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2.	**West Zone**	**Future of Work and Skill Development** *Subthemes* • Sustainable Careers: Navigating a Dynamic Workplace • Human-centered Skills in a Tech-driven World: Soft Skills and Emotional Intelligence • Resilience & Adaptability: Impact of Gig Economy on Higher Education	December 04, 2023	December 18-24, 2023
3.	**Central Zone**	**Nurturing Research and Innovation Ecosystem** *Subthemes* • Collaborative Research Networks: Fostering Inter-disciplinary Research • Entrepreneurship and Innovation: From Idea to Impact • Innovative Funding Models for Research	January 01, 2024	January 15-21, 2024
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Freedom to Learn, Seek the Truth, be the Light

M S Kurhade*

"You must begin by knowing
That you have already arrived.
Your true nature lives as perfect as
an unwritten number, everywhere
at once across space and time."

- Richard Bach

We are privileged to celebrate the 76th anniversary of India's independence. In the midnight hour of the 14th -15th of August, 1947, 'the soul of India in the words of Pandit Jawaharlal Nehru, it's the long-suppressed found utterance, but not fully or substantially'. It is natural that we celebrate this defining moment in our national destiny with zeal. But, even as we do so, it is necessary that we engage with the meaning and discipline of freedom. What does it mean to be free? What are the dangers that the legacy of freedom faces today? What does it take to be good and faithful custodians of freedom? How can we ensure that freedom does not, under our watch, degenerate into tyranny and bondage?

These questions are pertinent, even pressing, because the birth of our freedom coincided with the outbreak of the most horrendous communal violence in the history of the Indian subcontinent. Many did not live to enjoy our hard-won freedom.

The founders of religions were fundamentally liberators of humanity. Prince Siddartha who would later be the Buddha renounced earthly possessions and pleasures to illumine the path of human liberation from the sea of suffering in which earthly existence remains submerged. Rather than become the powerful king of a people, he chose to be the spiritual liberation for all humankind. Similarly, Jesus Christ prioritized the need for human liberation. I have come, he said 'to set the captives free'.

The liberation they addressed pertains to what philosophers call the native freedom of human beings. Native freedom is freedom that inherent in being human. We may call it species freedom. The native freedom of a bird includes the freedom to fly, which is not native to us. The critical awareness of the world and the self capacity for self-criticism- is native to us, but not to birds and animals. So, it is necessary that the scope of freedom we celebrate is understood in relation to what it takes to be human. What empowers and ennobles human beings, as against what corrupts and degrades them is the substance of freedom. The freedom to be sub-human endangers freedom.

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Freedom is holistic. As Mahatma Gandhiji emphasized, political freedom is incomplete without social, economic and cultural freedom. And as Dr. B. R. Ambedkar said, equality is a necessary foundation for human freedom to be viable and stable. So, our celebrations of freedom must be sobered with the concern for the further horizons of freedom; freedom not just for the privileged, but for all citizens. The mettle of our freedom must be inferred from the extent of meaningful freedom that the least among Indians are able to enjoy. So, Gandhiji was right, after all, in formulating his talisman that the last and the least must be a measuring rod for our priorities in nation-building.

Religion and the Conundrums of Freedom

Admittedly, there is nothing that human beings long for deeper than freedom. Every religious tradition in the world recognizes the fundamental importance of freedom to humankind. They understand freedom, as well as address the human longing for it, in their own ways. But none among them is indifferent to the human longing for freedom.

All religions remain self-contradictions with respect to religious freedom. The more centrally organised and hierarchical a religious establishment is, the less inclined it is to allow freedom of conscience to its adherents. Religious freedom, in their view, does not include freedom to be free from religious dogma, superstition, and obscurantism. Most certainly, religious freedom, understood thus, does not accommodate the freedom to choose religions on the basis of personal conviction or taste. Religions grant the freedom to conform as compatible with the self-preservation of religions. To the custodians of religious establishments, the scope of religious freedom must be limited strictly to the freedom to preserve the religious status quo, peppered, in the case of proselytizing religions, with the freedom to propagate and swell on rank at the expense of others. If the religious communities suffer numerical diminution as a result of protest, they are assumed to be enemies of religious freedom.

These contradictions of religious freedom must be reckoned with in the Indian context, especially for the reason that we are a deeply religious people. Our religiosity plays a major role in shaping our cognitive- and response strategies. The incapacity to think objectively and fairly that religions encourage visa-vis religious freedom could well be, often is, brought into the public domain, when mixed with politics in a religiously majoritarian context this holds the potential for subverting our democratic culture and social harmony. The typical Indian definition of secularism as the state remaining equidistant from all religions amplifies the scope for this manifold.

As Swami Vivekananda said, there is a hierarchy in the extent of freedom. The scope of freedom is lowest in the material realm. It is greater in the mental, and it is limitless in the spiritual realm. If so, it is obvious that exclusive absorption with the material aspects of life shrinks the scope of one's freedom. This logic underlies the spirituality of renunciation. Covetousness undermines the freedom of the self as well as makes such a person a threat to the freedom of others. One has to be spiritually free, to be free enough to respect the freedom of others.

Freedom and Work

Freedom is the ability, power, or right to act, say, or think whatever one wants, without being constrained or controlled. Freedom is liberating and empowering at the same time. At workplaces, it contributes to a culture that is motivating, engaging, and productive. Employees who are given the autonomy to achieve their objectives with a flexible approach are more productive, motivated, and passionate about their work.

Modern workplaces are no longer the traditional hierarchy-driven, rigid and rule-bound places. They are open, adaptive, and flexible and independence is experienced in a variety of different dimensions that form an integral part of the culture.

True Independence in the Workplace Implies

- ***Freedom to Operate From***: Modern workplaces give employees the autonomy and flexibility to operate from where it is convenient, with forward-looking policies on flexible working hours and work-from-home that have become an integral part of most workplaces now. The employee is no longer compelled to operate from a defined area or workstation.
- ***Freedom to Question***: Commitment to ensuring the growth of employees, begins by giving them independence and autonomy in the work they do. Empowering employees and allowing them the freedom to make decisions in their areas of responsibility, nurturing and encouraging independent ideas and creating a culture that

allows them to question, disagree, debate and decide, goes a long way in shaping their growth as a professional. Allowing them the freedom to voice their opinions and concerns, offer suggestions and feedback, share ideas and debate strategies build confidence and enable better decision-making.

- ***Freedom to Experiment***: To foster a culture of innovation and creativity, it is important to give employees a comfortable environment to be imperfect, make mistakes and learn from them. By specifying goals and deadlines and giving employees the freedom to decide on the strategy and project execution, organisations encourage creativity and spark innovative ideas. Accepting and celebrating failures, that will become the stepping-stone to success for tomorrow, leads to true overall independence without the fear of failure.

- ***Freedom from Prejudice***: Accepting diversity and promotion inclusion, gives employees the freedom to perform to their highest potential. It reassures them that their assessment will be based on abilities, without any bias or prejudices on gender, age, etc. Respect is intrinsic to fostering freedom from prejudice and opening the door to a great workplace.

- ***Freedom to Choose***: Independence is also extended to the freedom to choose your own career path and to encourage each employee to find meaning and satisfaction in what they do. Practices like Internal Job Posting (IJPs), role enhancements, stretch assignments, and developmental cross-functional projects, offer employees an opportunity to work in assignments, developmental cross-functional projects, offer employees an opportunity to work in assignments and on projects that may be diverse from their expertise or domain, but would aid their holistic professional growth while allowing them the freedom to choose how they contribute and make a difference to the organization.

Freedom at work is liberating and empowering at the same time. It fosters a positive atmosphere at work. Freedom at workplaces is letting employees make decisions with measured risks in the tasks they do and driving success. It includes letting employees set their own schedules, elect to work from home, and choose how to do their work. Other changes include allowing employees to determine which performance goals they see as most beneficial to their company. Finally, managers can shift into the role of a coach who guides, suggests, and provides structure for the team. This makes managers of service to the team (instead of the other way round) and allows them the freedom to ask employees to point out policies that hinder productivity.

With the freedom of speech
Comes the responsibility to listen.
With the freedom of belief
Comes the responsibility to accept.
With the freedom from want
Comes the responsibility to serve.
And with the freedom from fear
Comes the responsibility to act.

What's more, these four responsibilities do not exist in a vacuum or independently of one another. Just as each of the Four has its complement, so do each of our responsibilities complement the others. If we commit ourselves to accepting others, we will be more likely to serve those who need us. And if we commit ourselves to accepting others, we will be more likely to serve those who need us. And if we commit ourselves to service, we will understand how we should act now. And if we're going to act, we must act now.

It seemed particularly appropriate to deliver a message about democratic values on these four great campuses because Colleges and Universities are essential institutions for our democracy-places that manifest our highest aspirations and ideals. What better audience to engage with these ideas, rise to this occasion, and defend our democratic values and institutions than these new graduates?

Of course, this duty is not restricted to the young. Far from it, it is incumbent upon each of us, as willing and humble participants in our democratic system, to maintain and expand the freedoms that enable the world's longest-standing liberal democracy, and to ensure its success both now and in the future. Each of us should reflect on our responsibilities and fulfillment of what our freedom requires and our democracy demands.

Freedom without fences is risky. While individual liberty is a sign of progress and should be value-what about the obvious ability to misuse it? Any leader in a family or society will know that freedom without restraints can be extremely risky. A Statue of Liberty needs to be balanced with a statue of accountability.

Responsibility and freedom go together. If you don't want to take responsibility, you can't have freedom either. The two come together or they go together. If you shun responsibility, you have to accept slavery in some way or other.

You had dreamed about freedom without ever thinking that great responsibility would follow. The freedom you have but you have not fulfilled the responsibility. Hence, sadness lingers around you. You are absolutely capable of removing this sadness. If you were capable of destroying your slavery, and your chains, you are certainly capable of being creative.

Freedom means you will have to be responsible for every act, for every breath; whatever you do or don't do, you will be responsible. People are really in deep fear of freedom, although they talk about freedom. But my own experience is: that very few people really want freedom; because they are subconsciously aware that freedom will bring many problems that they are not ready to face. It is better to remain in cozy imprisonment. It is warmer, and what will you do with freedom? Unless you are ready to be a seeker, a searcher, a creator. Very few people want to go on a pilgrimage or to go into deeper silences of the heart, or take the responsibility of love. The implications are great.

You will have to dispel that darkness, otherwise, sooner or later you will enter into a prison. You cannot go on burdening yourself with sadness. Before the burden becomes too much and forces you back into slavery, into imprisonment, change the whole situation by being a creative person. Just find out what is your joy in life, what you would like to create, what you would like to be, what you want to be your definition. Freedom is simply an opportunity to find a definition for yourself, a true, authentic individuality, and a joy in making the world around you a little better, a little more beautiful, a few more roses, a little more greenery, and a few more oases.

Albert Einstein once said, "Wisdom is not a product of schooling but of the lifelong attempt to acquire it." When I was a child, I always thought education was all about studying and achieving good grades but later when I stepped out in the world and started to learn things myself and pursued a career in education it went beyond being literate, it is way above just studying, it is much more than just understanding the meaning of photosynthesis and atmospheric pressure. That is when I realized that the same thought might exist in many of the students studying in my classrooms.

Since then, I have made it a point to explore various possibilities that can make education more self-determining, uncontrolled, and out of love for learning. Freer, whether I will ever be able to find that breath of free and fresh air that I am looking for in the education models for our country is a thing to wait and watch.

Even in its empirical sense, freedom has two intertwining aspects: freedom from and freedom for. 'Freedom from' is the negative terminal of the power-pack of freedom. 'Freedom for' is its positive terminal. How do we express our freedom? To what extent and to what end? The attainment of freedom can only be a temporary excitement, no matter how euphoric it makes a person when it happens. Of course, it is a great thing that we are free from the colonial yoke. But unless citizens are able, or enabled, to express that freedom is aligned with personal fulfillment and nation-building, the attainment of freedom is likely to remain empty of substance.

As our Constitution insists every citizen has the right to find fulfillment, which is the purpose underlying personal liberty. How does an individual find self-expression? Among the many facets relevant to this, the foremost is work. Work is the most important medium for self-expression. What falls short of this norm cannot be should not be, deemed work, but drudgery. From this point of view, under-employment – which does not fully engage the potential of a person is as soul-stifling, as unemployment. Suppose a person is 'employed'. What if the work environment is oppressive? So, corruption and oppression in the workplace are serious issues from the perspective of freedom. Overarching all this are the 'pressures' honest individuals have to endure in relation to their work. To me, the height of corruption that a society can reach is that the freedom to serve with self-respect and integrity is denied to workers and public servants.

The decline in freedom of speech is much lamented these days. But, to me, the erosion of the freedom of speech is much lamented these days. But, to me, the erosion of the freedom to serve in honesty to the full extent of one's capability is an even more painful reality. Surely, it is more widespread. This is the main reason why our performance as a nation is far below our genius as a people. We are far short of attaining a healthy work culture in which citizens are free to express their best in the service of the nation. As

a rule, mediocre people, or those who play the game as it is played by all and sundry have a smooth passage; whereas those who want to serve to the best of their character and capacity get into serious trouble. A related issue is that the really meritorious and deserving do not get rewarded, except by fits and starts. 'Preferment goes', as Shakespeare wrote in Othello, 'by letter and affection, not by old gradation'. (or, seniority).

Freedom and Violence

It is noteworthy that there were two contrary schools of thought regarding the attainment of our freedom. The hardliners-I wish to avoid the word extremists- and the moderators shared the same goal but differed in their strategies. Underlying their differences, were two different understandings of the nature and scope of freedom. While one section reposed faith in violence, to Gandhi, violence was incompatible with freedom. Even if the strategies of violence succeeded in driving out the colonial masters, violence was bound to bring oppression back through the backdoor. All that a people would achieve through violence is the substitution of one set of oppressors with another.

Historically and culturally, violence is deemed manly. 'Country' is feminine, but 'State' is masculine. That is because the State enjoys the exclusive right to use violence in pursuance of its goals. It is legitimate for the State to use violence not only against external enemies, but also against citizens. Violence is macho. From ancient days man showed off his prowess through his capacity to inflict violence, cruelty, and death on others. Man remains, as anthropologists and zoologists insist a hunter at heart. So, violence has a powerful appeal to human nature. No wonder war-mongering remains the sure-shot way to electoral success.

War is the foremost theatre of manly strength. The pride in warmongering does not lie in the capacity or willingness to endure suffering. It lies in one's ability to inflict death and destruction on the enemy. Patient endurance is a weakness in men; whereas it is the characteristic strength of women. No man can survive the equivalent of labor pains.

This brings us face-to-face with Gandhi's willingness to suffer and purify himself, rather than pollute the pilgrimage to freedom with hate, violence and bloodshed. His emphasis on the culture of caring would feed a lamb, and keeping busy men waiting and of service was of piece with this. The ultimate rejection of violence is the readiness to die rather than kill for the sake of freedom. Gandhiji proclaimed in South Africa, 'I am willing to die, but not kill, for the sake of freedom'.

Freedom and Universal Values

To Gandhi, the value of religion lay entirely in the values they fostered in human beings. He discounted the ritualistic and dogmatic baggage of religions and welcomed their spiritual light, which comprised the universal values they taught: love, truth, justice, and compassion. Gandhi knew that human freedom could exist only on the foundation of these values. In a society that flouts them, freedom will be weaponised as a means of oppression. Adherence to spiritual values ensures that individuals use their freedom in a wholesome way.

It is obvious that when love turns into hate, the ambit of freedom is all but lost. In a society where truth is what the powerful dictate, the powerless cannot hope for justice or fair play. Compassion- the ability to see situations not only as expedient to oneself but also as relevant to the needs of others –is basic to the active practice of benevolence which involves a positive expression of human freedom; especially the freedom to be noble rather than mean-minded.

Religions cannot only teach these universal values but also strengthen the individual's will to practice them. Often, it is not because one doesn't know what is right to do that wrongdoing happens. It is rather because the will to do it is lacking. Religions by hitching individual motivation to the will of God, provide strong motivations for individuals to uphold these values in practice even incurring material loss or inconvenience to oneself. Mere knowledge of what is right and wrong is a poor substitute for this.

So, unlike what the secularists argue, it is not less of religion that we need, but more of spirituality, if we are to be responsible custodians of freedom. It makes sense that those who want to imperil or stigmatise the freedom of targeted people-groups and communities, urge those who are vulnerable to their propaganda to take pride in hating, rather than loving their fellow human beings. Untruth, or falsehood, is the principal means they adopt for the purpose. They also devalue compassion and revel in the denial of justice for this purpose. The scary reality is that this descent to inhumanity is valorized in the name of patriotism and national pride. What corrupts the soul of India cannot

be a matter of pride; nor can it conduce to love for the Motherland.

Freedom and Character

Character is best understood as the extent of freedom an individual attains from his or her self-centered instincts and impulses. Human beings are social creatures. So, one cannot live by seeking one's interests alone to the detriment of the interests of others. Hence the teaching in all religions is 'Do to others what you would that they do to you'. Seen in this light, character involves a re-orientation of the self from the self to the society, the nation, and the world at large. Our humanity needs to be complemented with concern for fellow humanity.

Rousseau put it somewhat differently. One can deal with any given situation either in terms of only one's personal gains or in terms of what promotes the general good. So, character implies the equilibrium between the self and the larger context. This view is endorsed by Immanuel Kant. Just as individuals need to transcend exclusive obsession with one's own interests, people groups and communities also need to transcend interests and advocacies aimed at promoting or maximizing their exclusive interests. The capacity to do so must be seen as basic to wholesome patriotism. The appropriation of the patriotism-nationalism plank as the self-assertion of one people- group in opposition to another, or all else needs to be seen as harmful to the nation as a whole. Its stridency must not be mistaken for national awakening.

Surely, this was the hallmark of the outlook of the leaders of our Freedom struggle. Without this large-heartedness, the distinction between freedom and license could become national.

Freedom and Education

Education is, one way or another, a political project. There could be choices regarding the sort of politics that the enterprise of education endorses. But it cannot be that education remains uninfluenced by the political environment in which it is practised. As John Dewey in his famous book 'Democracy and Education' (1913) argues, equipping the children and youth of a country to be responsible citizens is a necessary goal in a democratic polity.

It is a truism that a nation is built up day by day in her classrooms. A vision of humanity must be the guiding light for that agenda. It is impossible to imagine humanity without the freedom to think, to debate and, if necessary, to dissent. A commitment to diversity in thought and convictions is, hence, basic to education. Education predicted to promote homogeneity cannot but erode freedom. Regimentation via education might give us a docile workforce, but it cannot nurture thinkers, innovators, and pioneers. As of now, we pay lip service to the goal of fashioning innovators but shut the door against their emergence in practice. Innovation and creativity-the highest forms of human activity happen except in a state of unfettered intellectual freedom in a matrix of rich diversity.

A human society cannot be developed or educated on the analogy of a colony of ants or bees, in which members are assigned specific and identical roles within the same group. Worker ants or bees, for example, cannot think of, much less, do anything other than what is assigned to them. Ants and bees represent a far lower stage of evolution. In the human context, the freedom to break out of existing molds and to transcend the status quo is fundamental to being human. That is why human beings have histories of progress, and ants and bees don't.

A society that fashions only the parasites of the establishment, and either cares not or dares not look beyond the given, undermines its own future. In the long run, it is those who dare to take to the 'road less traveled by' who serve the larger needs of a society and make significant contributions to fulfilling its unique destiny. As against this, it is entirely possible to craft a robotized citizenry that behaves exactly along predictable and programmed lines. Education of this kind is tantamount to an institutionalized subversion of the gift of national freedom. As a rule, the enemies of a society's freedom the words of Karl Popper, the enemies of the open society, hail from the educated segments of that society, not from its illiterate backyard. The clarion call to freedom also can come only from the educated class. Much depends on what is sought to be achieved through the education that a country practices. Prophets of freedom as well as saboteurs of freedom belong together in the sphere of education; the reason why it is important to do all we can to make the learning environment and experience conducive to building a healthy, progressive, and just society.

Freedom and the soul of India I return, to a phrase that we owe to poetic eloquence of Pandit Jawaharlal Nehru. The proof that India is free is that

the soul of India can now find utterance. The question is: does she? What does it mean for India to do so? 'Soul is a holistic concept. Soul cannot be truncated or compartmentalized. It belongs to the whole of India in an organic sense. If the soul of India is to find utterance, it is imperative that India is imagined as an organic, indivisible entity. No part of it, no people-group no territorial silver, no cultural strand can be excluded or weakened. Soul belongs to the wholeness of an organic being'.

Not only that, the soul is a domain in which external control is inadmissible. It was this principle that made Henry David Thoreau formulate the dictum, 'Minimum government, maximum governance'. I rejoiced when we adopted it as a national clarion call. But sadly, it turned out to be no more than a slogan uttered once for its sound value and forgotten soon for its inconvenience. In effect what has emerged so far is the sledge-hammer maximization of government. For governance to be maximum, the people of a democratic society need to be developed and enlightened. A paradigm shift from government to governance cannot be achieved overnight, just because one person or an entire nation wants it. It can happen through appropriate and purposive education, and the larger cultural, and socio-economic reorientations that must complement it are addressed. We are light years away from this goal.

In the end, this wondrously evocative idea of the 'Soul' of the nation challenges us to re-examine our idea of India as it is entertained today. After all, the country is being nudged relentlessly towards the threshold of an alternate avatar of it. Will the New India have a soul to make significant utterances not just for India, but also, as Nehru and Tagore envisioned, for humanity at large?

What is freedom worth unless it serves as the wind under the wings of a people to make them attain heights on behalf of humanity undreamt- of before?

The Value of Freedom for Human Beings

Freedom is the ability to act, speak, and think without external restrictions. It is an essential value for human beings as it allows them to express themselves freely, pursue their own goals and desires, and live their lives as they see fit. Freedom is a fundamental right that every individual should have, and it is a crucial component of human existence.

Importance of freedom for the growth of civilization and humanity:

i. Promotes individual growth: Freedom allows individuals to develop their own unique perspectives, ideas, and beliefs. This personal growth is essential for the development of civilization and humanity as a whole, as it allows individuals to contribute their unique talents and skills to society.

ii. Encourages Innovation: Freedom encourages innovation and creativity, as individuals are free to explore new ideas and ways of thinking. This freedom has led to the development of numerous inventions and technologies, which have improved the quality of life for many people.

iii. Fosters tolerance: Freedom fosters tolerance and acceptance of different viewpoints and lifestyles. This tolerance is essential for the growth of civilization and humanity as it allows individuals to coexist peacefully and work together towards a common goal.

iv. Promotes Democracy: Freedom is a cornerstone of democracy, which is a system of government that allows individuals to participate in the decision-making process. Democracy is essential for the growth of civilization and humanity, as it provides individuals with a voice and ensures that their needs and desires are taken into account. Nelson Mandela's life is an example of how freedom is essential for the growth of civilization and humanity. Mandela fought tirelessly for the freedom of his people, and his efforts eventually led to the end of apartheid in South Africa. Mandela believed that freedom was a fundamental right that every individual should have, and his life's work was dedicated to achieving this goal. In conclusion, freedom is an essential value for human beings, and it is crucial for the growth of civilization and humanity. Without freedom, individuals cannot develop their full potential, and society cannot progress. Nelson Mandela's life is an example of how the pursuit of freedom can lead to positive change and the growth of humanity.

Make freedom from stress a priority. Let's resolve to protect our personal well-being from stress and enable a joyous and wholesome life. Given the fast-paced nature of our lives, stress has become an avoidable consequence. Hence, this Independence Day,

don't just celebrate, national freedom, but also lay the groundwork for personal liberation from stress.

You have only to remain quiet
and firm in your following of the path
and your will to go to the end.
If you do that, circumstances
will in the end be obliged to shape
themselves to your will, because it
will be the Divine Will in you.

- Sri Aurobindo

Real independence is when we are free to do what we aspire for, and when we are mentally at peace to work efficiently with ease. At the soul level, real independence is when we extend the purview of our good deeds and have a positive impact on others. For this, an element of spirituality is required.

During the yugas of Ram and Krishna, spirituality is doing everything in the right spirit, using all your faculties, and doing the karma that is Satyam, Shivam, and Sundaram- truthful, beneficial for all, and effective and beautiful too. To free the soul we have to be Satyamaye, truthful; atmaye, soulful; and prem-maye, full of love. Also, everyone needs to meditate and ponder over what we can offer to our country through our body, breath, soul, and energy.

History is a great teacher. But the lessons of history come slowly and tortuously. Democracies all over the world trudge along this difficult path. History is rarely forgotten, and its lessons are hard to come by. Many years ago, I had been reading the works of Arthur Schopenhauer. One of his statements stuck deep in my heart. Most people, he wrote, are afraid to be truly themselves. They run parallel to who they need to be. Such people become hostile to those who are authentic in their personality: milder versions of Shakespeare's Iago, who detested Othello for the daily beauty of his life. The malice with which they despise and denigrate who they hate is the measure by which they hate themselves, however secretly.

I resolved that the most fundamental spiritual duty I owe to myself and to humanity was to be a relevant, responsive, and effective human being. I would live vitally, not in a vague, wishy-washy fashion drifting here and there. It didn't matter how long I lived. What mattered was how well, or how vitally.

Living vitally, in my understanding, was not, and still is not, living in a dramatic or reckless fashion. Vitality, in my scheme of things, is a function of 'Fullness'. The challenge in this mode is to live in a state of responsibility to the world around to the best of one's capacities. It excludes halfhearted, lukewarm, responses. It also excludes courting risks and dangers for their sake. Living vitally involves, for me living free of the fetters of entrenched stereotypes that hold most people bound hand and foot.

Now consider, for a moment, the opposite of this: living as a log of grift wood, a slave to the past and the stereotypes of the present, unfree to sing the song of one's heart. The quality of our life in the last leg of our life is decided, howsoever unwittingly, in advance by each one of us. Live life significantly, your old age is sure to be vital and radiant. One is only as valuable and lovable as is the measure of one's inner worth. All of us begin our lives with potential in regard to various possibilities. It is up to us to develop them or to ignore them. Developing such potentials necessarily involves venturing, running risks, enduring struggles, and suffering.

I sense, with deep pain and growing frustration, an aggravating epidemic of the cheapening of the human. We are made to believe –in which we are complicit-that development applies only to the material circumstances of life. What is 'human' does not have to develop. Conformity is being turned into the foremost national merit. The suffocation of homogeneity is being thrust on individual uniqueness, stifling the latter. Thinking for oneself has come to be perceived as an unpatriotic aberration. Already in the wake of the ascendancy of the materialistic culture, human stature is dwindling. As it is, authentic individuals are a rare species in consumerist culture. The erosion already half-done is now completed by ideological over-zealousness. I believe ardently that the spiritual destiny of India must be fulfilled for the sake of humanity as a whole. That was the vision of our ancient seers, *Vasundhaiva Kutubakam*. To find the right road out of this despair, the modern man, says Bertrand Russell, "must enlarge his heart as he has enlarged his mind. He must learn to transcend self, and in doing so acquire the freedom of the universe."

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Sports Engineering: A Perspective View

Pintu Modak*

The new Olympic motto: "Faster, Higher, Stronger – Together". Solidarity fuels our mission to make the world a better place through sport. We can only go faster, we can only aim higher, we can only become stronger by standing together — in solidarity.

"Not let your mind bite You, bite your Mind instead to perfect your PERCEPTION". My perception says - "Accomplishing a work is not important but the WAY of accomplishing the work is rather more important which makes a champion in every field irrespectively". Grooming a champion needs an appropriate environment and the engineering makes it perfect. When engineering helps in creating an environment for athletes to play safely and improve performance, we call it Sports Engineering. Sports Engineering may be a new domain in India but not different from Classical Engineering. It is simply the application of Classical Engineering in Sports. Sports Engineering is a field that focuses on the design and production of Sports Equipment, Facilities and Infrastructure, and Performance Measurement. It is based not only on Mathematics, Physics and their branches (Mechanics, Thermodynamics, Aerodynamics, etc.) but also on Production Technology, Materials Science, Machine Learning, Kinesiology, etc. Sports Performance is therefore considered to be a multidisciplinary approach. However, Sports Engineering and Sports Science are not similar (as disciplines) as many people get confused but both work for athletes from the outside and inside (the athletes) respectively in improving performance. Engineering in sports importantly explores two aspects Facilities/infrastructures and movement analysis. Let me elaborate on these two aspects from an Indian context.

Facilities/Infrastructures

A good infrastructure is the backbone of a healthy country. Good infrastructure in sports means having adequate standard facilities like accredited academies, synthetic/artificial sports flooring/fields, Sports movement analyzing centers, sports data science centers, sports nutrition, sports performance research centers, and manufacturing quality equipment among others. Sports infrastructure is one of the important issues in India and we fundamentally depend on importing and outsourcing them. Despite phenomenal growth in Indian Sports, the status of sports infrastructure in India is still not at the desired level. The Govt. has been taking many steps like schemes of grants for the creation of sports infrastructure in rural areas, installation of synthetic playing surfaces, and promotion of games and sports in universities and colleges. They aim at broad basing of sports and promotion of excellence in sports. Sports is considered to be a state subject and it is primarily the responsibility of the state governments and the National Sports Federations (NSFs) to frame policy for promotion and development of various sports disciplines in the country. The ministry only supplements the efforts of state governments and the NSFs. Sports being a state subject the states have to bear a part of the expenditure on sports so that there is a sense of participation and ownership by the states in this scheme. Hence the funding pattern between center and state is in the ratio of 75:25 in respect of normal states and 90:10 in respect of special category states. However, if a state will give priority to sports development- is a cause of concern. What we lack is a holistic approach toward the development of sports infrastructure uniformly throughout the country. Towns and villages lack adequate facilities. Sports are meant not only for elite athletes but for everyone in a country. A country cannot sustain itself in any sector as long as depends on imported goods. The basic reasons behind this are understood that we fail to connect engineering with sports development and have our own manufacturing industries supported indigenously by engineering research. It is indeed very important for researchers from engineering and sports science to work together not only for infrastructure development indigenously but also for the reduction of injuries in athletes while they participate in sports. Yes, their application matters in the development of sports at all levels in India.

Movement Analyses

"This is not the Education but the Practice that makes you 'PERFECT'. Education, of course, is an important thing in our life but alone it cannot take us to our goal. We have to convert education into action which needs regular practice to succeed in life. Ask

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any athlete who knows better how they put everything together into practice to reach the Olympics. Regular practice in any field helps you acquire mastery and brings perfection. But mere practice will never make you perfect unless you follow the science of perfect practice. There are external forces (importantly force of gravity, air/water resistance (fluid resistance) in our physical environment which we always encounter in our activities of daily living. The external forces that we cannot control, have serious effects on human performance. But in sports, an athlete has to manipulate their body segments or objects to have less effects of external forces on their body surface so that they can run faster, they can jump higher and they can act stronger which we call 'technique'. Practicing the techniques with accuracy and consistency makes us successful in our respective field called 'Performance'. However, in the process of practicing the techniques, a coach cannot track (with their naked eye) the sports movements or kinetic and kinematic sequence (force and motion) that travels through the body segments or objects during the performance. When your kinematic sequence is correct, your biomechanical application is considered to be perfect to achieve peak skill execution. In such cases, the coaches need the help of technology to understand the movements so that they can correct them accordingly and make the techniques perfect for success. Therefore, we need the application of engineering & and science to assess the performance of both the athletes and sports equipment by means of design, technology, and research to help coaches enhance the performance of their athletes in sports. Thus, the Sports Engineering Association (SEA) India is the only platform in India where the faculty from engineering/science and sports can interact and solve sporting problems indigenously for the enhancement of sports performance and reduction of injuries in sports as a whole.

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Introducing Digital Humanities in Library and Information Centers: Ensuring Ethical Responsibility of Library Professionals

Subhajit Panda* and Navkiran Kaur**

Digital Humanities (DH) is a rapidly growing field that brings together scholars from a wide range of disciplines to explore the intersection of human culture and technology. DH leverages the power of digital tools and methods to study and analyze various aspects of human culture, including literature, history, art, and language, and has the potential to transform the traditional methods of organizing, managing, and disseminating information. This paper presents an all-inclusive exploration of DH and its application in Library and Information Centers (LICs). It further examines the challenges and benefits of incorporating DH into information management methods and the most effective practices for its implementation. Additionally, it emphasizes the importance of ethical considerations when working with DH. Through this, LICs can remain relevant and responsive to the needs of their users while adhering to ethical standards.

The rise of digital technologies has brought about significant changes in the ways Library and Information Centers (LICs) operate. With the digitization of resources and the growing importance of digital literacy, library and information professionals are increasingly looking to incorporate Digital Humanities (DH) into their work. This has led to the emergence of DH as an interdisciplinary field (Klein, 2015, p. 10) that combines traditional humanities with computer science, data analytics, and other digital tools (Anderson, 2022, p. 9). It is a field that uses computational tools and methods to study human experience and culture. DH has transformed the way scholars, researchers, and students interact with information, opening up new avenues for research, analysis, and dissemination (Pawlicka-Deger, 2021). However, as library professionals move towards this new field, they must also ensure that they are behaving in an ethical and responsible manner. This paper aims to provide an overview of DH and its application in LICs, discuss the benefits and challenges, explore best practices for implementation, and ensure ethical considerations are taken into account.

The concept of digital humanities, commonly referred to as DH, emerged in the early 2000s as a progression of the "Computation in the Humanities" project that began in the 1950s. While there is no universal definition of DH, it is generally understood as a collaborative and interdisciplinary approach to generating and analyzing digital data through computational processing within the humanities disciplines (Gonzalez & Rodrigues, 2022). In other words, DH involves the use of digital technologies to enhance and transform traditional humanities research and scholarship. Over the years, the field has grown to encompass a wide range of disciplines, including history, philosophy, linguistics, and cultural studies. DH has become an essential tool for researchers, providing them with innovative ways to approach and analyze their subject. The following literature review provides a critical analysis of the relationship and cooperation between Digital Humanities (DH) and libraries.

Russell (2011) presented the challenges encountered by developers of DH resources and how libraries could help overcome these. Sula (2013) situated digital humanities work within the user-centered paradigm of library and information science and developed a cultural informatics model of libraries. DH. Zhang et al. (2015) proposed present and future roles for LIS professionals in DH projects and examined effective ways for libraries and information centers to collaborate with the DH community. Ferguson et al. (2016) reported on a research project investigating the ethical dilemmas experienced by library and information professionals, and the contribution case studies can make to ethical understanding and decision-making.

The literature also highlighted the diverse skills, knowledge, and experience exhibited by librarians in the digital humanities. Millson-Martula and Gunn (2017) published a special issue of College & Undergraduate Libraries that discussed current challenges in digital

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humanities. Risam et al. (2017) examined work creating DH opportunities for underserved student populations at Salem State's Berry Library, serving as a model for building DH at regional comprehensive universities. Kamble (2019) explored the relationship of library and information professionals with digital humanities and effective ways to support DH education and research, while Millson-Martula and Gunn (2020) showcased the range of projects and theoretical issues tackled by academic librarians, including DH pedagogy and collaboration. Yao and Xiao's (2022) study revealed the varied roles of DH librarians and emphasized the importance of collaboration, clear frameworks, and resource investment for successful DH pedagogy.

Overall, the reviewed literature demonstrates that libraries need to stay up-to-date to remain relevant in the digital age. It offers insights into the relationship between libraries and digital humanities, the evolving role of LIS professionals, collaboration with the DH community, and ethical issues. Case studies are recommended to educate practitioners. The literature also highlights the growing expertise of librarians in DH and their potential to support underserved student populations.

The scope of this paper is to explore the role of Digital Humanities in LICs. It highlights how DH is transforming the traditional methods of organizing, managing, and disseminating information in libraries and information centers. The objectives of this paper are:

i) to provide an overview of Digital Humanities (DH) and its application in LICs,
ii) to discuss the benefits and challenges of using DH in LICs,
iii) to explore some of the best practices for implementing DH in LICs, and
iv) to ensure ethical consideration while introducing DH in LICs

Digital Humanities in Library and Information Centers

This section of the paper is structured into three sub-sections to explore Digital Humanities (DH) in libraries comprehensively. The first sub-section provides an overview of DH and its tools and methods, such as text mining, network analysis, and visualization. The second sub-section discusses the benefits and challenges of using DH in libraries and how it transforms traditional information management methods. The third sub-section explores best practices for implementing DH in libraries, emphasizing the significance of collaboration, training, and support for DH projects.

Digital Humanities and its Application in LICs

Digital Humanities is an interdisciplinary field that combines traditional humanities research with digital tools and methods. It encompasses a wide range of research and scholarship, including text analysis, data visualization, network analysis, and digital publishing. Further, this rapidly growing field has the potential to revolutionize the way in which LICs manage their collections and serve their users. There are numerous applications of DH in LICs, including:

Data Analysis and Visualization

DH provides libraries with powerful tools for analyzing and visualizing their collections. For example, the New York Public Library's Map Warper project allows users to overlay historical maps onto modern-day maps to see how cities and landscapes have changed over time (The New York Public Library, 2012). This type of analysis and visualization can provide insights into historical and cultural trends that might otherwise be difficult to discern.

Digital Preservation

DH provides LICs with innovative ways to preserve and digitize cultural artifacts and data. For example, the British Library's Endangered Archives Program (EAP) works with libraries and archives around the world to digitize and preserve at-risk materials, such as manuscripts, photographs, and sound recordings (British Library, 2004). By using DH tools and techniques, the EAP is able to digitize these materials and make them accessible to a wider audience.

Collaborative Research

DH encourages collaboration between researchers from different disciplines, which can lead to new insights and discoveries. For example, the Digital Public Library of America (DPLA) is a collaborative effort between libraries, museums, and archives to provide digital access to their collections (DPLA, 2019). By working together, these institutions are able to provide a more comprehensive view of American history and culture.

Text Mining

DH provides libraries with powerful text-mining tools that can help analyze large amounts of data

quickly and efficiently. For example, the HathiTrust Digital Library contains millions of digitized books that can be searched and analyzed using text-mining tools (HathiTrust Digital Library, 2019). This type of analysis can help researchers identify patterns and trends that might otherwise go unnoticed.

Network Analysis

DH provides libraries with powerful tools for network analysis, which can help analyze the relationships between different entities in a collection or dataset. For example, the Stanford Literary Lab has used network analysis to explore the relationships between different characters in works of literature (Stanford Literary Lab, 2023). This type of analysis can provide new insights into the structure and meaning of literary works, as well as other types of cultural artifacts.

Benefits of Using Digital Humanities in LICs

Digital Humanities can bring many benefits to LICs, including making cultural heritage materials more accessible, enabling new research methods and new insights, and facilitating collaborations between researchers and institutions.

Wider Accessibility of Cultural Heritage

One of the main benefits of DH in LICs is the ability to make cultural heritage materials more accessible to a wider audience. By digitizing and making available these materials online, libraries can reach new users and promote scholarship and research in new and innovative ways.

Innovative Pedagogy

DH can also be used to support innovative pedagogy, by providing students with hands-on experience working with digital tools and datasets. For example, students can use DH tools to analyze primary source materials or develop their own digital projects, such as online exhibits or interactive maps.

Professional Development

DH can also provide opportunities for professional development for library professionals. By learning new digital tools and techniques, library professionals can expand their skill sets and develop new competencies.

Facilitate Collaboration between Researchers and Institutions

Another benefit of DH is that it allows for collaboration between institutions and researchers. DH projects often involve interdisciplinary teams with diverse skill sets, including researchers, librarians, archivists, and technologists. This can lead to new and innovative approaches to research and scholarship, as well as to the creation of new tools and resources that benefit the wider community.

Preservation and Archiving

DH can help LICs preserve and archive their collections for future generations. Digital preservation can help ensure that digital materials are accessible and usable over time while archiving LICs can develop strategies for managing and preserving their collections in perpetuity.

Challenges of Using Digital Humanities in LICs

However, there are also challenges to implementing DH in LICs, including technical and financial constraints, the need for training and expertise, and issues related to copyright and intellectual property.

Lack of Technical Expertise and Resources

One of the main challenges is the need for technical expertise and resources. Many DH tools and methods require specialized knowledge and infrastructure, such as high-performance computing resources and large-scale data storage. Implementing these technologies can be expensive and time-consuming.

Intellectual Property and Copyright Issues

Another challenge is related to intellectual property and copyright issues. DH projects often involve the digitization and dissemination of materials that are still under copyright. This can create legal and ethical challenges, as libraries must balance the need to make materials accessible with the need to respect the rights of copyright holders.

Despite these challenges, DH is transforming the traditional methods of organizing, managing, and disseminating information in LICs. DH tools and methods enable LICs to create new forms of knowledge, promote new research methods, and reach new audiences. As DH continues to evolve, it will undoubtedly play an increasingly important role in the work of libraries and other cultural institutions.

Best Practices for Implementing Digital Humanities in LICs

Implementing Digital Humanities in LICs can be a complex and challenging process, requiring careful planning and implementation. Here are some best practices for implementing DH in libraries that highlight the importance of collaboration, training, and support for DH projects:

Collaborate with Other Institutions

Collaboration is key to successful DH projects. LICs should consider partnering with other institutions, such as universities, museums, or archives, to share resources and expertise. Collaborating with other institutions can also help to increase the impact and visibility of DH projects.

Invest in Training and Support

DH projects require specialized skills and expertise, and it is important for libraries to provide training and support for staff members. This can include training in digital tools and methods, as well as in project management and data management. LICs should also consider providing ongoing support for DH projects, such as technical assistance and project management advice.

Start Small

LICs should consider starting with small DH projects, which can help to build skills and expertise before taking on larger, more complex projects. This can also help to demonstrate the value of DH to stakeholders and build support for larger projects down the line.

Engage with Users

LICs should engage with users throughout the DH project, from the planning stages to implementation and dissemination. This can include conducting user needs assessments, soliciting feedback and input, and engaging users in the creation of digital tools and resources.

Prioritize Data Management

DH projects often involve the creation and management of large amounts of data, and it is important for libraries to prioritize data management throughout the project. This can include establishing data management plans, using open data standards, and ensuring the long-term preservation and accessibility of data.

Ethical Responsibility Associated with Digital Humanities

Ethics is an important consideration in Digital Humanities projects, particularly from the perspective of LICs and librarians. Some key ethical considerations in DH include:

Privacy is a key concern in DH projects, particularly when it comes to the use of personal data. Libraries and librarians must ensure that they are collecting and using personal data in a way that is transparent and respects individuals' privacy. This may include obtaining informed consent from users and ensuring that data is stored securely.

Intellectual Property is another important ethical consideration in DH projects. Libraries and librarians must ensure that they respect copyright and other intellectual property laws when digitizing and disseminating materials. This may include obtaining permission from copyright holders or using materials that are in the public domain.

Access is another ethical consideration in DH projects. Libraries and librarians must ensure that the digital resources they create are accessible to a wide range of users, including those with disabilities or who do not have access to the internet. This may include providing alternative formats or using open data standards to ensure that the resources can be easily accessed and used.

Libraries and librarians must also be mindful of issues related to ***cultural heritage and the representation*** of marginalized communities in DH projects. This includes ensuring that materials are digitized and preserved in a way that respects the cultures and traditions of the communities they come from, as well as ensuring that marginalized voices are represented in the digital resources created by DH projects.

Conclusion

Digital humanities are transforming the traditional methods of organizing, managing, and disseminating information in LICs. DH provides researchers, scholars, and students with innovative ways to approach and analyze their subject matter. While there are challenges to implementing DH in LICs, such as the need for collaboration, training, and support, the benefits of using DH in LICs are significant. As such, LICs must embrace DH to remain relevant and responsive to the needs of their users. However, it is essential that library professionals approach this field in an ethical and responsible manner. This includes respecting the privacy and intellectual property rights of users, as well as being transparent about how data is collected and used. As LICs continue to evolve in the digital age, it is vital that ethical responsibility remains at the forefront of all digital humanities work.

References

1. Anderson, C., B. (Ed.). (2022). *Digital Humanities and Libraries and Archives in Religious Studies* (p. 9), De Gruyter. *https://doi.org/10.1515/9783110536539*

2. British Library. (2004). *Welcome to the Endangered Archives Programme*. *https://eap.bl.uk/*

3. Digital Public Library of America (2019). *Discover 47,681,067 Images, Texts, Videos, and Sounds from across the United States*. *https://dp.la/*

4. Ferguson, S., Thornley, C., and Gibb, F. (2016). Beyond Codes of Ethics: How Library and Information Professionals Navigate Ethical Dilemmas in a Complex and Dynamic Information Environment, *International Journal of Information Management*, *36*(4), 543–556. *https://doi.org/10.1016/j.ijinfomgt.2016.02.012*

5. Gonzalez, M., E., and Rodrigues, M., V. (2022). Digital Humanities: Ethical Implications and Interdisciplinary Challenges, *Humanities Bulletin*, *5*(1), 111–125. *https://journals.lapub.co.uk/index.php/HB/article/view/2357*

6. HathiTrust Digital Library. (2019). *Millions of Books Online*. *https://www.hathitrust.org/*

7. Kamble, S. (2019). Significance of Digital Humanities for Libraries & Information Professionals, *Journal of Advanced Research in Library and Information Science*, *6*(2), 16–19. *https://doi.org/10.24B21/2395.2288.2019*

8. Klein, J., T. (2015). *Interdisciplining Digital Humanities* (p. 10), University of Michigan Press, Ann Arbor. *http://dx.doi.org/10.3998/dh.12869322.0001.001*

9. Millson-Martula, C., and Gunn, K. (2017). The Digital Humanities: Implications for Librarians, Libraries, and Librarianship, *College and Undergraduate Libraries*, *24*(2-4), 135–139. *https://doi.org/10.1080/10691316.2017.1387011*

10. Millson-Martula, C., and Gunn, K., B. (2020). *The Digital Humanities: Implications for Librarians, Libraries, and Librarianship*. Routledge, London.

11. Pawlicka-Deger, U. (2021). Infrastructuring Digital Humanities: On Relational Infrastructure and Global Reconfiguration of the Field, *Digital Scholarship in the Humanities*, *37*(2). *https://doi.org/10.1093/llc/fqab086*

12. Risam, R., Snow, J., and Edwards, S. (2017). Building an Ethical Digital Humanities Community: Librarian, Faculty, and Student Collaboration, *College and Undergraduate Libraries*, *24*(2-4), 337–349. *https://doi.org/10.1080/10691316.2017.1337530*

13. Russell, I. (2011). The Role of Libraries in Digital Humanities, *IFLA 2011: PUERTO RICO*, 1–6. *https://www.ifla.org/past-wlic/2011/104-russell-en.pdf*

14. Stanford Literary Lab. (2023). *Stanford Literary Lab | Home*. *https://litlab.stanford.edu/*

15. Sula, C., A. (2013). Digital Humanities and Libraries: A Conceptual Model, *Journal of Library Administration*, *53*(1), 10–26. *https://doi.org/10.1080/01930826.2013.756680*

16. The New York Public Library. (2012). *Digital Research Projects | Map Warper*. *https://www.nypl.org/digital-research/projects/map-warper*

17. Yao, W., and Xiao, P. (2022). What Contributes to a Qualified Digital Humanities Librarian and Ideal Digital Humanities Pedagogy? An Exploratory Qualitative Study, *The Journal of Academic Librarianship*, *48*(6), 102524. *https://doi.org/10.1016/j.acalib.2022.102524*

18. Zhang, Y., Liu, S., and Mathews, E. (2015). Convergence of Digital Humanities and Digital Libraries. *Library Management*, *36*(4/5), 362–377. *https://doi.org/10.1108/lm-09-2014-0116* ❑

The Impact of COVID-19 on Micro, Small, and Medium Enterprises of Uttarakhand: A District-wise Analytical Study

Nitish Kumar Arya* and Neha Kharai**

The rapid expansion of the small industry sector after Independence has been a crucial aspect of the Indian economy. The small-scale industry was assigned a prominent role in the Industrial Policy Resolutions of 1948 and 1956 for adding new jobs while requiring little capital outlay. Small units were given more attention by the 1977 Industrial Policy Statement. The government divided small-scale industrial operations into two categories in 1950: those that used power but employed fewer than 50 people and those that did not but still employed fewer than 100.

The Indian government announced the MSME Act of 2006 in October of that year. The act established for the first time the existence of Medium Businesses in India as well as Micro Enterprises in India. It gave the three categories of enterprises—Micro, Small, and Medium Enterprises—the legal framework to be organised. The state government is primarily responsible for the promotion and growth of MSME. Nonetheless, the Indian Government supports the efforts of the state Government through several programmes. The Ministry of Micro, Small, and Medium Enterprises and its organization's goal is to support the states in their initiatives to promote business ownership, employment possibilities, and means of subsistence, as well as to improve MSME's competitiveness in the new economic environment.

Role of MSME

As the years have gone by, over 63 million MSMEs have spread across the country. Statistics across the years show how the MSME sector has been responsible for the lion's share of the country's GDP. As recently as FY20, MSMEs contributed 30 % to India's GDP. The MSME sector has also generated ample employment opportunities for individuals nationwide. According to a study by the Ministry of Statistics and PI, between July 2015 and June 2016, the MSME sector employed 111 million workers. MSMEs have also played a key role in the industrialization of the country's rural areas in very cost-effective ways. And as far as international trade is concerned, MSMEs have accounted for nearly 40% of India's total exports. Even during the economic crisis caused due to the COVID-19 pandemic, the sector was credited with having played a pivotal role in India's economic recovery. Government measures like subordinate debt relief, equity infusion, Emergency Credit Line Guarantee Scheme, etc., have helped the sector strengthen. Now that you know more about the importance of MSME in the economic development of the nation, you can begin your own entrepreneurial journey. HDFC Bank recognizes the challenges entrepreneurs face while acquiring capital. Thus, HDFC Bank has created MyBusiness, a one-stop solution that gives you easy access to loans, and digital solutions and provides you with the essential knowledge you need to run your business. With HDFC Bank MyBusiness, you can scale up, expand your operations, and nurture your business. According to census 2011, Uttarakhand's 69.77 % population resides in rural areas. Industry is the secondary economic activity of Uttarakhand people, and the number of small-scale industries is 25,294 providing employment to 63,599 persons. As per the data, in the last 20 years, 50,456 MSMEs with an investment of Rs 12,916 crore have come up and given jobs to 2.85 lakh people in the State. Many of the researchers studied different aspects of MSME, like, MSME has played a major role in Uttarakhand, some studies revealed the growth of MSMEs in Uttarakhand and some of the studied performance of MSME. None of the researchers worked on the year-on-year district-wise status of MSME in terms of registered units, investment, and employment generation in Uttarakhand.

Literature Review

The review of literature thoroughly investigates both national and international literature pertaining to the performance analysis of Micro, Small and Medium Enterprises. Vaidyanathan (2014) in his studies he observed a clear case for the unincorporated economic

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entities in the country, including the MSMEs being the engine of our economic growth and talks of their travails credit delivery mechanisms and the need for social security for the self-employed. Jeyaseeli et al. (2014) analyzed the growth and performance of MSMEs in India with special reference to Tamil Nādu on the number of enterprises, exports, investment, employment generated and money value of production and concluded that Tamil Nādu MSME sector creates more employment opportunities next to agriculture as they are labour intensive in nature. Jaswal (2014) identified the leading role played by Micro, Small and medium enterprises (MSMEs) in propelling economic growth, sustaining livelihood and promoting equitable regional development. He found that the most important contribution of this sector is towards employment generation which is second only to agriculture in India. Kadian and Chahal (2015) "*Make India Innovative and Competitive",* the study focuses on highlighting the role of MSMEs in the "Make in India" initiative. It has been analyzed that the key area of progress for India would be the development of its MSMEs to achieve and manage scale effectively. It has also been studied how MSME sector is recognized as the key engine for growth to promote entrepreneurship across the country. Kumar (2017) in their article "*An Analysis of Growth of MSMEs in India and Their Contribution to Employment and GDP of the Country*" has tried to understand the role of MSMEs in providing employment opportunities and pushing towards the inclusive development of the country. The various problems faced by these MSMEs in executing their operations have also been discussed in this paper. Khanna and Singh (2018) "Status *of MSMES In India: A Detailed Study",* This paper is an attempt to study the status of micro, small and medium enterprises in the country. The performance of MSMEs after liberalization and their prospects have been studied in detail. Researchers have also tried to find out the major problems and challenges being faced by MSMEs in India. Jena et al. (2018) in their article "*Performance of the micro, small and medium enterprises (MSMEs) manufacturing sector in select states in India",* try to explain the factors behind the growth differential of MSME Manufacturing units in different states as well as prescribe the benchmark level for all such parameters through the MSME-MBF index. The study ascertains that the state of Maharashtra has the highest MSME-MBF index value implying that the state is best suited for the growth of MSME manufacturing sector in India. Virk and Negi (2019) an overview of "*MSME sector in India with special reference to the state of Uttarakhand"*. This paper will focus on existing scenarios and trends of MSME in India. In this study the status of MSME sector in India, its performance, various initiatives taken by the government to accelerate the growth of this sector, as well as the problems faced by the MSMEs in the Indian economy. Additionally, this paper dedicates one section to the MSMEs sector in the state of Uttarakhand. Hence, this paper also analyses the status of MSMEs in the state of Uttarakhand and outlines the problems faced and recommends the measures that should be taken to promote this sector. Kumar and Gajakosh (2020) "*MSMEs Issues and Prospectus of Uttarakhand: A Conceptual Investigation with Special Reference to COVID-19"*, In this article focuses on analyzing the status and the problems faced by MSMEs in Uttarakhand. The research also examines the state's MSMEs before and during the COVID-19 pandemic. The article concludes that despite various incentives the MSME sector is facing various challenges in the state which need to be addressed for smooth functioning of the sector. Sahoo and Swain (2020) reported in their study *"Micro, small and medium enterprises (MSMES) in India: The Engine of Growth***",** article concludes with a statement that MSMEs are the lower layer of the enterprise system, which contributes to the overall GDP and welfare by generating additional employment, increasing export and maintaining equity. Therefore, MSMEs must be explored and used of as a powerful tool for growth and social justice. Kumar and Vetrivel (2020) The micro small and medium enterprises (MSMEs) have been recognized as the engine of economic growth and for stimulating equitable development. The MSMEs play an energetic role in the overall growth of the industrial economy of the country. Bisht, et. al. (2022), "*Growth of micro, small and medium enterprises (MSMEs) in Uttarakhand (India)",* in this paper analyzes the growth, investment, and employment generation by MSMEs in the last ten years in Uttarakhand to find the best scale industries for employment generation with low capital investment. The main objectives of the Study are:

- To identify the impact of COVID-19 on MSMEs in terms of registered units, investment, and employment generation in Uttarakhand.

The Research Question is:

- What is the impact of Covid-19 on MSMEs in Uttarakhand?

The study is based entirely on secondary data collected from the Directorate of Industries, Uttarakhand for the financial year 2019-20 and 2021-22. The study aims to gather information regarding the status of MSMEs in districts of Uttarakhand in terms of registered units, investment, and employment generation in the year 2019-20 and 2021-22. The study also aims to identify the impact of COVID-19 on MSMEs in terms of units registered, investment and employment generation in districts of Uttarakhand. The researcher used tabular and graphical representations for the analysis of collected data.

Result and Data Analysis

One of the provinces of northern India is Uttarakhand. The state has a total area of 53,483 square kilometres and is divided into the Garhwal and Kumaon regions, which are further subdivided into 13 separate districts. A mountainous region, Uttarakhand province covers 34,662 square kilometres of land, or more than 64% of the state's total area, with forests that are rich in biodiversity. The MSME sector is crucial to Uttarakhand's registered units, investment, and employment generation because the location and infrastructure do not suit the construction of large industrial operations.

Table 1 depicts district district-wise status of MSMEs in the financial year 2019-20. According to the Directorate of Industries (Uttarakhand), Micro, Small and Medium enterprises are further classified in terms of unit registered, investment (lakhs) and employment generation. Table 1 shows that the highest number of units registered in Micro Enterprises is 2419. The unit registered in small Enterprises is 222 and Medium Enterprises consists of 4 units. As per the data, the highest Investment is generated by Micro enterprises in comparison to Small and Medium Enterprises due to the more units of industries being set up. Table 1 also shows the employment generation in all districts of Uttarakhand which is more in Micro Enterprises as compared to Small Enterprises.

Table 2 shows the district-wise status of MSMEs in the manufacturing and Service sectors in the financial year 2019-20. As per the data of Uttarakhand State, the highest number of units registered is 1496 in the Service Sector while the Manufacturing Sector consist of 1149 units registered. The Investment generated in the Manufacturing sector is 30241.56 (lakhs) and in the Service Sector is 20031.07 (lakhs). The Investment

Table 1: District-wise Status of MSMEs in the Financial Year 2019-20 of Uttarakhand

		Micro			Small			Medium		
S.No	District	Unit	Investment	Employment	Unit	Investment	Employment	Unit	Investment	Employment
1	Almora	55	2494.00	186	0	0	0	0	0	0
2	Bageshwar	145	637.60	395	0	0	0	0	0	0
3	Chamoli	0	0	0	0	0	0	0	0	0
4	Champawat	0	0	0	0	0	0	0	0	0
5	Dehradun	441	11737.74	3918	0	0	0	0	0	0
6	Haridwar	520	4326.86	3951	108	6932.70	2994	3	2704.00	205
7	Nainital	0	0	0	0	0	0	0	0	0
8	Pauri Garhwal	375	3861.30	1253	35	3071.00	268	1	225.00	26
9	Pithoragah	0	0	0	0	0	0	0	0	0
10	Rudraprayag	197	1575.00	633	0	0	0	0	0	0
11	Tehri Garhwal	0	0	0	0	0	0	0	0	0
12	Udham Singh Nagar	488	2672.43	1877	58	7984.00	741	0	0	0
13	Uttarkashi	198	1066.00	644	21	985.00	110	0	0	0
Total		2419	28370.93	12857	222	18972.7	4113	4	2929	231

Source: Directorate of Industries, Uttarakhand (Industries Department Uttarakhand | Single Window Industries Department | Industrial Policies | Hill Policy | Industrial Schemes) (doiuk.org)

is generated more in the manufacturing sector. And there is a slight difference in employment generation between the Manufacturing and Service Sector. The service sector generates 9000 employees while the Manufacturing Sector generates 8201 Employment.

Table 3 depicts district district-wise status of MSMEs in the financial year 2019-20. According to the Directorate of Industries, Micro, Small and Medium enterprises are further classified in terms of unit registered, investment (lakhs) and employment generation. Table 3 shows the highest unit registered in Micro Enterprises which is 1916. The unit registered in small Enterprises is 12 and Medium Enterprises consist of 3 units. As per the data, the highest Investment is generated by Micro enterprises in comparison of Small and Medium Enterprises due the more units of industries are setup here. The table also shows the employment generation in districts of Uttarakhand which is more in Micro Enterprises followed by Medium and Small Enterprises.

Table 4 shows the district-wise status of MSME in the manufacturing and Service Sector in the financial year 2019-20. As per the data of Uttarakhand State, the highest number of units registered is 1496 in the Service Sector while the Manufacturing Sector consists of 1408 units registered. The Investment generated in the Manufacturing sector is 16323.98 (lakhs) and in the Service Sector is 15683.6 (lakhs). The Investment is generated more in the manufacturing sector. The Employment generation in the Service Sector is 9612 while the Manufacturing Sector generates 5390 Employment.

Objective: To identify the impact of COVID-19 on MSMEs in terms of registered units, investment, and employment generation in Uttarakhand

Table 5 and figure 1 show the total registered unit of MSME in financial year 2019-20 and 2021-22 of Uttarakhand. The data shows that from 2019-20 to 2021-22 there has been decline in micro, small and medium enterprises in terms of registered unit from 2419 to 1916, 222 to 12 and 4 to 3 respectively. The MSME registered units are also classified to the manufacturing and service sectors. The data shows that from 2019-20 to 2021-22 there has been major decline in manufacturing sector from 1149 to 523 respectively, and there is slight decline in registered units of service sector.

Table 2: District-wise Status of MSME in the Manufacturing and Service Sector in 2019-20 of Uttarakhand

		Manufacturing Sector			Service Sector		
S.No	**District**	**Unit**	**Investment(lakhs)**	**Employment**	**Unit**	**Investment (lakhs)**	**Employment**
1	**Almora**	20	1212.00	85	35	1282.00	101
2	**Bageshwar**	51	202.60	146	94	435.00	249
3	**Chamoli**	0	0	0	0	0	0
4	**Champawat**	0	0	0	0	0	0
5	**Dehradun**	213	6054.00	2176	228	5683.74	1742
6	**Haridwar**	290	10224.56	2977	341	3739.00	4173
7	**Nainital**	0	0	0	0	0	0
8	**Pauri Garhwal**	143	2580.00	583	268	4577.30	964
9	**Pithoragarh**	0	0	0	0	0	0
10	**Rudraprayg**	62	346.00	165	135	1229.00	468
11	**Tehri Garhwal**	0	0	0	0	0	0
12	**Udham Singh Nagar**	295	9275.40	1829	251	1381.03	789
13	**Uttarkashi**	75	347.00	240	144	1704.00	514
	Total	**1149**	**30241.56**	**8201**	**1496**	**20031.07**	**9000**

Source: Directorate of Industries, Uttarakhand (Industries Department Uttarakhand | Single Window Industries Department | Industrial Policies | Hill Policy | Industrial Schemes) (doiuk.org)

Table 3: District-wise Status of MSMEs in the Financial Year 2021-22 of Uttarakhand

	Micro			Small			Medium		
District	**Unit**	**Investment (lakhs)**	**Employment**	**Unit**	**Investment (lakhs)**	**Employment**	**Unit**	**Investment (lakhs)**	**Employment**
Almora	0	0	0	0	0	0	0	0	0
Bageshwar	0	0	0	0	0	0	0	0	0
Chamoli	0	0	0	0	0	0	0	0	0
Champawat	0	0	0	0	0	0	0	0	0
Dehradun	852	8052.75	9946	0	0	0	0	0	0
Haridwar	0	0	0	0	0	0	0	0	0
Nainital	0	0	0	0	0	0	0	0	0
Pauri Garhwal	403	12436.00	1647	1	149	35	0	0	0
Pithoragah	0	0	0	0	0	0	0	0	0
Rudraprayag	226	2364.00	748	0	0	0	0	0	0
Tehri Garhwal	0	0	0	0	0	0	0	0	0
Udham Singh Nagar	211	407.53	905	11	1146.30	154	3	4984.00	954
Uttarkashi	224	2468.00	613	0	00	0	0	0	0
Total	1916	25728.28	13859	12	1295.3	189	3	4984	954

Source: Directorate of Industries, Uttarakhand (Industries Department Uttarakhand | Single Window Industries Department | Industrial Policies | Hill Policy | Industrial Schemes) (doiuk.org)

Table 4: Status of MSME in the Manufacturing and Service Sector in the Financial Year 2021-22 of Uttarakhand

		Manufacturing Sector			Service Sector	
District	**Unit**	**Investment (lakhs)**	**Employment**	**Unit**	**Investment(lakhs)**	**Employment**
Almora	0	0	0	0	0	0
Bageshwar	0	0	0	0	0	0
Chamoli	0	0	0	0	0	0
Champawat	0	0	0	0	0	0
Dehradun	196	2072.12	3066	656	5980.63	6880
Haridwar	0	0	0	0	0	0
Nainital	0	0	0	0	0	0
Pauri Garhwal	131	7202.00	526	273	5383	1156
Pithoragarh	0	0	0	0	0	0
Rudraprayag	45	252.00	201	181	2112.00	547
Tehri Garhwal	0	0	0	0	0	0
Udham Singh Nagar	87	6151.72	1429	138	386.11	584
Uttarkashi	64	646.14	168	160	1821.86	445
Total	**523**	**16323.98**	**5390**	**1408**	**15683.6**	**9612**

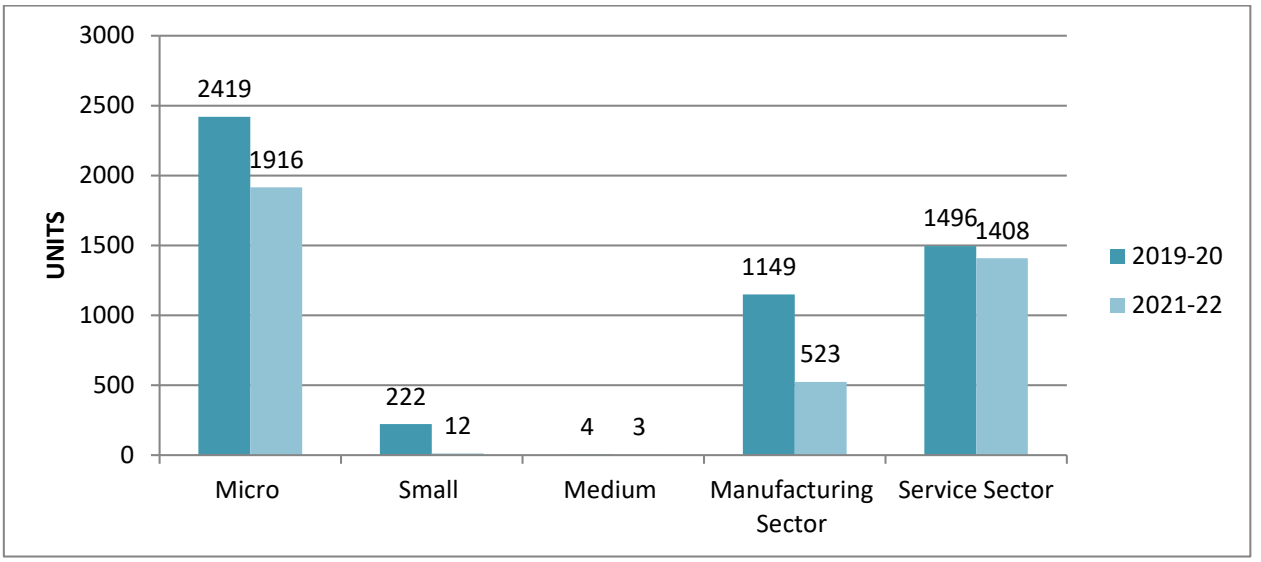
Source: Directorate of Industries, Uttarakhand (Industries Department Uttarakhand | Single Window Industries Department | Industrial Policies | Hill Policy | Industrial Schemes) (doiuk.org)

Table 5: MSME Registered Units of the Financial Year 2019-20 and 2021-22 of Uttarakhand

Unit	2019-20	2021-22
Micro	2419	1916
Small	222	12
Medium	4	3
Total	**2645**	**1931**
Manufacturing Sector	1149	523
Service Sector	1496	1408

Source: Directorate of Industries, Uttarakhand (Industries Department Uttarakhand | Single Window Industries Department | Industrial Policies | Hill Policy | Industrial Schemes) (doiuk.org)

Figure 1- MSME Registered Units of the Financial Year 2019-20 and 2021-22 of Uttarakhand



Source: (doiuk.org)

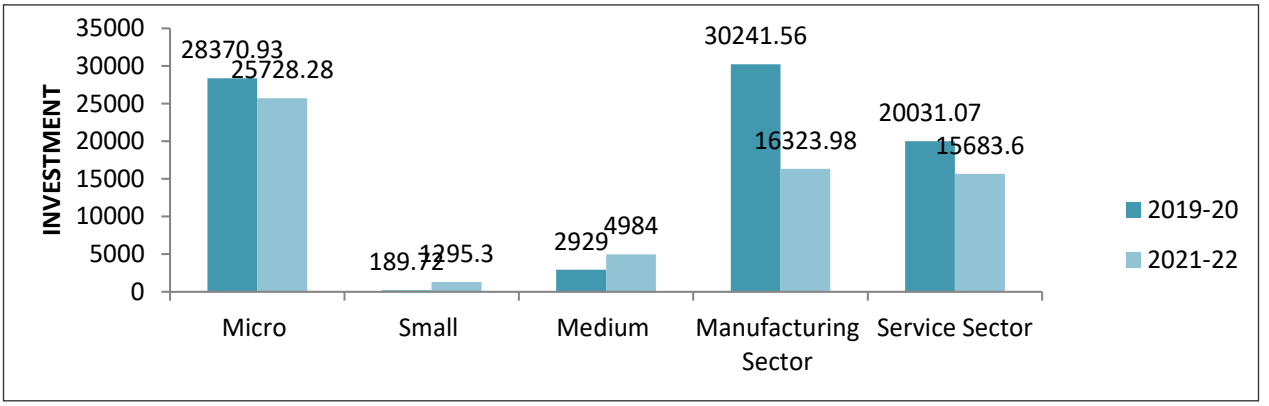
Table 6: Investment Generated in the Financial Year 2019-20 and 2021-22 of Uttarakhand

Investment (lakhs)	2019-20	2021-22
Micro	28370.93	25728.28
Small	189.72	1295.3
Medium	2929	4984
Total	**50272.63**	**32007.58**
Manufacturing Sector	30241.56	16323.98
Service Sector	20031.07	15683.6

Source: Directorate of Industries, Uttarakhand (Industries Department Uttarakhand | Single Window Industries Department | Industrial Policies | Hill Policy | Industrial Schemes (doiuk.org)

Table 6 and figure 2 show the total investment generation of MSME in the financial year 2019-20 and 2021-22 of Uttarakhand. The data shows that from 2019-20 to 2021-22 there has been a decline in micro, small and medium enterprises in terms of investment generated from 28370.93 lakhs to 25728.28 lakhs, 189.72 lakhs to 1295.3 lakhs and 2929 lakhs to 4984 lakhs respectively. The investment generated by MSMEs is also classified into the manufacturing and service sectors. The data shows that from 2019-20 to 2021-22 there has been a major decline in the manufacturing sector from 30241.56 lakhs to 16323.98 lakhs respectively, and there is a slight decline in investment generation of the service sector.

Figure 2: Investment Generated in the Financial Year 2019-20 and 2021-22 ofUttarakhand



Source: (doiuk.org)

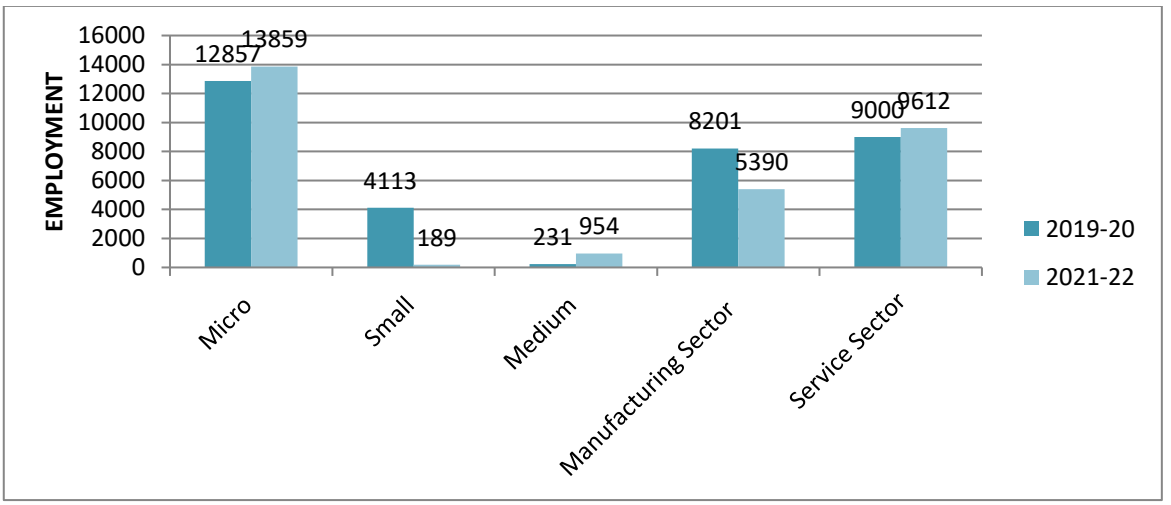
Table 7: Employment Generated in the Financial Year 2019-20 and 2021-22 of Uttarakhand

Employment	**2019-20**	**2021-22**
Micro	12857	13859
Small	4113	189
Medium	231	954
Total	**17201**	**15002**
Manufacturing Sector	8201	5390
Service Sector	9000	9612

Source: Directories of Industries, Uttarakhand (Industries Department Uttarakhand | Single Window Industries Department Industrial Policies | Hill Policy | Industrial Schemes0 (doiuk.org)

Table 7 figure 3 show the total employment generation of MSME in the financial year 2019-20 and 2021-22 of Uttarakhand. The data shows that from 2019-20 to 2021-22 there has been a decline in micro-enterprises, small enterprises in the year 2021-22 and medium enterprises in the year 2019-20 in terms of investment generated from 13859 to 12857, 4113 to 189 and 954 to 231 respectively. The investment generated by MSMEs is also classified into the manufacturing and service sectors. The data shows that from 2019-20 to 2021-22 there has been a major decline in employment generation of the manufacturing sector from 8201 to 5390 respectively, and there is a slight decline in employment generation of the service sector in the year 2019-20.

Figure 3- Employment Generated in the Financial Year 2019-20 and 2021-22 of Uttarakhand



Source: (doiuk.org)

Conclusion

The above figure shows the differences in MSME units, investment and employment generated in the year 2019-20 and 2021-22. From the above tables and figures (directories of industries), we can interpret that Micro enterprise generated the highest number of units registered, investment and employment generated in the year 2019-20 in which the service sector generated more employment and more units registered. After the pandemic in the year 2021-22, MSMEs in Uttarakhand have slow growth in units registered, investment and employment generated. Even most of the districts of Uttarakhand registered zero units, investment, and employment. The MSME sector in Uttarakhand was adversely affected by the COVID-19 pandemic. The impact is clear from the fact that only 1931 MSME units were registered in the state after the pandemic during the financial year 2020-22, and only 17201 people were employed in the MSME sector. The COVID-19 outbreak has resulted in decreased orders for 73% of MSMEs and supply chain disruptions for 60% of MSMEs, according to the FICCI research. All types of payments, including wages, salaries, interest, loan repayments, and taxes, are affected by insufficient cash flow. Even after the lockdown, MSMEs' operations are significantly hampered. Several units discontinued operations during the shutdown.

Problems and Prospects of MSMEs in Uttarakhand

Issues Faced by MSMEs in Uttarakhand

Despite the various favorable factors supporting the MSMEs in Uttarakhand, there are still various factors that hamper the operation of MSMEs in the state. In this section, these factors are classified under the following six categories.

- *Finance-related Problems*

Regardless of the size, nature, or industry of the firm, finance is one of the most important components. Every firm needs the right amount of funding to launch and run its operations successfully. Due to the lack of credit, poor access to financial institutions, lack of banking facilities, difficulties obtaining equity capital, and high mortgage requirements, it is extremely difficult for MSMEs to raise money in Uttarakhand (Sawan et al. 2015). Some of the additional financial issues faced by MSMEs in Uttarakhand include appropriate financial planning, proper capital budgeting, and maintenance of an ideal working capital level (Goel & Madan, 2021).

- *Market-related Problems*

Markets are settings where commodities and services are exchanged in exchange for money. Profit and competitive survival are the two main goals of business, and these goals can only be achieved if the company can charge a fair price for its products and services. In Uttarakhand, the majority of MSMEs only serve the needs of the neighbourhood market. MSMEs in Uttarakhand struggle with several market-related issues, including insufficient market support, intense competition from major corporations and globally recognised brands, low market demand, and difficulties entering both domestic and foreign markets (Shiralashetti,2012). MSMEs in Uttarakhand lack market knowledge and are unaware of regional and international trends. All these acts as barriers to the growth of MSMEs.

- *Human Resources-related Problems*

All the employees who work for a company are referred to as its human resources. Utilising human resources effectively is important for maintaining a competitive advantage over rivals. MSMEs are regarded as the sector that encourages employment since they give many people the chance to find work, yet they have a variety of difficulties managing their human resources in Uttarakhand (Patra &Choubey, 2014). Lack of qualified education, technical expertise, and experience are the root causes of the skilled labour shortage. The State also has difficulty offering appropriate courses for skill development and training to those employed by MSMEs. One of the biggest problems facing MSMEs in Uttarakhand is a lack of managerial talent.

- *Technology and Innovation-related Problems*

Technology is the area of knowledge that deals with the creation and use of technological tools like machinery and equipment for operations that save costs, time, and effort while simultaneously raising the level and quality of output. On the other side, innovation focuses on the acceptance and use of novel concepts, techniques, or equipment for various corporate endeavours. Innovation and technology are directly correlated with MSMEs' expansion and growth. Businesses with a competitive edge are those who accept technology and are always willing to innovate. MSMEs in Uttarakhand struggle with a variety of issues, such as difficulty gaining access to

technology, a lack of proper technical skills, and a lack of awareness and information.

- *Socio-cultural-related Problems*

All the forces present in cultures and communities that influence people's thoughts, feelings, and behaviours are referred to as socio-cultural factors. The development and effectiveness of MSMEs are directly impacted by socio-cultural aspects. Women are prevented from entering the industry by a lack of family support and gender discrimination (Naithani et al., 2018). An individual's ability to launch and run their own business unit is restricted by a lack of entrepreneurial expertise, inadequate mentorship, lack of faith, and lack of confidence (Sharma & Madan, 2013). The growth and development of MSMEs in Uttarakhand are hampered by all these problems.

- *Other Problem*

In addition to the industry-specific issue, MSMEs in Uttarakhand were also dealing with several other difficulties that posed obstacles to their expansion and efficient operation. These problems include a scarcity of raw materials, expensive material and other input costs, problems with regulations and taxes, a lack of use of installed capacity, and climatic limitations (Jaswal, 2014). All these problems contributed to the state's slow growth of MSMEs, and as a result, many MSME units came to a standstill and were unable to survive.

Recommendations for Boosting the Growth in the MSME Sector of Uttarakhand

The following steps may augment the formation and position of MSME

- Adopting a cluster development approach might help the MSME sector grow sustainably.
- Strengthening Training Institutions and Training Facilitation in Rural and Remote Areas.
- Better Marketing Assistance to MSMEs and Strengthening/Creation of Existing/New Marketing Support Infrastructure or Institutions.
- The Rural Outreach Programme, which involves academic faculty and students sharing their expertise, concepts, and resources with the MSME units, can support the growth of this industry.
- The establishment of a public procurement policy for MSMEs to help them increase their market share.
- Academic institutions, R&D groups, independent inventors, etc. are the primary sources of technological advances. The main issue is technology transfer, which will encourage innovation and technological entrepreneurship and, most importantly, give SMEs the opportunity to engage in high-risk pre-proof-of-concept R&D.
- Providing skill training to young people without jobs in the State and encouraging innovation by establishing numerous business incubators in reputable educational institutions.
- The introduction of microcredit programmes, particularly for small businesses in the service sector, can significantly contribute to regional growth and poverty reduction.
- Putting into action a plan to assist States in creating Rehabilitation Funds and launching appropriate initiatives for the rehabilitation of businesses temporarily rendered ill owing to no fault of their own.

Discussion and Conclusion

Just as education is the key that will make any other Sustainable Development Goals (SDGs) possible (Arya and Mehta, 2019), the same as MSMEs are also able to achieve SDGs goals as "engines of economic growth" of developing countries. It's the panacea to alleviate poverty and a proven way to improve the quality of life, particularly for poor people. One of India's larger economic participants is the MSME sector. The sector accounts for about 29% of India's GDP and 49.5% of its exports. According to the MSME Annual Report 2020–2021, 4.17 lakh MSME units are now in operation in the state of Uttarakhand. More than 6.60 lakh persons in the state are employed by these units. Considering that only 14% of all MSMEs in the state are registered, the unregistered sector is more prevalent. The MSMEs are essential to creating jobs, fostering an entrepreneurial culture, and growing the state. The industry also helps in reducing the state's two main problems, underuse of natural resources and migration. The state offers several beneficial conditions for the installation and efficient operation of MSME units, including financial programmes, power and land rate subsidies, and other government incentives. MSMEs in Uttarakhand are now operating and functioning significantly differently because of COVID-19. As a result of COVID-19, the MSME sector is now dealing with a new set of problems. Poor

marketing demand, a lack of raw materials, labour problems, supply chain disruptions, and a lack of money flow are all consequences of the lockdown.

Uttarakhand is providing essential resources to support MSMEs in the state in running efficiently. The supportive environment has contributed to the continued success of the state's MSMEs industry. To encourage entrepreneurship in the state, the government is subsidising the establishment and operation of MSME units in addition to other training and incubation facilities, but there is still much work to be done. To create the right policies to address the problems MSMEs face, regular surveillance is needed in this industry. The industry needs more research and development activity; thus, this issue should also be looked at. At the state and federal levels, the performance of the MSMEs sector has been significantly impacted by COVID-19, but it will take some time for the industry to fully recover. The state's overall growth and development will surely benefit if sufficient effort is put into the area.

References

1. Oyelana, A., A., and Adu, E., O. (2015). Small and Medium Enterprises (SMEs) as a Means of Creating Employment and Poverty Reduction in Fort Beaufort, Eastern Cape Province of South Africa. *Journal of Social Sciences*, *45*(1), 8-15. *http://pubs.aip.org/aip/acp/articlepdf/doi/10.1063/5.0103881/16211515/040003_1_online.pdf*

2. Ali, A., and Husain, F. (2014). MSMEs in India: Problems, Solutions and Prospectus in Present Scenario. *International Journal of Engineering and Management Sciences*, *5*(2), 109-115.

3. Arya, N., K., and Mehta, I. (2019). Efficacy of Sustainable Development Goals (SDGs) in the Perspective of Quality Education. *UPUEA Economic Journal*, *15*, 18-21.

4 Levy, B. (1993). Obstacles to Developing Indigenous Small and Medium Enterprises: An Empirical Assessment. *The World Bank Economic Review*, *7*(1), 65-83.

5. Bisht, R., K., Bisht, I., P., and Joshi, B., C. (2022, November). Growth of Micro, Small and Medium Enterprises (MSMEs) in Uttarakhand (India). In *AIP Conference Proceedings* (Vol. 2481, No. 1). AIP Publishing.

6. Brush, C., G., and Brush, C., G. (2006). Growth-oriented Women Entrepreneurs and their Businesses: A Global Research Perspective. Edward Elgar, Cheltenham.

7. Brush, C., G. (1992). Research on Women Business Owners: Past Trends, A New Perspective and Future Directions. *Entrepreneurship Theory and Practice*, *16*(4), 5-30.

8. Brush, C., G., De Bruin, A., and Welter, F. (2009). A Gender-aware Framework for Women's Entrepreneurship. *International Journal of Gender and Entrepreneurship*, *1*(1), 8-24.

9. Gichuki, C., N., Mulu-Mutuku, M., and Kinuthia, L., N. (2014). Performance of Women- owned Enterprises Accessing Credit from Village Credit and Savings Associations in Kenya. *Journal of Global Entrepreneurship Research*, *4*, 1-13.

10. Mali, D., D. (1998). *Development of Micro, Small and Medium Enterprises of India: Current Scenario Vol-XII*. PP-62-64.

11. Dangi, N. (2014). Women Entrepreneurship and Growth and Performance of MSMEs in India. *International Journal*, *2*(4), 174-182.

12. Dash, A. (2018). Micro and Small Medium Enterprises in India: An Analytical and Policy Perspective. *International Journal of Scientific and Engineering Research*, 9(7), 1121–1149.

13. Sudan, F., K. (2005). Challenges in Micro and Small-scale Enterprises Development: Some Policy Issues. *Synergy: ITS Journal of IT and Management*, *3*(2), 67-81.

14. Fiseha, G., G., and Oyelana, A., A. (2015). An Assessment of the Roles of Small and Medium Enterprises (SMEs) in the Local Economic Development (LED) in South Africa. *Journal of Economics*, *6*(3), 280-290.

15. Goel, N., and Madan, P. (2019). Benchmarking Financial Inclusion for Women Entrepreneurship–A Study of Uttarakhand State of India. *Benchmarking: An International Journal*, *26*(1), 160-175. *https://doi.org/10.1108/BIJ-01-2018-0023*

16. Gupta, A., and Pathak, P. (2017). Key Drivers Influencing Women as Entrepreneur in Uttarakhand. *Prestige International Journal of Management and Research*, *10*(2), 11-18.

17. Ilahi, S. (2018). An Overview of Female Entrepreneurs in the Indian MSME Sector. *Saudi Journal of Business and Management Studies*, *3*(11), 1269-1273.

18. Jain, V., and Jain, A. (2012). A Study and Scope of SMEs in Uttarakhand and Problems Faced by Them. *Asian Journal of Business and Economics*, *2*(2.2), 1-13.

19. Jaswal, S., S. (2014). Problems and Prospects of Micro, Small and Medium Enterprises (MSMEs) in India. *International Journal of Innovative Research and Studies*, 3(5), 140–161.

20. Jena, N., R., Thatte, L., R., and Ket, V., G. (2018). Performance of the Micro, Small and Medium Enterprises

(MSMEs) Manufacturing Sector in Select States in India: The Concept of MSME Manufacturing Business Facilitator (MSME-MBF) Index. *Academy of Entrepreneurship Journal*, *24*(1), 1-22.

21. Kadian, R., and Chahal, A. (2015). Make India Innovative and Competitive: Role of MSMEs. *International Journal of Research in Social Sciences and Humanities*, *5*(3), 65-73.

22. Khanna, R., and Singh, S., P. (2018). Status of MSMEs in India: A Detailed Study, *Journal of Applied Management-Jidnyasa*, *10*(2), 1-14.

23. Kumar, B., and Gajakosh, A., R. (2021). MSMEs Issues and Prospectus of Uttarakhand: A Conceptual Investigation with Special Reference to COVID-19. *SEDME (Small Enterprises Development, Management & Extension Journal)*, *48*(3), 299–310.

24. Kumar, N., K., and Sardar, G. (2011). Competitive Performance of Micro, Small and Medium Enterprises in India, *Asia Pacific Journal of Social Sciences*, 3(1), 128-46.

25. Kumar, V. (2017). An Analysis of Growth of MSMEs in India and Their Contribution to Employment and GDP of the Country. *International Journal of Interdisciplinary and Multidisciplinary Studies*, *4*(2), 187-191.

26. Sarfaraz, L., Faghih, N., and Majd, A., A. (2014). The Relationship between Women Entrepreneurship and Gender Equality. *Journal of Global Entrepreneurship Research*, *4*, 1-11.

27. Lateh, M., Hussain, M., D., and Halim, M., S., A. (2017). Micro-enterprise Development and Income Sustainability for Poverty Reduction: A Literature Investigation, *International Journal of Business and Technopreneurship*, *7*(1), 23-38.

28. Nadaf, R., and Kadakol, A., M. (2017). A Study of Major Problem, Prospects and Performance Aspects of MSME's in India. *International Journal of Business, Management and Allied Sciences*, *4*(4), 177-184.

29. Naithani, A., Pathak, A., and Naithani, R. (2018). Women Entrepreneurs of Uttarakhand: Challenges and Solutions—A Review. *Himalayan Journal Social Science and Humanities*, 13, 1–6.

30. Pathak, P., and Agarwal, M. (2017) Evaluation of Growth and Performance of Micro, Small and Medium Enterprises: A Study of Uttarakhand Region, India. *IJAR* 4(6) 554-562.

31. Patra, S., and Chaubey, D., S. (2014). Factors Influencing Industrial Performance: An Empirical Study with Special Reference to the MSMEs of Uttarakhand State, *International Journal of Management Technology (IJMT)*, *22*(1), 12-28.

32. Sorokhaibam, R., and Thaimei, G. (2012). Entrepreneurship Development and Employment in North East India, *Journal of Asian Business Strategy*, *2*(5), 95.

33. Vani, R., M., C. (2013). The Impact of Globalization on Micro, Small and Medium Enterprises with Special Reference to India, *Innovative Journal of business and management*, *2*(05).

34. Sahoo, B., B., and Swain, K., C. (2020). Micro, Small, and Medium Enterprises (MSMEs) in India: The Engine of Growth, *International Journal of Social Sciences*, *9*(1), 31-43.

35. Kumar, B., and Gajakosh, A, R. (2021). MSMEs Issues and Prospectus of Uttarakhand: A Conceptual Investigation with Special Reference to COVID-19. *SEDME (Small Enterprises Development, Management and Extension Journal)*, *48*(3), 299-310.

36. Sawan, S., Kaushal, D., and Chandwani, R. (2015). Entrepreneurship and Micro Small Medium Enterprises in Uttarakhand: Issues and Possibilities. *Advances in Economics and Business Management*, 2(13), 1251–1254.

37. Sharma, L. and Madan, P. (2013). Perceived Barriers to Youth Entrepreneurship: A Study of Uttarakhand State, India. *International Journal of Research*, 4, 42–51.

38. Shiralashetti, A., S. (2012). Prospects and Problems of MSMEs in India—A Study. *International Journal of Multidisciplinary and Academic Research*, 1(2), 1-7.

39. Tambunan, T., T., H. (1994). *The Role of Small-scale Industries in Rural Economic Development: A Case Study in Ciomas Subdistrict, Bogor District, West Java, Indonesia,* Erasmus Universiteit Rotterdam (The Netherlands).

40. Virk, S., K., and Negi, P. (2019). An Overview of MSME Sector in India with Special Reference to the State of Uttarakhand, *International Journal of Trend in Scientific Research and Development*, *3*(2), 891-896. ❑

Technological Innovation: The Engine of Progress

Senapathy "Kris" Gopalakrishnan, Chairman, Axilor Ventures delivered the Convocation Address at the 8th Convocation Ceremony of Indian Institute of Technology Jodhpur on November 12, 2022. He said, "I believe that it is best to assume that the future will be uncertain and all of us need to create a plan B if best-laid plans get derailed by some unforeseen events. Resilience is a trait that each one of us needs to build in key aspects of your lives – job, wealth, reputation, education, etc. " Excerpts

Congratulations to all the graduates and your families. Your hard work over the years has come to fruition, especially during Covid pandemic. I believe that Covid has made us stronger, resilient and has increased our faith in science and technology.

I want to congratulate the faculty and staff of IIT Jodhpur during this convocation for their tremendous work in graduating so many students. I also want to congratulate them on the progress made by this institute over the last 14 years since the inception. Institute building takes time, but the progress already demonstrated in the rankings achieved by this institute is commendable.

Covid has shown us that unanticipated events can derail the best laid plans for the future. Ukraine war is another event that has affected the world with fuel price increase, and higher inflation across the world. On top of this, climate change is increasing the number of unusual weather events – floods, hurricanes, extreme temperatures. We do not know if these uncertainties will disappear or will continue. I believe that it is best to assume that future will be uncertain and all of us need to create a plan B if best laid plans get derailed by some unforeseen events. Resilience is a trait that each one of us need to build in key aspects of your lives – job, wealth, reputation, education etc.

Having said this, I am an optimist and I believe that the next 30 years are going to be even better than the last

30 years. The next 30 years will span your professional lives. It is an opportunity for each one of you to leave your mark in this world. To create an impact. To leave a legacy. To be remembered for.

I was fortunate to be part of the IT revolution in India and the world – lucky to get a ring side view of both of these revolutions.

For India, the industry changed the perception of India to a land of high quality, global talent. The industry currently is USD 200 billion in revenues, employs more than 5 million people in India and outside India. Most of the global multinational companies have their R&D and IT departments in India. They also outsource these services to consulting and IT firms in India. India has become the default location for such work.

During Covid, most of the offices were closed and employees had to work out of their homes, especially those providing services. Remote work became the only way to provide services; Indian IT companies started and perfected the processes around remote work from 1980s.

I am proud of the IT services industry in India for creating a world class industry in India, for leading the world in remote work, for creating some of the best governed companies in the world, and for being entrepreneurial. The IT story of India is inspiring a new generation of entrepreneurs in India. Many of the IT leaders have now become investors in the start-up ecosystem in India. Over the last 5 years, my colleagues at Itihaasa and I have interviewed many of the leaders who lead this IT revolution in India and have documented their achievements. In October this year, our book titled "Against all odds – The IT Story of India" has been published. You will find many anecdotes on the growth of the IT industry in India in this book and I hope that you will find the book interesting and educational.

I saw the growth of the digital computer industry over the last 45 years. I passed out from IIT Madras in 1979 with a masters in computer science. Apple introduced the Apple II personal computer in 1977 and IBM introduced the IBM PC in 1981. This democratised computing and changed the way offices functioned – all business processes were converted to execute using the computer. Personal computers changed our lives increasing our productivity, connectivity, and access to knowledge. During the last 45 years, we saw the emergence of Internet, mobile phones, cloud computing, social networks, wearable computing devices etc. You

will agree with me that digital computer has transformed our lives and businesses tremendously.

The GDP of India went from USD 180 Billion in 1980 to USD 3.2 Trillion today, a growth of 18 times over 42 years. Global GDP has gone from USD 11 Trillion to USD 90 Trillion now, a growth of 9 times over the last 42 times. A lot can change in a lifetime.

Looking at the next 30 years, I believe that 3 trends will be important to you. Three trends that you can ride on as you build your career. First one is technology innovations. Second is new opportunity for industry leadership and the third is India opportunity. Let me elaborate on each one.

Technology innovation is accelerating with multiple innovations transforming multiple industries. On the digital computing side, we are creating faster and cheaper processors, cheaper memories, and new parallel processing capabilities. The first PC introduced could process a few hundred instructions per second. The new processor M2 released by Apple can process billions of instructions per second. And it is cheaper than the first PC.

Cloud computing is providing each user with almost unlimited memory capacity with almost no cost. But the most interesting change that is happening is on the programming paradigm. Till 2010, the programming paradigm was the traditional paradigm of procedural code. One defines the algorithm to solve a problem in detail, converts the algorithm into a computer program which is then executed by the computer. Computer follows these program instructions including any error made in the algorithm.

This paradigm allowed us to use the computer to solve problems which we knew the algorithms for. This limited the problems that could be solved by using the computer. For example, using computers to translate text from one language to another or to understand an image or picture was rudimentary.

In recent years, we have thought about how human brain could be processing such tasks and we have created computer systems that try mimic how we believe the brain works – this paradigm is called the Deep Machine Learning. Here we teach the computer with sample inputs and outputs and use the computing power to figure out the algorithms. The output is the algorithm and that then can be used to solve other similar problems. As computers get more powerful and as we get more and more data, the computer is used to figure out the programs that will solve these problems.

In narrowly defined tasks like playing chess or the game of Go or image recognition, computers have become almost equal to humans in providing correct solutions. In computations, computers are already far superior to humans with the ability to process billions of computations per second. These capabilities are called Artificial Narrow Intelligence . Over time combining many such machines, we should be able to create a machine which will show general intelligence or broad intelligence capabilities.

Already AI/ML machines are used to replace humans in several areas like reading x-rays, voice recognition and automatic translation in real time, playing various computer games, medical diagnostics, self driving vehicles, etc. These machines are used in identifying patterns in large amounts of data and identify underlying patterns. I believe that this paradigm change in programming is as fundamental as the introduction of digital computers. This will transform many industries where knowledge work is needed – just like the 3rd Industrial Revolution changed manual work.

The second trend I want to talk about is the opportunity for new leadership to emerge. If you look of the list of companies in the U.S. with the biggest market capitalization, these are mainly in the IT industry. All these are in existence for less than 50 years. So new industry leadership has emerged.

Similarly, U.S. was about 2% of world's GDP in 1900s whereas today it is about 20% of the world's GDP. In the first half of the 20th century, U.S led the world in factory based repetitive manufacturing, increasing productivity through the use of technology and management techniques. In the second half, U.S. dominated the world in digital computing. So riding these trends, a country can take the leadership in economic terms. In the second half of 20th century, China accelerated its GDP growth on top of being the world's factory. China is the second largest economy in the world today.

I believe that disruptive technologies will transform all industries and give India an opportunity to accelerate its GDP growth and become 2nd or 3rd biggest economy in the world. Some of firms can become the largest in their sectors. As a few of IT services companies have demonstrated in the last 45 years.

There is tremendous wealth to be made in India as India grows to USD 5 trillion or USD 10 trillion economy. India is already the 3rd best place for entrepreneurs and start-ups. We have 100+ unicorns – companies whose market cap is more than USD 1 billion. Some of these companies will have to run the marathon and become global multinationals leading their industries.

The third trend is the India Opportunity. India is transitioning to a developed economy in the next few years. But what kind India will we create? I hope that we will create a better india and a better world. One that is sustainable, equitable, affordable and accessible. These are the problems humanity is facing today. India can be the laboratory of the world to create these new developmental models. Let me give you couple of examples. When Covid struck the world, U.S. came out with a vaccine to create immunity against these viruses in record time, especially using mRNA technology. We created these vaccines in record time using the best of science and innovation. These vaccines costed USD 30 a dose and would probably be affordable to the top 10% of the world. Imagine what it would have costed India to vaccinate a majority of the eligible population, estimated to be 800 million. It would have cost India USD 48 billion assuming 2 doses per person . Then India came out with our own vaccines which were priced at USD 3 per dose. And it costed us 1/10th cost, approximately USD 5 billion.

In fintech, we have created the payment infrastructure built on Aadhaar and UPI. One can transfer money instantaneously with almost zero cost by just knowing the other person's telephone number or UPI code. With this, 80% of Indian adult population is able to use digital financial transactions to buy products where as less than 15% own credit or debit cards.

In telecom, India has one of the best telecom infrastructure covering most of the country. In fact, we were able to function during Covid because of the telecom infrastructure. Where else in the world would you get to make unlimited calls, send messages and consume 1GB of data per day costing just ₹300 per month. I can go on. India provides the opportunity to create new business models that works for the 7 billion people of the world rather than the top 10% of world's population.

This is why I believe that the next 30 years are going to be exciting and could transform India to be a leading, developed nation. And you have the opportunity to create this better India. Identify companies that are working to create disruptive technologies or business models. That are fast growing. Work for them or better yet, star t these businesses. This is what I would call identifying large waves and riding the wave.

I wish each one of you the very best wishes. May the force be with you. ❑

Faculty Development Programme on Funded Research Projects

A six-day Online National level Faculty Development Programme on 'Funded Research Projects' was organized by the Centre of Excellence for Transformative Education, ATLAS SkillTech University, Mumbai in association with Gracia from October 16-21, 2023. About 1,500 participants from various Higher Educational Institutes (including IITs and IIMs) and many international participants attended the programme through online mode. The event aimed to benefit individuals from various fields and industries who are interested in applying for research grant proposals. It was targeted towards a wide audience, including faculty members, corporates, researchers, and research scholars from across India.

Dr Indu Shahani, Founding President and Chancellor, ATLAS SkillTech University, Mumbai delivered the Welcome Address. Her address was not merely a formality but a heartfelt message that underscored the profound importance of funded research in the academic world. Dr. Shahani's words resonated with the audience as she emphasized how funded research projects are the lifeblood of academic progress and innovation. Her address served as a reminder of the transformative power of research that is adequately supported and funded, setting the tone for a programme that aimed to empower educators and researchers to unlock new frontiers in knowledge and make a lasting impact on their fields and society as a whole.

Mr. Shantanu Bagwe, Gracia Global Advisory LLP delivered his Keynote Address and highlighted the interest in the funded research projects. He also mentioned the initial challenges one faces while drafting a proposal for the same and shared his viewpoint on the same.

Dr Rohit Bansal, Associate Professor, Rajiv Gandhi Institute of Petroleum Technology shared insights on the 'Fundamentals of Research Project Management'. Dr. Bansal highlighted the importance of having a clear objective before drafting a research proposal and the challenges faced while drafting a proposal, managing the research fund, and time management. He mentioned that Research Project Management is a dynamic process that requires careful planning and ongoing monitoring. Successful management ensures that the research project is conducted efficiently, ethically, and in a manner that allows for meaningful contributions to the field. He focused on having an interactive session with a question and answer (Q&A) session where participants highlighted the challenges they faced while managing the research project funds and team building. He also shared some of his original templates of the research proposal for reference. The comprehensive session covered project planning, emphasizing the importance of defining research objectives, setting timelines, and establishing budgets. Researchers were introduced to diverse methodologies, resource allocation, risk management, and continuous monitoring and evaluation. The importance of transparent communication and ethical considerations was underscored, ensuring the highest standards of academic integrity. The session provided a solid foundation for embarking on successful research projects with confidence and competence.

Prof. Hina Thakkar, Pro Vice Chancellor, ATLAS SkillTech University, Mumbai also delivered an encompassing address, unveiling the importance of funded research projects and the dearth of organizing such informative topics in the academic sector. Sukanya Dixit, Assistant Professor, ATLAS SkillTech University shared her insights on the 'Grant Proposal Writing and Submission for Minor and Major Research Projects'. She covered the said topic from all possible aspects by educating the participants about the factors considered while drafting the research proposal, principles for success, and the factors that determine the winning scenarios of getting the grants. She also shared with the participants the possible links and the platforms that welcome the research proposals from the universities. She also shared some of the templates of her applied research proposals with the participants.

The session played a key role in equipping educators and researchers with the essential skills to craft compelling grant proposals. Understanding the diverse grant opportunities, aligning proposals with funders' priorities, and mastering budgeting and resource allocation were key takeaways. The art of crafting a compelling narrative and adhering to ethical considerations in research added depth to

the session. It also emphasized the significance of efficient submission and review processes, along with the value of building collaborative partnerships. The session was a fundamental component, empowering faculty members and researchers to secure funding for impactful research endeavors and advance academic careers while making a profound impact on their fields and society.

Dr Mohd Nayyer Rahman, Assistant Professor, Aligarh Muslim University, Aligarh extended the learning on funded research projects by sharing his insights on 'Budgeting, Financial Management, and Reporting' by sharing the parameters needed to manage the funds received from the grants. How to maintain the Excel and the key requirements needed that ensure the justification of the received grants. The session aimed to equip educators and researchers with the essential financial skills necessary for managing research projects effectively. Participants gained a comprehensive understanding of budget planning, resource allocation, budget monitoring, and financial reporting. They learned the importance of accurate budgeting, efficient resource allocation, and continuous monitoring to ensure project success. Ethical considerations and risk management in financial practices were emphasized. The session also focused on reporting financial progress transparently to stakeholders. As research projects grow in complexity, financial management skills are essential for faculty and researchers to navigate the financial aspects of their projects successfully. The session empowers participants to handle financial matters with confidence, ensuring that research projects are academically rigorous, financially sound, and ethically managed.

Dr Somdutta Banerjee, Senior Research Fellow, Center for WTO Studies, Indian Institute of Foreign Trade (IIFT) shared her insights on 'Effective Data Collection and Analysis'. She mentioned the importance of data collection and the challenges faced while collecting the data. She also introduced the participants to various platforms from where data can be collected, World Bank, Prowess IQ, EMIS, Thomson, Trade, etc. Further, some insights were also shared on various methodologies for different data sets collected for the research. The session was a crucial endeavor to enhance the research and analytical capabilities of educators and researchers. Data collection and analysis are integral aspects of producing meaningful research outcomes, and this session aimed to provide a comprehensive understanding of the best practices and techniques in these areas. Participants learned about various data collection strategies, the importance of data quality and integrity, effective data management and organization, a spectrum of data analysis techniques, and the practical use of software tools for analysis, including SPSS, R, NVivo, and Excel. Ethical considerations in data collection and analysis were emphasized, ensuring participants were well-versed in the importance of informed consent and data privacy. The session also delved into interpreting and reporting research findings effectively to cater to both academic and non-academic audiences. In an era where research projects are becoming increasingly data-centric and intricate, mastering these skills is pivotal for faculty members and researchers. The session empowered the participants to handle data with precision and integrity, driving academic excellence and impactful research across various fields and disciplines.

Dr Komal Chopra, Associate Professor, Symbiosis Institute of Management Studies, Pune shared his insights on 'Project Dissemination and Sustainability'. The speaker discussed the methods of project dissemination i.e. presentations, collaborations, online platforms, and publications. Further, highlighted the key elements of the project sustainability, that is, funding, institutionalization, evaluation and supervision, etc. The session was a significant step in equipping educators and researchers with the knowledge and strategies necessary to effectively disseminate research findings and ensure the long-term sustainability of their projects. This comprehensive session covered essential aspects, including dissemination strategies encompassing traditional and contemporary methods, the art of impactful storytelling, engagement with stakeholders, funding and resource management, continuous monitoring, community involvement, advocacy, and ethical considerations. It underscored the significance of equipping participants with the skills to disseminate research effectively and ensure the enduring value and impact of their work. This knowledge is increasingly crucial as research projects continue to grow in scope and complexity. The session empowered participants to chart a path toward a more impactful and enduring future for their research in their respective fields and communities.

Dr Moushimi Datta, Professor, and Principal of Nagindas Khand Wala College shared her insights on 'Navigating the Landscape of Research Funding: Strategies and Compliances for Minor & Major Research Projects'. She discussed the various platforms from

where the relevant information of the announcements of research proposals can be fetched. Further, the strategies for the minor and major research projects must be adopted. The session was a fundamental initiative aimed at empowering educators and researchers with the knowledge and skills necessary to navigate the intricate world of research funding. This comprehensive session commenced with an exploration of the diverse landscape of research funding opportunities, spanning government grants, private foundations, industry sponsorship, and international funding sources. The participants were guided through the art of crafting compelling grant proposals, emphasizing the importance of clarity, conciseness, and alignment with the funder's priorities. Efficient budgeting and resource allocation were highlighted as essential to research success, with a focus on managing resources and staying within budget constraints. The ethical and compliance aspects of research funding and project execution were underscored, ensuring transparent and ethical practices. The session also provided insights into proposal submission and the typical review process, as well as strategies for addressing reviewer feedback to enhance competitiveness. The value of collaborative partnerships was discussed, highlighting the importance of relationships with collaborators, institutions, and funders. Moreover, the session delved into strategies for the long-term sustainability of research projects and impact assessment. It concluded as a cornerstone of the Faculty Development Programme, arming participants with the tools and insights necessary to secure funding and ensure the enduring success of their research endeavors, ultimately fostering a community of researchers capable of making significant contributions to their fields and society at large.

Dr Varsha Agarwal, Convener and Director, Centre of Excellence for Transformative Education proposed the vote of thanks. Her words resonated with gratitude and encouragement as she extended her appreciation to all the speakers who had generously shared their knowledge and expertise. Furthermore, she took a moment to extend her heartfelt thanks to all the enthusiastic participants who had actively engaged in the event, contributing to the vibrant discussions and creating a conducive learning environment.

All India Legal History Congress

A three-day All India Legal History Congress is being organized by the University School of Law and Legal Studies, Guru Gobind Singh Indraprastha University, Dwarka, New Delhi in collaboration with the All India Association of Legal History Congress and Centre for Studies in Legal History, NUJS, The West Bengal National University of Juridical Sciences, Kolkata from December 06-08, 2023. The event aims to unite historians, scholars, and enthusiasts to explore various aspects of history. The Subthemes of the Event are:

- Marginalities and Margins.
- Invention of Tradition.
- International Law.
- Law and Development Studies.
- Story of Governance – Elections, Panchayats, Local Self-Government.
- Historical Perspective of Language and Law.
- Judicial Decisions-Themes of Women, Children, etc.
- Law, Economics and History.
- Law and Social Sciences.
- Origin and Development of Legal History: Text and Context.
- Histories of Labour and Mobility.
- Legal Economics and History.
- Criminal Justice System - IPC, etc.
- Indigenous Community - Human Rights, Interdisciplinary, etc.
- Land Laws.
- Media, Law and History.
- Intellectual History.
- Technology, History and Laws.
- Historical Foundations of Legal Institutions in India.
- The Role of the Indian Constitution in the making of Indian Legal History- National Movement, Civil Rights, Human Rights.
- Sources of Legal History and Historical Method.

For further details, contact the Organising Secretary, University School of Law and Legal Studies, Guru Gobind Singh Indraprastha University, Sector 16 C, Dwarka, New Delhi- 110078, E-mail: *ailhc2023@gmail.com.* For updates, log on to: *www.ipu.ac.in/events.*

Faculty Development Programme on Simulation of Welds and Optimization Techniques

A six-day Faculty Development Programme on 'Simulation of Welds and Optimization Techniques'

is being organized by the Centre for Materials Joining and Research, Department of Manufacturing Engineering, Faculty of Engineering and Technology, Annamalai University, Chidambaram, Tamil Nadu from November 20-25, 2023. The event is sponsored by the All India Council for Technical Education─Training and Learning (ATAL) Academy. The faculty members of the AICTE-approved institutions, Ph.D. scholars, PG students, participants from Government, Industry (Bureaucrats/ Technicians/ Participants from Industry etc.) and staff of the host institutions may participate in the event. The Major Contents of the Event are:

- Modelling of Heat Transfer Problems in Welds.
- Thermo-mechanical Modeling of Welds.
- Statistical Tools: Response Surface Methodology, Regression Models.
- Software and Algorithms Used in Optimization.
- Wire arc Additive Manufacturing Modelling.
- Hands-on Training, Using ANSYS, SYSWELD.

For further details, contact Coordinator Dr. S Rajakumar, Department of Manufacturing Engineering, Faculty of Engineering and Technology, Annamalai University, Annamalai nagar-608002, Tamil Nadu, Mobile No: +919486870051, +917904549396, E-mail: *srkcemajor@gmail.com.* For updates. Log on to: *https://annamalaiuniversity.ac.in/cemajor_index.php*

AIU News

Faculty Development Programme on Recent Technological Trends and Advancements

A five-day Faculty Development Programme on 'Recent Technological Trends and Advancements in Pharmaceutical Sciences' was organized by the Association of Indian Universities (AIU)– Academic and Administrative Development Center (AADC), Amity Institute of Pharmacy and Amity Academic Staff College, Amity University Haryana from October 09-13, 2023. About ninety-six participants registered across the country for the event and there was a galaxy of twelve speakers ranging from industry to academia.

The Inaugural Address was delivered by the Vice Chancellor, Prof. P B Sharma. Mr. Alok Mishra, Adjunct Professor, DUKE National University of Singapore (NUS), Singapore delivered the address as a Guest of Honor. The inaugural session also witnessed the addresses of Dr Amarendra Pani, Joint Director and Director (I/C), Research Division, Association of Indian Universities (AIU), Prof. Satish Sardana, Director, AIP and Dr. Sanjna Vij, Deputy Director, Amity Academic Staff College, AUH.

During his address, Prof. P B Sharma highlighted the seminal role that pharmaceutical sciences could play in the healthcare sector. Further, he highlighted the role of newer technologies and innovation in the growth and development of pharmaceutical sciences. He encouraged the pharma academician to adopt the habit of skill upgradation and innovation in their day-to-day life.

During the Technical Session, Dr. Aashish Sharma, Associate Professor, G D Goenka University, Haryana spoke on 'Innovations in Bio-adhesive: Nature's Inspiration for Biomedical Applications'. The theme of the session was 'Technological Advancements in Topical Drug Delivery System'. The talk was very informative as he discussed the nitty gritty details of various polymers used in the topical drug delivery system.

Dr. Rakesh Singh, Head, Department of Pharmacology and Toxicology, NIPER, Raebareli, Lucknow spoke on topic 'Protective Effects of Natural Compounds in Models of Neuroinflammation'. Subsequently, Prof. Sanju Nanda, Dean, DOPS, MDU Rohtak spoke on the topic 'Technological Advancements in Beauty Product: A Caveat Venditors Instead of Caveat Emptors'. The talk was informative and interactive.

The theme of the next session was 'Advancements in Remote Pedagogy in Pharmaceutical Sciences'. Where two lectures were scheduled. The first lecture was on the topic 'How Remote Skill Assessment is Revolutionising Pharmacy Education' delivered by Dr Suresh Shanmugam, Head, Pharmacy Practice, School of Pharmacy, International Medical University, Malaysia. In his talk, he discussed how remote pedagogy is being carried out in Malaysia and how it could be extrapolated in the Indian context. The second talk was delivered by Dr. Alok Mishra, Adjunct Associate Professor, Office of Innovation and

Entrepreneurship Duke NUS, Singapore on the topic 'Recent Advancements in MedTech Industry'. He gave a fair idea about the global MedTech industry vis-a-vis its Indian prospects.

The next session was on the topic 'Recent Trends in Drug Regulatory Affairs and Drug Discovery'. There were two talks delivered in this session. The first talk was delivered by Mr Amit Bansal, Global IPR, Mankind on 'Excipients Used in Ophthalmic Drug Delivery System' wherein he touched upon all the safer excipients that could be utilized in developing an ophthalmic drug delivery system. The second talk was delivered by Dr Pritesh Bhatt, Principal Application Scientist, Schrodinger India on 'Discovering Drug Molecules Using the Schrodinger Platform- Overview and Case Studies'. Dr. Pritesh discussed several case studies of small bioactive compounds in his talk.

The theme of the next session was 'Digital Pharmaceutical Interventions for Optimal Therapeutic Outcomes in Patients'. Prof. Harish Dureja, Head, Department of Pharmaceutical Sciences, MDU, Rohtak spoke on 'Digital Therapeutics and Pharmaceutical Regulatory Environment'. His talk summed up the role of digital infrastructure in the healthcare sector of the country and how it would shape the regulatory framework in the coming decades. Further, Dr Shrikant Bhagat, Scientist, Department of Medicinal Chemistry, NIPER Mohali delivered his talk on 'General Safety in Chemistry Lab and Our Routine Health Care and Wellbeing'. He discussed the do's and don'ts of general lab practices and what are the precautions a research scholar should take while working in the laboratory.

Dr Tarun Wadhwa, Associate Professor, Department of Clinical Pharmacy and Pharmacology, RAK Medical and Health Science University, UAE spoke on 'Pharmaceutical Care Intervention' wherein he highlighted the role of community pharmacy especially in the intervention of diabetes.

Further, the session was on 'Research Ethics and Funding Opportunities'. Prof. B S Bhoop, Emeritus Professor, Chitkara University Innovation and Network (CURIN), Chitkara University delivered his talk on 'On being an Adept Pharmaceutical Researcher: Maladies and Remedies in Ethical Publishing of Scientific Findings'. The talk was very useful particularly for the budding academician and research scholar as he pointed out the importance of ethical scientific writing and pointed out the biggest menace of plagiarism in scientific writings. He gave numerous examples via various case studies and emphasized being an honest researcher even when the findings were not very appealing.

Dr. Gaurav Joshi, Assistant Professor and Convenor, IIC, Department of Pharmaceutical Sciences, HNBG Central University, Uttrakhand spoke on the topic 'Navigating Research in Pharmaceutical Sciences: A Hands-on Session on Literature Search Reference Management and Funding Opportunities'. He showed various databases that a researcher can utilize in his research and how he could write for extramural funding.

During the Valedictory Session, Pro Vice Chancellor, Prof. Vikas Madhukar shared his words of wisdom and pointed out some of the most exciting domains of pharmaceutical sciences. He outlined six breakthroughs that are taking place in pharmaceutical sciences such as machine learning and the growing role of AI, augmented reality, big data analytics, digital therapeutics, 3D-printing-based drug discovery, and nanotechnology. He highlighted the necessary goals that are of utmost importance for the stakeholders of healthcare sectors.

The Head, Department of Pharmaceutical Sciences, MDU Rohtak, Prof. Harish Dureja delivered a brief valedictory address wherein he emphasized skill training and skill upgradation that is required for an academician so as to well fit in the everchanging scenario of teaching and research. Subsequently, Dr. Sanjna Vij, Deputy Director, Amity Academic Staff College shared her views on the growing need for innovation and technology in the field of education and she emphasized that an academician should learn new skills and should get acquainted with the newer technology. At the end, Prof. Satish Sardana proposed the Vote of Thanks. ❑

THESES OF THE MONTH

SCIENCE & TECHNOLOGY

A List of doctoral theses accepted by Indian Universities
(Notifications received in AIU during the month of July-August, 2023

AGRICULTURAL & VETERINARY SCIENCES

Forestry

1. Ravita. **Physiological and molecular responses of salt stress in *Eucalyptus* clones**. (Dr. Santan Barthwal and Dr. H S Ginwal), Department of Forest Biotechnology, Forest Research Institute, Dehradun.

2. Sharma, Upasna. **Growth potential vis-a-vis carbon sequestration potential of selected Indian trees**. (Dr. Sangeeta Gupta and Dr. P. K. Gupta), Department of Forest Botany, Forest Research Institute, Dehradun.

Silviculture

1. Chanu, Thounaojam Bidya. Assessment of population status, contribution in rural economy and vegetative propagation of ***Myrica esculenta*** in Mussoorie Forest Division, Uttarakhand. (Dr. Nawa Bahar and Dr. S P Chaukiyal), Department of Silviculture, Forest Research Institute, Dehradun.

2. Niazi, Sakeena Gul. **Standardisation of clonal propagation technique in *Melia composita* through shoot cuttings and root cuttings**. (Dr. Dinesh Kumar and Dr. Ashok Kumar), Department of Silviculture, Forest Research Institute, Dehradun.

BIOLOGICAL SCIENCES

Biotechnology

1. Jadhav,SwatiRangrao.**Structurecharacterisation of phytochemicals from Momordica species and their molecular docking**. (Dr. L H Kamble), Department of Biotechnology, Swami Ramanand Teerth Marathwada University, Nanded.

Life Science

1. Yadav, Priyanka. Impact of green synthesis of silver nanoparticles using Grewia Tenax as a potent antibacterial and antifungal agent. (Dr. Sreemoyee Chatterjee), Department of Microbiology & Biotechnology, IIS University, Jaipur.

Microbiology

1. Kulkarni, Amit Diliprao. **Development of microphos by using alkaliphlic actinomycetes as efficient bioinoculant**. (Dr. P S Wakte), Department of Microbiology, Swami Ramanand Teerth Marathwada University, Nanded.

Zoology

1. Manoorkar, Pujawati Sanjaykumar. **Studies on Helminth parasite spectrum of edible freshwater fish Mastacembelus Armatus**. (Dr. Sanjay Shamrao Nanware), Department of Zoology, Swami Ramanand Teerth Marathwada University, Nanded.

EARTH SYSTEM SCIENCES

Environmental Science

1. Deshmukh, Vaijanath Uttamrao. **Assessment of ground water quality in the environs of fly ash pond from Koradi & Khaparkheda Thermal Power Plants, District Nagpur, Maharashtra**. (Prof. Dr. D. B. Panaskar Dr. Paras R. Pujari), Department of Environmental Science, Swami Ramanand Teerth Marathwada University, Nanded.

ENGINEERING SCIENCES

Automobile Engineering

1. Bentgens, Felix. **Development of an adaptive vehicle restraints system with special consideration of small occupants with help of**

an advanced steering column. Department of Automobile Engineering, Hindustan Institute of Technology & Science, Chennai.

Biomedical Engineering

1. Saravjeet Singh. **Nanoparticles modified graphite electrode as a sensing platform for urea detection**. (Dr. Geeta Singh and Dr. Minakshi Sharma), Department of Biomedical Engineering, Deenbandhu Chhotu Ram University of Science and Technology, Murthal.

Biotechnology

1. Chaudhary, Vipul. **Studies on physio-biochemical hematological and transcriptomic changes in mice FED with A1/A2 milk based diet with special reference to diabetes progression**. (Dr. Pamela singh and Dr. Manishi Mukesh), Department of Biotechnology, Deenbandhu Chhotu Ram University of Science and Technology, Murthal.

2. Twinkle. **Development of gold nanoparticles-reduced graphene oxide based impediometric immunosensor for a cardiac biomarker brain natriuretic peptide**. (Dr. J S Rana and Dr. Minakshi Sharma), Department of Biotechnology, Deenbandhu Chhotu Ram University of Science and Technology, Murthal.

Civil Engineering

1. Gopinath, R. **Evaluation of groundwater contamination and to integrate the analyzed parameters in Karur District using geo spatial technology**. Department of Civil Engineering, Hindustan Institute of Technology & Science, Chennai.

2. Neelmudiyon, V T. **Impact on Deevanur Tank Irrigation System using buried PVC pipelines for the conveyance of irrigation water**. Department of Civil Engineering, Hindustan Institute of Technology & Science, Chennai.

Computer Science & Engineering

1. Balasubramani, S. **Driver behaviour based intelligent transport system for efficient route detection and accident prevention**. Department of Computer Science & Engineering, Hindustan Institute of Technology & Science, Chennai.

2. Gaikwad, Shital Yadavrao. **Routing in wireless sensor networks**. (Dr. B R Bombade), Department of Computer Science & Engineering, Swami Ramanand Teerth Marathwada University, Nanded.

3. Haridas, S. **An improved particle swarm optimization algorithm to increase network lifetime and mitigate security threats in MANET**. Department of Computer Applications, Hindustan Institute of Technology & Science, Chennai.

4. Jinturkar, Aditya Avinash. **An approach for design and development of handwritten mixed multi digits Marathi numeral recognition using soft computing**. (Dr. P B Khanale), Department of Computer Science & Engineering, Swami Ramanand Teerth Marathwada University, Nanded.

5. Mayasala, Parthasaradhi. **Finding suitable shortest, reliable energy conserving path to achieve source location privacy in WSNs**. (Dr.S Murali Krishna), Department of Computer Science & Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

6. Neelu, Lalband. **Agile process: A hybrid approach for software development analysis in IOT systems**. (Dr. Kavitha), Department of Computer Science & Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

7. Nivedita. **A development environment that integrates big data architectures and deep learning models for quick experimentation**. (Dr. Kulvinder Singh), Faculty of Science, Tantia University,Sri Ganganagar.

8. Prabha, B. **Energy efficient cloud resource management framework using machine learning techniques**. Department of Computer Science & Engineering, Hindustan Institute of Technology & Science, Chennai.

9. Sanghavi, Kainjan Mahesh. **Design of effective techniques for prevention and detection of grape diseases at real time using IoT and image processing**. (Dr. Archana M Rajurkar), Department of Computer Science & Engineering, Swami Ramanand Teerth Marathwada University, Nanded.

10. Swami Lalit. **Impact of Information and Communication Technology (ICT) on preschool education in Anganwadi centers**. (Dr. Aashish Arora), Faculty of Science, Tantia University,Sri Ganganagar.

11. Visalaxi, S. **Enhancing endometeriosis-prediction for women using deep learning based framework**. Department of Computer Science & Engineering, Hindustan Institute of Technology & Science, Chennai.

Electrical & Electronics Engineering

1. Mani, P Getzial Anbu. **Performance analysis of a high gain DC-DC boost converter fed BLDC motor driven EV charging system using stand alone photovoltaic system**. Department of Electrical & Electronics Engineering, Hindustan Institute of Technology & Science, Chennai.

2. Nanda, Anup Kumar. **Performance enhancement of partially shaded photovoltaic array connected to a microgrid by optimal reconfiguration scheme**. (Dr. Babita Panda and Dr. Chinmoy Kumar Panigrahi), Department of Electrical Engineering, Kalinga Institute of Industrial Technology, Bhubaneswar.

3. Patil, Sangita Bapu. **Intelligent energy management strategies for renewable energy sources**. (Dr. L M Waghmare), Department of Electrical Engineering, Swami Ramanand Teerth Marathwada University, Nanded.

4. Sivasankar, N. **Design of non-isolated bidirectional multiport DC-DC converters for solar and energy storage integration**. Department of Electrical & Electronics Engineering, Hindustan Institute of Technology & Science, Chennai.

5. Waingankar, Poorva Girish. **Study of video compression techniques for low bit rate applications**. (Dr. Sangeeta M Joshi), Department of Electrical Engineering, Swami Ramanand Teerth Marathwada University, Nanded.

Electronics & Communication Engineering

1. Akheel, T Syed. **An efficient algorithm for face recognition using regression methods**. (Dr. V Usha Shree and Dr. S Aruna Mastani), Department of Electronics & Communication Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

2. Annapurna, V. **Hybrid video steganography and cryptography framework using motion vectors for convert communications**. (Dr. S Nagaraja Rao and Dr. M N Giri Prasad), Department of Electronics & Communication Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

3. Jayalakshmi, Machiraju. **Development of pathological brain tumor detection system using machine learning and deep learning techniques for magnetic resonance images**. (Dr. S Nagaraja Rao), Department of Electronics & Communication Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

4. Neha. **Some studies on design of current controllers for a grid Connected PWM inverter to improve power quality**. (Dr. Satyaranjan Jena and Dr. Chinmoy Kumar Panigrahi), Department of Electrical & Engineering, Kalinga Institute of Industrial Technology, Bhubaneswar.

Electronics & Telecommunication Engineering

1. Tyagi, Shweta Jaipal. **Deep learning based lung cancer detection and its treatment analysis**. (Dr. Sanjay N Talbar), Department of Electronics & Telecommunication Engineering, Swami Ramanand Teerth Marathwada University, Nanded.

Mechanical Engineering

1. Balwan, Vishal Ramchandra. **Experimental studies of hard turning parameters for case hardening steels**. (Dr. B. M. Dabade and Dr. Lalit N. Wankhade), Department of Mechanical

Engineering, Swami Ramanand Teerth Marathwada University, Nanded.

2. Elankavi, R Sugin. **In situ monitoring of pipelines using semi-autonomous inspection robots**. Department of Mechatronics Engineering, Hindustan Institute of Technology & Science, Chennai.

3. Jose, Jaise. **Design and development of magnetic wall climbing inspection robot for high rise ferromagnetic surfaces**. Department of Mechanical Engineering, Hindustan Institute of Technology & Science, Chennai.

4. Ravi, K. **Experimental investigation on diesel engine characteristics fueled with neem oil biodiesel, CNG and HHO gas**. Department of Mechanical Engineering, Hindustan Institute of Technology & Science, Chennai.

MATHEMATICAL SCIENCES

Mathematics

1. Anthvanet L, Jeromia. **Advanced study on dodecagonal fuzzy number and its application in MCDM problem**. Department of Mathematics, Hindustan Institute of Technology & Science, Chennai.

2. Kandula, Ramanamoorthy N. **Mathematical models in pharmacology using differential equations**. (Dr. Rupali S Jain), Department of Mathematics, Swami Ramanand Teerth Marathwada University, Nanded.

3. Mitra, Siddharth. **A study of variational inequality problems and numerical methods**. (Dr. Prasanta Kumar Das), Department of Mathematics, Kalinga Institute of Industrial Technology, Bhubaneswar.

4. Palsaniya, Vandana. **Some aspects and applications based on special functions and fractional calculus operators**. (Dr. Ekta Mittal), Department of Mathematics, IIS University, Jaipur.

5. Rajesh Kumar. **A study of fixed point theorems for mappings in metric spaces**. (Dr. Sanjay Kumar), Department of Mathematics, Deenbandhu Chhotu Ram University of Science and Technology, Murthal.

6. Richa. **A study on optimum allocation of staff in assignment problems**. (Dr. Vinod Kumar Sharma), Faculty of Science, Tantia University,Sri Ganganagar.

7. Savita. **Static deformation of layered half-space due to various seismic sources**. (Dr. Ravinder Kumar Sahrawat and Dr. Meenal Malik), Department of Mathematics, Deenbandhu Chhotu Ram University of Science and Technology, Murthal.

8. Senapati, Archana. **B-spline approach for approximate solution of differential equations**. (Dr. Saumya Ranjan Jena), Department of Mathematics, Kalinga Institute of Industrial Technology, Bhubaneswar.

9. Shringare Bhaskarrao, Chakradhar. **On some computational methods of fractional partial differential equations with dynamically varying conditions and It's applications**. (Dr. S M Jogdand), Department of Mathematics, Swami Ramanand Teerth Marathwada University, Nanded.

MEDICAL SCIENCES

Anatomy

1. Yadav, Hari Narayan. **An observational study to estimate the osteological morphometry of dry thoracic vertebrae & its radiological correlation**. (Dr. Prachi Saffar Aneja), Department of Anatomy, Shree Guru Gobind Singh Tricentenary University,Gurugram.

Biotechnology

1. Das, Biswajit. **Study the role of quinacrine in inhibition of cMET- mediated metastasis and angiogenesis in pre-clinical models of breast cancer**. (Dr. Chanakya Nath Kundu), Department of Biotechnology, Kalinga Institute of Industrial Technology, Bhubaneswar.

Homeopathy

1. Aggarwal, Anil. **Clinical verification of the symptoms of contact dermatitis of graphitis by**

assessment through likelihood ratio. (Dr. E Siva Rami Reddy), Faculty of Homoeopathy, Tantia University,Sri Ganganagar.

2. Bajpai, Kirti. **Usefulness of Homoeopathic medicines in individual type of acute diseases: Upper respiratory tract infections**. (Dr. Anupriya Vyas), Faculty of Homoeopathy, Tantia University,Sri Ganganagar.

3. Gupta, Satya Sharan. **Scope of Homoeopathy in the treatment of anxiety disorders specially kali group of remedies**. (Dr. Jaswinder Kaur), Faculty of Homoeopathy, Tantia University,Sri Ganganagar.

4. Nimbhorkar, Amit Mohan. **Randomized control trial on efficacy of Homoeopathic medicines in separation anxiety disorder in pediatric age group**. (Dr. Devender Kumar Bhardwaj), Faculty of Homoeopathy, Tantia University,Sri Ganganagar.

5. Pandey, Ajay Kumar. **A study to ascertain the effectiveness of homoeopathic medicines in case of eczema with miasmatic approach**. (Dr. Sunil Kumar), Faculty of Homoeopathy, Tantia University,Sri Ganganagar.

6. Pandey, Devesh Kumar. **Role of homoeopathic medicines in treatment of gastro-esophageal reflux disease without esophagitis**. (Dr. Sunil Kumar), Faculty of Homoeopathy, Tantia University,Sri Ganganagar.

7. Rajput, Pushapraj Singh. **Detail study of antidote medicines & its importance in clinical practice**. (Dr. Jaswinder Kaur), Faculty of Homoeopathy, Tantia University,Sri Ganganagar.

8. Sarkar, Swarupananda. **Randomised single blind placebo control study on the efficacy of calcarea fluorica 6x in fissure-in-ano**. (Dr. E Siva Rami Reddy), Faculty of Homoeopathy, Tantia University,Sri Ganganagar.

9. Sharma, Raj Kumar. **Study of arsenicum iodatum and it's clinical approach**. (Dr. Devender Kumar Bhardwaj), Faculty of Homoeopathy, Tantia University,Sri Ganganagar.

10. Singh, Virendra Pratap. **Role of miasms in homoeopathic treatment of vitiligo**. (Dr. Jaswinder Kaur), Faculty of Homoeopathy, Tantia University,Sri Ganganagar.

11. Vinay Kumar. **A prospective study on effectiveness of Pareira Brava in cases of urinary incontinence: A randomized single blind controlled trial**. (Dr. E Siva Rami Reddy), Faculty of Homoeopathy, Tantia University,Sri Ganganagar.

12. Wasudeorao, Chincholkar Santosh. **To understand the selection of potency with susceptibility in children to evaluate the efficiency of L M potency in fever**. (Dr. Devender Kumar Bhardwaj), Faculty of Homoeopathy, Tantia University,Sri Ganganagar.

13. Yadav, MantoshKumar Sitaram. **Double blind randomized control study on the efficacy of homoeopathic medicine in inflammatory bowel disease**. (Dr. E. Siva Rami Reddy)), Faculty of Homoeopathy, Tantia University,Sri Ganganagar.

Pharmaceutical Science

1. Banjare, Sanjay. **Prevalence of tuberculosis among HIV patient on anti-retroviral therapy with special emphasis on pattern of adverse events of first line anti-tubercular drug**. (Dr. Poonam Salwan), Department of Pharmacology, Shree Guru Gobind Singh Tricentenary University,Gurugram.

2. Bhansali, Krishna Bhagwandas Rekha. **Design, development and evaluation of liposomes containing anticancer drug**. (Dr. Shivappa N Nagoba), Department of Pharmacy, Swami Ramanand Teerth Marathwada University, Nanded.

3. Kulkarni, Vaibhav Vijaykumar. **Development and characterization of antibacterial nanoparticulate drug delivery system for prostatitis infections**. (Dr. Lalit V. Sonawane and Dr. T. M. Kalyankar), Department of Pharmacy, Swami Ramanand Teerth Marathwada University, Nanded.

Physiology

1. Rajput, Jay Prakash Singh. **The effect of integrated yoga practice on autonomic function, serum leptin and adiponectin in overweight subject in the age group 18-24 year**. (Dr. Asha Gandhi), Department of Physiology, Shree Guru Gobind Singh Tricentenary University,Gurugram.

PHYSICAL SCIENCES

Chemistry

1. Bishnoi, Manisha. **Monitoring and assessment of pesticide use contamination and impact on environment and the people health in Sri Ganganagar, Rajasthan**. (Dr. Harish Kumar), Department of Chemistry, Tantia University,Sri Ganganagar.

2. Gavhane, Priya Dnyanoba. **Design, synthesis and investigation of potential pharmacophores derived from hybrid based heterocycles**. (Dr. B. S. Dawane), Department of Chemistry, Swami Ramanand Teerth Marathwada University, Nanded.

3. Jadhav, Rahul Indrajit. **Synthesis and biological evaluation of nitrogen containing heterocyclic compounds**. (Dr. N A Kedar), Department of Chemistry, Swami Ramanand Teerth Marathwada University, Nanded.

4. Kadam, Deepak Shankar. **Synthesis of novel iminothaiazolidinones derivatives, characterization and its biological activities**. (Dr. S G Patil), Department of Chemistry, Swami Ramanand Teerth Marathwada University, Nanded.

5. Kalpana, A. **Assessment and monitoring of groundwaterqualityinandaroundRayalaseema Thermal Power Plant, Kalamalla, Yerraguntla (M), Kadapa District, Andhra Pradesh**. (Dr. K Sesha Maheswaramma), Department of Chemistry, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

6. Karuppiah, I. **Particle size distribution (PM, PM_{10} and $PM_{2.5}$) studies on industrial stack emission from diesel generators and boilers employing various fuels**. Department of Chemistry, Hindustan Institute of Technology & Science, Chennai.

7. Rajender Singh. **Effect of various source of nutrients and organic manures on growth and yield of wheat irrigated with different saline water**. (Dr. Harish Kumar), Department of Chemistry, Tantia University,Sri Ganganagar.

8. Renge, Atul Sarangrao. **Development of new synthetic methods**. (Dr. W N Jadhav and Dr. B R Patil), Department of Chemistry, Swami Ramanand Teerth Marathwada University, Nanded.

9. Tekale, Anant Sitaram. **Studies on metal complexes of thiazole ring containing ligands**. (Dr. B N Muthal), Department of Chemistry, Swami Ramanand Teerth Marathwada University, Nanded.

Physics

1. Madhavi. **Evaluation of effectiveness of iron oxide magnetic nanoparticles for magnetic hyperthermia and biocompatibilogy**. (Dr. Mukesh Kumar), Department of Physics, Shree Guru Gobind Singh Tricentenary University,Gurugram.

2. Mahewar, Ramesh Baloji. **Studies on chemically synthesized Cu_2ZnSnS_4 thin films for solar cell applications**. (Dr. L S Ravangave), Department of Physics, Swami Ramanand Teerth Marathwada University, Nanded.

3. Varudkar, Hemant Ashokrao. **Studies on Al and Co doped ZnO nanomaterials**. (Dr. J. S. Dargad), Department of Physics, Swami Ramanand Teerth Marathwada University, Nanded.

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