

Greetings from **IMPACT**



EDITORIAL TEAM

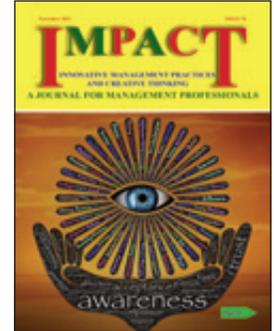
Dr. N.V Subbaraman
“Kalki” V Murali
Dr M G Bhaskar

EXPERT ADVISORY BOARD

Dr. R Rangarajan
Professor & Head
Dept. of Commerce
University of Madras

Dr. R Krishnaveni
Assistant Professor
Head Department of English
Government Arts and Science College
Palladam, Tirupur (Dist)

All opinions expressed in the articles appearing in the e-journal IMPACT, are that of the respective authors. The Publisher or Editor of IMPACT cannot be held responsible / liable in any manner whatsoever for any claims and / or damages.



Dear Readers,

After the deadly onslaught of Corona 19 virus which made even the so called developed nations to their knees along with the world economy, now the world is limping back. Not because a cure was invented but as a part of mystic nature’s “this will also pass away” as Japan has bounced back in full rigour after the atom bomb. To think back human race with all its intelligence and technological advancements, have we ever found a CURE even for a normal running nose?! Treatments are prescribed for all diseases but cure????? But with audacity we call ourselves “supreme species of the planet”!!!!

IMPACT triggers the thought process. Ponder and respond.

Editorial Team

INSIDE



Trust In God But Lock Your Car —

Mr. R. Venugopal

4



Increase Your Emotional Intelligence
To Be a Better Leader —

Mr. Steve. A

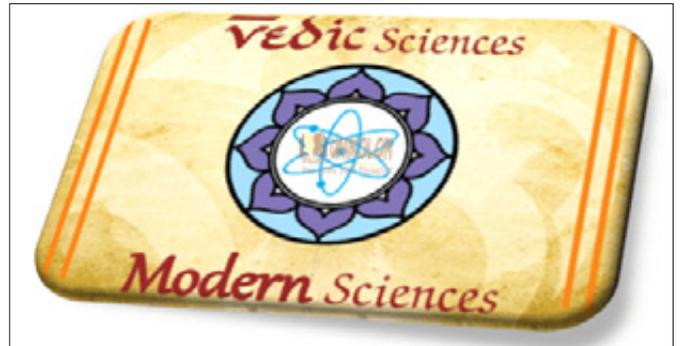
7



Wonderful Creation —

Mr. NV Subbaraman

10



Modern Science and Vedic Science —

Dr. David Frawley

12



Strategies to Turn Your Perspective
into Power —

Mr. Syed Fazlullah Khan

19



Artificial Intelligence in India

23

TRUST IN GOD BUT LOCK YOUR CAR

The Manager of a large company was returning home in the office car, driven by the driver and hearing the famous radio jockey, talking to the listeners. The DJ was asking people about their dreams and their fulfilments. One listener said that he had a dream the earlier day that God would send him a nice

dinner today being his birthday. The listener is such a staunch devotee that he was simply waiting at home for the God's Gift, without preparing any dinner and he was sure of getting it. He told the DJ that he would give the happy feedback the next day and DJ clapped his hands and appreciated the listener for his unshakable faith, although internally the DJ was wondering himself how this was possible.



The Manager who was hearing this conversation laughed heartily and sarcastically as he was an atheist. He told the driver “ Did you listen to this conversation? How can God send such a gift personally to anybody for that matter?” Suddenly he had an idea and asked the driver to stop at a good restaurant and get a parcel of a nice dinner. This was done by the driver. On reaching home, the Manager asked the driver to go and handover the parcel to the radio listener- the listener's address was mentioned in the radio broadcast. The driver queried as to what should he do, if the listener enquired as to who sent the Gift. “ Shall I give your name Sir?” asked the driver. The Manager thought for a second. “ Hmm, this listener is expecting the dinner from God. Why can't you say “ SATAN sent it ” and he instructed the driver accordingly.

The driver went to the listener's house and gave the

parcel to the listener. The listener jumped with joy and shouted “ See, God has sent me the dinner as per the dream. Thank you God, thank you God, I know you will not fail me”.

The driver interjected and said “ No, SATAN sent this Gift”, thinking that the listener would be shocked and refuse the Gift. But the listener became even more happy and cried “ See how God can even make SATAN carry out good deeds in his life like sending a dinner gift to me. He can only command SATAN to do such things. Very glad, please go and convey my

appreciation to SATAN for carrying out such gracious things in his life.”

The driver was dumbfounded at the extreme unshakable of the poor listener. No doubt, the Manager too very much shocked to hear about the response of the listener and started thinking seriously about becoming a believer in God.

No doubt, this incident proves the greatness of having unfathomable trust in God. However only Trust alone is not enough, some efforts are also to be taken at our level.



The Response of the Wise One

A man went to see a Wise Guru for taking some advice in view of his bad time in life. The Guru Asked the devotee to return home through a forest and he will get a solution on the way. The Man followed the Guru's advice and on the way he saw a small fox lying near a bush. It had lost Both its legs perhaps in a cruel trap laid out by the poachers. The man wondered as to how the Fox would get food, since it could not run and catch any prey. At that time a tiger came along With a fresh catch of a small deer, ate his share and dragged the balance meat towards the fox. The fox ate the rest of the food happily.

Amazed by what he saw, the man exclaimed " I got my solution. All I need to do is to sit quietly In a corner of my house, like this fox. God will provide me what I want every day as He sends The tiger each day with some food". So he reached home and sat still doing nothing for days no End. Nothing happened and his bad position continued. Angrily he went to the Guru again and Told him everything. The Wise One laughed and simply said " You only followed what the fox Did. The solution was to discontinue being like an injured fox and follow the example of the Tiger".

Well, the same take away here also: Have faith in God but Row the boat to the Shore.

What is our Role?

Success introduces you to the world. Failure introduces to you. If you add salt in a cup of water, the whole water tastes salty. But at the same time, if you put salt In a pond of water, the sweetness of the water remains and the added salt could not change the Nature of the pond water. We should be also like a pond, unperturbed by the difficulties Occurring now and then in our lives.

Waves are inspiring, not because they rise and fall, but because they never fail to raise again. Be Positive. Hard times too will go soon.

In life also, if we buy one, you get one free, as following:

Buy Anger, you get Acidity free.

Buy Jealousy, you get Headache free. Buy Hatred, you get Ulcer free.

Buy Stress, you get BP free. Conversely:

Buy Trust, you get Friendship free.

Buy Exercise, you get Health free.

Buy Peace, you get Prosperity.

Buy Honesty, you get Sleep free.

Buy Love, you get good Virtues.

Do all the good you can, To all the people you can, In all the ways you can As long as you can.

If all these tips are followed, you can relax in utter belief in God, because Not only you trust in God, but also lock your car.

R. Venugopal

Mr. Venugopal has served in LIC of India from 1968 to 2006 for 38 years and retired as an Executive Director.



Increase Your Emotional Intelligence To Be a Better Leader



Want to become a stronger leader?

It starts with you.

More specifically, it starts by improving your emotional intelligence.

Despite some of my reactions, I am quite self-aware... I have a very high emotional intelligence AND I have a temper!

In many blogs, I've talked about times I blew my top.

I admit I've been an ass. The people around me deserved much more and much better.

The weird thing is I know that. I know when it's happening. And I know I should never have put myself in the position of losing control.

But I've learned to manage myself by breaking contact when I feel my emotions starting to boil. I excuse myself and go for a walk or take a break to allow rationality and logic to take over. These lessons have all been part of the journey to improve my EQ. And it's a path I want to share with you today.

What is emotional intelligence?

Emotional intelligence Quotient (EQ) is the ability to evaluate, control, and express your own emotions. It's also the ability to assess the emotions of others.

You might think it is airy-fairy new-age management gobbledygook. After all, the term wasn't coined until 1990.

But research has shown that EQ is more responsible for leadership success than high intelligence (IQ) scores.

A University of Pennsylvania study showed that leaders with average IQ and high emotional intelligence outperform those with high IQs but with low EQ 70% of the time.

70%!

It makes sense that high emotional intelligence is critical for a leader to be effective.

Effective leaders need to be able to identify and control their emotions. Otherwise, how will they make the right decisions for their organizations, take calculated risks, communicate effectively, and build relationships? Answer: They won't.

They need to be able to understand the emotions of their team. That's how they can inspire and drive them to success. But what can be done to improve your emotional intelligence so you can be a better leader at the same time?

3 steps for bolstering your emotional intelligence

The importance of EQ, particularly the components focused on self-awareness and self-regulation, is a simple, intentional process anyone can follow.

Here are the three steps you need to take to get started:

1. Notice

Think about a time you were in a contentious meeting.



Maybe you were trying to balance limited resources with competing priorities.

Or was an initiative in trouble and your team is trying to figure out what to do about it?

The meeting probably made you tense, anxious, maybe even irritated. These negative feelings cloud your judgment and negatively impact your behaviour.

When the leader is anxious or tense, that energy permeates throughout the team and stalls progress. It causes you to make decisions that might ease anxiety but don't address the challenges at hand.

Every day we can feel the full range of emotions, from anger, happiness, loving, stressed, aggressive, etc.

So, next time you're on this emotional rollercoaster, challenge yourself to stop. During this pause, take stock of what you're doing and notice how you are presenting yourself.

By the way, maybe you're on the other side of this token and you're dealing with a boss who has low emotional intelligence.

2. Choose

After you've noticed your own emotions and feelings, choose how you want to respond. And yes – you have a choice!

Are you becoming aggressive? Is that response working for you? If it is, then you may choose to continue. But if it's not, figure out what would help.

Recall that contentious meeting?

Reacting with tension may not be helpful.

The team likely needed a calming presence that would allow the space to see possibilities rather than becoming mired in any negativity.

Whatever you choose, acknowledge that it is your choice.

3. Be

Become what you've chosen, manage your emotions, and be the leader your people deserve.

If you've chosen to be peaceful, calm your mind. Slow your breathing. Relax your muscles.

Powerful? Stand up tall. Uncross your arms. Project your voice.

Whatever it is you've chosen to be, take the action you need to BE it.

Now, this doesn't come naturally to most, like most worthy causes, it can mean some work. So

take the time to practice until it becomes second nature.

Emotional intelligence for leaders

When you choose to behave peacefully in the midst of chaos people will begin to mirror you. As a leader, setting this positive example for your team will have a profound impact on the success of the organization.

Learn to recognize your own emotions and then decide what action you can take for the benefit of their team. This emotional intelligence will serve you not only in business but in every part of your life

Author: Steve. A

Source: <https://stevenarmstrong.ca>

Readers are requested to send their
management related questions.

IMPACT will get replies from management
experts.

Send your questions to:

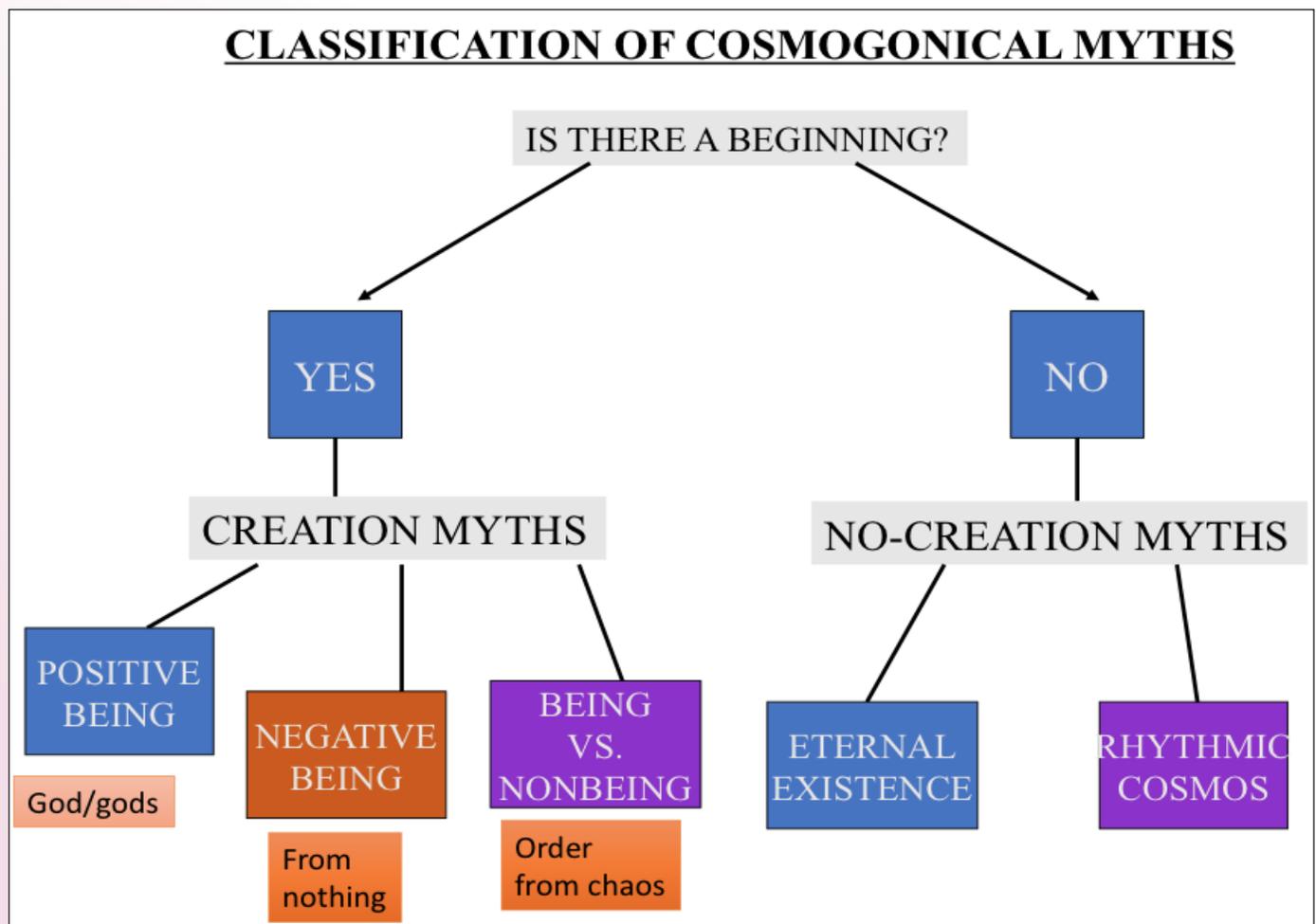
impactjournalindia@gmail.com

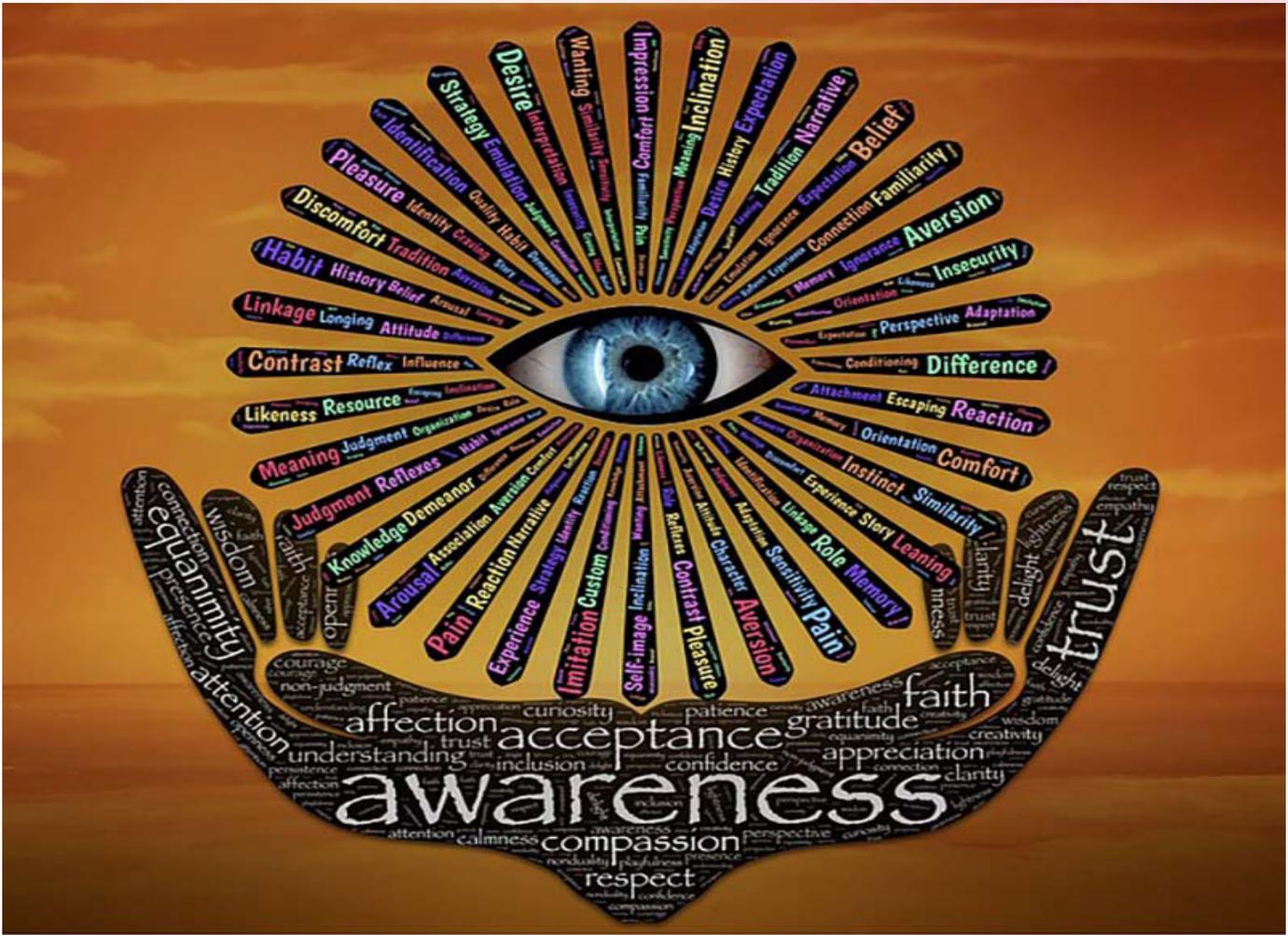
Wonderful Creation

Lord Almighty -the Omnipotent, Omniscient and Omnipresent is indeed the creator of the entire Universe including human beings, animal beings, hills and dales, mountains and seas- all to make HIS creations enjoy their lives in peace and happiness, joy and harmony. But how we make our lives miserable, we know the causes and effects.

Hills are lovely, dales are beautiful
 River is lovely, fishes are beautiful
 Sea is lovely, waves are beautiful

Sky is lovely, the stars are beautiful
 Tree is lovely, and the flowers are beautiful!
 Beautiful is the sky lark, lovely is the peacock
 Beautiful are the birds, lovely are the animals-deers and dogs!
 Beautiful nature is always beautiful
 Oh! It is all Thy wonderful creation!
 Even
 Rain is lovely, fire is beautiful
 Storm is lovely, volcano is beautiful
 Thunder is melodious, lightning is pleasing!





Nature's fury is a thing of beauty!
 Bed of roses and scent around it
 Blade of grass and dews upon it
 Rise of moon and stars above it
 Oh! It's all the marvels of Thy creation!
 Here is a child with crippled foot
 There is a boy with cruel mind
 Here is a man with dishonest deeds
 There is a woman with lustful eyes!
 He has eyes, yet blind
 She has ears, yet deaf
 She has hands, yet lame
 Yonder Thou art witnessing all!
 Mend their ways or end their deeds
 Make them honest - make them healthy
 Help us live in peace and amity!

Creator has assigned clear duties and responsibilities for each and every part of the human body. All

should be aimed at improving the society in which we are privileged to live. Let us keep in mind and work for human welfare.

Mr. N V Subbaraman

A bilingual poet, writer, trainer, translator, thinker and speaker from Chennai Mr. N. V. Subbaraman has written 36 books. His paper, "Valluvam inspired Mahatma Gandhi," was approved for presentation in the international Tirukkural Conference held in Washington, USA. His translated works include Thirukkural, Bharathiyar's Kuyilpattu and Ramana Maharishi's Aksharamanmalai. He was formerly the Deputy zonal Manager, LIC of India.



Modern Science and Vedic Science

Vedic Science and the Pursuit of Truth

Real science consists of an objective pursuit of truth through observation and experimentation. It occurs apart from any beliefs or preconceptions about what it is going to find. It is based upon reason and direct perception, in which the reality is allowed to reveal itself to the unbiased observer.

However, the universe we live in is a multidimensional reality from the subatomic to the supragalactic in the realm of physics alone. Biology, medicine, psychology and the social sciences require different perspectives and approaches to deal with appropriately. On top of these are subtle forces and influences, extrasensory,

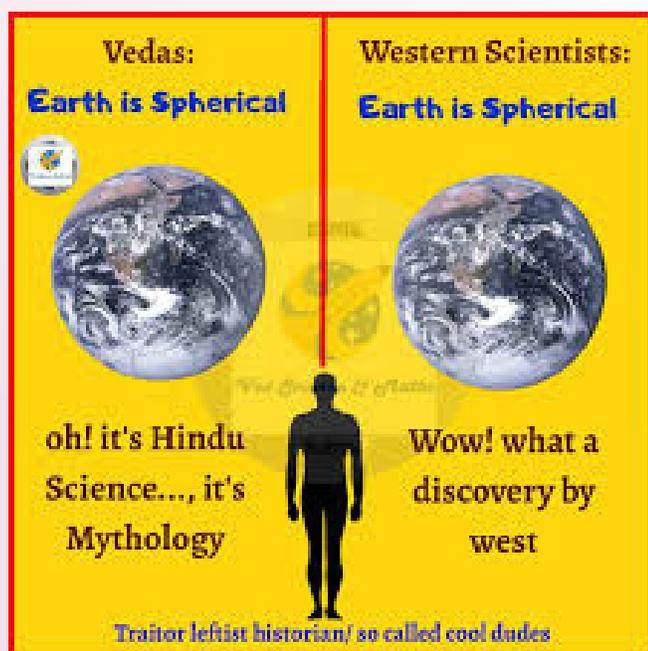
occult and spiritual that many people claim to experience as well and have developed special methods of working with.

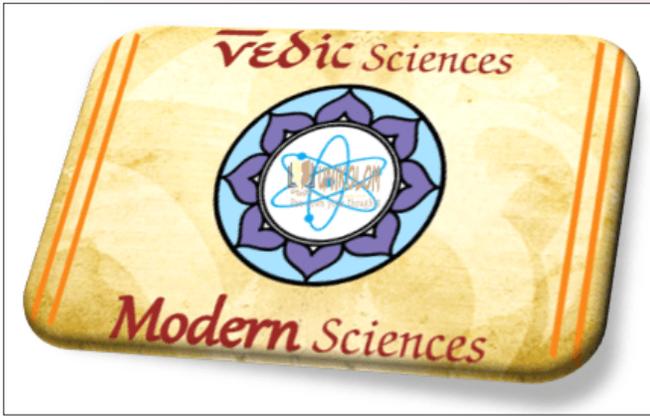
Besides any knowledge of the external world is the knowledge of the internal world, the perennial quest for Self-knowledge or knowledge of our true nature, as evidenced by the most primary and important of all life's many questions, "Who am I." This inner quest or inner science can be very different in approach than the outer sciences.

From an Indian perspective, we can call this inner science of Self-knowledge, 'yogic science'. Traditional Yoga and Vedanta also has its goal as the objective pursuit of truth. But it aims at the supreme truth – which is the eternal – that truth which never changes. It regards relative truths – up to and including the very existence of the external world itself – as ultimately an illusion because these eventually, at one time or level or another, are found not to be valid. This yogic science aims not just at the knowledge of the world but an understanding of Knower.

Science and Spirituality in India

In India, science and spirituality have always gone together. Experiential spirituality through Yoga and Vedanta has always been conceived of as a science, a way of knowledge to be approached with reason and experimentation through Yoga and meditation leading to the direct perception of truth. Other





Indic systems of thought like Buddhism and Jainism have shared similar views.

Veda itself means knowledge, deriving from the Sanskrit root 'vid' meaning to know, to see or to cognize. The Vedas are called Vidyas which means ways of knowledge or perception (a term cognate with Latin video!). The Vedas we might say are the Vidyas or videos of the sages shown on the inner screen of the meditative mind. They were said to have been cognized by the human mind in tune with the universal Being or Brahman.

The Vedas address all aspects of existence through Dharma, the natural laws that uphold the universe, which reflect not only matter and energy but life, mind and consciousness. As such, the Vedas constitute what could be called a science in the modern sense of the word and much more. We can find among the Vedic sciences a whole range of sciences from astronomy and chemistry to psychology and surgery, extending to astrology and to the science of Yoga itself. We can call this integral approach to both the spiritual and material sciences as 'Vedic science.'

Unlike medieval Europe, traditional India never saw a conflict between science and spirituality. It never suppressed science or art in favor of religion. Rather its arts and sciences developed in harmony with spirituality. However, it did discriminate between the material and the spiritual sciences.

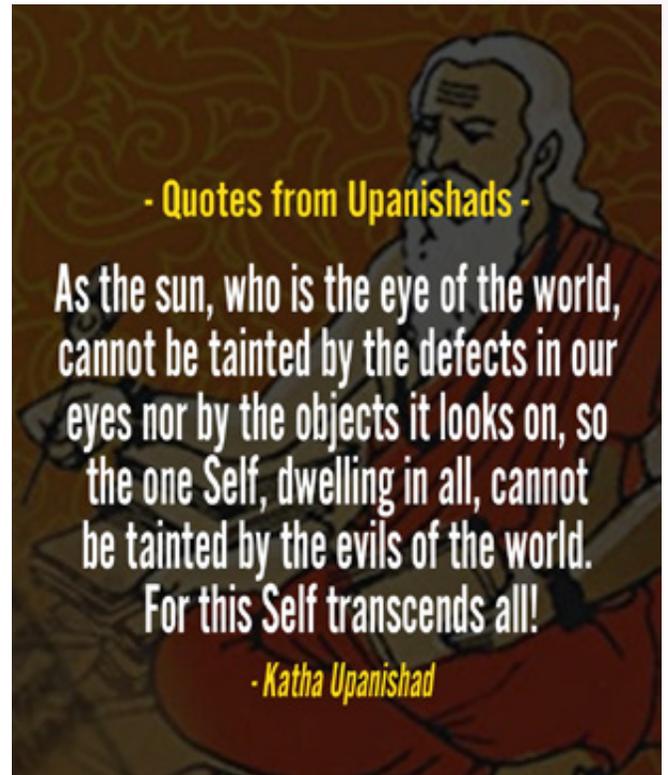
The Higher and Lower Knowledge

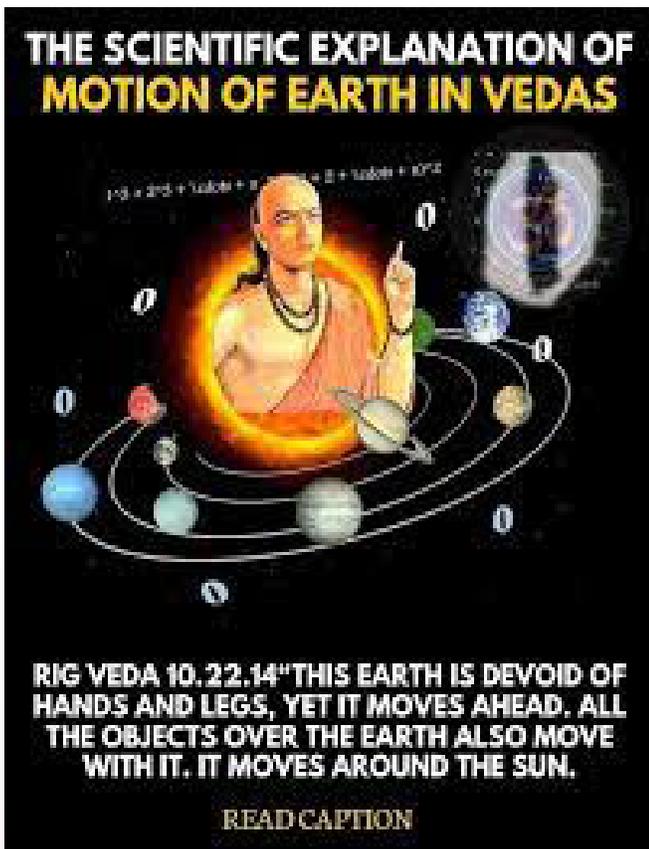
This the Mundaka Upanishad makes this clear. "Two sciences are to be known, the higher and the lower. The higher is through which the eternal is known."

The lower knowledge consists of the outer forms of knowledge through which the transient factors are known, the aspects of name, form and action. The higher knowledge is Self-knowledge through which the nameless, formless being is known.

This division of the higher and lower forms of knowledge reflects the Vedantic definition of reality as that which is eternal and the transient as an illusion. Because of this orientation, historically in India the inner or spiritual science gained the greatest attention, though the outer sciences were not neglected.

The lower sciences, moreover, can similarly be divided into two groups. The first are the usual material sciences like astronomy and medicine such as formulated in modern science. Second





are what could be called ‘occult’ sciences like astrology and Vastu, which modern science has generally neglected or rejected, which suggest subtle influences of intelligence pervading the forces of nature. While the Vedic mind never saw a real division between these two types of outer sciences (for example, Vedic Jyotish includes both astronomy and astrology), since the modern mind does, it is important to note this distinction.

Science as Yoga

However, the distinction between the outer and inner sciences was never meant as a radical division. In the Vedic view, one can approach the outer sciences with an inner vision and turn them into inner sciences as well. In this way, the outer sciences can become inner sciences. That is why we find such diverse subjects from astronomy and mathematics, to music and even grammar defined as paths of Yoga or spiritual paths. We find the same groups of Vedic seers working with and

developing the outer as well as the inner sciences from the most ancient times, not finding working with one to necessarily be contrary to working with the other.

It remains possible to approach such outer sciences as physics as spiritual paths or paths of Yoga. They can be part of an inner science of Self-realization if one uses them to connect to the universal Being and Consciousness within the world and within ourselves. Much of modern physics is heading in this direction as it looks for an underlying consciousness to explain the underlying unity of the laws of physics.

Some scholars have said that this Indian emphasis on spirituality prevented the outer sciences from developing in India, since the outer sciences were not given the same priority. But we must remember that the dark ages in India came later than in the West, with repeated foreign invasions and conquests disrupting the country from 1000 AD to 1800 AD. Had this not occurred India would have likely played a greater role in the development of modern science. Today we find many scientists coming out of India and many of these feel in harmony with Yoga, Vedanta and Buddhism as well as with modern science.

The Correct Means of Knowledge

Science rests upon a definition of what constitutes the right means of knowledge through which something can be known. Science, like the classical philosophies of India, recognizes the validity of sensory perception and reason as the main means at our ordinary disposal for gaining authentic knowledge about the world and about ourselves.

Yet science is not content with what the senses present us as reality, any more than the mystic or yogi is, though science builds upon rather than rejects what the senses show. Science has created a vast array of special instruments and equipment

from microscopes and telescopes that can greatly increase the range of our physical senses. It has added other instruments like radio telescopes which bring in information about the universe from means that are related to but outside the scope of our ordinary senses. It has created special computers to extend the range of computation as well.

While Vedic science recognizes the importance of sensory perception and reason, it considers that there is another, more reliable and internal source of knowledge, particularly necessary for understanding the inner or spiritual world. This is the direct perception of the silent or meditative mind, the state of Samadhi.

The Meditative Mind as the Best Instrument of Science

Vedic thought holds that the best instrument of knowledge is the silent mind. This allows the mind itself, like an unflawed mirror, to directly reflect reality inside oneself. The mind becomes a reliable instrument of direct knowledge beyond the limitations of the senses. This silent mind is clearly defined in the Yoga Sutras of Patanjali and other texts as the state of samadhi. When the mind is in a state of peace and balance it becomes capable of directly perceiving the nature of things, which is consciousness and bliss. This is samadhi-pramana, samadhi as a means of knowledge in yogic thought, which opens up the inner world of the mind as

**MANUSMIRI SAYS
EARTH IS MORE
THAN 4 BILLION
HUMAN YEARS,
SCIENCE SAYS, IT
IS 4.54 BILLION
HUMAN YEARS
APPROXIMATELY.**

"Long before it became a scientific aspiration to estimate the age of the earth, many elaborate systems of the world chronology had been devised by the sages of antiquity. The most remarkable of these occult time-scales is that of the ancient Hindus, whose astonishing concept of the Earth's duration has been traced back to Manusmriti, a sacred book."

- Arthur Holmes, Geologist

HINDUISM AND SCIENCE

clearly as our eyes open up the outer world of the senses.

In Vedic science, the meditative mind in samadhi is regarded as the appropriate instrument for knowing the inner reality. Pure consciousness, God or Brahman, after all, is beyond name, form, number, time, place and person or it would just be another object or entity in the outer world. That which comprises the totality but is not limited by the totality cannot be examined by the instruments that work to provide knowledge of limited things.

This does not mean that examining the brain waves of meditators and other scientific experiments of this order are not of any value but that these are secondary and indirect means of knowing the internal reality, like trying to examine a person through their body as reflected in a mirror, rather than examining the body directly.

We must employ the right instrument of knowledge to gain adequate knowledge something. One cannot see the Sun with one's ears, for example. Only the eyes will reveal the light of the Sun. Similarly, the appropriate instrument for knowing the universal Being is not a limited instrument which looks externally, like a telescope, but the silent mind that is able to see within.

While samadhi may not be ordinarily recognized means of knowledge in science, we must note that many great scientific discoveries have been made by scientists when they were in the reverie of the inspired, concentrated or peaceful mind, in a kind of samadhi. Those who do deep research or concentrating thinking also develop the mind in a yogic way that can fall into samadhi, even without knowing what the state is! One could argue that all great discoveries or inspirations arise in a samadhi-like state of absorption and concentration.

Yet samadhis cannot be taken without scrutiny either and, like any source of knowledge, they

also can be limited, mixed or partial. They are of different types and lesser Samadhis may not yield entirely correct knowledge.

The Conscious Universe

Modern science and Vedic science also differ in their view of the universe. In Vedic science the universe is a manifestation of consciousness. It is pervaded by consciousness as a universal power. This universal consciousness is different than the embodied consciousness in living beings, though it is related to it.

In modern science, consciousness has been mainly limited to living organisms and identified mainly by the development and functioning of the brain. However, modern science has begun to look for and many scientists recognize such a universal consciousness extending into a life intelligence in all organisms or even a planetary intelligence in the Earth itself. So as we gain a greater understanding of the conscious universe, the approaches of yogic and Vedic science are bound to become more relevant.

Yet Vedic science does not recognize just a background universal consciousness, but a cosmic intelligence and a universal life force to explain how that absolute consciousness is connected to the world of our ordinary experience. It posits God as the universal creator as the supreme intelligence behind the universe and pervading it, not as a mere article of faith or belief. In this way religion can be integrated into a spiritual science as well.

The Need for both Outer and Inner Sciences

Clearly, the outer or material science has its value in helping us to understand and utilize the forces of the outer world. It gives us better technology which can make our lives easier. But when it comes to the inner world, scientific knowledge is often either indirect or misleading. For the inner knowledge,

Ancient science knows more than modern science?



- The Vedas claim that there are living entities everywhere - even in fire.
- Modern science, however, presumed that no life could exist in fire.
- This presumption is in fact the basis for the process of sterilization.
- But recent advancements in the field of medicine have shown that microbes called 'fire bacteria' survive even in fire.

we need to cultivate the yogic sciences with their understanding not only of the physical universe but of the subtle forces behind the senses and of our true nature beyond time and space.

After all the ultimate questions of human life, whether at a personal or a scientific level, are – “What in us can survive death?” and “How can we gain immortality?” Religions ordinary try to answer such question by faiths, telling us to believe in something of this nature but not showing us how to directly perceive it for ourselves. Yogic science and similar forms of mysticism show us how to know the immortal and eternal in our own minds and hearts. This means that however practical the outer sciences may be for dealing with the external

world, our deeper human quest is best addressed through the inner sciences.

Yogic Science

Yoga in the classical sense is the practical means of developing the meditative mind to allow for direct perception of truth. As such, it is the basis of all the inner or Vedic sciences. Vyasa, the main ancient commentator on Patanjali's Yoga Sutras, the most important classical text on Yoga, defines Yoga as samadhi or the mind free of conditioning and preconception, the mind in a state of deep meditation. The Yoga Sutras begin with Samadhi Pada or the section dealing with Samadhi. The third and fourth sections of

the book also deal mainly with Samyama, which is the joint practice of Dharana, Dhyana and Samadhi.

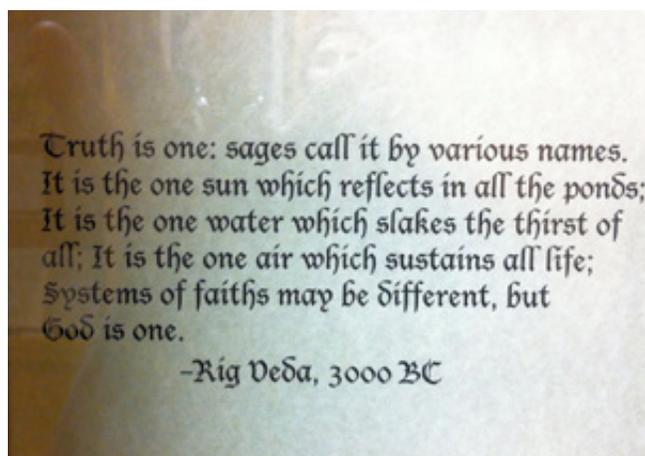
In the third section of the Yoga Sutras, different forms of knowledge gained by Samadhi are outlined. These include meditations on objects from sites in one's own body to the forces of nature that reveal both the nature of the universe and can grant superhuman powers. The greatest knowledge that can be revealed by samadhi is that of the Purusha, which is not only our true Self but the Self of the universe and yet, in its own nature, is beyond all manifestation.

The field of Yogic science is vast. It includes practices like asana, pranayama, ritual, mantra and meditation. It can reveal knowledge not only of our ordinary body and mind, but of all aspects of the collective and cosmic minds, extending to the very processes of creation. Yoga contains special ways of knowledge relative to the body, mind, prana, senses and consciousness internally and to the powers of energy, light, matter and space externally.

Ayurveda

Yet the deeper knowledge not only relates to spiritual practices, but to bringing well-being to all aspects of our nature as well. In the Vedic sciences, human well-being is defined as the harmony of body, mind, prana and soul (Atman or Purusha). Ayurveda, Vedic medicine, shows us how to find health and well-being through understanding the forces of nature and consciousness both within and around us.

The main different between Ayurveda and what we could call scientific medicine is that it recognizes an underlying prana or vital energy behind all bodily activities. Modern medicine tries to explain all these processes, sometimes extending to human emotion and intelligence, according to biochemistry alone, as if there were no conscious entity or force of life behind the process. In this regard, modern



medicine is often more reductionist and physically based than is modern physics!

The concept of prana posits an overall field of energy and intelligence as a totalistic and holistic power to explain the factors of life at both individual and cosmic levels. As science is now looking for an underlying consciousness behind the universe to explain the laws of physics, it must also look to an underlying cosmic life-force behind life to explain its development. An organic system must include some unique being above and beyond its particular components, processes or chemical reactions.

Conclusion

Once we recognize the place and value of both the outer and inner sciences, we can learn to use both to improve our lives on all levels. This should be our real work as a species and it can be a great adventure of discovery and transformation. This universal pursuit of knowledge can be used to set aside our political and religious differences, which are not a matter of truth or direct perception but of clashing beliefs and opinions. The ultimate unity of science and spirituality can provide a light forward to a true global age of peace and harmony. In such a world the inner technologies of Yoga will be found to be as important as the latest advances in technology, if not more so.

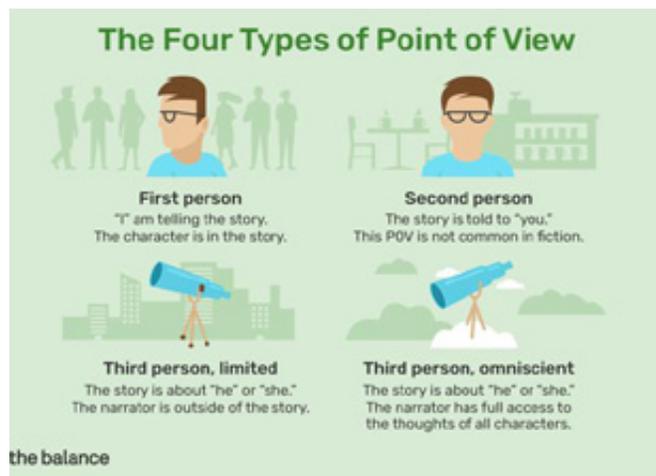
Dr. David Frawley

Source: <https://www.vedanet.com>

Strategies to Turn Your Perspective into Power

Many among us know that the way one approaches situation makes a difference in the outcome. “We can complain because rose bushes have thorns, or we can rejoice because thorn bushes have roses.” – Abraham Lincoln. This powerful statement from Abraham Lincoln illustrates both the power and the problem with perspective.

We all have unique ways of looking at things in life and in business, and each provides a stream of experience in which we operate.



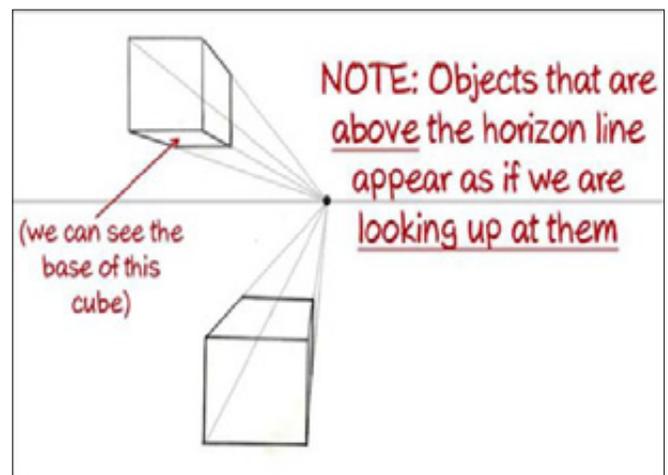
But how can you optimize your perspective to re-imagine what's possible and to ultimately harness it for entrepreneurial success?

Here are four ways you can rewire your perspective to better approach situations and to make what sometimes seems insurmountable much more tolerable and attainable.

1. Perspective when interpreting your position.

Think of the last time you were driving in a large city. As you drove along the road, you focused on the immediate environment. You saw the signs ahead of you, the lights overhead and the lines on the road. You heard the cars beside you, the people talking outside your window and the vibrant buzz of the city.

Even though you were in the middle of a sprawling urban environment -- with thousands of people from varying backgrounds living and working in hundreds of building sprouting from the web of streets and alleys -- you were ultimately only concerned with the road you were on at that moment. Your focus was contained to the immediate environment as if you were driving down any other road in a small town.



The same perspective should be used when thinking of your position in the market or your position in the maturity of your business.

Don't be overwhelmed with the enormity of the industry or the size and maturity of your competitors. Understand that you can't get caught up in the burden of scale. Maintain your perspective, and keep driving toward your stated goal.

2. Perspective when viewing and interacting with your community.

Too often entrepreneurs produce content for the masses without taking into consideration the personal side of the transaction. While there is nothing wrong with the goal of reaching thousands of people, you have to make sure you do certain things to form a more lasting relationship with those who might come across your content.

In particular, you should always craft content that speaks to that single person sitting on the other side of the screen. Think to yourself how they might interact with your website. What information are they seeking by reading through your content? Address their needs and wants instead of simply publishing content for content's sake. Speak directly to them by using the word "you" instead of "we" or other generalities.

In addition, remember the person consuming your content is a human being just like you. They have worries and responsibilities. They have families and



jobs, as well as desires and dreams. Treat those who you are fortunate enough to interact with online as individuals, each providing value in their own unique way.

3. Perspective when managing your operations.

Artists and architects lean heavily on perspective to make objects fit together properly to create masterpieces of art and function. Without the orderly alignment of objects, chaos would ensue.

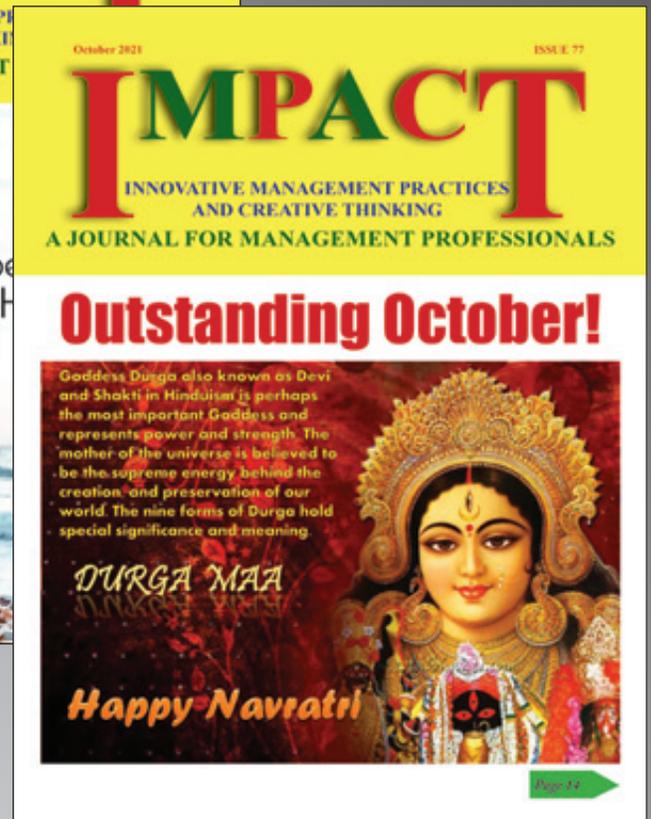
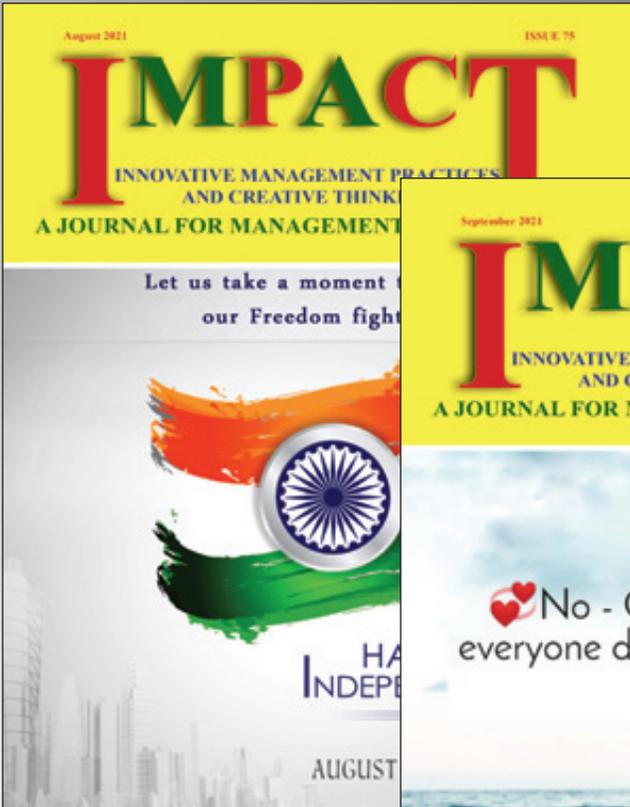
Your approach to business operations is no different. Even if you don't fully understand the intricacies all of the moving parts of your business, you still need to have a general grasp of the concepts and components making it all happen.

Also, with the number of plates spinning in the air, you need to understand priority and embrace delegation. Far too many entrepreneurs fall into the trap of losing track of all of their tasks and refusing to delegate to others. Use perspective to understand how your business operates and how you might improve efficiencies by distributing work.

4. Perspective when looking at the big picture.

You are a hard-charging entrepreneur with dreams of exceeding even your wildest expectations. Fame, fortune and notoriety may be your end goal, but perspective demands you look elsewhere for true fulfillment. As you spend the long arduous hours in

Subscribe to



Periodicity: Monthly

Subscription:

Single copy: Rs 100/- each issue

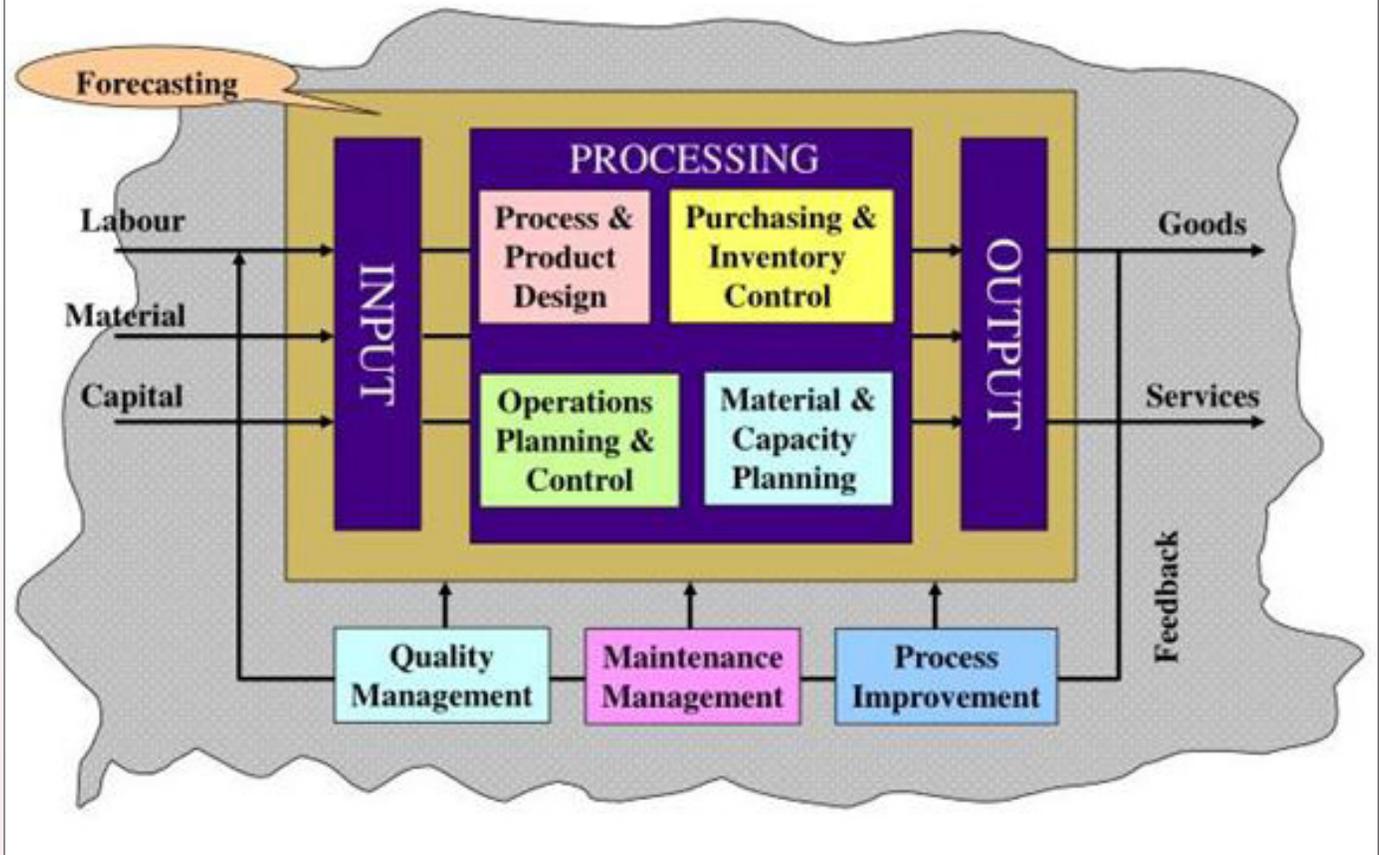
Annual: Rs 1000/- for 12 issues

Subscriptions may be paid by Cheque/DD drawn in favour of **IMPACT**, payable at Chennai.

Contact: email: impactjournalindia@gmail.com

Operations Management

A systems Perspective



front of the keyboard, don't forget the unsung heroes in your life providing you support along the way.

Your family should remain your top priority. Some of the most successful entrepreneurs find the most satisfaction in the fact that they are a successful parent first. Don't get so caught up in the hustle that you forget what truly matters. Take a break, and help your kids with their homework. Leave work to attend their school play. Even better, engage with them, and share your journey. Then sit back and soak in the unfiltered feedback you're sure to receive.

Following above methods will allow you to move forward in your business with a mindset adjusted and refined to have power for the uncertain, and

often frustrating, aspects of entrepreneurship. Any strategic advantage you can gain now should be welcomed with open arms and adopted as soon as possible for continuous success.

Syed Fazlullah Khan

Certified Project Manager (IPMA C) and MRICS with over 3 decades of qualitative experience in the Construction Industry. Formerly he was working with ETA Properties & Investments Pvt.Ltd., Chennai as Head – Projects. Presently, he is a Project Management Consultant for many Projects.



Artificial Intelligence in India

Artificial Intelligence or AI is a field of Data Science that trains computers to learn from experience, adjust to inputs, and perform tasks of certain cognitive levels. Over the last few years, AI has emerged as a significant data science function and, by utilizing advanced algorithms and computing power, AI is transforming the functional, operational, and strategic landscape of various business domains.

AI algorithms are designed to make decisions, often using real-time data. Using sensors, digital data, and even remote inputs, AI algorithms combine information from a variety of different sources, analyze the data instantly, and act on the insights derived from the data.

Most AI technologies – from advanced recommendation engines to self-driving cars – rely on diverse deep learning models. By utilizing these complex models, AI professionals are able to train computers to accomplish specific tasks by recognizing patterns in the data.

Analytics India Magazine (AIM), in association with Jigsaw Academy, has developed this study on the Artificial Intelligence market to understand the

developments of the AI market in India, covering the market in terms of Industry and Company Type. Moreover, the study delves into the market size of the different categories of AI and Analytics startups / boutique firms.

Here is our last year's study.

Overview of the Artificial Intelligence Market in India

As a part of the broad Data Science domain, the Artificial Intelligence technology function has so far been classified as an emerging technology segment. Moreover, the AI market in India has, till now, been dominated by the MNC Technology and the GIC or Captive firms. Domestic firms, Indian startups, and even International Technology startups across various sectors have, so far, not made a significant investment, in terms of operations and scale, in the Indian AI market. Additionally, IT services and Boutique AI & Analytics firms had not, till a couple of years ago, developed full-fledged AI offerings in India for their clients.

The AI market has, however, started to transform. As revealed in the Computer Vision Market study and the AI and Analytics start-up investment study, the Data Science space in India, specifically the AI function, is evolving into an innovative enterprise segment. MNC Technology, Domestic, Advanced Engineering, Healthcare, and Semi-conductor firms, to name a few, are now developing advanced Artificial Intelligence capabilities in India and providing top-notch AI services to firms across various industries and geographies.



AIMResearch has developed this study to research the development and scope of the AI market in India.

The AI market has been analyzed on the basis of various segments, including the sector the enterprises fall under and the type of companies.

AIMResearch has gone a step further to determine the market size of the Boutique AI and Analytics firms providing specialized AI services. These include the following types of firms:

- End-to-end Analytics Products & Services
- Artificial Intelligence / Computer Vision
- IoT / Logistics
- Natural Language Processing
- Robotics

As covered in the AIMResearch Emerging Technologies report, the AI function in India has felt the effects of the recessionary environment, which has been caused by the unfortunate Covid pandemic. While the effects of the downturn have resulted in some contraction in the overall addressable AI market and in AI jobs, the India AI market is still extremely resilient – the contraction in AI salaries and advertised open jobs are all expected to recover over the next quarter or so and register marginal year-on-year growth in 2020-2021 over the corresponding 2019-2020 figures.

Scope and Methodology of Report

The scope of the report covers the total addressable market in India within the Artificial Intelligence domain. The companies and enterprises considered cover the firms that have operations based in India, regardless of the geography and/or the clients the firms are servicing.

The firms include Indian corporations (domestic conglomerates and domestic IT firms), MNC firms (including Technology and Engineering firms), Hi-tech Electronic / Chip & Semiconductor firms,



Communications & Media enterprises, Banking & Financial (Public Sector, Private Sector, and Captives) firms, Energy, Industrial, Mobile Payments (Fintech), eCommerce, and Healthcare firms.

The market size has been categorized by Company Type and Industries or Sectors. The research also studies the salaries of AI personnel and the salaries advertised for AI open jobs.

The reference period of the data in the report is July – August 2020. The source of the data in this report includes all secondary sources in the public domain and some primary sources as well through discussions with hiring managers and domain leaders.

Market value figures are represented in USD while salary figures are represented in INR across the research report.

Key Highlights

- The Indian Artificial Intelligence market is valued at \$6.4 Bn as of July – August 2020. As mentioned, this covers the revenues from all AI operations originating from India regardless of stakeholder or client type, type of firm providing AI services, and geography of client.
- The AI market share and size in relation to the Types of Companies is the highest



**FIRST THING TO BE DONE
AFTER YOU DO YOUR
COMPANY INCORPORATION**

Avail our Expertise – Reap Good Returns



ENVOLVE EVOLUTIONS

ENVOLVE EVOLUTIONS

- Project Funding
- Innovative Business Strategies
- Digital Marketing
- Training & Development
- Customised Software

Contact for your Needs:

info@envolveevolutions.com

+91 755 015 3282

across the broad MNC IT / Technology / Electronic category, which includes High-end Software and Hardware technology, IT Services, Semi-conductor, and Electronics firms. The combined market share is 36.2%

- The market size by Industries or Sectors is the highest across the IT Services sector, followed by the Technology sector (including Software and Hardware firms), with a market share of 41.1% and 23.3% respectively.
- Apart from the IT and Technology sectors, the BFSI sector has a market share of AI services at 9.6%.
- There are close to 91000 Artificial Intelligence personnel working across enterprises in India, with a median salary of INR 14.7 Lakhs.
- The highest median salaries are drawn by AI professionals in Mumbai, at INR 16.7 Lakhs.
- Close to 16500 open positions related to AI are currently available to be filled in India, as of July 2020. Bengaluru, just as it does for other Data Science and IT services roles, tops the location for the highest proportion of open jobs.

Artificial Intelligence Market Size by Company Type

The Artificial Intelligence market size in India covers the companies providing Artificial Intelligence services from the India geography, regardless of the geographical market and type of industry the services are provided to. The Indian Artificial Intelligence market has been valued at \$6.4 Bn.

In terms of Company Type, the broad based MNC IT, Technology, and Electronics category has the highest share of the AI market at 36.2% in percentage share, and \$2314.3Mn in terms of Market Value. The large share of this category is logical given the broad-based firms that fall under this category, all which have significant AI operations in India. Accenture has the largest AI operations base in India across the broad MNC IT and Tech category.

The enterprises that fall under this category include:

- MNC IT Services firms, such as Accenture, IBM, and Capgemini, among others, which provide AI services, as part of the larger Analytics & Digital service offerings, to their international and domestic clients.
- Software Technology firms, such as Microsoft, Google, SAP, Oracle and AWS, among others – Microsoft has the largest AI operations in India across this sub-category. These firms are pioneering AI across all technology services, including Intelligent cloud, AI-as-a-service, and Edge Computing (developed along with Network & Telecom firms).
- MNC Hardware Technology, Networking Equipment, and MNC Telecom firms, including Cisco, Juniper, Nokia, Verizon, and AT&T, among others. The AI technologies, adopted by these firms, are pioneering next generation 5G Networks (developed along with the Electronic and Semi-conductor firms), Edge Computing, and overall Connectivity / IoT platforms. 5G / Telecom network equipment leader, Ericsson, has the largest AI operations in this sub-category.
- Electronics and High-end Semi-conductor firms, such as Samsung, Intel, Nvidia, Qualcomm, and AMD among others, which develop AI technologies for Smart Phones, Processing Units, Chips, Memory Devices, Servers, Data Centres, and other sensor-driven technologies. This includes AI technologies for Camera sensors, Facial Recognition devices, Driverless vehicles, Automation, and Cloud and IoT platforms. Samsung and Intel have the largest contribution in this sub-category.

The scope and range of firms across the MNC Tech category exemplifies the depth of the AI market in India across various specializations, including Intelligent Cloud, Edge Computing, IoT, and 5G Networks, to name a few. Most of the firms under this category are operating specialized AI Research

centres in India that service the global AI and Data Science initiatives and capabilities of these firms.

Domestic IT

The broad MNC Tech company type is followed by the Domestic IT company type, which has a 25.4% AI market share at a value of \$1619.3 Mn. This category covers the Domestic IT and ITES firms, including TCS, Infosys, Wipro, HCL Tech, Tech Mahindra, among others. Just like the MNC IT Services firms, these firms provide AI services within the broader Analytics and Digital offerings to international and domestic clients. Within this category, TCS has the highest AI market share contribution across all Domestic IT and ITES companies, just as it had in the CV market.

Captive

The Domestic IT category is followed by the broad category of Captive firms. The Captive category has an 8.8% AI market share at a value of 564.1 Mn. This category includes both Captive Banking and

Healthcare companies. The MNC Banking and Pharma & Healthcare companies that have Global In-house Operations (GIC) in India constitute this category. AIMResearch has further broken-down this category in the sub-section below. JP Morgan Chase has the highest market share contribution across the Captive category.

Domestic Firms

The Captive company type is followed by the category of Domestic firms. This category of firms, which are headquartered in India, includes the Telecom, Oil and Gas, Pharma, Private Banks, Automotive, and Cross-sector conglomerates. The Domestic firms have a collective AI market share of 7.1% at a market value of 451.9 Mn. The Reliance group has the largest market share contribution across this category, with AI operations across its Oil & Gas, Retail, Jio Infocomm, and other segments. Other firms in this category include industry leaders like Airtel, ICICI Bank, HDFC Bank, Tata Motors, Tata Communications, Mahindra & Mahindra, Larsen & Toubro, and the Aditya Birla Group.

Fresher's Required for Digital Marketing

- * Fire to Achieve**
- * Willing to Learn and Grow**

**Send Your Resume to:
inforesource@gmail.com**



The market value of the AI services of Domestic firms is indicative of the focus of organizations to leverage Data Science for Operational Efficiency, Sales and Marketing, Customer acquisition, and overall growth, all while reducing time to market for products and services.

AIMResearch has separately assessed the market contribution of Indian PSU firms and Government Research institutes.

MNC Engineering

The MNC Engineering company type follows the category of Domestic firms. The MNC Engineering category has a market contribution of \$371.6 Mn, with a market share of 5.8%. This category includes Multinational Engineering, Industrial, and Automotive firms. These companies include, Bosch, Siemens, Honeywell, ABB, GE, Hitachi, Delphi, Volvo, Ford, and GM, among others, that incorporate AI technologies across their high-end industrial, automation, IoT, and automotive products and services.

These include Machine-to-Machine platforms, Optical sensors, Industrial devices, IoT sensors, Driverless technologies, and other Machine-based technologies. Bosch and GE have the highest market shares in this category. The range of companies in this category highlights the strength of the AI market in India across capabilities, talent, skills, and technology infrastructure.

eCommerce

The category of eCommerce company follows the MNC Engineering category, with a 4.8% market share and \$ 305.1 Mn market value. The companies represented in this category include Flipkart and Amazon, which service the eCommerce and Retail markets through the AI services; Tesco, Target, and Walmart, which solely service the AI segments of their International eCommerce divisions; and Travel & Hospitality portals that facilitate tickets and hotel bookings.

AI capabilities are leveraged across almost all functions eCommerce. From Product Targeting, Market Segmentation, Pricing, Digital Platforms, Quality, Merchandise Classification, and Shipping & Logistics. AI and Machine Learning applications are utilized across the entire value chain of eCommerce and Retail; the AI market within the eCommerce category has the potential to grow to \$2.75 Bn within the next decade.

Boutique AI & Analytics

The eCommerce company type is followed by the broad category of Boutique Analytics & AI firms, which have a market share of 3.4%, at a market value of \$215.1 Mn. This category of largely domestic firms includes Analytics firms that provide AI services as part of the larger Analytics offering, and specialized AI firms that utilize AI, Machine Learning, and Robotics services as part of their Data Science offerings. The former companies include Ugam, Fractal Analytics, Automation Anywhere, Tiger Analytics, and MuSigma, among others. While the latter companies include such specialized AI & Robotics firms as Cellstrat, Wobot Intelligence, Mad Street Den, AgNext, Niramai Health, and Sigtuple, among others.

PSU & Government Research

The broad category of Public Sector Undertaking firms and Government Research Institutes are next

in the list with a market share of 3.4% at a market value of \$214.4 Mn. The PSU firms include the Maharatna corporations of ONGC, Indian Oil, HPCL, and BPCL to name a few. The institutes include Government-funded Scientific Research & Development organizations, including DRDO, ISRO and HAL.

These organizations utilize AI technologies and Machine Learning models across the Defence, Space, and Aeronautics Research & Development segments respectively. The research institutes also include engineering and technology research institutions, such as IISc and IITs. Many of these institutes have in-house AI incubation units, providing consulting and mentoring services to start-up AI firms and AI services to other science and technology institutions (both public and private). The Education Research Institutes and DRDO have the maximum contribution across this category.

Consulting

The market share of Consulting firms is next in the list at 2.1 % at a market value of \$ 132.6 Mn. The AI market of these firms is restricted to specialized AI services as part of the broader IT consulting services that some of these firms provide their clients.

MNC Other

The remaining international corporations, classified as MNC Other, including MNC FMCG and Automotive firms, are next in the list. This category, in terms of AI market size and value, has a 1.8% market share and \$111.9 Mn market value.

Aggregator Startups

Aggregator Startups complete the list of the type or category of firms. These startups include Zomato, Ola, and Swiggy, which utilize AI to expand their customer base. These firms utilize data models and analytics for customer acquisition, product

curation, tracking, and recommendation engines. The AI contribution of this category of firms has a market value of \$85.2 Mn and a market share of 1.3%.

The wide scale of companies that have set-up Artificial Intelligence operations in India indicates not just the promise that AI provides for the Indian market, but also the confidence that enterprises and organizations have in the AI capabilities of the Indian ecosystem and workforce.

AI Market Share of Captive Firms

The Artificial Intelligence Captive market covers MNC firms that have set-up GICs or Global In-house Centres, which handle all their non-core operations, including the Artificial Intelligence operations. These firms typically fall under one of two sectors – Banking and Healthcare.

The entire Captive market for AI in India is valued at \$564.1 Mn.

The Captive Banking firms include Investment Banks, Hedge Funds, and International Banks. These firms have their AI operations serviced from the India GIC for their global operations and have the majority share of the Captive market at 83.6%, at a market value of \$471.5 Mn. The Captive Healthcare firms have a market share of 16.4%, at a market value of \$92.6 Mn – the Captive healthcare sub-category includes healthcare, health insurance, and pharma companies.

JP Morgan Chase has the highest market share across the entire Captive category, including the Captive – Banking sub-category. The AI operations of HSBC, Goldman Sachs, Citibank, and Wells Fargo follow the AI operations of JP Morgan Chase in terms of market share size in the Captive – Banking sub-category.

UnitedHealth Group (including the healthcare and health insurance operations) and Novartis (Pharma

operations) have the highest market share in the Captive – Healthcare sub-category.

Artificial Intelligence Market Size by Sector / Industry

AIMResearch has analyzed the AI market by sector or industries.

The sector-wise distribution of AI services, covers:

- Firms that are exclusively associated with a sector or industry – such as Flipkart with eCommerce
- Firms within another segment, such as Boutique AI and Analytics, but provide exclusive services to a particular function within an industry – such as Mad Street Den providing Computer Vision and Artificial Intelligence services to the Retail sector.

AI in IT Services

In terms of Sector or Industry, the broad-based IT services industry or sector has the highest share of the AI market at 41.4%, and \$2625 Mn in market value. The contributors to the IT services' sector market value include Domestic and MNC firms:

- Domestic firms: TCS, Wipro, Infosys, Tech Mahindra, and HCL Technologies, to name a few.
- MNC firms: Accenture, IBM, and Capgemini

The market size and market share highlight the impact of the IT services industry (both Domestic and MNC) on the AI offerings serviced from India. The AI services within the IT services sector typically fall within the broad Digital and Analytics segment – these services are provided as part of the larger IT consulting, delivery, and platform integration offerings of the IT companies.

TCS and Accenture are the largest contributors of market share in this industry category. This



sector includes contribution from the Boutique AI & Analytics firms that provide AI services to domestic and international clients. These firms were referenced in the previous section and include Fractal Analytics, Ugam Solutions, AbsolutData, and LatentView Analytics, among others.

AI in Technology – Software & Hardware Technologies | Chip & Semi-conductors | Electronic Devices

The contribution from the Technology sector, which includes Software & Hardware technologies, follows the IT services sector. The contribution of the Technology sector covers a 23.3% market share and \$1488 Mn market value. This sector covers Software, Cloud Computing, Semi-conductor, Database technologies, Server platforms, and Networking solutions, to name a few, technology segments. The companies contributing to this sector largely cover MNC firms, and include the following firms servicing various sub-verticals:

- Software, and Cloud Computing: Microsoft, Google, Oracle, AWS, SAP, Adobe
- Social Media: Facebook
- Computer and Server Hardware: Dell, HP Enterprise, VMware
- Network Hardware: Cisco, Juniper
- Telecom Equipment: Ericsson, Nokia, Broadcom
- Semi-conductors & High-End Electronics: Intel, Nvidia, Qualcomm, Samsung Electronics, Samsung Research, NXP, Texas Instruments, AMD

- Medical Technology and Devices utilized for AI-driven medical diagnosis: Philips, GE Healthcare, Siemens Healthcare, Carl Zeiss

The vast array of firms and sub-verticals demonstrates the level of contribution of this sector in the AI space. Most of the firms in have set-up exclusive Data Science Research Centres of Excellence that drive significant innovation for these firms in the area of AI.

The MNC firms across this sector are driving Research & Development in India to train AI models, which was, till now, carried out only in the regional hubs of these firms across US, Western Europe, Israel, Japan, South Korea, and Taiwan. Finally, the advancements in AI across the Technology sector are spanning other sectors as well:

- AI in Edge Computing across Cloud Computing and Telecom Service Provider firms
- AI in 5G, Smart Homes, and Connected Devices across Telecom Equipment, Semiconductor, and Telecom Service Provider firms
- AI in IoT & Smart Cities across the Semiconductor, Engineering & Industrials, Automotive, and Government enterprises

AI in BFSI

The contribution from the BFSI sector follows the Technology sector – the BFSI contribution is \$615.3 Mn in market value and 9.6% in market share. The firms in the BFSI sector were one of the first to utilize Data Science services to derive insights on consumers. The BFSI sector is now employing AI across various functions:

- Digital Services to gain a competitive advantage, drive efficiencies, and improve customer experience

- Robotics and Natural Language Processing (NLP) to enhance on-demand customer experience and satisfaction
- Adoption of algorithms in Investments to increase portfolio returns and reduce risks, both for institutional and retail investors
- AI-based financial management tools to deliver personalized financial management advice and alerts to customers
- Smart transaction analysis programs and tools to detect fraud and money-laundering transactions

These examples are just a few of the instances in which AI delivers innovation across the ss areas of investments, financial advice, and overall BFSI operations. The BFSI sector includes Domestic Private, PSU, and MNC Captive BFSI firms. These include ICICI Bank, SBI, HDFC Bank, Axis Bank, Bajaj Finance, Kotak Mahindra, and Aditya Birla Finance; JP Morgan Chase, HSBC, Citibank, American Express, Barclays, Standard Chartered, and Nomura, to name a few.

AI in Engineering | Industrials | Automation

The Engineering and Industrial sector follows the BFSI sector. The contribution of this sector is \$382.9 Mn in market value and 6% in market share. The Engineering and Industrial sector covers International and Domestic firms that integrate AI and Deep Science models in their Engineering, Manufacturing, and Automation services. AI is utilized in design, simulation, quality analysis, and maintenance:

- AI-driven design and blueprinting enables the development of digital prototypes before the production phase
- AI in conjunction with IoT sensors / platforms facilitates real-time predictive tool maintenance to reduce unplanned machine downtime
- AI used in tooling and machine manufacturing detects the slightest of anomalies and can

- carry out real-time tracking and recall of defective equipment
- AI in Infrastructure, combined with IoT and 5G connectivity, is facilitating the development of solutions for smart cities and smart utilities
- AI, combined with navigation systems, robots, and drone systems, is used across defence, aviation, surveillance, topography mapping, and forestry and farm / crop management

The organizations across this sector include Bosch, Siemens, Honeywell, GE Engineering, ABB, and Johnson Controls, to name a few. These organizations also develop optical products for use in camera technology, security, and facial recognition. This sector includes Domestic companies utilizing and developing AI solutions, such as Larsen & Toubro Engineering, and Government-funded Defence and Science Enterprises, including DRDO, ISRO, and Hindustan Aeronautics Limited (HAL). This sector also includes exclusive Boutique AI & Analytics firms that provide solutions for the Engineering and Industrials sectors, such as Netradyne, The Hi-Tech Robotic Systemz, and Wobot Intelligence.

AI in Retail – eCommerce | Big-Brand Retail | Retail Aggregation

The broad eCommerce and Retail sector (which includes the Retail Aggregation sub-sector) follows the Engineering and Industrials sector with a contribution of \$317.8 Mn in market value and 5.0% in market share. The contribution of AI across this broad sector is significant, considering the instances AI technologies are utilized and the scope of growth over the next decade:

- AI is utilized across the entire supply-chain for the eCommerce and Retail sector, starting with merchandise procurement and classification, and quality, billing and payments, logistics tracking, delivery, and even managing and tracking customer feedback and complaints.

- From a portal and platform perspective, AI is utilized in product recommendations for consumers, across the digital and online platforms – enhancing the shopping experience of customers, by pushing required product recommendations and suggestions to shoppers.
- AI is utilized by Marketplace and Retail Aggregator firms serving as a conduit between Consumers and small-box retail stores, including kirana shops. Herein, AI is utilized across the supply-chain by the Aggregator firms.

The companies utilizing AI across this broad sector include:

- Domestic eCommerce Players: Flipkart, Myntra
- Domestic Retail Players: Trent Retail (Tata Group), Reliance Retail (incl Reliance Digital, AJIO, and Jio Mart), Aditya Birla Retail
- International Retail and eCommerce Players / Operations: Amazon (India and International), Walmart Labs, Walmart Retail, Target, Tesco, Lowe's
- Marketplace and Retail Aggregators: BigBasket, Grofers, Olx
- Boutique AI and Analytics: Firms, such as Mad Street Den, that provide AI services to the Retail sector

The potential for AI in the entire Retail sector, which includes eCommerce and Retail Aggregators,



is tremendous. With the entry of new players in this space, such as JioMart, and the expansion of Hospitality and Food Aggregators, such as Swiggy and Zomato, into Retail Aggregation, AI services across the entire Retail sector (including eCommerce) in India are expected to value \$5.25 Bn within the next decade. The growth will be driven by the shift to eCommerce for almost all the retail players, greater adoption of digital and online shopping by consumers, and a need to strategically and functionally deliver value to consumers and gain market share by the various firms and enterprises.

AI in Energy | Mining & Metals

The Retail sector is followed by the Energy | Mining & Metals sector that contributes 2.3% of market share and \$145.9 Mn in terms of value. AI operations across this wide-ranging sector cover numerous industries and sub-verticals, across PSU, Domestic Conglomerates, and International firms, including:

- Energy / Oil & Gas – Reliance, Shell, BPCL, IOCL
- Steel and Metals – Tata Steel and JSW Steel

While the size of the AI operations of the Domestic conglomerates, especially Reliance Oil & Gas and Tata Steel, make up the majority of the market share, the scale of operations across the MNC firms is significant. Shell has the highest contribution of the MNC firms in this Energy | Mining & Metals sector.

AI in Telecom

The Energy | Mining & Metals vertical is followed by the Telecom sector, which contributes \$138 Mn to the AI market, with a market share of 2.2%. The Telecom vertical includes MNC firms such as Verizon and AT&T that are developing AI capabilities for use in IoT, Connected Devices, and other 5G connectivity solutions. The sector includes Domestic Telecom providers, Reliance Jio

Infocomm, Airtel, and Tata Communications, that are also developing AI solutions for the 5G and existing 4G connectivity services. AI is adopted by the Telecom firms across the Telecom value-chain and various industry use cases:

- Telecom Networks: Telecom firms are collaborating on AI in Core Networks with Network Equipment firms – Ericsson and Nokia
- Edge Computing: AI in Telecom is adopted in Mobile Edge Computing and Network Virtualization. The telecom firms are collaborating on AI with technology firms, MS (Azure) and AWS (Wavelength), to name a few
- Connectivity Solutions: AI in Telecom is adopted in Connected Cars, Smart Devices, Smart Homes, Private Networks, IoT Platforms, and Smart Cities
- Consumer Plans and Customer Services: AI is adopted by Telecom firms to identify the best plans for consumers, and provide intelligent customer service through SMS, App, and Push Notifications

AI in Automotive

The Telecom vertical is followed by the Automotive sector, which contributes \$133.9 Mn in terms of value and 2.1% in terms of market share. This sector includes automobile manufacturers that are developing in-house AI and CV solutions for driverless technologies, including AI-driven Sensor, Radar, Lidar, and Optical solutions. AI is also adopted by the Automobile firms for predictive maintenance, not just at factory floor and machinery equipment, but also for the vehicles and cars. The firms that are utilizing AI for the Automotive segment are:

- MNC Automotive firms: Hyundai, Ford, Volvo, and Honda
- Domestic firms – Tata Motors (Jaguar / Land Rover), Mahindra & Mahindra, Maruti Suzuki, TVS Motors

- Automotive Navigation and Mapping Technologies firms: Here Technologies

AI in Education and Public Research

The Automotive sector is followed by the Education and Public Research sector, which contributes \$126.7 Mn to the Indian AI market, with a market share of 2%. In terms of overall value, this sector is significant as it covers the prestigious IIT, IISc, and other engineering institutions. The market value covers the AI contribution across research, patents, AI consulting to government and private enterprises, and incubator firms supported by these institutions. The prestigious IIT institutes are the largest contributors of value in this sector.

AI in Pharma & Healthcare

The Research and Education sector is followed by the Pharma & Healthcare sector, with a contribution to the Indian AI market of \$120.3 Mn and a 1.9% market share. While this sector is dominated by the Captive units of the MNC Pharma & Healthcare firms, including Novartis and UnitedHealth Group, the Indian pharma firms of Dr. Reddy's Laboratories, Sun Pharma, and Cipla, among others, provide a significant contribution to the AI market within the Pharma & Healthcare sector.

AI in Other Sectors

There are other sectors that contribute to the AI market in India. These sectors have a small but significant and steadily expanding market size and share. The following are the remaining sectors that contribute to the AI market:

- Travel & Hospitality – The contribution to the AI market of this sector is \$92.6 Mn in market size and 1.4% in market share. The combined sector includes platforms that enable ticket booking and hotel reservations,

and aggregator apps that enable online food ordering and delivery. AI is used to connect the consumer with the service providers over an online or digital marketplace platform. The firms across this sector that are utilizing AI include Domestic firms – Zomato, Ola, Oyo, Makemytrip, and MNC firms – Expedia. AI is increasingly utilized to cut costs across this sector during this period of severe contraction in business and operations.

- Digital Media – The contribution to the AI market of this sector is \$73.9 Mn in market size and 1.2% in market share. The Digital media sector is adopting AI for targeted content and advertising across all platforms, including digital, online, and mobile. This sector includes Domestic and International partnerships across Content Production and Distribution, Advertising, and Digital Marketing. The AI market in this sector also includes Boutique Analytics and AI firms that develop AI solutions across Digital and Media platforms. WPP is the largest contributor to the AI market in this sector. Within this sector, the content distribution services include TV, Box Office, and Streaming (OTT) distribution:
 - o Content: Star India (including Disney+ Hotstar), Sony Entertainment (including SonyLiv), Viacom Network18 (including Voot), Zee (including Zee5), among others
 - o Advertising & Digital Marketing: WPP (all divisions and units), Nielsen
 - o Boutique AI and Analytics firms: Uncanny Vision and Snap2Insights
- FMCG: The contribution of the FMCG sector to the AI market in India is \$55.2 Mn in market size and 0.9% in market share. This sector covers both Domestic and FMCG companies. Unilever is the largest contributor to this sector. Other contributors to the AI market include MNC firms such as Kraft,

Pepsi, Proctor & Gamble (P&G), and Coca Cola, to name a few, and Domestic FMCG players, such as ITC.

- Fintech: The contribution of the Fintech sector has been listed separately from the BFSI sector as the Fintech vertical is rapidly emerging as key adopter of AI and ML platforms and technologies. With an exponential increase in adoption in digital and online payments, especially after the lockdown caused by the pandemic, the contribution to the Indian AI market of the Fintech sector \$54.9 Mn at just under 0.9%. While this may seem small as of now, it is expected to grow almost ten-fold in the in the next 5 years. The firms in the sector include the domestic fintech startups, PayTm, PhonePe, the MNC fintech players of Mastercard and Visa, and Boutique Analytics players as well.
- Cross-Sector (including Agri-Tech): Other firms that contribute to the AI market across several sectors, including the Agri-tech sector, have a market share of 0.2% and a market size of \$15.2 Mn. The Agri-Tech sector is dominated by start-ups that are providing AI services to the Agriculture vertical; these include AgNext and Intello Labs that are seeking to revolutionize the Agriculture space by combining AI, robotics and drone systems

Domestic Boutique Start-ups Artificial Intelligence Market Break-up

The Boutique Start-up company type / category has a market value of \$215.1 Mn.

AIMResearch has further segmented this market on the basis of the Data Science services these firms offer:

- Analytics Products & Services
- Artificial Intelligence / Computer Vision
- Robotics

- IoT / Logistics AI
- Natural Language Processing

The contribution of the Start-ups covers:

- Market Value (in \$ Mn) across Start-up categories
- Market Share across Start-up Categories

Start-up Market Break-up

The Analytics Products and Services firms have the largest market contribution at \$145.6 Mn, at a share of 67.7% across the Domestic Boutique Start-up space. These firms include firms that provide end-to-end analytics services, including Data Analytics and other Data Science services. The services provided by these firms depend on the requirement of the customer or the client, and some projects include development of exclusive AI technologies and platforms.

The specialized Artificial Intelligence firms have a combined market value for AI services at \$55.4 Mn and a share of 25.8% within the Boutique start-up space.

The contribution of the next segments of start-ups, is significantly lower – the Robotics firms have a market contribution of \$6.0 Mn at a 2.8% share. These are followed by IoT / Logistics start-up firms that have a market contribution of \$4.8 Mn and a share of 2.3% and the Natural Language Processing firms that have a market contribution of \$3.2 Mn and a share of 1.5% within the Boutique Start-up space.

Source: <https://analyticsindiamag.com>

