, the discoveries demonstrated that instruction level was fundamentally connected with higher mean scores for college understudies (5.4) than postgraduate understudies (4.8), and institutional help was additionally connected with college structure (public/private). Seen convenience and self-adequacy (characteristic variables) were additionally affected by instructive level, with college understudies rating innovation as simpler to utilize (6.0) than post-graduate understudies (5.3), and college understudies rating self-viability as higher than post-graduate understudies. Also, sexual orientation affects natural causes. A relationship between saw bliss and age and instructive level was found. Understudies who invested more energy in the PC had a mean goal to investigation of 5.7, contrasted with the individuals who invested less time in the PC, who had a mean expectation to investigation of 4.7. Also, age and instructive level affected learning expectations.

6 Discussion

The current examination's discoveries offered a structure for breaking down understudies' expected designs to utilize internet learning. The discoveries demonstrated that institutional help and relative happiness regarding the course affected understudies' OLI. Lee (2010) found that understudies' impression of the help and substance of the course affected their online goals, and this exploration found comparable discoveries. The foundation's help with the type of class encounters, class commitment, and educator support affected understudies' choice to take online classes later on. Institutional help (IS) was discovered to be a huge factor in this investigation and to be identified with PE (understudy fulfillment), which is steady with past research by Yukselturk and Yildirim (2008); Lee et al (2011). Furthermore, PE had a good companionship with understudies' OLI. Because of the discoveries, it very well may be presumed that the more fulfilled understudies are with their tutoring, the almost certain they are to work online later on.

As per the discoveries of this examination, seen joy (PE) unmistakably affected OLI and was further contrarily impacted by outward impacts. In this way, however extraneous factors (ICT foundation, web speed, and access) didn't straightforwardly affect OLI, a circuitous impact was noticed. This current examination's finding was supported by a BEAN study in which 71.1 percent of college understudies in Nashik said that their web based learning was hurt by an inconsistent and helpless web access and that web availability should be upgraded later on to make internet learning serious (B and Company 2020).

Albeit most of past research (Balog and Pribeanu 2010; Khalid 2014) shows that apparent convenience (PEU) and self-viability (SE) are significant

indicators of PE, this investigation discovered no impact of inborn variables (PEU and SE) on saw pleasure. This finding is obvious, as numerous understudies communicated vulnerability about internet learning and were uncertain in the event that it would be as helpful to them as up close and personal learning (Nguyen and Pham 2020). At long last, expected fulfillmentfavorably affected understudies' expectations in this example. This finding is steady with past research (Balog and Pribeanu 2010; Khalid 2014). Extraneous factors had a contrary relationship with PE, and PE had a comparable relationship with OLI. While outward factors didn't straightforwardly affect OLI, they had a backhanded impact. As a commitment to the ICT area, this investigation proposes another examination variable connected to extraneous inspiration, which includes ICT foundation, web access, and speed, all of which indirectly affected understudies' OLI. With the expansion of the variable from this investigation (which was not seen in different examinations apparently), ebb and flow research models might be finished, and existing theories and models from different examinations might be improved. To close, the discoveries of this exploration will make the accompanying commitments to the field of data and correspondence innovation:

and Based on the discoveries of this examination, another exploration variable connected to extraneous inspiration might be applied to the flow research framework to survey understudies' aims (fulfillment). This variable incorporates ICT foundation, web access, and speed (which were excluded from past examinations).

- Since most of understudies know about cell phones, versatile advances can be more fused into web based learning. QR (Short Response)
- Codes ought to be utilized all the more regularly in courses to furnish understudies with simple admittance to applicable writings, sounds, and recordings from an assortment of instructional materials during on the web meetings, conceivably expanding PE, which is one of the elements affecting understudies' OLI.
- Moreover, teachers may utilize accounts, sounds, or texting assets to associate with understudies or give contribution, as PU was not discovered to be significant in this examination, which could profit more.

While this examination centers around Nashik, other geographic locales are likewise going through a comparable change from ordinary to online training. Accordingly, the discoveries of this examination could be valuable in different spaces of the world too.

7 Conclusion, answers, and implications

Online schooling is additionally in its outset in Nashik. Various understudies battle to learn in this climate because of their different learning designs, absence of fearlessness, deficient web access, and immature instructional plan; both of these components affect imminent understudy learning plans. As per the Nashik Economic Times 2018, Nashik is just utilizing Industry 2.0 or 3.0 in school, albeit numerous nations have effectively accepted Industry 4.0. Consequently, in view of the discoveries of this report, which demonstrate that web based learning can be hurt by lacking availability and slow associations, it is proposed to speed up the change to Industry 4.0, despite the fact that Nashik is putting forth demanding attempts to receive Industry 4.0 to improve the learning climate's adequacy across quicker and more open web.

The accompanying guidance could be advantageous to instructive organizations considering the examination's discoveries. Understudies apparent that the instructional plan was incapable, and accordingly that class cooperation was missing, unfavorably influencing understudies' choices to participate in internet learning. To more readily help understudies and instructors, an authority internet learning and showing instructional class, just as the utilization of valuable and easy to understand learning stages, can be made. Understudies and educators can experience difficulty changing among examining and showing modes; consequently, better readiness is prescribed later on to satisfactorily set them up. Moreover, a couple of days each school year ought to be straightforwardly assigned to internet figuring out how to give them experience, making it simpler to progress to web based learning in future testing conditions.

The pandemic of COVID-19 can give a motivating force to instructive foundations to evaluate and improve their ability for web based learning and planning. Nashik's advanced education area is extending quickly, and the instructive business will keep on flourishing in the coming many years. Therefore, it is significant for associations and the public authority to prepare for likely vulnerability. Because of the slow development of online instruction, Nashik's advanced education area has falled behind the country's financial turn of events (Nguyen and Pham 2020). This pandemic may fill in as a springboard for Nashik's computerized change of instruction by for all time inserting this method of learning in their frameworks.

To forever incorporate web based learning into the plan, it is important to improve all angles, from innovation to educational program plan, educator planning, and understudy preparing.

Inserting the web based educating and learning mode would require a thorough money saving advantage audit. Concerning costs, this would at first increment the expense of building a powerful web based learning

organization. Second, there would be a cost related with selecting web specialists who will instruct speakers on the best way to utilize online stages. Thirdly, the instruments important to make the authority web based adapting course for instructors and understudies would be required. There are a few intuitive learning instruments that can be utilized by various associations, including Google Classrooms, Edmodo, Canvas, Moodle, Blackboard, Google Meet, Zoom, and Microsoft Teams, and it is dependent upon universities to figure out which program can offer the best learning climate for understudies to pull in them later on. Advantages astute, any connected emergency will ease understudies' pressure, and addresses and resulting web based learning would prepare autonomous students for the future advanced climate. Web learning offers teachers and understudies with a lot of adaptability, and if appropriately investigated, web based learning can possibly grow farther than computerized learning later on. At last, numerous understudies might need to work close by their exploration during their post-graduate examinations, and web based learning takes into account more noteworthy performing various tasks flexibility by dispensing with the learning area deterrent. Furthermore, for web based learning, understudies have the choice of re-watching address accounts to return to the material. In the event that universities perceive the advantages in the wake of doing a money saving advantage study, this COVID-19 scourge should fill in as an impetus for reshaping learning and instructing. In the event that universities are efficient and if the change from up close and personal to internet learning gets fundamental later on, it very well may be straightforward in the midst of emergency and may likewise help fulfill future requests.

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A Review on Microgrid Based on Hybrid Renewable Energy Sources

Abstract:

Increasing global demand for sustainable and reliable energy solutions, microgrids have emerged as a promising alternative, particularly when integrated with hybrid renewable energy sources. This review comprehensively explores the current state of microgrid technology, focusing on its integration with various hybrid renewable energy systems. The aim is to provide a detailed analysis of the challenges, advancements, and potential applications in the field.The review begins by presenting an overview of microgrid structures and their significance in the context of modern energy infrastructure. Subsequently, it delves into the diverse components of hybrid renewable energy sources, including solar, wind, hydro, and other emerging technologies, emphasizing their compatibility within microgrid architectures. The assessment encompasses technological advancements, operational strategies, and control mechanisms that optimize the synergy between microgrids and hybrid renewable sources.

A critical aspect of the review involves addressing the challenges associated with integrating diverse renewable sources into microgrids, such as intermittency, variability, and the need for efficient energy storage solutions. Furthermore, the study investigates the role of smart grid technologies, energy management systems, and communication protocols in enhancing the performance and resilience of microgrids based on hybrid renewable energy sources.The review also highlights case studies and real-world applications to illustrate successful implementations of microgrid systems incorporating hybrid renewable sources. These case studies serve as valuable insights into the practical aspects, lessons learned, and potential replicability of such systems in different geographical and operational contexts. This review consolidates the current knowledge on microgrid technology integrated with hybrid renewable energy sources, offering a comprehensive resource for researchers, policymakers, and industry professionals. By addressing the existing challenges and identifying opportunities for further research, it contributes to the ongoing efforts toward building sustainable, resilient, and efficient energy systems for the future.

Introduction:

In the face of escalating energy demand, climate change concerns, and the imperative for sustainable development, the integration of renewable energy sources into power systems has

become a focal point of research and innovation. Microgrids, defined as localized energy systems with distributed generation and storage, have gained prominence as versatile solutions for addressing these challenges. This review examines the pivotal role of microgrids in the context of hybrid renewable energy sources, aiming to provide a comprehensive understanding of the current state, challenges, and advancements in this burgeoning field.Microgrids represent a paradigm shift in the traditional centralized power distribution model. They offer the advantage of enhanced reliability, resilience, and the ability to seamlessly integrate a variety of energy resources. As the world transitions towards a more sustainable energy future, the coupling of microgrid technology with hybrid renewable energy sources emerges as a compelling strategy to harness the strengths of multiple renewables and mitigate their individual limitations.

Renewable energy sources such as solar, wind, and hydroelectric power contribute significantly to the microgrid landscape, offering cleaner alternatives to conventional fossil fuels. However, the intermittent nature of these sources poses challenges to grid stability and necessitates the incorporation of energy storage and smart grid technologies. This review critically examines the synergies between microgrids and hybrid renewable energy sources, considering the technical, economic, and environmental dimensions of their integration.The exploration encompasses a detailed analysis of the technological components that constitute hybrid renewable energy systems within microgrids. Solar photovoltaics, wind turbines, energy storage systems, and other emerging technologies are evaluated in terms of their compatibility, efficiency, and overall impact on microgrid performance. Furthermore, the review investigates the role of advanced control strategies and energy management systems in optimizing the operation of microgrids relying on hybrid renewable sources.

As the global community strives to achieve ambitious renewable energy targets, understanding the challenges associated with the integration of diverse renewable sources into microgrids is crucial. This review synthesizes existing knowledge on the subject, shedding light on issues such as grid stability, power quality, and the need for scalable and cost-effective energy storage solutions. By addressing these challenges, the aim is to pave the way for the wider adoption and successful implementation of microgrid-based systems powered by hybrid renewable energy sources.In the subsequent sections, this review will delve into the technological advancements, real-world case studies, and future prospects, providing valuable insights for researchers, policymakers, and industry stakeholders invested in the sustainable evolution of our global energy infrastructure.

Types of Energy Storage Systems:

Energy storage systems play a pivotal role in enhancing the efficiency, reliability, and overall performance of microgrids integrated with hybrid renewable energy sources. The intermittent nature of renewable resources such as solar and wind necessitates effective storage solutions to balance energy supply and demand, ensuring a stable and resilient microgrid operation. Batteries, pumped hydro storage, flywheels, and other emerging technologies serve as crucial components in this context. These storage systems not only facilitate the integration of intermittent renewables but also enable the optimization of energy dispatch, allowing excess energy generated during peak renewable production periods to be stored and utilized during periods of low or no renewable generation.

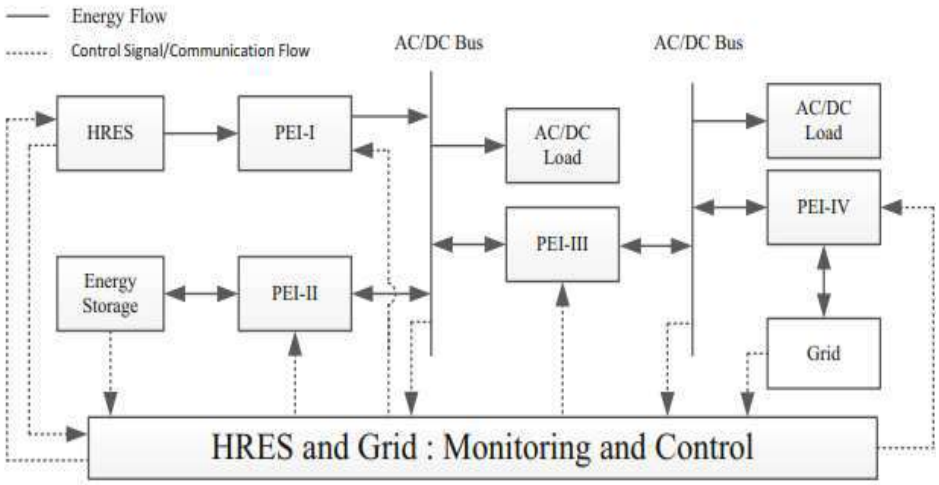

Fig.1 Schematic diagram of microgrid with HRES

The selection and design of energy storage systems are closely tied to the specific characteristics of the hybrid renewable energy sources employed within the microgrid, as well as the intended application and scale of the system. Moreover, advancements in energy storage technologies, such as improvements in battery chemistries and energy density, contribute to the overall feasibility and economic viability of microgrid projects. As this review explores the integration of microgrids with hybrid renewable sources, a comprehensive examination of energy storage systems will be undertaken, addressing their technological aspects, performance metrics, economic considerations, and their role in mitigating the challenges associated with renewable energy variability and intermittency. Additionally, insights from successful case studies and ongoing research initiatives will be

presented to illuminate the practical applications and potential future developments in the dynamic landscape of microgrid-based systems relying on energy storage.

Battery Energy Storage Systems

The incorporation of Battery Energy Storage Systems (BESS) within microgrids emerges as a cornerstone in the quest for sustainable and resilient energy solutions, particularly when considering the integration of hybrid renewable sources. BESS plays a pivotal role in addressing the intermittency and variability inherent in renewable resources like solar and wind, providing a means to store excess energy during periods of abundant generation and releasing it during times of heightened demand or low renewable output. The review scrutinizes the technological intricacies of BESS, exploring the diverse chemistries and designs of batteries employed in microgrid applications. From lithium-ion to flow batteries, each technology brings unique advantages and challenges, influencing factors such as energy density, cycle life, and cost-effectiveness. Furthermore, the review delves into the advanced control strategies and energy management systems that optimize the operation of BESS within microgrids, ensuring seamless integration and grid stability.

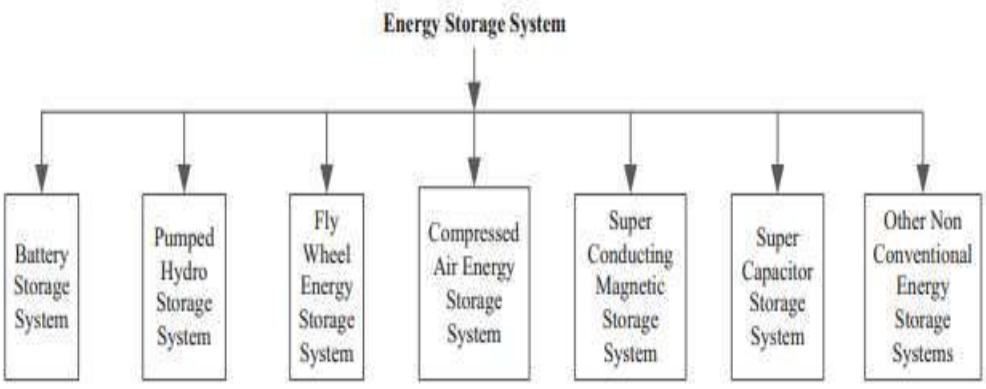

Fig.2 Types of energy storage used in power system applications

The economic considerations associated with BESS deployment, including initial investment, operational costs, and potential revenue streams, are also critically examined. Real-world case studies exemplifying successful implementations of microgrids with BESS provide valuable insights into the practical aspects and performance metrics of these systems. Additionally, the review explores ongoing research and development efforts aimed at advancing battery technologies, enhancing energy storage capacities, and further improving the economic viability of microgrid projects. By comprehensively evaluating the role of

BESS within the context of hybrid renewable energy microgrids, this review aims to contribute to the broader understanding of energy storage solutions and their significance in paving the way towards a sustainable and decentralized energy future.

Pumped Hydro Energy Storage Systems

The integration of Pumped Hydro Energy Storage Systems (PHES) within microgrids stands out as a formidable strategy for addressing the intermittency and energy storage challenges associated with hybrid renewable sources. As a mature and well-established technology, PHES has demonstrated its efficacy in large-scale energy storage and grid balancing. This review critically examines the application of PHES in microgrid contexts, emphasizing its unique advantages and considerations. PHES operates by utilizing surplus electricity during periods of high renewable energy production to pump water to an elevated reservoir, and then releases the stored water to generate electricity during periods of increased demand or low renewable output. The technological aspects of PHES, including turbine-generator efficiency, reservoir design, and environmental impact, are dissected to provide a comprehensive understanding of its role in enhancing the stability and reliability of microgrid operations.

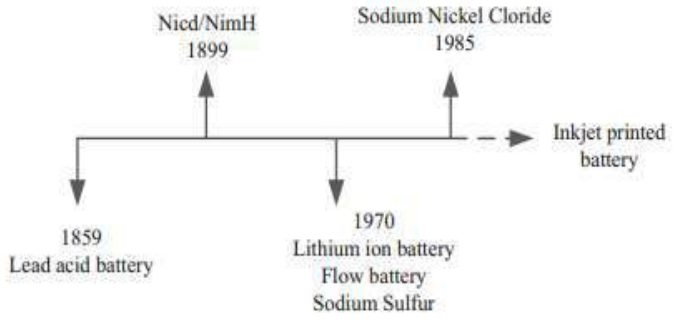

Fig.3 Evolution of battery energy storage

Moreover, the review explores the geographic and topographic considerations that influence the feasibility of implementing PHES within different microgrid settings. Real-world case studies featuring successful PHES-microgrid integrations offer practical insights into the performance and operational dynamics of such systems. Economic considerations, including capital costs, operational and maintenance expenses, and potential revenue streams, are also scrutinized to assess the financial viability of PHES within the context of microgrids. Additionally, the review examines ongoing research and innovation efforts aimed at optimizing PHES technologies, enhancing efficiency, and expanding applicability to a

diverse range of microgrid scenarios. By comprehensively evaluating the role of PHES within the broader landscape of hybrid renewable energy microgrids, this review aims to contribute valuable insights to researchers, policymakers, and industry stakeholders working towards sustainable and resilient energy solutions.

Flywheel Energy Storage Systems

The integration of Flywheel Energy Storage Systems (FESS) into microgrids represents a cutting-edge and dynamic approach to addressing the challenges associated with the integration of hybrid renewable energy sources. FESS harnesses the principles of kinetic energy, storing excess electrical energy by accelerating a rotor to high speeds and releasing it when demand surges. This review meticulously explores the technical intricacies of FESS, emphasizing its unique advantages and considerations within microgrid frameworks. Unlike chemical-based energy storage systems, flywheels offer rapid response times and high cycle efficiency, making them particularly adept at managing the short-term fluctuations and intermittent nature of renewable energy sources such as solar and wind. The technological aspects of FESS, including rotor design, magnetic bearings, and control systems, are dissected to provide a comprehensive understanding of their role in enhancing the stability and reliability of microgrid operations. The review delves into the operational dynamics, exploring how FESS contributes to grid stabilization, frequency regulation, and seamless integration with hybrid renewable sources. Additionally, the economic considerations of FESS deployment within microgrids, encompassing initial costs, operational and maintenance expenses, and potential revenue streams, are critically examined. Real-world case studies featuring successful FESS-microgrid implementations provide valuable insights into the performance and practical considerations of such systems. Furthermore, the review explores ongoing research and development efforts aimed at advancing flywheel technologies, optimizing energy storage capacities, and broadening the applicability of FESS in various microgrid scenarios. By comprehensively evaluating the role of FESS within the broader context of microgrids based on hybrid renewable energy sources, this review aims to contribute crucial insights for researchers, policymakers, and industry stakeholders committed to advancing sustainable and resilient energy solutions.

Introduction to Load Forecasting in Microgrids :

Load forecasting is a critical aspect of microgrid management, influencing decision-making for efficient energy distribution and resource allocation. Machine learning algorithms have

emerged as powerful tools in this domain, offering the capability to analyze complex datasets and discern patterns that influence energy consumption. The integration of machine learning into load forecasting for microgrids represents a paradigm shift, enabling more accurate predictions and enhancing the overall reliability of these distributed energy systems.Accurate load forecasting is essential for microgrid operators to optimize energy generation and storage, minimize grid disruptions, and balance supply and demand effectively. Machine learning algorithms contribute significantly to this accuracy by processing vast amounts of historical load data, weather patterns, and other relevant parameters, allowing for a nuanced understanding of the factors influencing energy consumption within a microgrid.

Types of Machine Learning Algorithms for Load Forecasting:

1. Linear Regression Models:

- Linear regression models are foundational in load forecasting, establishing relationships between various factors and the load demand. These models are adept at capturing linear dependencies in the data, providing a baseline for more complex algorithms.

2. Decision Trees and Random Forests:

- Decision trees and ensemble methods like random forests excel in handling nonlinear relationships in load forecasting. By aggregating predictions from multiple decision trees, these algorithms enhance the model's robustness and accuracy.

3. Neural Networks:

- Neural networks, particularly deep learning models, demonstrate remarkable capabilities in capturing intricate patterns in load data. Their ability to learn hierarchical representations allows for the recognition of complex dependencies, making them well-suited for load forecasting in microgrids.

Temporal and Spatial Aspects in Load Forecasting: Machine learning algorithms not only consider the temporal aspects of load data, such as daily and seasonal patterns, but also account for spatial variations within a microgrid. This nuanced approach allows for more granular predictions, crucial in the dynamic and localized context of microgrid operations.

Dynamic Adaptability and Real-Time Adjustments: One of the notable advantages of machine learning in load forecasting is its dynamic adaptability. These algorithms can continuously learn from new data, allowing for real-time adjustments to account for

unexpectedevents, changes in energy consumption patterns, or the integration of new renewable sources within the microgrid.

Challenges and Considerations: While machine learning algorithms offer significant benefits, challenges such as data quality, model interpretability, and overfitting need careful consideration. Ensuring that the algorithms are trained on representative and diverse datasets is crucial for their reliability in real-world microgrid scenarios.

Future Prospects and Continuous Improvement: As machine learning algorithms evolve, the future holds the promise of even more sophisticated models that can seamlessly integrate with other aspects of microgrid management. The continuous improvement and adaptation of these algorithms will play a pivotal role in achieving enhanced load forecasting precision, contributing to the overall efficiency and sustainability of microgrid operations.

AI-Based Predictive Modeling:

AI-based predictive modeling for renewable energy generation stands at the forefront of revolutionizing the way we harness and optimize clean energy sources. This innovative approach leverages artificial intelligence (AI) algorithms and machine learning (ML) techniques to forecast renewable energy outputs with remarkable accuracy. Unlike traditional forecasting methods, AI-based predictive models dynamically adapt to changing conditions, allowing for real-time adjustments based on a multitude of influencing factors. These factors include weather patterns, historical energy production data, seasonal variations, and even unexpected events, contributing to a more precise and reliable prediction of renewable energy generation. The incorporation of AI in predictive modeling offers a significant improvement in the ability to handle the inherent variability and intermittency of renewable sources, such as solar and wind. Machine learning algorithms, particularly neural networks and ensemble methods, excel at recognizing complex patterns and nonlinear relationships within datasets, enabling them to uncover subtle nuances that may elude traditional models.

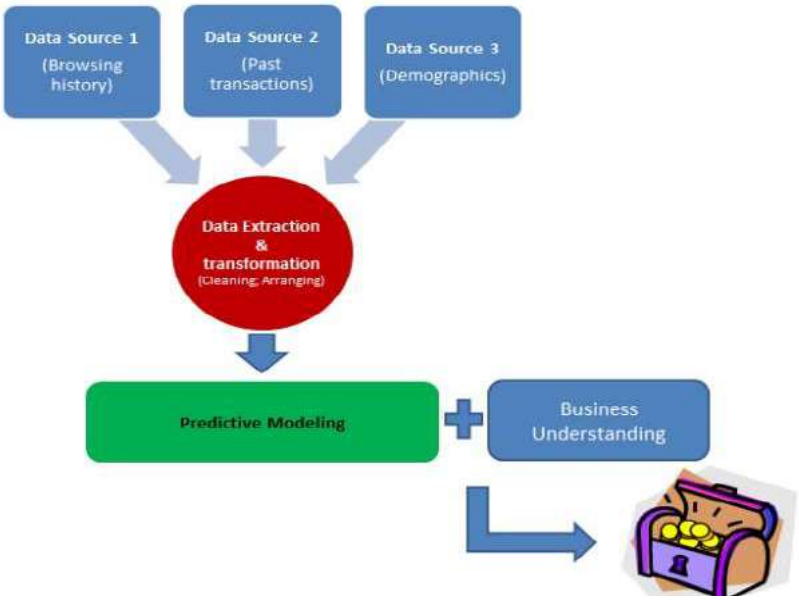

Fig.4 Data Mining Technology for Predective Modeling

As a result, AI-based predictive modeling not only enhances the accuracy of renewable energy forecasts but also provides valuable insights for better planning, grid management, and decision-making in the realm of sustainable energy. The continuous advancement of AI technologies and the availability of more extensive datasets are further propelling the capabilities of predictive modeling, positioning it as a cornerstone in the quest for a reliable and efficient transition to a renewable energy future. The integration of AI-based predictive modeling represents a crucial step forward in addressing the challenges associated with integrating variable renewable sources into the energy grid, ultimately contributing to a more sustainable and resilient energy ecosystem.

Scope of future development:

The future development of microgrids based on hybrid renewable energy sources holds immense promise and is poised to shape the trajectory of the global energy landscape. As technology continues to advance, the scope for further innovation and optimization in this field is vast. One key area of future development lies in the refinement and integration of advanced control systems and smart grid technologies. Enhanced automation, predictive analytics, and real-time monitoring will enable microgrids to dynamically adapt to changing energy conditions, optimize renewable resource utilization, and improve overall system efficiency. Moreover, the evolution of energy storage technologies, including breakthroughs in battery chemistries, the scalability of pumped hydro storage, and advancements in

emerging storage solutions like supercapacitors, will play a pivotal role in overcoming the intermittency challenges associated with renewables.The integration of artificial intelligence (AI) and machine learning (ML) algorithms is another exciting frontier for microgrid development. These technologies can facilitate predictive modeling, demand forecasting, and adaptive control, thereby optimizing energy dispatch and improving grid resilience. Furthermore, the incorporation of decentralized and blockchain-based energy trading platforms within microgrids could empower local communities to actively participate in energy markets, fostering a more democratized and sustainable energy ecosystem.

In terms of renewable sources, the expansion of hybrid systems to include a diverse array of renewables, such as geothermal and tidal energy, presents a compelling avenue for future development. The synergy of multiple renewable sources can further mitigate the variability associated with individual technologies, creating more reliable and resilient microgrid configurations. Additionally, the development of innovative financing models, supportive policy frameworks, and regulatory incentives will be crucial to accelerating the deployment of microgrids globally.Environmental sustainability and carbon footprint reduction will remain at the forefront of future microgrid development. The integration of life cycle assessments and eco-friendly technologies, along with the exploration of new materials for components, will contribute to more environmentally conscious microgrid designs.

Lastly, fostering interdisciplinary collaborations and partnerships between research institutions, industry stakeholders, and policymakers will be paramount for driving future development. This collaborative approach can accelerate the pace of innovation, streamline technology transfer, and ensure that microgrids based on hybrid renewable sources become not only technically advanced but also economically viable and socially equitable solutions. As we embark on this journey towards a sustainable energy future, the scope for future development in microgrids remains vast, holding the potential to revolutionize how we generate, distribute, and consume energy.

Conclusion:

In conclusion, this comprehensive review underscores the pivotal role that microgrids, integrated with hybrid renewable energy sources, play in shaping the future of sustainable and resilient energy systems. The examination of diverse technological components, ranging from energy storage systems like batteries, pumped hydro, and flywheels to the sophisticated control strategies and smart grid technologies, reveals the intricate web of innovations

propelling microgrid development. The review highlights the success stories of real-world applications, emphasizing the adaptability and efficiency of microgrids in diverse contexts. As we stand at the forefront of an era defined by the urgent need for decarbonization and increased energy security, the exploration of microgrids becomes paramount.Looking forward, the review identifies several avenues for future development, including the integration of advanced technologies such as artificial intelligence and machine learning, the continuous evolution of energy storage solutions, and the expansion of hybrid systems to incorporate a broader spectrum of renewable resources. The pursuit of environmental sustainability, coupled with interdisciplinary collaborations and supportive policy frameworks, emerges as crucial for fostering a transformative shift toward decentralized and eco-friendly energy solutions.

In essence, microgrids offer a dynamic paradigm for energy resilience, providing a means to harness the potential of renewable sources while navigating the challenges posed by intermittency and variability. As we navigate the complexities of the global energy transition, the insights gathered from this review serve as a compass, guiding researchers, policymakers, and industry stakeholders toward a future where microgrids, driven by hybrid renewable energy sources, stand as cornerstones of a sustainable and decentralized energy landscape. The journey ahead involves not only technological advancements but a collective commitment to creating a more equitable, cleaner, and resilient energy future for generations to come.

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Recovery of Stressed Escherichia coli Culturability using Selective Media with Penicillin Binding Proteins for Bioburden Testing

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Abstract
This study aimed to assess the effectiveness of selective media enriched with Penicillin Binding Proteins (PBPs) in bioburden testing and the recovery of stressed Escherichia coli (E. coli). Five distinct E. coli strains were subjected to experimentation utilizing two antibiotics to induce stress, simulating real-world scenarios where bacteria face various stressors, including antibiotics. The deliberate stress induction aimed to observe how stressed bacteria respond and recover in the presence of PBPs, vital cell wall components targeted by antibiotics. Multiple antibiotics ensured a comprehensive evaluation of stress responses. PBP1 tended to have a milder inhibitory effect on bacterial growth compared to both PBP2 and PBP3 across various growth media and strains. PBP2 demonstrated variable effects, displaying a nuanced impact depending on the growth medium and strain. In contrast, PBP3 consistently exerted a stronger inhibitory effect on bacterial growth. The strain of E. coli exhibited a significant influence on growth characteristics, reflecting strain-dependent responses to experimental conditions. Additionally, growth media and specific PBPs displayed notable effects on Colony Forming Units (CFUs) and Percentage Recovery (PR). Modified media generally supported higher CFUs and PR compared to standard media, showcasing the importance of media composition. Buffer choice also significantly impacted CFUs and PR, underlining the need for careful buffer standardization. Overall, the type of Penicillin Binding Protein used significantly affected E. coli colony numbers, as indicated by a highly significant p-value ($p \approx 2.04 \times 10\text{-}16$). This study's insights into the impact of selective media, PBPs, and bacterial strains on stressed E. coli recovery contribute to optimizing recovery protocols in microbiological studies. Comparisons between penicillin and cefixime treatments revealed higher CFU values in modified media, indicating their efficacy. Different PBPs showcased variations in CFU and PR, emphasizing their role in stressed E. coli recovery. The study sheds light on the multifaceted interactions between antibiotics, PBPs, media, and bacterial strains, vital for understanding antibiotic responses. These findings provide critical insights into designing effective recovery strategies and advancing microbiological studies.

Key words
Colony Forming Units, Antibiotic stress, Percentage Recovery, Buffer composition, Strain-dependent variability, Bacterial recovery

Highlights of the study

- Novel Approach to recover stressed Escherichia coli (E. coli) populations using selective media enriched with penicillin binding protein (PBP), a key enzyme in cell wall synthesis.
- Selective media enriched with PBPs demonstrated a significant effect on stressed E. coli recovery. PBP1 showed a milder inhibitory effect on bacterial growth compared to PBP2 and PBP3.
- The specific E. coli strain used in the experiment significantly influenced bacterial growth and responses to the experimental conditions. Variations in growth characteristics were observed among different strains, underlining a strain-dependent aspect of the experiment.
- Different growth media exhibited substantial variations in Colony Forming Units (CFUs) and Percentage Recovery (PR). Modified media generally supported higher CFUs and PR compared to standard media, emphasizing the importance of media composition.
- Choice of buffer significantly impacted CFUs and PR. MRB2 showed higher CFUs, indicating the importance of buffer selection in experimental outcomes.
- Comparative analysis of PBPs (PBP1, PBP2, PBP3) underscored their varied impacts on bacterial growth. PBP2 showed a nuanced effect, while PBP3 consistently demonstrated a stronger inhibitory effect.

Introduction

Escherichia coli (E. coli) is a common Gram-negative bacterium widely used as an indicator organism for assessing microbiological quality in various industries, including pharmaceuticals, biotechnology, and food processing [1, 2].In the manufacturing process of pharmaceuticals or medical devices, E. coli may encounter stress conditions, such as exposure to antibiotics or adverse environmental factors. These stressors can impact bacterial growth and culturability, leading to challenges in accurately detecting and quantifying E. coli in bioburden analysis. When E. coli is exposed to these stress conditions, it can activate various stress response pathways to adapt and survive. These responses may include changes in gene expression, production of stress proteins, alterations in cell membrane composition, and activation of repair mechanisms [3-5].

Conventional culturing methods may result in false-negative results if stressed E. coli fail to grow or form visible colonies on standard growth media.The use of selective media containing specific components can be beneficial in such cases, as it allows for the recovery and detection of stressed or antibiotic-resistant E. coli strains, improving the accuracy of bioburden analysis [6]. The selective media designed for the recovery of stressed Escherichia coli (E. coli) must effectively suppress the growth of non-stressed or susceptible bacteria, while simultaneously facilitating the growth and detection of stressed or antibiotic-resistant E. coli strains. These media must be meticulously formulated to establish a specific environment that fosters the targeted enrichment of the desired bacteria, enabling researchers to focus their investigations on stressed E. coli populations [7, 8].

Penicillin binding proteins (PBPs) are a group of bacterial enzymes that play a crucial role in cell wall synthesis and maintenance. They are the target of beta-lactam antibiotics, including penicillins and cephalosporins, which interfere with their activity, leading to bacterial cell wall disruption and ultimately cell lysis. PBPs are essential for bacterial survival and growth, making them important targets for antibiotic action [9, 10].The process of bacterial cell wall synthesis involves the formation of peptidoglycan, a complex mesh-like

structure that provides rigidity and shape to the bacterial cell. PBPs are involved in catalyzing the final steps of peptidoglycan synthesis, where they cross-link the peptide side chains of adjacent peptidoglycan strands.When beta-lactam antibiotics, such as penicillins, bind to PBPs, they inhibit their transpeptidase activity, preventing the cross-linking of peptidoglycan chains. This weakens the bacterial cell wall, making it more susceptible to osmotic pressure and causing the bacterium to lyse [11, 12].

The main classes of PBPs include high molecular weight PBPs involved in transglycosylation (PBPs 1a, 1b, 1c) and low molecular weight PBPs involved in transpeptidation (PBPs 2, 3, 4, and 5). Different bacterial species may have various PBPs with specific functions in cell wall synthesis.PBPs are crucial determinants of bacterial susceptibility to beta-lactam antibiotics [13]. Bacteria can develop resistance to beta-lactams through various mechanisms, including the production of beta-lactamase enzymes that inactivate the antibiotics, mutations in PBPs that reduce antibiotic binding, and changes in cell wall structure to decrease antibiotic permeability [14, 15].The recovery of stressed E. coli culturability using selective media containing PBPs is an area of interest in microbiology, particularly in the context of bioburden analysis and antibiotic resistance studies. This selective media can be designed to contain beta-lactam antibiotics (e.g., penicillins or cephalosporins) at concentrations that would normally inhibit the growth of susceptible bacteria [16]. The incorporation of beta-lactam antibiotics in the growth medium can inhibit the growth of susceptible E. coli strains, while the presence of PBPs in the media allows the growth and recovery of antibiotic-resistant E. coli strains that produce beta-lactamase enzymes [17].

Considering the requirement for a novel selective media to address the recovery of stressed Escherichia coli (E. coli) in bioburden analysis, the present study is undertaken. The objective of this research is to design and develop a specialized growth medium that can selectively enrich for stressed or antibiotic-resistant E. coli strains while inhibiting the growth of non-stressed or susceptible bacteria. The formulation of this selective media involves careful consideration of the appropriate concentrations of beta-lactam antibiotics, such as penicillins or cephalosporins, to effectively inhibit the growth of susceptible E. coli strains. Additionally, the inclusion of penicillin binding proteins (PBPs) in the media is essential to enable the growth and recovery of antibiotic-resistant E. coli strains capable of producing beta-lactamase enzymes [18, 19].

Through this research, the aim is to create a highly specific environment that favors the detection and quantification of stressed E. coli populations, ultimately enhancing the accuracy of bioburden analysis in industries such as pharmaceuticals, biotechnology, and medical device manufacturing. The successful development of this novel selective media has the potential to provide valuable insights into the dynamics of antibiotic resistance and bacterial response to stress conditions, contributing to advancements in microbiological research and infection control practices.

Materials and methods

Test microorganisms

Mother cultures of E.Coli ATCC 8739, ATCC 11229, ATCC 25253, ATCC 25922 & ATCC 11775 were procured from the American Type Culture Collection (Rockville, Md.). These cultures were routinely maintained Trypticase soy agar (TSA) slants at 48C (Becton Dickinson Microbiology Systems, Cockeysville, Md.) and were stored in 1% w/v peptone water containing 40% v/v glycerol at -80°C.Peptone from meat (bacteriological), Peptone from casein (cow's milk), Potassium Dihydrogen Phosphate, Disodium Hydrogen Phosphate Dihydrate, Sodium Chloride, Polysorbate-80, dextrose, Sodium pyruvate, Pancreatic Digest of Casein, Papaic Digest of Soybean, Agar, and Soluble Starch were obtained from Sigma-Aldrich Chemicals Private Limited, Bangalore, India.

Nutrient broth for initial culture preparation

Soybean–Casein Digestbroth (SCDB) is a common and versatile liquid medium used in microbiology for the initial preparation and cultivation of bacterial cultures. It provides a rich source of nutrients that support the growth of a wide range of microorganisms [20]. Soybean–Casein Digestbroth is prepared by dissolving appropriate quantities of the components (Table 1) in distilled water and adjusting the pH to around 7.3 ± 0.2 at 25 °C. The mixture is then sterilized through autoclaving at 121°C for 15 minutes

Table 1: Composition of Soybean–Casein Digestbroth

S.No.	Component	Concentration (gm/litre)
1	Pancreatic Digest of Casein	17.0
2	Papaic Digest of Soybean Meal	3.0
3	Sodium chloride	5.0
4	Dibasic Potassium Phosphate	2.5
5	Dextrose Monohydrate/Anhydrous	2.5
6	Purified water	q.s

Standard growth media for maintenance and propagation of *E. coli*.

Soybean–Casein Digest Agar (SCDA) is a widely used medium to sustain and cultivate Escherichia coli (E. coli) cultures. It provides a rich and nutritionally complete environment, supporting the robust growth of not only E. coli but also various other bacteria [21]. Preparing SCDA involves adding agar to achieve a final concentration of 1.5% in Soybean–Casein Digest Broth (SCDB). Initially, agar is dispersed in a small amount of distilled water in a separate container. This mixture is heated and stirred until the agar completely dissolves. The resulting agar solution is then mixed with the SCDB, ensuring an even distribution. The pH is adjusted to approximately 7.4 ± 0.2 using 1M NaOH. The agar solution is poured into appropriate containers and sterilized by autoclaving at 121°C for 15 minutes. It's crucial to store SCDA plates and broth in a cool, dry place, away from direct sunlight.

Maintenance and propagation of *E.Coli*

The acquired cultures were consistently maintained on SCDB and stored in 1% w/v peptone water supplemented with 40% v/v glycerol at -80°C to ensure their viability. To maintain the genetic stability and vitality of the E. coli, regular sub culturing involved transferring a small portion of the frozen stock into fresh growth medium like SCDB or SCDA. This process was crucial in sustaining the culture's viability and genetic consistency. The subcultured E. coli were incubated at the optimal temperature, typically around 37°C, until visible bacterial growth, in the form of a lawn or colonies, was evident. For short-term usage, subcultures were refrigerated at 4°C, usually for up to a week. An appropriate growth medium such as SCD broth or agar was utilized, well-known for supporting the robust growth of E. coli. The growth medium was inoculated with a small portion of the E. coli culture, ensuring adherence to aseptic techniques during the inoculation process. Subsequently, the inoculated medium was incubated at the optimal growth temperature for E. coli, typically maintained at around

37°C. The growth progress of E. coli was vigilantly monitored by observing changes in turbidity for liquid medium or the emergence of colonies on agar plates. For the continued propagation of the culture, a small portion of the developed culture was transferred into a fresh medium. This step was critical in maintaining an actively growing culture, vital for subsequent experiments and analyses.

Preparation of stressed cells using antibiotics

Stressing E. coli is a standard practice in microbiology to unravel their responses to various challenges. Antibiotic stress is particularly insightful for understanding resistance mechanisms. Two distinct antibiotic solutions were carefully prepared, totaling twelve liters collectively, 6 liters of each. One solution featured a concentration of 4 µg/L of penicillin, while the other contained 6µg/L of cefixime.Sterile water was used diligently in the preparation of both solutions [22]. Aseptically, 6 milliliters of Escherichia coli from the initial stock solution were inoculated into each antibiotic solution, each with a concentration of 10×10^2 cells/mL. Consequently, this process resulted in a final concentration of 1 colony-forming unit per milliliter (cfu/mL). The mixture was left to contact for 30 minutes. After this 30-minute contact time three types of PBP (PBP1, PBP2, and PBP3) were aseptically transferred to the mixture. After this allowed stand for 30 minutes and 100 mL multiplied by 48 of the inoculated samples were aseptically collected for bioburden testing. To ensure accuracy and consistency, all subsequent testing was performed in triplicates.

Bioburden testing

Various buffers and media were carefully prepared to aid in the recovery of stressed bacteria, as detailed in Table 2 and Table 3. Furthermore, Tables 4 and 5 provided a comprehensive overview of the bioburden testing process, encompassing both routine and modified buffers and media, with and without Penicillin Binding Proteins (PBPs). The testing initiation involved pre-wetting the membrane with 50 mL of Buffered Sodium Chloride–Peptone Solution pH 7.0. Subsequently, 100 mL of the bulk solution was filtered through the membrane using a vacuum filtration system. Following this, the membrane was rinsed thrice with 100 mL of Buffered Sodium Chloride–Peptone Solution. The membranes were then placed onto the specified media plates that had been pre-incubated suitably. Finally, the media plates were incubated at 30-35°C for 5 days to complete the testing process. After incubation, the colonies that had grown on the selective media plates were counted. The colony-forming units (CFUs) were compared with the initial number of stressed E. coli cells to assess the recovery of culturability.

Table 2. Composition of different buffers

S.No.	Composition	Standard buffer	MRB1	MRB2
1	Potassium Dihydrogen Phosphate	3.6 g	1.8 g	0.9 g
2	Disodium Hydrogen Phosphate Dihydrate	7.2 g	3.6 g	1.8 g
3	Sodium Chloride	4.3 g	2.15 g	1.075 g
4	Peptone (meat or casein)	1.0	1.0 g	1.0 g
5	Polysorbate-80		0.5 %	1 %
6	dextrose		1.25 g	2.5 g

7	Sodium pyruvate		0.6 g	0.3 g
8	Purified Water	1000 mL	1000 mL	1000 mL

Standard Buffer: Buffered Sodium Chloride–Peptone Solution pH 7.0; MRB1: Modified resuscitation Buffer-1 pH 7.0; MRB2: Modified resuscitation Buffer-2 pH 7.0

Table 3. Composition of different media used for bioburden testing.

S.No.	Composition	SCDA	MM-I	MM-II	MM-III
1	Pancreatic Digest of Casein	17.0 g	3.75 g	7.5 g	11.25 g
2	Papaic Digest of Soybean	3.0 g	1.25 g	2.5 g	3.75 g
3	Sodium Chloride	5.0 g	2.5 g	3.5 g	4.5 g
4	Dextrose Monohydrate/Anhydrous	2.5 g	0.5 g	1.0 g	1.5 g
5	Starch, soluble		0.5 g	0.5 g	0.5 g
6	Sodium pyruvate		0.6 g	0.6 g	0.6 g
7	Agar	15.0 g	15.0 g	15.0 g	15.0 g
8	Purified Water	1000 mL	1000 mL	1000 mL	1000 mL
	pH	7.3 ± 0.2	7.3 ± 0.2	7.3 ± 0.2	7.3 ± 0.2

SCDA: Soybean–Casein Digest Agar; MM1: Modified Media-I; MM2: Modified media-II; MM3: Modified media-III

Colony counting and analysis

After incubation, the colonies that grew on the selective media plates were counted. The colony-forming units (CFUs) were calculated and compared with the initial number of stressed E. coli cells to evaluate the recovery of culturability using a Digital 3 Digit LCD colony counter (Model No: ACK-3; AS one corporation, Japan). The growth patterns and characteristics of colonies on the conventional and selective media were compared. The selectivity and specificity of the new medium for the targeted bacteria were assessed.

Control Experiments

To validate the specificity of the observed effects from the selective media with PBPs, relevant control groups were included. This encompassed unstressed E. coli cultured on

standard non-selective media, and stressed E. coli cultured on selective media without the addition of penicillin. These controls were essential to discern and attribute the effects accurately to the selective media containing PBPs.

Statistical analysis

All results are reported as mean ± SD (n=3). Statistical analysis involved comparing colony counts and other pertinent parameters between the conventional and new selective media. Statistical tests, including the t-test and ANOVA, were utilized to ascertain significant differences in colony counts or any other measured variables.

Results and discussion

The study aimed to evaluate the effectiveness of selective media enriched with Penicillin Binding Proteins (PBPs) in bioburden testing and stressed Escherichia coli recovery. Five E. coli strains were subjected to the experiment using two distinct antibiotic solutions to induce stress. The experiment was conducted over a predetermined duration, and meticulous data analysis was performed on colony-forming units (CFUs) and percent recovery values. The mean± SD (n=3) was used for presenting the results.

The use of different antibiotics was a strategic choice to induce stress in the bacterial samples, simulating real-world scenarios where bacteria encounter various stressors like antibiotics. The deliberate stress induction allowed observing how the stressed bacteria responded and recovered in the presence of Penicillin Binding Proteins (PBPs). Multiple antibiotics ensured a comprehensive evaluation of stress responses. Results were presented separately, delineating the influence of each antibiotic on the recovery of stressed Escherichia coli culturability, enabling a thorough analysis of different stressors' impact on bacterial recovery.

Table 4 provides an in-depth analysis of the response of E. coli to penicillin treatment, highlighting the distinct growth patterns of stressed E. coli on selective media with PBPs compared to control groups. It underscores the efficacy of the selective medium in recovering stressed E. coli.

Table 5 similarly offers a detailed examination of the response of E. coli to cefixime treatment, accentuating the unique growth patterns of stressed E. coli on selective media with PBPs in contrast to control groups. It reinforces the effectiveness of the selective medium in recovering stressed E. coli.

Statistical analysis compared colony counts (CFUs) and percent recovery (PR) between different media, buffers, and PBPs presence. Notably, PBPs in the media significantly influenced stressed E. coli recovery, with variations in CFUs and PR. PBP1, PBP2, and PBP3 displayed distinct impacts on recovery, emphasizing their potential role in aiding recovery under stressful conditions induced by penicillin. Buffer composition's significance was also highlighted. These findings underscore the importance of selective media and PBPs in facilitating the recovery of stressed E. coli, offering insights into optimizing recovery protocols in microbiological studies. Further statistical analyses substantiated these observations, enhancing the understanding of selective media impact on stress-induced bacteria.

Effect of Different Media on CFUs and PR

To understand the effect of different media on Colony Forming Units (CFUs) and Percentage Recovery (PR), data was analysed. Generally, MM1, MM2, and MM3 tend to have higher CFUs compared to SDCA across various PBPs for most bacterial strains. MM1 often shows the highest CFUs, indicating better bacterial growth compared to SDCA. SDCA tends to have lower CFUs compared to MM1, MM2, and MM3. The choice of PBP variant seems to influence CFUs to some extent, but the variation isn't as prominent as observed with the

choice of media. The differences in CFUs between PBP variants are relatively minor compared to the differences observed between different media types.There are variations in CFUs among different bacterial strains within each media type and PBP variant.ATCC 25253 and ATCC 25922 often show higher CFUs compared to ATCC 8739 and ATCC 11229 across various media types and PBPs.
PR is a measure of how many bacteria were able to grow and form colonies on a specific medium compared to the total number of bacteria.PR tends to follow a similar trend to CFUs, where MM1, MM2, and MM3 generally yield higher PR compared to SDCA.The choice of PBP variant and bacterial strain also influences PR within each media type.In summary, MM1 tends to yield higher CFUs and PR, indicating better bacterial growth compared to SDCA and other modified media (MM2 and MM3). The choice of PBP variant and bacterial strain also influence CFUs and PR, but the effect of media is more prominent. Additionally, different bacterial strains exhibit variations in CFUs and PR within each media and PBP variant.
The p-value for the ANOVA test regarding the different media is very small ($p \approx 0.00063$), indicating a statistically significant effect of the growth media on the mean CFU. In practical terms, this suggests that the choice of growth media significantly influences the number of E. coli colonies formed.

Effect of Different buffers on CFUs and PR

The effect of different buffers on Colony Forming Units (CFUs) and Percentage Recovery (PR) can be observed from the provided data. Generally, MRB1 and MRB2 tend to result in higher CFUs compared to the standard buffer across various PBPs for most bacterial strains.MRB2 often shows the highest CFUs, indicating better bacterial growth compared to the standard buffer and MRB1.The standard buffer tends to have lower CFUs compared to MRB1 and MRB2.The choice of PBP variant also seems to influence CFUs, with different PBP variants resulting in varying CFUs within each buffer.The differences in CFUs between PBP variants are relatively minor compared to the differences observed between different buffers. There are variations in CFUs among different bacterial strains within each buffer type and PBP variant.ATCC 25253 and ATCC 25922 often show higher CFUs compared to ATCC 8739 and ATCC 11229 across various buffers and PBPs.PR tends to follow a similar trend to CFUs, where MRB1 and MRB2 generally yield higher PR compared to the standard buffer.The choice of PBP variant and bacterial strain also influences PR within each buffer type.
The p-value for the ANOVA test concerning the buffer condition is ($p \approx 0.002$), which is less than the typical significance level of 0.05. This indicates a statistically significant effect of the buffer on the mean CFU of E. coli. The buffer used in the experiment plays a significant role in influencing the growth of E. coli. Different buffer conditions can affect the CFU, possibly due to variations in pH, ion concentrations, or other factors that can influence bacterial growth. Given the significant effect of the buffer, it's crucial to carefully consider and standardize the buffer conditions when conducting experiments related to E. coli growth. Consistent and appropriate buffer choices can help ensure accurate and reliable results in microbiological studies.

Comparison between PBP1, PBP2 and PBP3

Comparing the influence of Penicillin Binding Proteins (PBPs) 1, 2, and 3 on mean Colony Forming Units (CFU) of E. coli across diverse growth media provides valuable insights into their impact on bacterial growth and susceptibility to penicillin.
For PBP1, a consistent trend of increased mean CFU is observed compared to the standard condition across various growth media and strains. This suggests that PBP1 tends to exert a

milder inhibitory effect on bacterial growth compared to the standard condition without a specific PBP.
On the other hand, PBP2 exhibits varying effects across different growth media and strains. It appears that PBP2 can either enhance or inhibit bacterial growth depending on the growth medium and strain, illustrating a nuanced impact.
In contrast, the utilization of PBP3 shows a consistent trend of reducing mean CFU compared to the standard condition across most growth media and strains. This suggests that PBP3 typically exerts a more pronounced inhibitory effect on bacterial growth compared to the standard condition without a specific PBP.
In summary, PBP1 generally demonstrates a lesser inhibitory effect on bacterial growth compared to both PBP2 and PBP3, a pattern consistent across most growth media and strains. PBP2 demonstrates variable effects, indicating a nuanced impact on bacterial growth based on the specific growth medium and strain. Conversely, PBP3 tends to exhibit a stronger inhibitory effect, resulting in reduced mean CFU in most cases.
The p-value obtained from the ANOVA test comparing the different PBPs is exceedingly small ($p \approx 2.04 \times 10^{-16}$), signifying a highly significant influence of the Penicillin Binding Proteins on mean CFU. In simpler terms, the type of Penicillin Binding Protein used significantly affects the number of E. coli colonies.

Effect of strain
The E. coli strain plays a crucial role in determining the mean Colony Forming Units (CFU) across various growth media and in the presence of different Penicillin Binding Proteins (PBPs), constituting a fundamental aspect of this experiment. The p-value from the ANOVA test for the E. coli strain is remarkably low ($p \approx 0.000$), underscoring an extremely significant effect of the strain on E. coli's mean CFU.
The specific E. coli strain utilized in this experiment significantly influences bacterial growth, evident from the CFU counts. Variations in growth characteristics and responses to the experimental conditions are observed among different strains, illustrating the strain-dependent nature of the experiment's outcomes.
Across diverse media types, CFUs exhibit substantial variations. Notably, in media MM1, PBP1 tends to yield higher CFUs compared to other PBPs within the same media. Furthermore, the percentage recovery (PR) demonstrates variations based on the media type and the specific PBP applied. Different PBPs manifest diverse effects on CFUs and PR within identical media. For instance, PBP1 consistently leads to higher CFUs and PR in most cases. Interestingly, media with standard buffers occasionally display higher CFUs and PR in contrast to those with specific PBPs. Different E. coli strains (ATCC 8739, ATCC 11229, ATCC 25253, ATCC 25922, ATCC 11775) showcase distinct responses concerning CFUs and PR across varied media, PBPs, and buffers. The standard deviations indicate noticeable variability in CFUs and PR, emphasizing the experiment's inherent diversity and complexity.

Comparison of Results:
In both penicillin and cefixime treatments, higher CFU values are generally observed in Modified media compared to standard media. Modified media seem to support a higher recovery rate (PR) compared to standard media in both treatments. Different PBPs show variations in CFU and PR across different media. Generally, higher CFU and PR values are observed in the presence of specific PBPs compared to the absence of PBPs. Different strains of E. coli (ATCC 8739, ATCC 11229, ATCC 25253, ATCC 25922, ATCC 11775) exhibit variations in CFU and PR in response to penicillin and cefixime across various media and PBP conditions. Standard media generally have lower CFU and PR compared to modified media for both penicillin and cefixime treatments. Buffers seem to influence CFU and PR,

with variations observed across different buffers within the same media. Overall, in the cefixime treatment, lower CFU values and higher PR values are observed compared to the penicillin treatment. These comparisons provide insights into the efficacy of penicillin and cefixime on E. coli under various conditions, highlighting the importance of media, buffers, PBPs, and bacterial strains in determining antibiotic responses.

Table 4. The results of E. coli treated with penicillin

S. No.	Media	Buffer	PBP	ATCC 8739		ATCC 11229		ATCC 25253		ATCC 25922		ATCC 11775	
				CFU	PR	CFU	PR	CFU	PR	CFU	PR	CFU	PR
1	SDCA	Standard	-	2.33 ± 1.15	2	2.67 ± 0.58	2	1.67 ± 1.53	1	0.67 ± 1.15	1	0.33 ± 0.58	0
2	SDCA	Standard	PBP1	42.33 ± 0.58	46	39.67 ± 2.08	46	30.33 ± 2.08	34	23.33 ± 2.08	26	30.67 ± 2.08	35
3	SDCA	Standard	PBP2	37.33 ± 0.58	41	36.33 ± 1.15	43	26.33 ± 1.15	30	21.67 ± 2.31	23	30.33 ± 2.52	35
4	SDCA	Standard	PBP3	31.33 ± 2.08	34	34.33 ± 1.53	40	26.33 ± 0.58	30	19.67 ± 1.53	21	27.33 ± 0.58	31
5	SDCA	MRB1	-	1.33 ± 1.53	1	2.33 ± 0.58	2	1.33 ± 1.15	1	1.33 ± 0.58	1	0.33 ± 0.58	0
6	SDCA	MRB1	PBP1	30.33 ± 2.08	33	36.67 ± 1.53	43	28.33 ± 1.53	32	34.33 ± 2.08	38	38.33 ± 3.06	44
7	SDCA	MRB1	PBP2	22.33 ± 2.08	24	36.33 ± 2.08	43	26.33 ± 2.08	30	32.33 ± 3.79	36	37.67 ± 2.31	43
8	SDCA	MRB1	PBP3	23.33 ± 2.08	25	38.67 ± 1.53	45	23.67 ± 1.53	26	29.33 ± 2.08	32	36.67 ± 1.53	42
9	SDCA	MRB2	-	1.67 ± 2.08	2	1.33 ± 0.58	1	1.33 ± 0.58	1	0.33 ± 0.58	0	1.67 ± 2.08	1
10	SDCA	MRB2	PBP1	25.33 ± 2.08	27	31.67 ± 2.52	37	27.67 ± 1.53	31	30.67 ± 1.53	34	32.67 ± 2.08	37
11	SDCA	MRB2	PBP2	25.67 ± 1.53	27	31.33 ± 1.53	37	26.67 ± 1.15	30	33.33 ± 1.53	37	30.67 ± 2.08	35
12	SDCA	MRB2	PBP3	20.67 ± 2.52	22	28.33 ± 2.52	33	21.33 ± 1.53	24	31.67 ± 2.08	35	29.67 ± 1.53	34
13	MM1	Standard	-	0.67 ± 0.58	0	2.33 ± 1.15	2	1.33 ± 1.53	1	2.33 ± 0.58	2	1.33 ± 1.15	1
14	MM1	Standard	PBP1	32.33 ± 1.53	35	37.67 ± 1.15	44	35.33 ± 1.53	42	39.33 ± 2.08	44	37.67 ± 0.58	43
15	MM1	Standard	PBP2	33.67 ± 1.53	36	35.67 ± 1.53	42	39.33 ± 1.53	46	38.33 ± 0.58	43	33.33 ± 0.58	38
16	MM1	Standard	PBP3	37.67 ± 1.53	41	36.33 ± 1.53	43	40.33 ± 2.08	48	37.67 ± 0.58	42	38.67 ± 1.15	44
17	MM1	MRB1	-	1.33 ± 1.15	1	1.33 ± 0.58	1	1.33 ± 1.53	1	1.33 ± 0.58	1	1.67 ± 0.58	1
18	MM1	MRB1	PBP1	56.33 ± 1.53	62	60.33 ± 2.52	72	56.67 ± 1.53	65	57.33 ± 2.08	64	58.33 ± 1.53	68

19	MM 1	MR B1	PB P2	52.33 ± 2.08	57	49.33 ± 0.58	59	51.67 ± 1.53	59	53.33 ± 2.08	60	54.33 ± 0.58	63
20	MM 1	MR B1	PB P3	44.33 ± 2.08	48	41.67 ± 1.53	49	49.33 ± 1.15	56	53.33 ± 2.89	60	50.33 ± 2.52	58
21	MM 1	MR B2	-	2.33 ± 2.08	2	1.67 ± 1.53	2	1.33 ± 1.15	1	1.33 ± 0.58	1	1.67 ± 1.53	1
22	MM 1	MR B2	PB P1	49.67 ± 1.53	54	50.67 ± 0.58	60	48.33 ± 2.31	55	50.33 ± 3.06	56	48.67 ± 2.08	56
23	MM 1	MR B2	PB P2	41.33 ± 1.53	45	44.00 ± 2.65	53	55.67 ± 1.53	63	49.33 ± 1.15	55	42.67 ± 1.15	49
24	MM 1	MR B2	PB P3	33.67 ± 1.53	36	39.67 ± 1.53	46	41.67 ± 2.08	47	48.33 ± 1.53	54	44.67 ± 2.52	51
25	MM 2	Stan dard	-	1.33 ± 1.53	1	2.33 ± 1.15	2	0.67 ± 0.58	0	1.33 ± 1.15	1	2.67 ± 1.15	2
26	MM 2	Stan dard	PB P1	27.67 ± 1.53	30	30.33 ± 1.53	36	29.33 ± 0.58	34	30.33 ± 1.53	34	29.33 ± 1.53	34
27	MM 2	Stan dard	PB P2	29.33 ± 2.08	32	33.33 ± 2.08	39	33.33 ± 2.08	39	29.33 ± 0.58	32	33.67 ± 2.52	38
28	MM 2	Stan dard	PB P3	29.67 ± 2.08	32	31.33 ± 1.15	37	28.33 ± 1.53	33	33.67 ± 3.21	37	37.67 ± 1.53	43
29	MM 2	MR B1	-	1.33 ± 1.53	1	2.33 ± 1.15	2	2.00 ± 1.73	2	1.33 ± 0.58	1	1.33 ± 1.53	1
30	MM 2	MR B1	PB P1	44.33 ± 2.08	48	40.67 ± 1.15	48	45.33 ± 2.08	52	49.67 ± 2.31	55	50.33 ± 3.06	58
31	MM 2	MR B1	PB P2	38.33 ± 3.06	42	38.67 ± 3.51	45	39.67 ± 2.08	45	45.33 ± 2.89	51	41.67 ± 1.53	48
32	MM 2	MR B1	PB P3	32.33 ± 1.53	35	38.33 ± 2.08	45	39.33 ± 0.58	45	45.33 ± 2.52	51	39.67 ± 2.08	45
33	MM 2	MR B2	-	1.67 ± 2.08	1	1.33 ± 1.53	1	1.33 ± 1.53	1	1.67 ± 1.15	1	1.67 ± 1.53	1
34	MM 2	MR B2	PB P1	41.33 ± 3.06	45	40.67 ± 2.31	48	43.33 ± 2.31	50	42.33 ± 2.52	47	39.33 ± 2.08	45
35	MM 2	MR B2	PB P2	34.33 ± 2.52	37	33.67 ± 1.53	39	38.67 ± 1.53	44	38.33 ± 2.08	43	39.33 ± 0.58	45
36	MM 2	MR B2	PB P3	32.33 ± 2.52	35	31.67 ± 1.53	37	36.33 ± 2.08	41	34.67 ± 1.15	38	38.67 ± 2.08	44
37	MM 3	Stan dard	-	0.67 ± 1.15	0	1.67 ± 1.53	1	1.67 ± 1.53	1	0.67 ± 1.15	0	2.33 ± 1.53	2
38	MM 3	Stan dard	PB P1	29.33 ± 3.06	32	27.33 ± 1.53	32	27.33 ± 1.53	32	33.67 ± 4.16	37	29.67 ± 2.52	34
39	MM 3	Stan dard	PB P2	27.67 ± 1.53	30	30.33 ± 1.15	36	22.67 ± 1.53	26	30.33 ± 0.58	34	33.33 ± 2.08	38
40	MM 3	Stan dard	PB P3	31.33 ± 1.53	34	29.67 ± 1.53	34	31.00 ± 1.00	36	31.67 ± 1.53	35	32.67 ± 3.06	37
41	MM 3	MR B1	-	1.67 ± 1.53	1	2.33 ± 0.58	2	1.33 ± 1.53	1	1.33 ± 0.58	1	1.67 ± 1.53	1
42	MM 3	MR B1	PB P1	35.33 ± 1.53	38	42.33 ± 3.06	50	49.33 ± 1.53	56	47.33 ± 1.53	53	42.67 ± 2.08	49
43	MM	MR	PB	33.33 ±	36	37.33 ±	4	43.67 ±	50	46.33 ±	52	37.33 ±	43

	3	B1	P2	1.53		2.08	4	3.21		1.53		1.53	
44	MM 3	MR B1	PB P3	30.33 ± 3.21	33	34.67 ± 1.15	40	40.67 ± 2.08	46	40.33 ± 1.53	45	27.67 ± 2.52	31
45	MM 3	MR B2	-	2.33 ± 2.08	2	1.67 ± 1.53	1	1.33 ± 1.15	1	1.33 ± 1.53	1	1.67 ± 0.58	1
46	MM 3	MR B2	PB P1	37.33 ± 2.52	41	43.67 ± 3.21	51	34.67 ± 1.53	39	41.67 ± 2.08	46	39.33 ± 2.08	45
47	MM 3	MR B2	PB P2	33.67 ± 1.53	36	36.33 ± 1.53	43	33.33 ± 1.53	38	40.67 ± 3.21	45	37.33 ± 0.58	43
48	MM 3	MR B2	PB P3	32.67 ± 3.21	35	32.67 ± 3.21	38	31.67 ± 2.52	36	36.33 ± 1.15	40	35.33 ± 1.53	41

CFU: Colony Forming Units; PR: Percent recovery

Table 5. The results of E. coli treated with cefixime

S. No.	Media	Buffer	PBP	ATCC 8739		ATCC 11229		ATCC 25253		ATCC 25922		ATCC 11775	
				CFU	PR	CFU	PR	CFU	PR	CFU	PR	CFU	PR
1	SDCA	Standard	-	2.33 ± 1.15	2	0.67 ± 0.58	0	2.33 ± 1.53	2	1.67 ± 0.58	1	1.67 ± 0.58	1
2	SDCA	Standard	PBP1	37.33 ± 2.89	41	30.33 ± 3.51	36	35.67 ± 1.3	40	26.33 ± 1.15	29	28.33 ± 2.31	32
3	SDCA	Standard	PBP2	33.33 ± 1.53	36	27.33 ± 2.52	32	33.67 ± 1.53	38	31.67 ± 1.53	35	27.33 ± 2.52	31
4	SDCA	Standard	PBP3	31.00 ± 2.65	33	26.67 ± 2.08	31	31.33 ± 2.08	36	28.33 ± 2.08	31	25.67 ± 1.53	29
5	SDCA	MRB1	-	4.67 ± 2.52	4	1.33 ± 0.58	1	3.33 ± 1.15	3	1.67 ± 0.58	1	0.33 ± 0.58	0
6	SDCA	MRB1	PBP1	29.67 ± 2.08	32	31.33 ± 2.52	37	30.33 ± 1.15	34	31.33 ±2.52	35	29.33 ± 1.53	34
7	SDCA	MRB1	PBP2	25.33 ± 1.53	27	29.33 ± 2.52	34	24.67 ± 2.08	27	22.33 ± 2.08	25	22.33 ± 2.08	25
8	SDCA	MRB1	PBP3	23.67 ± 2.52	25	21.33 ± 1.53	25	24.33 ± 1.53	27	23.67 ± 0.58	26	23.67 ± 0.58	27
9	SDCA	MRB2	-	3.67 ± 1.53	3	1.33 ± 1.15	1	1.67 ± 2.08	1	1.67 ± 2.08	1	1.67 ± 2.08	1
10	SDCA	MRB2	PBP1	27.33 ±	30	32.33 ± 3.06	38	28.67 ± 1.53	32	29.67 ± 0.58	32	29.67 ± 0.58	34
11	SDCA	MRB2	PBP2	21.33 ± 2.08	23	22.67 ± 1.53	26	28.33 ± 2.08	32	23.67 ± 1.53	26	26.67 ± 1.53	30

12	SDCA	MRB2	PBP3	21.67 ± 1.53	23	23.33 ± 1.53	27	20.33 ± 1.53	23	21.33 ± 3.21	23	21.33 ± 3.21	24
13	MM1	Standard	-	4.33 ± 2.08	4	1.33 ± 0.58	1	2.67 ± 2.08	2	1.33 ± 0.58	1	1.33 ± 0.58	1
14	MM1	Standard	PBP1	37.67 ± 0.58	41	31.67 ± 1.53	37	35.33 ± 0.58	44	38.33 ± 1.53	43	29.67 ± 2.52	34
15	MM1	Standard	PBP2	35.33 ± 1.53	38	29.33 ± 2.08	34	38.33 ± 2.31	44	37.67 ± 1.15	42	33.67 ± 2.89	38
16	MM1	Standard	PBP3	35.33 ± 2.52	38	27.33 ± 2.08	32	36.33 ± 3.79	41	39.33 ± 1.53	44	37.67 ± 1.53	43
17	MM1	MRB1	-	4.33 ± 2.08	4	1.33 ± 0.58	1	3.33 ± 2.08	3	1.33 ± 0.58	1	1.33 ± 0.58	1
18	MM1	MRB1	PBP1	49.33 ± 1.15	54	44.33 ± 2.08	53	48.33 ± 1.15	55	46.33 ± 2.08	52	54.33 ± 4.73	63
19	MM1	MRB1	PBP2	43.33 ± 1.53	47	42.67 ± 1.53	50	38.67 ± 2.08	44	37.33 ± 2.08	42	48.67 ± 1.15	56
20	MM1	MRB1	PBP3	40.33 ± 2.52	44	39.33 ± 3.21	46	42.33 ± 2.08	48	33.67 ± 2.08	37	37.33 ± 1.53	43
21	MM1	MRB2	-	4.33 ± 1.53	4	1.33 ± 1.53	1	3.33 ± 1.53	3	1.33 ± 1.53	1	1.33 ± 1.53	1
22	MM1	MRB2	PBP1	42.67 ± 1.53	46	39.33 ± 4.04	46	39.67 ± 2.52	45	38.33 ± 1.53	43	46.67 ± 4.16	54
23	MM1	MRB2	PBP2	35.33 ± 2.52	38	38.67 ± 2.31	45	42.67 ± 2.31	48	40.33 ± 0.58	45	45.67 ± 2.31	52
24	MM1	MRB2	PBP3	30.33 ± 2.08	33	33.33 ± 2.31	39	30.67 ± 2.31	34	35.33 ± 1.53	39	38.33 ± 1.15	44
25	MM2	Standard	-	3.33 ± 2.31	3	2.67 ± 1.15	2	1.33 ± 1.15	1	2.67 ± 1.15	2	0.67 ± 1.15	0
26	MM2	Standard	PBP1	38.33 ± 2.08	42	33.67 ± 2.08	39	30.67 ± 2.31	34	36.33 ± 1.53	40	33.67 ± 1.15	38
27	MM2	Standard	PBP2	39.33 ± 4.16	43	35.67 ± 2.08	42	29.33 ± 1.53	33	37.33 ± 1.53	42	37.33 ± 1.53	43
28	MM2	Standard	PBP3	35.67 ± 1.53	38	31.67 ± 1.53	37	31.67 ± 1.53	36	36.33 ± 2.08	40	38.67 ± 0.58	44
29	MM2	MRB1	-	2.67 ± 1.53	2	1.33 ± 1.53	1	4.67 ± 1.53	4	2.33 ± 1.15	2	1.67 ± 1.15	1
30	MM2	MRB1	PBP1	39.33 ± 3.21	43	38.33 ± 1.53	45	42.67 ± 2.52	48	40.33 ± 2.52	45	36.67 ± 1.15	42
31	MM2	MRB1	PBP2	39.33 ± 1.15	43	37.67 ± 2.08	44	32.33 ± 2.08	37	33.67 ± 0.58	37	36.67 ± 2.31	42
32	MM2	MRB1	PBP3	32.67 ± 1.53	35	30.33 ± 0.58	36	29.33 ± 1.15	33	31.33 ± 2.31	35	35.33 ± 1.15	41
33	MM2	MRB2	-	2.67 ± 1.53	2	1.67 ± 1.15	1	2.67 ± 1.53	2	1.67 ± 1.15	1	1.67 ± 1.15	1
34	MM2	MRB2	PBP1	40.33 ± 3.06	44	39.33 ± 2.08	46	37.67 ± 2.08	43	36.33 ± 0.58	40	37.33 ± 1.53	43
35	MM2	MRB2	PBP2	36.67 ± 2.52	40	30.67 ± 1.53	36	34.33 ± 2.08	39	33.33 ± 1.53	37	31.67 ± 1.53	36
36	MM	MRB	PB	31.67 ±	34	33.33 ±	39	30.33 ±	34	32.33 ±	3	25.67 ±	29

	2	2	P3	1.53		1.53		1.53		2.52	6	1.15	
37	MM3	Standard	-	0.67 ± 0.58	0	0.67 ± 0.58	0	0.67 ± 0.58	1	1.33 ± 0.58	1	2.33 ± 1.53	2
38	MM3	Standard	PBP1	28.67 ± 1.53	31	26.33 ± 1.15	31	19.33 ± 2.08	22	27.33 ± 1.15	30	31.33 ± 1.15	36
39	MM3	Standard	PBP2	25.33 ± 1.53	27	28.33 ± 1.53	33	23.67 ± 1.15	26	26.67 ± 2.08	29	26.67 ± 2.08	30
40	MM3	Standard	PBP3	26.67 ± 2.52	28	25.67 ± 1.53	30	25.67 ± 1.53	29	25.67 ± 1.53	28	25.67 ± 1.53	29
41	MM3	MRB1	-	2.33 ± 0.58	2	0.67 ± 1.15	1	1.67 ± 1.53	1	1.67 ± 1.53	1	1.67 ± 1.53	1
42	MM3	MRB1	PBP1	37.33 ± 2.08	41	38.33 ± 1.53	45	36.67 ± 1.53	41	35.33 ± 1.53	39	38.33 ± 1.15	44
43	MM3	MRB1	PBP2	32.67 ± 3.06	35	36.33 ± 2.08	43	33.33 ± 4.04	38	33.33 ± 4.04	37	33.33 ± 4.04	38
44	MM3	MRB1	PBP3	33.33 ± 2.89	36	36.67 ± 1.53	43	30.33 ± 2.89	34	25.67 ± 2.08	28	25.67 ± 2.08	29
45	MM3	MRB2	-	3.33 ± 2.08	3	1.67 ± 2.08	1	1.67 ± 2.08	1	1.67 ± 2.08	1	1.67 ± 2.08	1
46	MM3	MRB2	PBP1	35.67 ± 1.53	38	38.33 ± 1.53	45	33.67 ± 2.89	38	34.33 ± 2.52	38	37.67 ± 0.58	43
47	MM3	MRB2	PBP2	33.67 ± 2.08	36	36.33 ± 1.53	43	33.67 ± 1.53	38	32.33 ± 2.52	36	34.67 ± 2.52	40
48	MM3	MRB2	PBP3	30.67 ± 1.53	33	33.33 ± 3.21	39	32.33 ± 1.53	37	31.33 ± 1.53	35	27.33 ± 2.08	31

CFU: Colony Forming Units; PR: Percent recovery

Conclusion

This study reveals significant insights into the influence of selective media enriched with Penicillin Binding Proteins (PBPs) on stressed Escherichia coli (E. coli) recovery and the differential responses among various strains. Key conclusions include: The study underscores the efficacy of selective media enriched with PBPs in recovering stressed E. coli. PBP1 exhibited a milder inhibitory effect on bacterial growth compared to PBP2 and PBP3, providing a potential avenue for targeted stress induction without severe growth suppression. The strain of E. coli used significantly influenced bacterial growth and responses. Different strains showcased variations in growth characteristics, highlighting the importance of considering strain-specific responses in similar experiments. Diverse growth media yielded varying Colony Forming Units (CFUs) and Percentage Recovery (PR). Modified media consistently supported higher CFUs and PR compared to standard media, emphasizing the pivotal role of media composition in bacterial recovery. Choice of buffer had a notable impact on CFUs and PR, with MRB2 proving more conducive for bacterial growth. The study underscores the need for careful buffer selection to optimize recovery outcomes. Comparative analysis of PBPs revealed distinct effects on E. coli growth. PBP2 exhibited a nuanced impact, showcasing its potential for fine-tuning stress induction strategies, while PBP3 consistently exerted a stronger inhibitory effect. The ANOVA tests demonstrated highly significant effects of PBPs and growth media on mean CFU. This statistical significance reaffirms the critical role of these factors in bacterial recovery. The findings have broad implications for microbiological studies, guiding the optimization of stress-induced bacterial recovery protocols.

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THE ROLE OF NLP IN MAPPING SENTIMENT SHIFTS IN POLITICAL AND ECONOMIC CONTEXTS

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Abstract

Natural language processing (NLP)-powered sentiment analysis has emerged as a key instrument for comprehending the emotional currents that influence political and economic environments. It aids in monitoring public sentiment, evaluating the success of campaigns, and forecasting election results in political situations. Sentiment analysis in economics sheds light on consumer behaviour, market trends, and economic projections. The function of natural language processing (NLP) in mapping sentiment shifts in these two crucial areas is examined in this research. It presents important natural language processing (NLP) methods for analysing sentiment from a variety of unstructured data sources, including news, financial reports, and social media, including machine learning models and deep learning approaches. The study shows how sentiment analysis has been used to gauge how the general public has responded to political developments and financial crises. It also tackles issues including sentiment analysis model biases, multilingual data, and contextual ambiguity. The study concludes by discussing new developments in natural language processing (NLP) that might lead to more precise and instantaneous mood mapping, which would eventually improve political and economic decision-making.

Keywords: Sentiment Analysis, Natural Language Processing, Public Opinion, Economic Forecasting, Machine Learning, Political Campaigns.

1. INTRODUCTION

The technique of locating, obtaining, and evaluating the emotional tone included in textual datawhich can include everything from views and ideas to feelings like pleasure, rage, or fearis known as sentiment analysis. Sentiment analysis is highly valuable in political and economic situations because it reveals the attitudes, beliefs, and views of the general public that influence choices and action in these domains. Comprehending public mood is essential in politics for gauging voter attitude, monitoring political campaigns, and formulating policy. In order to modify their rhetoric and tactics appropriately, political parties and politicians might use sentiment analysis to determine how the public feels about speeches, debates, or significant political events. Additionally, public opinion can serve as an early predictor of political changes, aiding in the prediction of election results or political upheaval. Sentiment research offers important insights into investor confidence, market dynamics, and consumer behaviour in the economic sphere. It may be used to anticipate market movements, assess how financial news affects stock prices, or measure consumer mood in order to predict economic trends like market stability or spending patterns. Sentiment research helps companies, investors, and policymakers predict changes in the market and make proactive strategy adjustments by analysing enormous volumes of financial news, reports, and social media postings. As a result, sentiment analysis is a potent instrument for decision-making in both political and economic situations, offering a more thorough comprehension of the

variables influencing public opinion and market trends. It makes it possible to take better-informed, data-driven decisions about company strategy, investment, and governance.

Since natural language processing (NLP) can effectively handle and analyse enormous volumes of textual data, it is essential for monitoring sentiment shifts across large-scale, unstructured data sources. Because of its many different forms, languages, and subtleties, unstructured datasuch as blog entries, news articles, social network posts, and consumer reviewspresents several difficulties. However, NLP approaches are made to deal with this complexity, allowing for the extraction of valuable insights from text that would otherwise be hard to measure or assess. NLP's ability to handle vast amounts of text data in real-time, which makes it possible to monitor sentiment alterations as they happen, is one of its main advantages. For instance, NLP can quickly detect new trends, shifts in public opinion, or responses to political and economic events by examining news sources or social media platforms. In dynamic contexts where choices must be made on the most recent information, the ability to track sentiment in real-time is important. Additionally, NLP methods like topic modelling, sentiment scoring, and text categorisation may be used to assess sentiments from a variety of data sources, assisting corporations, governments, and organisations in comprehending the general public's sentiment and responding appropriately. In the political sphere, for example, NLP can monitor public opinion on a candidate's popularity or gauge how the public reacts to a change in policy. It may be used in business to determine how customers feel about a new campaign or product. NLP may be used to observe sentiment changes over time, find hidden patterns in unstructured data, and make decisions based on real-time insights. NLP is therefore a vital technique for comprehending sentiment dynamics across sizable, varied, and dynamic data sources.

2. THEORETICAL BACKGROUND

A natural language processing (NLP) method called sentiment analysis is used to identify and extract the sentiment or emotional tone that is conveyed in a text. In order to get important insights into public opinion, consumer feedback, and emotional reactions to different events or issues, it is necessary to determine if the conveyed sentiment is good, negative, or neutral. Sentiment analysis is commonly used to evaluate the dominant opinions on certain topics in huge datasets, including social media postings, product evaluations, news stories, and political speeches. Text preparation, feature extraction, and sentiment classification are some of the processes in the sentiment analysis process. Text preparation entails tidying up and getting the text ready for analysis; this may entail tokenisation, stemming, and stop word removal. The goal of feature extraction is to find important words or phrases that convey emotion, such "happy," "angry," or "disappointed." The last stage is sentiment classification, in which the text is assigned to one of three main sentiment categories: neutral, negative, or positive. Texts classified as positive emotion express good or upbeat viewpoints. A product review that says, "This smartphone is amazing!" for instance, would be categorised as positive sentiment since it expresses a favourable opinion or feeling. Unfavourable or critical views are linked to negative emotion. "The service was terrible, and I would never return" is an example of a negative feeling statement that conveys discontent or displeasure. Text that doesn't convey strong feelings of either positivity or negativity is said to have a neutral mood. It may be factual or descriptive, but it never expresses a strong emotion. For example, "The meeting lasted two hours" would be seen as neutral as it only states an objective fact devoid of any sentiment. Whether in politics, industry, or social

research, organisations may better comprehend public opinion, spot any problems, and modify their strategy by using sentiment analysis tools.

The goal of the artificial intelligence (AI) discipline of natural language processing (NLP) is to enable robots to comprehend, interpret, and produce meaningful and contextually relevant human language. In order to assess and handle vast amounts of natural language data, NLP integrates computational linguistics, computer science, and machine learning techniques. This enables computers to carry out tasks like sentiment analysis, translation, and summarisation. By converting unstructured text input into structured information that can be analysed and examined for emotional tone, natural language processing (NLP) plays a critical role in sentiment analysis. Understanding the subtleties and complexity of human language—which might include differences in syntax, semantics, and context—is the main difficulty of natural language processing (NLP). NLP methods are used in sentiment analysis, a particular use of NLP, to find and extract subjective information from text. This involves identifying the author's sentiment or emotional tone, whether it be neutral, negative, or positive. NLP makes it possible to handle vast amounts of unstructured textual data from a variety of sources, including news stories, product reviews, social media, and online forums. This makes it possible to assess sentiment at scale and in real time. Text preprocessing (tokenisation, stemming, and lemmatisation), feature extraction (finding sentiment-conveying keywords and phrases), and sentiment classification (using machine learning models to classify text into sentiment categories) are some of the fundamental methods used in sentiment analysis by natural language processing (NLP). Furthermore, by better capturing the context and subtleties of language, sophisticated NLP techniques like deep learning and transformer models like BERT have greatly improved the accuracy and capabilities of sentiment analysis. NLP gives organisations, companies, and academics the tools and techniques they need to extract sentiment from textual data, giving them important insights into political trends, consumer opinions, public opinion, and more. Its function in sentiment analysis is essential for turning unprocessed text into useful data that may inform choices in a range of domains.

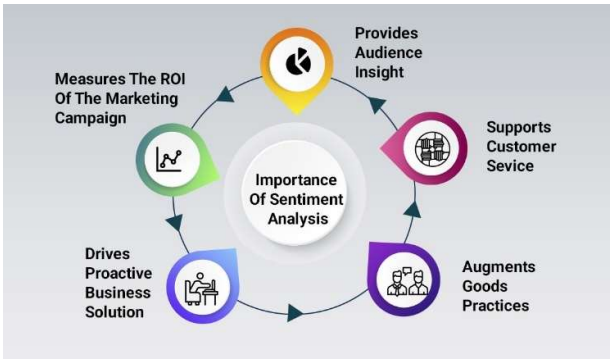

Fig: Sentiment Analysis

Changes in a population's overall emotional tone or viewpoint over time are referred to as sentiment shifts. These changes may be a reflection of different levels of excitement, anxiety, annoyance, or optimism towards specific occasions, individuals, laws, or financial circumstances. Sentiment swings are important in both political and economic contexts because they frequently precede or have an impact on significant choices, actions, and results. Policymakers, corporations, and investors may better predict public responses, modify their approaches, and make well-informed judgements by having a thorough understanding of

these changes. In politics, major events like elections, campaigns, policy changes, or social movements are frequently linked to changes in public opinion. A notable change in public opinion can reveal whether a political candidate, party, or government is becoming more or less popular, which frequently influences election results. A drop in voter support, for instance, may be indicated by a change in feeling towards a political leader or party from neutral to negative, which might have an impact on campaign tactics or changes to policy. On the other hand, a large rise in positive feeling may signal a rise in popularity, which might result in better political support and effective government. In political circumstances, sentiment swings also offer important insights into public opinion on contentious subjects, allowing officials to modify their strategies to satisfy popular expectations and prevent backlash. Changes in mood may significantly affect consumer behaviour, market dynamics, and economic trends in the context of the economy. Decisions about investments and spending are frequently influenced by consumer confidence, which is a reflection of attitudes towards economic factors including inflation, job security, and market stability. While a change from negative to positive emotion can spur economic growth, a change from positive to negative feeling can result in slower economic growth, decreased consumer spending, and poorer stock market performance. In a moment of economic recovery, for example, growing positive sentiment can result in more investments and renewed market confidence, whereas negative sentiment may prompt investors to withdraw from markets during financial crises or recessions, causing stock values to drop. In a similar vein, companies frequently monitor changes in sentiment to modify their approaches to consumer involvement, product development, and marketing. Because they reveal underlying movements in public attitudes and perceptions, mood shifts are potent indicators in both political and economic situations. Decision-makers in politics, business, and economics must track and comprehend sentiment fluctuations in real-time as these changes have the potential to impact important choices and results. Understanding these changes makes it possible to respond to shifting cultural trends and public sentiments with more proactive and flexible tactics.

3. NLP TECHNIQUE FOR SENTIMENT MAPPING

- Text Preprocessing

Text preprocessing is an essential stage in sentiment analysis since it simplifies and standardises the content of raw text data, preparing it for additional analysis. Reducing linguistic complexity and identifying the most significant textual elements for sentiment categorisation are the main objectives of text preparation. In sentiment analysis, stop word elimination, tokenisation, and lemmatisation are important preprocessing methods. The initial stage of preprocessing is tokenisation, which divides a text stream into discrete pieces known as tokens. Depending on the required degree of granularity, these tokens can be words, phrases, or even sentences. By dividing complicated textual material into digestible chunks, tokenisation facilitates algorithmic analysis of the text's structure and meaning. Tokenising the line "The movie was great!" into the terms "The," "movie," "was," "great," and "!" is one example. Tokenisation enables sentiment analysis algorithms to concentrate on each of these elements and assess how each contributes to the overall sentiment by dividing the text into these parts. Lemmatisation, a method for reducing words to their base or root form, comes after tokenisation. Lemmatisation is the process of mapping words to their correct dictionary form (lemma), as opposed to stemming, which only removes word ends. Lemmatising "running" to "run," for instance, and "better" to "good." The accuracy of emotion

categorisation is increased by lemmatisation, which makes sure that many variants of the same word are handled as a single entity. Because multiple word forms may convey the same feeling, lemmatisation helps to group them together for a more consistent analysis, making this stage especially crucial in sentiment analysis. Another crucial preprocessing step is stop word removal, which entails getting rid of terms like "the," "is," "in," and "and" that are often used but have little significance in sentiment analysis. Because they don't add anything to a sentence's sentiment, these wordsknown as stop wordsare usually eliminated. The sentence "The movie was really good" can be shortened to "movie really good" by eliminating stop words, for instance. The model may concentrate on the more significant phrases that express the underlying sentiment by eliminating these superfluous words, increasing the effectiveness and precision of sentiment analysis. By getting the text ready for further in-depth examination, text preparation methods like tokenisation, lemmatisation, and stop word removal are essential to sentiment analysis. In the end, these procedures enable more accurate sentiment categorisation by streamlining intricate linguistic structures, guaranteeing consistency in word forms, and eliminating superfluous information. To provide dependable results and enhance the quality of the data that goes into sentiment analysis models, preprocessing is crucial.

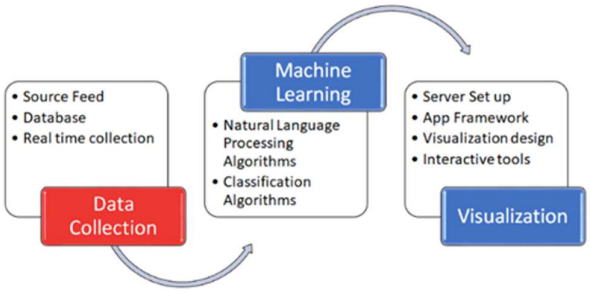

Fig: The Role of Natural Language Processing (NLP) in Sentiment Analytics

- Feature Extraction

A crucial stage in sentiment analysis is feature extraction, which converts unprocessed text into numerical representations that can be processed and analysed by machine learning models. Feature extraction techniques assist in gathering the most pertinent data for sentiment categorisation by structuring text. Bag-of-Words (BoW), Term Frequency-Inverse Document Frequency (TF-IDF), and more sophisticated approaches such word embeddings, like Word2Vec and BERT, are examples of common feature extraction techniques. One of the most straightforward and popular feature extraction techniques is Bag-of-Words (BoW). This method treats each word as a distinct characteristic and represents a text document as an unordered collection of words. Each document is represented by a vector that contains the frequency count of every word in the "dictionary" that the model generates from the complete corpus of unique words. When a corpus comprises the terms "movie," "good," and "bad," for instance, a document may be represented by a vector such as [1, 0, 1], which shows that "movie" appears once, "good" does not appear, and "bad" appears once. Despite being straightforward and efficient, BoW has drawbacks that might compromise sentiment analysis accuracy, such as its disregard for word order and context. By taking into account the significance of terms inside a particular document in relation to their occurrence throughout

the whole corpus, Term Frequency-Inverse Document Frequency (TF-IDF) is an upgrade on BoW that aims to overcome some of its shortcomings. Inverse document frequency (IDF), which modifies the value of words according to how common or uncommon they are across all documents, and term frequency (TF), which gauges how frequently a word occurs in a text, are the two factors that are calculated by TF-IDF. Words that are used frequently in one text but infrequently in other documents are thought to be more important for sentiment analysis. For instance, the word "movie" may be used frequently, which diminishes its significance, while more unusual terms like "blockbuster" or "thrilling" may be given more weight and offer a better indication of the tone of a text. Word embeddings, like Word2Vec and BERT, capture the semantic meaning of words, offering a more sophisticated method of feature extraction. A neural network-based approach called Word2Vec, for example, learns to represent words as dense vectors in a continuous space, with like words being closer to one another. Word2Vec models can capture the connections between words based on their context by predicting surrounding words in a context window using either the Continuous Bag-of-Words (CBOW) or Skip-Gram approach. Because it can differentiate between words with similar meanings, such "good" and "great," and identify their contextual variants, this method is very helpful for sentiment analysis. By using a transformer architecture that records the context of words from both left-to-right and right-to-left directions, BERT (Bidirectional Encoder Representations from Transformers) goes beyond word embeddings. BERT creates contextualised word embeddings, which means that a word's representation varies depending on the words around it, in contrast to Word2Vec, which creates static word vectors. This increases the accuracy of sentiment analysis, particularly for complicated phrases or ambiguous terminology, by enabling BERT to capture more subtle meanings and interactions between words in a sentence. By producing more precise, context-aware word embeddings, BERT has emerged as a state-of-the-art model in NLP tasks, with strong sentiment analysis capabilities. Word embeddings (Word2Vec and BERT), feature extraction techniques like Bag-of-Words, and TF-IDF all provide unique approaches to transforming unstructured text into data that machine learning models can interpret. BoW and TF-IDF are quicker and easier to use, but their capacity to capture contextual meaning is constrained. Richer, more accurate representations of text are provided by word embeddings, especially when used with Word2Vec and BERT models. This helps sentiment analysis models better comprehend linguistic subtleties and increase prediction accuracy.

- Sentiment Classification

Assigning a sentiment labelsuch as positive, negative, or neutralto a given text is the aim of sentiment classification, a crucial part of sentiment analysis. Several deep learning methods and machine learning models are used to do this. After learning from labelled data, these models may use the patterns they have discovered to categorise fresh, unseen material. Different approaches to sentiment classification are provided by machine learning models such as Support Vector Machines (SVM) and Naive Bayes, as well as deep learning methods like Recurrent Neural Networks (RNNs) and transformers like BERT. Each of these approaches has advantages and uses. Because Support Vector Machines (SVM) can handle high-dimensional data and identify the best hyperplane to divide classes, they are a popular option for sentiment classification. SVM functions in sentiment analysis by drawing a line that maximises the difference between the positive and negative sentiment classifications. SVM performs well in text classification problems, particularly when the dataset is sparse or

limited, as in the case of TF-IDF features or bag-of-words. When the classes are clearly separable and distinct, it usually performs well; but, if it is not properly tuned, it may have trouble processing noisy or complicated data. Another popular machine learning approach for sentiment categorisation is Naive Bayes. Naive Bayes, which is based on Bayes' Theorem, streamlines the modelling process by assuming that the characteristics (words) are independent of one another. It performs quite well for text categorisation in spite of this "naive" assumption, particularly when the distribution of words for each sentiment class has a distinct pattern. When the dataset is sizable and the vocabulary is not overly complicated, Naive Bayes works well and is quick and easy to apply. However, because it ignores context and word dependencies, it could have trouble with more complex sentiment expressions. A kind of neural networks called recurrent neural networks (RNNs) is made to process sequential input, like text. Because RNNs evaluate the input text word by word while preserving a hidden state that records information from earlier words, they are especially well-suited for sentiment categorisation. This makes it possible for RNNs to simulate the relationships between words in a sequence, which is essential for figuring out emotion in lengthier texts or phrases where the sentiment may be dispersed among several sections. However, vanishing gradients and long-range dependencies can be problematic for typical RNNs, making training challenging. A specific kind of RNN called Long Short-Term Memory (LSTM) networks uses memory cells to save information across longer sequences in order to solve the vanishing gradient issue. When context is crucial for sentiment analysis tasks, such differentiating between positive and negative sentiment in lengthy reviews or complicated words, LSTMs perform very well. Their ability to effectively classify sentiment is enhanced by their capacity to retain pertinent information across greater distances in a sequential fashion. Sentiment categorisation and other areas of natural language processing have been transformed by the advent of transformers. Compared to RNN-based models, transformers are better at capturing global context and word associations since they are built to handle the full input sequence at once. By offering contextualised word representations, the transformer model BERT (Bidirectional Encoder Representations from Transformers) improves sentiment categorisation even further. BERT creates dynamic embeddings based on the surrounding words, which aids in contextual sentiment interpretation, in contrast to earlier models that employed fixed word embeddings. BERT is particularly useful for complicated sentiment analysis jobs where context is crucial for meaning interpretation because of its bidirectional approach, which enables it to record both the previous and subsequent context of each word. Because of their excellent accuracy and capacity to interpret nuanced sentiment signals, BERT and related transformer models (such as GPT and T5) have raised the bar for many NLP tasks, including sentiment categorisation. A range of machine learning and deep learning approaches, each tailored to a particular type of text and data complexity, may be used to classify sentiment. While deep learning models—in particular, RNNs, LSTMs, and transformers like BERToffer potent capabilities for managing more complicated, contextualised sentiment analysis tasks, machine learning models like SVM and Naive Bayes work well with simpler, well-structured data. Deep learning models are becoming the gold standard for sentiment classification as they develop further, especially with the introduction of transformers, because of their capacity to comprehend text's contextual relationships and deeper semantic meanings.

- Multimodal Analysis

To give a more thorough picture of sentiment, multimodal analysis in sentiment analysis combines textual data with other data types, including photos, videos, and even audio. This method acknowledges that mood may be conveyed not just via spoken words but also through visual and aural signals, which can provide deeper understanding of social behaviour, emotional reactions, and public opinion. Multimodal analysis enables a more thorough and nuanced sentiment categorisation by combining these many data sources, especially in settings like social media where users frequently mix text with pictures, videos, and other material. On social networking sites, people frequently combine words and photos to convey emotions. For example, they could post a picture with a tweet or a comment. A more comprehensive understanding of sentiment is possible when textual sentiment analysis and picture analysis are combined. An individual's tweet that says, "Feeling great," for example, may convey a pleasant feeling, but it might be strengthened if it were combined with a picture of a sunny beach. Computer vision techniques such as Convolutional Neural Networks (CNNs), which are taught to recognise visual components that signal emotions or sentiments (e.g., smiling faces, cheery hues, or positive/negative symbols), may be used to apply sentiment analysis to photos. Multimodal approaches can provide more accurate sentiment evaluations by combining textual sentiment with visual analysis, particularly in situations where language alone may be unclear or inadequate. Videos are a common type of material on websites like YouTube and TikTok, where sentiment is expressed not just through spoken words or captions but also through body language, facial expressions, and visual settings. In these situations, multimodal analysis incorporates object or scene detection (to comprehend the video's context), facial expression recognition (to identify emotions), and voice recognition (to examine the spoken material). A video showing someone stating, "I'm so excited about this project," with a smile on their face and vivacious body language, for instance, can convey a strong positive attitude, whereas the same words combined with a neutral expression might convey a more muted one. A deeper comprehension of the underlying sentiment is possible when visual and aural signals are combined with the text. Sentiment analysis may also benefit greatly from the use of audio data, particularly when it comes to speech or voice. Sentiment analysis is further enhanced by the fact that speech characteristics such as tone, pitch, and tempo frequently convey the speaker's emotional state. This can improve the identification of subtleties in emotion when paired with text analysis, especially when the textual content may be unclear. For instance, even if the words are good, a sarcastic statement like "I'm so happy for you!" might be categorised as negative sentiment. Multimodal systems can better comprehend the complexities of human emotions by integrating text analysis with auditory sentiment. Multimodal sentiment analysis presents a number of difficulties even if it offers more thorough and accurate sentiment insights. The integration of several data kinds, each with its own representation and structure, is one of the primary challenges. For instance, music is frequently represented as waveforms or spectrograms, pictures as pixels, and text as words or embeddings. It takes sophisticated data fusion and model integration approaches to combine various representations in a meaningful way. Furthermore, the dependability of various modalities may vary; for example, text may be quite explicit, but images or videos may offer more subtly conveyed information that is more difficult to decipher. Large, tagged datasets that contain the text together with related pictures, videos, or audio are also necessary for training multimodal models, and these might be resource-intensive. By integrating textual data with additional modalities, such as photos, videos, and audio, multimodal sentiment analysis provides a potent method for

comprehending feelings. This makes it possible to understand sentiment in a more complex, context-aware manner, particularly in settings where people express their feelings in a variety of ways. Although combining many data sources can be difficult, developments in deep learning and multimodal models are assisting in resolving these problems, making multimodal sentiment analysis a promising field for sentiment identification that is more thorough and reliable.

4. SENTIMENT ANALYSIS IN POLITICAL CONTEXTS

Sentiment analysis is essential for monitoring public opinion in political situations because it provides real-time insights into people's feelings towards political events, politicians, or policy. Natural Language Processing (NLP) can analyse large volumes of unstructured data, including speeches, news stories, blog posts, and social media platforms, to determine the dominant sentiment in the public conversation. One way to determine if public opinion is favourable, unfavourable, or neutral towards a candidate's plans or campaign is to examine Twitter exchanges at political rallies. Analysing speeches and news stories may also assist political analysts in comprehending how the media frames certain topics and how public opinion changes as a result of this framing. Due to the vast amount of user-generated material on social media, sentiment analysis is able to gather sentiment at the grassroots level in ways that traditional polling techniques are unable to. Politicians, decision-makers, and strategists can use these evaluations to determine how the public is reacting to current political events and to shape their future plans. A key component of developing political campaign tactics is sentiment analysis. Campaigns may better match their messaging with voter concerns, interests, and values by knowing the feelings and viewpoints of the voters. Political campaigns can track the public's reaction to certain speeches, ads, or messaging by using sentiment analysis on social media sites like Facebook and Twitter. For instance, the campaign may concentrate more on related topics or concerns that generated the favourable emotion if a candidate's speech generates a strong favourable response from particular demographic groups. On the other side, campaigns might alter their strategy to allay worries or enhance impressions if a candidate's message is received negatively. Sentiment analysis may also aid in voter outreach by directing campaigns to target particular age groups, geographic areas, or socioeconomic classes according to the opinions they have expressed. Campaigns can increase their chances of success by being more flexible and adaptable through the customisation of strategies based on real-time sentiment data. Elections are dynamic occasions where discussions, political disputes, or fresh information frequently cause a sharp change in public opinion. These shifts over time may be mapped using sentiment analysis, which offers a comprehensive picture of how public opinion varies across an election cycle. For instance, people' opinions frequently change during debates between candidates as a result of their performance, arguments, or gaffes. Sentiment analysis can analyse how these changes affect voters' opinions of the candidates by regularly observing social media and press coverage before to, during, and following debates. Similar to this, public opinion may shift significantly as a result of political controversies like scandals or policy reversals. For political analysts and campaign teams to modify their tactics or messaging, it might be essential to comprehend these changes. Sentiment analysis offers a detailed perspective on these shifts, providing important information on the efficacy of political message and the changing political environment. Governmental decision-making and the development of political policy are greatly influenced by public opinion. Sentiment

analysis is frequently used by policymakers to determine how the public feels about new legislation, government initiatives, or political speeches. For instance, government representatives may be prompted to reevaluate or modify their strategy if a new policy proposal on immigration, healthcare, or climate change sparks a lot of negative emotion on social media or in news sources. In a similar vein, sentiment analysis may enhance the political capital of a widely supported policy and assist advance it more successfully. Additionally, sentiment analysis may provide decision-makers immediate input on how new legislation or policy changes are being implemented, enabling them to modify their approaches or language to better reflect popular concerns. Sentiment analysis gives decision-makers a valuable tool to keep aware of the demands and preferences of the population in democracies, where public opinion frequently impacts administration. Political leaders may make sure that their policies are both responsive to the public and more likely to be supported by the people by taking mood patterns into account. By monitoring public opinion, influencing campaign tactics, mapping sentiment movements during elections, and influencing policy choices, sentiment analysis plays a crucial role in politics. Political actors may make better judgements and interact with voters more successfully by using NLP approaches to obtain insightful knowledge about public sentiments and attitudes. Sentiment analysis is a potent tool for comprehending the intricate and changing political scene, whether it is used to analyse speeches, social media posts, or news coverage.

5. SENTIMENT ANALYSIS IN ECONOMIC CONTEXTS

In the realm of finance, market mood is crucial in determining economic trends, market behaviour, and investment strategies. By examining a wide variety of unstructured data sources, such as investor correspondence, earnings reports, and financial news stories, analysts can use Natural Language Processing (NLP) to determine public mood. These documents frequently provide hints on investor expectations, market confidence, and economic outlooks, all of which have the potential to directly affect market movements. For example, NLP algorithms can assess the language used to anticipate investor emotion and its possible influence on stock prices if earnings releases routinely highlight great performance and favourable outlooks. Similar to this, examining financial news and articles on significant businesses, industries, or economic events might assist in spotting new patterns in the optimism or pessimism of investors. For forecasting short-term market swings, spotting buying or selling opportunities, and offering investing strategy advice, this sentiment research may be quite helpful. Due to its ability to estimate future stock performance, investor behaviour, and market movements based on sentiment patterns, sentiment analysis is becoming more and more popular in economic forecasting. For instance, predicting the direction of stock prices or general market movements can be aided by sentiment analysis of news stories, social media posts, and analyst reports. Stock prices can reflect the positive opinion expressed in the financial media about a certain firm or industry, which frequently portends future growth. Negative sentiment, on the other hand, may indicate impending drops or even crashes. By examining the general attitude towards economic policy, international commerce, or geopolitical events, NLP can assist in forecasting macroeconomic metrics like GDP growth, unemployment rates, and inflation in addition to market sentiment. Businesses and investors may get a competitive edge in the marketplace by making better forecasts about the state of the economy by tracking changes in sentiment and assessing trends over time. Since consumer behaviour directly affects spending, savings, and the state of the economy as

a whole, it is essential to comprehend consumer mood in order to forecast more general economic trends. Numerous consumer data sources, like as surveys, social media posts, online reviews, and customer feedback, can be subjected to sentiment analysis. Economists and companies can gain a better understanding of customer sentiment on their financial circumstances, product offers, or general economic conditions by evaluating these data points. For example, a rise in optimism about the economy's recovery or employment opportunities may signal increased consumer spending, which would impact retail sales, inflation, and the expansion of the economy as a whole. On the other hand, unfavourable attitude associated with worries about inflation, job losses, or price increases might indicate a decline in consumer confidence and expenditure. A more sophisticated knowledge of economic patterns is made possible by the ability of NLP algorithms to monitor sentiment changes across various demographic groups or geographical areas. Business strategy guidance, risk identification, and economic cycle forecasting are all possible with these insights. Changes in mood that reflect rising investor and consumer fears frequently precede economic crises like market crashes, recessions, or financial bubbles. mood analysis, which tracks shifts in tone, mood, and public opinion in news, social media, and financial reporting, may be very helpful in identifying these early warning indicators. For instance, attitude may change from optimism to panic and terror during a financial crisis, which might have an impact on stock prices and investment choices. Before these changes are completely apparent in market data, sentiment research can assist spot them, providing companies, investors, and legislators with crucial time to react. Similar to this, sentiment research can identify rising market confidence and optimism during times of economic recovery, indicating the possibility of expansion. Sentiment analysis may also shed light on how the public views government responses, such stimulus plans or bailouts, and how these measures affect investor and consumer confidence in times of crisis, like as market crashes or recessions. Policymakers and companies may take preemptive measures to reduce risk, handle crises, and negotiate unstable economic settings by identifying early attitude swings. Because it provides insights into consumer behaviour, economic forecasts, market mood, and crisis management, sentiment analysis is essential in economic situations. In order to forecast future market moves, gauge consumer confidence, and spot new economic trends, researchers can use natural language processing (NLP) to track sentiment across several data sources. Businesses and politicians can respond to shifting circumstances, make better decisions, and more accurately predict economic opportunities and problems by comprehending attitude fluctuations. Sentiment analysis is a potent technique for managing uncertainty and enhancing economic forecasts in the quick-paced and frequently unstable field of economics.

6. CHALLENGES IN MAPPING SENTIMENT SHIFTS

Contextual ambiguity, which results from linguistic subtleties like sarcasm, irony, or context-specific sentiment, is one of the biggest problems in sentiment analysis. Sentiment analysis algorithms frequently have difficulty interpreting the real sentiment behind such statements, particularly those that are based on machine learning and natural language processing techniques. For instance, a simple sentiment model would perceive a line like "Oh, great! Another meeting!" as positive since it uses the word "great," although it is probably sarcastic and reflects negative emotion in the context. Likewise, irony presents a problem for NLP systems as its literal meaning contradicts the intended attitude. It is challenging to precisely follow sentiment alterations in complicated or emotionally nuanced

information since these algorithms frequently rely on word-level analysis and are unable to understand the larger contextual meaning of phrases. In order to overcome this difficulty, more complex models that can comprehend the bigger context or apply sentiment context to longer text passages must be incorporated; this is an area of continuous study in the field. Applying sentiment analysis across linguistic and cultural boundaries presents additional difficulties. Sentiment analysis in multilingual environments adds a dimension of complexity, even if a large portion of NLP research and development has been concentrated on languages like English. Sentiment-expressing words and expressions may have distinct meanings or emotional overtones depending on the language. For instance, depending on the context and tone, the English phrase "I'm fine" may convey neutral, positive, or even negative feelings; nevertheless, its translation into another language may have completely different connotations. Additionally, how feeling is communicated can be greatly influenced by cultural variances. Public displays of emotion may be more overt in certain cultures and more subdued in others. When creating sentiment analysis models that must generalise across many language and cultural contexts, this presents difficulties. Researchers must create culturally sensitive and multilingual NLP systems to get over these obstacles and guarantee that sentiment is correctly translated in a variety of settings. The existence of data biases, particularly from sources like social media, is another significant problem in sentiment research. On social media sites like Facebook, Twitter, and Reddit, users frequently engage with people who hold similar opinions, creating echo chambers that distort sentiment trends. For instance, rather than being a fair representation of the population, sentiment analysis on social media platforms may largely represent the views of a particular ideology or interest group. Because the model might not take into consideration the sentiment of the larger population, this data bias may lead to erroneous sentiment forecasts. Furthermore, there is the problem of demographic bias, which occurs when some groupslike marginalised communitiesare under-represented in the statistics, skewing the findings. Sentiment analysis systems must have features that guarantee a variety of representative data sources are taken into account and that biassed patterns in the data are identified and dealt with in order to lessen these biases. Current models are still limited in their ability to comprehend complicated sentiment, particularly in circumstances that are culturally or extremely context-dependent, despite the advancements in natural language processing and sentiment analysis. Deep emotional or cognitive subtleties in text are frequently not well captured by conventional models, such as bag-of-words or even more sophisticated ones like word embeddings. They could find it difficult to understand long-range dependencies in a document or neglect to take tone, sarcasm, or changes in attitude during a conversation into consideration. Furthermore, a lot of sentiment models still place a lot of emphasis on word definitions at the surface level and fall short in capturing the intricate interactions between sentiment, intent, and social context. Although sentiment analysis has improved because to deep learning models like transformers (e.g., BERT), these models can also be constrained by their dependence on sizable datasets and their incapacity to comprehend the larger sociocultural or emotional context in which feelings are conveyed. To overcome the shortcomings of existing methods, further research into integrating greater contextual awareness and training on a wider range of datasets is necessary to improve these models. There are several obstacles to overcome when mapping sentiment movements, including biases in the data, the limits of existing NLP algorithms, and the ambiguity of context and cultural diversity. Improving the precision and dependability of sentiment analysis systems

will require tackling these issues as sentiment analysis is used in more and more fields. Sentiment analysis may advance to offer more significant insights into public opinion and sentiment dynamics by creating models that can analyse multilingual and cross-cultural data, address biases, and comprehend complex expressions.

7. FUTURE DIRECTIONS

There is a lot of promise for more precise and sophisticated sentiment tracking with the development of NLP models like GPT (Generative Pre-trained Transformers), BERT (Bidirectional Encoder Representations from Transformers), and its offspring. These sophisticated models, which are based on deep learning methods, are far better at analysing sentiment in intricate, nuanced content because they can comprehend context, distinguish between different meanings, and identify long-range relationships in text. For instance, using a more complex approach to language, GPT models have already shown remarkable ability in producing writing that is cohesive and contextually aware as well as in comprehending sentiment. By taking into account both the previous and succeeding context of words, BERT's bidirectional training approach is very good at grasping the nuances of language. These models will be essential tools for tracking sentiment in both political and economic situations as they continue to advance since they will be able to more precisely understand nuanced feelings like irony, sarcasm, or altering emotional tones. Furthermore, sentiment analysis will be further improved by models that integrate multimodal data, such as text, audio, and video, allowing for more thorough insights into sentiment across various data sources. Using real-time data to track sentiment alterations as they occur is one of the most intriguing future areas for sentiment analysis. In political and economic environments, where public opinion can shift quickly in reaction to events, policies, or crises, real-time sentiment monitoring can have a particularly significant influence. For instance, mood might change often during political elections or economic downturns; real-time recording of these changes enables more immediate and useful insights. Decision-makers might receive real-time feedback on market sentiment and public opinion using natural language processing (NLP) systems that can continuously analyse and analyse data from social media, news articles, and live speeches. This real-time monitoring might be essential for modifying investment choices, marketing plans, or political campaigns, giving businesses a competitive edge in dynamic settings. Additionally, real-time sentiment monitoring may help with crisis management, since prompt identification of unfavourable sentiment can help avert or lessen more serious problems like market crashes or PR meltdowns. One effective way to predict future sentiment trends and their possible effects is to combine sentiment research with predictive analytics. Machine learning algorithms may be used to forecast how sentiment will change over time and its anticipated impacts on markets, policy, or public conduct by examining historical sentiment data in conjunction with economic indicators or political events. For instance, by monitoring investor sentiment surrounding significant financial events, sentiment analysis may be used with predictive models to estimate stock market movements or election results based on changes in voter attitude. Deeper understanding of public opinion and its possible influence on future actions may be possible with the combination of sentiment data with predictive analytics. For example, predictive algorithms can determine the probability of higher voter participation or policy changes if a spike in favourable sentiment towards a specific political figure is identified. In a similar vein, emotion patterns in financial markets may aid in forecasting changes in stock prices, enabling investors to make better choices. The precision

and dependability of sentiment forecasts will increase as machine learning and artificial intelligence models develop, which will further improve the strategic decision-making process in politics, business, and finance. With developments in natural language processing (NLP) models, real-time data integration, and predictive analytics opening up new avenues for monitoring and predicting sentiment in political and economic situations, sentiment analysis has a bright future. These developments will allow for more prompt, proactive, and well-informed decision-making across sectors in addition to increasing sentiment analysis accuracy. As these technologies advance, they will open up many more possibilities for identifying and using sentiment patterns to impact political campaigns, corporate plans, and economic projections.

8. CONCLUSION

To sum up, Natural Language Processing (NLP) is essential for mapping sentiment changes in political and economic situations since it provides important insights into the feelings and viewpoints that influence public opinion and decision-making. NLP makes it possible to comprehend sentiment dynamics more deeply by using sophisticated methods like deep learning, machine learning models, and the analysis of unstructured data from a variety of sources, including news sources, financial reports, and social media. Sentiment analysis has been crucial in political contexts for monitoring public opinion, improving political tactics, and predicting election results. In the economic domain, it offers vital data for economic forecasts, consumer behaviour analysis, and market predictions. NLP-based sentiment analysis has several obstacles, such as contextual ambiguity, linguistic complexity, and data biases, which might compromise the precision and dependability of the results, despite its potential. These problems show how crucial it is to keep improving NLP models in order to take these complexity into consideration and guarantee that sentiment is appropriately mapped across various situations, languages, and cultures. As these technologies develop, they will make it possible to make more proactive and knowledgeable decisions, giving corporate strategists, economic analysts, and political leaders the ability to react to changes in public opinion more skilfully. The future of political campaigns, economic policies, and market tactics can be significantly shaped by sentiment research if the present obstacles are overcome and NLP advances are utilised.

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