Neuroscience Insights for Informational Leadership[1]

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The subject I have chosen to talk about, may be somewhat unusual, but I feel that it is a subject that deserves in-depth understanding, much better appreciation and lot more emphasis, especially in the management education circles in India.

What I am referring-to, is the amazing insights that brain research has been throwing up in the last three decades and its extreme relevance to the understanding of the current challenging environment.

There is a tidal wave of new information pouring out of research labs on how our brains control our behavior in a variety of situations. Let me give you an idea of the magnitude of the work that is being done in this domain. There are more than ten thousand Neuroscience researchers in the US alone, according to a recent estimate.

The increasing importance that this discipline is receiving can be gauged from the fact that Cass Sunstein, Harvard Law Professor and one of the authors of the best selling Behavioral Economics book called "Nudge", runs the office of Information and Regulatory Affairs for Barack Obama, and his co-author Richard Thaler, Behavioral Science and Economics professor at the University of Chicago Booth School, has been advising the Behavioral Insight Team in the Cabinet Office of Britain's Prime Minister, David Cameron.

Neuroscience not only challenges many of our long-held assumptions of human behavior but more importantly, it compels us to question the very nature of reality.

For instance, it is now well accepted in the scientific circles, that the "external world", as we refer to it, is simply a collection of perceptions and beliefs that is created by our brains.

Take vision as an example. The commonly held view is that light bounces off an object and enters the eye, causing the neurons on the retina to fire and send a mirror image of the object to the optic nerve in the brain.

But that's not how vision actually works. The image reflected on the retina is digitized and travels through the optic nerve as 125 million bits of information and then gets processed by over one billion neurons in the two dozen areas of the visual cortex. As this processed information travels to the seat of consciousness in the prefrontal cortex, it receives inputs from several areas of the brain that are linked to memory, emotion, and even our desires. What we perceive, therefore, is not the direct image, but the creation of the mind based on what we remember, how we feel, and even what we want. Thus, when ten people look at the same scenario their brains will interpret and encode ten different versions based on their own previous experiences and perceptions.

Michael Shermer in his very interesting book "Believing Brain" explains that reality exists independent of human minds, but our understanding of this reality depends on the beliefs that we hold at any given point of time. He, in fact, calls this process, wherein our perceptions about reality are dependent on the beliefs that we hold, as belief-dependent realism.

You may all be still wondering what Neuroscience has got to do with management education. Let me simply say that Neuroscience insights on human behavior has the power to change our fundamental approach to running organizations.

Experts in fact believe that the organizations that we strive to build can be effective and sustainable only when they are designed and run, keeping the brain in mind.

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Before I take you through the amazing and, sometimes, amusing manifestations of irrational behavior in humans, I would like to salute Bertrand Russel who had the wisdom to appreciate this behavioral underpinning in human beings, when he remarked "It has been said that man is a rational animal. All my life I have been searching for evidence which could support this".

All of us, as human beings, are inherently biased and this has been firmly established over the past 50 years by literally hundreds of empirical studies. Psychologist Daniel Kahneman received the 2002 Nobel Prize in Economics for his work in this area. The conclusion reached by Kahneman and his colleagues is that people use unconscious shortcuts, termed as heuristics while taking decisions.

Our unconscious biases make us behave irrationally most of the time and I will try to highlight some of these biases and their insidious effects in our decision-making.

Human beings, are social animals. As social animals we have evolved over the years to depend on our tribes, literally, for our safety and survival.

The idea that humans have a need to belong to social groups is so fundamental in psychology that one of the seminal papers on this topic has been cited almost 3000 times since its publication in 1995.

Its a well-known principle in social psychology that people define themselves in terms of social groupings and express their loyalty to their own groups by denigrating others not belonging to their groups.

The theory of Cultural Cognition, in fact, postulates that we shape our opinions to conform to the views of the groups with which we most strongly identify.

There is some survival mechanism at work, in creating and supporting in-group and out-group distinctions. In our desire to feel safe, we bond together with all those who look more like us and then build virtual fences to keep outsiders away.

It is only when we look through the lens of tribalism at work, that we can make sense of extremely irrational behaviors including large scale genocides, uncontrollable religious terrorism and wide scale regional extremism, to cite a few.

Psychologists Henri Tajfel and John Turner have demonstrated the strong bias that people show in favor of 'in-group' members, even when the groups are arbitrarily formed. In an interesting experiment when people were randomly assigned into groups and everyone was well aware of this random assignment, volunteers still showed a marked preference for members of their group. They even went on to give rational arguments on how unpleasant and immoral the 'out-group' people were.

Organization Leaders have therefore the challenging task of evolving strategies to manage group dynamics in their own organizations such that it channelizes the energies of its people towards fruitful endeavors instead of getting dissipated in fissiparous tendencies.

David Rock, Co-Founder of NeuroLeadership Institute says that the brain experiences the workplace, first and foremost, as a social system. Once leaders learn to manage the social dynamics of a workplace, they can effectively engage their employees by forming collaborative teams that work in harmony. David Rock goes on to say that the ability to intentionally address the social brain in the service of optimal performance will be the distinguishing leadership capability in the future.

Let us now look into the all-pervasive Optimism Bias.

The belief that the future will be far better than either the past or the present is the core of optimism bias. Both neuroscience and social science suggest that we tend to be more optimistic than realistic most of the time.

This Optimism bias severely impacts both microeconomic and macroeconomic activities. For example, Optimism bias influences high-stake financial decision-making, such as startup investments and merger decisions. It was found that 68 percent of startup entrepreneurs believe that their company is more likely to succeed than similar companies, even when they were fully aware that in reality only 50 percent of startup companies even survive beyond the first three years of activity.

Research also finds that 65 percent of CEOs are so over-optimistic about the future that they overpay when acquiring target companies and also undertake value-destroying mergers.

On the macroeconomic level, Robert Shiller in his book "Irrational Exuberance" makes the case that irrational exuberance is the prime contributor for generating bubbles in the financial markets.

An example closer home is that this very same bias makes second-year students of MBA, overestimate not only the number of job offers that they expect to receive but also the magnitude of their starting salaries.

The question we need to answer is what makes people maintain this rosy bias even when information challenging such forecasts is readily available.

Neuroscientists tried to find the answer by scanning the brains of people as they processed both positive and negative information about the future. The findings are striking. When people received inputs that enhanced their beliefs, it was found that their neurons faithfully encoded the desirable information. On the other hand, when pessimistic information was passed on to their brains, they completely ignored them.

Ladies and Gentlemen, many of the problems that the world faces today can be attributed to the issues related to perceived fairness.

Brain science has offered some remarkable insights into how fundamental the need for fairness is, for all humans. Prof Golnaz Tabibnia of Carnegie Mellon University, who has done extensive research on fairness, says that the tendency to resist and fight against unfair outcomes is some thing that is deeply rooted in all human beings.

Scientists claim that there is a specific area in the brain that processes "fairness issues". A study at the California Institute of Technology pinpointed the insular cortex, a region of the brain that is the seat of emotional responses, as the location where issues concerning equity are processed.

Fortunately for us, we can increase feeling of fairness in the workplace by making people believe that their voices and opinions are considered important and by recognizing their contributions as having positive impact on results.

Fairness, it turns out, activates the same network in the brain that monitors physical pain and pleasure.

Managers need to appreciate that any work environment that is perceived as unfair has far reaching consequences. People in such environment will experience an increase in the levels of the chemical cortisol, impacting not only their health and wellbeing but also their motivation levels for any type of work. It should therefore come as no surprise that employees tend to leave their well-paid jobs when they feel that their organizations have been unfair towards their workers, towards their customers or towards the community at large.

We all suffer from "Status Anxiety" even though we may not be aware of it, most of the time.

Status is our place in the social pecking order, relative to others. Our brains constantly monitor our status and send signals of threat or reward based on their assessment of changes in our ranking. Much of this happens subconsciously. Our status is easily threatened when at any time we feel belittled or subordinated by the words or actions of another. At that time we literally feel smaller and less worthy.

Not surprisingly, improvement in status is considered by most people as lot more valuable than financial rewards.

Ironically, status also generates vicarious satisfaction in people when they meet others who are worse off than themselves, the German concept of "Schadenfreude". Status even explains why people love to win arguments, even pointless ones.

The importance that people attach to social ranking was clearly demonstrated by researchers in an experiment. The volunteers were asked to select one of the two options, the first option being a plan that will earn them a sum of $50,000 a year in a scenario where other people in the same plan earned only $25,000 or half the amount. The second option was for the volunteers to earn a higher amount of $100,000 a year, but in this scenario others in this plan earned a whopping $250,000 or two and half times.

Surprisingly, the majority of people selected the first option, clearly indicating that they are willing to give up the opportunity to earn $100,000 as opposed to $50,000 just to make sure that others in the group earned less than them.

This result is one among thousands of experiments in behavioral economics, neuro-economics and evolutionary economics conclusively demonstrating the importance that people attach to relative social ranking in preference to financial gains.

Naomi Eisenberger, a leading social neuroscience researcher at UCLA, wanted to understand what goes on in the brain when people feel rejected by others. She designed an experiment that used Functional Magnetic Resonance Imaging to scan the brains of participants as they played a computer game called "Cyberball."

Cyberball was designed as a ball tossing game over the Internet with two other people. The ball got tossed between the volunteers and two others represented as avatars on the computer. In the experiment, half way through the game, the volunteers stopped receiving the ball while the other two players continued throwing the ball to each other. The researchers found that this experience generated intense emotions in the participating volunteers. What Eisenberger found was that when people were excluded, their brains showed activity in the dorsal portion of the anterior cingulate cortex, which is the neural region that is involved with pain thus demonstrating that exclusion and rejection was physiologically painful.

This has tremendous implications in workplace dynamics since there are any number of activities and situations that can engender such feelings.

Fortunately, it is not that difficult to build among employees the feeling of improved status. People experience an increase in status when they are acknowledged for their efforts or recognized for their expertise, or simply compared favorably with others. Interestingly, such feelings are also generated when people are actively involved in addressing issues that are normally reserved for the senior leaders in the organization.

Demonstrating ones value to the group that they belong to, has also been found to improve the status.

In terms of brain chemistry, when an increase in status level is experienced, dopamine and serotonin levels go up in the affected people making them feel happier, and cortisol levels go down reducing their stress levels. Testosterone levels go up increasing their focus and making them feel strong and confident. With more dopamine and other happy neurochemicals, an improvement in status increases the number of new brain connections that are made every hour. A feeling of high status, therefore, enables people to process lot more information and subtle ideas with much less effort.

Let me now draw your attention to the stranglehold that our internal beliefs have on us.

It is well established that we are all driven by our beliefs. We form our beliefs for a variety of subjective, emotional and psychological reasons that are based on our interactions with family members, friends and colleagues and also influenced by our culture and society. Once we form our beliefs, we defend, justify and rationalize them with a great degree of passion, making use of variety of tools including cogent arguments and rational explanations. It is now well proven that our beliefs come first and all explanations then follow to justify these beliefs, however irrational some of these beliefs may appear to others.

Interestingly, neuroimaging studies have shown that, at the level of the brain, superstitious beliefs like existence of ghosts or religious belief that ten-headed king Ravana was vanquished by Lord Rama are no different from the beliefs that two plus two equals four or Taj Mahal is located in Agra.

This is the reason why we live most of our lives as though our beliefs were really facts. Beliefs become amazingly resilient because they form strong neural connections in the brain and these well-entrenched memories and emotions play out as behaviors without our explicit awareness.

This leads me to the theory of Cognitive Dissonance by Leon Festinger, an American social psychologist who claimed that when people are persuaded to behave in ways that are inconsistent with their beliefs, an uncomfortable psychological tension is aroused in their brains. This tension, he suggested, will compel people to change their beliefs so that they fit their actual behavior.

Cognitive dissonance occurs in the world of investment too. Very often, investors buy a stock based on certain analysis and criteria. However, subsequently, when they receive information that contradicts their original hypothesis, they distort, manipulate or completely ignore this new information so as to relieve the discomfort caused by the conflicting views in their heads.

We confront, on a daily basis, any number of situations in which people resolve cognitive dissonance through rationalizations. The criminal who justifies his crimes blaming his difficult living conditions, the person who feels he got fired simply because his boss did not like his looks, or the self-made billionaire who keeps away from meeting people from his past since he is convinced that all they want is his money - are all examples of rationalization to manage cognitive dissonance.

Near home, this bias is present in academic circles, where a researcher will deliberately choose to overlook all data that contradicts his theory in an attempt to increase the credibility of his study.

What we need to introspect seriously is how we can prevent ourselves from falling prey to "Believing our own Lies", which is the dangerous consequence of cognitive dissonance. The potential tools at our disposal are some meditation training practice that will improve our awareness of this tendency and lot more of self-introspection questioning our own points of view.

Psychologists Daniel Kahneman of Princeton and Amos Tversky of Stanford University published in 1979 a breakthrough paper called "Prospect Theory: An Analysis of Decision under Risk," on how people think about and handle uncertain rewards and corresponding risks.

In the ensuing decades, this seminal paper in Behavioral Economics became one of the most widely cited papers in Economics. The authors argued that the ways in which alternatives are framed had strong influence on the decisions that people made.

Edward Russo and Paul Shoemaker provide an amusing story to illustrate the power of framing. A Jesuit and a Franciscan were seeking permission from their superiors to be allowed to smoke while they prayed. The Franciscan simply requested for permission to smoke while he prayed. His request, as to be expected, was straight away denied. The Jesuit, on the other hand, framed the question in a different way: "In moments of human weakness when I smoke, may I also pray?'' He got the approval.

Similarly the "loss aversion" theory posits that the pleasure people derive from gains is less intense than the pain from equivalent losses. In fact people prefer the option that avoids losses even when the alternative option of gains is twice as much. Marketers fully understand this and frame the expected results of their products or services in terms of "gains" and "successes" and avoiding words that connote "losses" and "failures."

Aldert Vrij in his book "Detecting Lies and Deceit" gives an interesting example on effects of framing. Participants in the experiment were shown a film of a traffic accident involving several cars. Among various questions about the accident, one particular question was differently framed for various groups. In the question "How fast were the cars going when they contacted each other?" the verb 'contacted' was replaced by 'hit', 'bumped', 'collided' or 'smashed' for various groups. While the question with the verb 'contacted' elicited the lowest speed of 31 miles per hour, the verb 'smashed' got the response of highest speed of 41 miles per hour.

One week later, the participants were asked whether they had noticed in the video broken glass at the accident site. Although the correct answer was 'no,' 32 percent of the participants who got the 'smashed' verb in their question responded that they did see the broken glass. This shows that the framing of the question can even influence the memory of the incident.

The strategic implication of all this for organizations is that when managers are pitching a proposition to their employees or to their customers or to any other stakeholder for that matter, they need to take special care to frame the proposal using appropriate words that will influence the recipients in the right direction.

Ladies and Gentlemen, as one intimately involved with Human Capital Management strategies for more than

three decades, I would like to take up the findings from Neuroscience on the critical issue of Talent Management.

We are all familiar with bonuses and incentives that are extensively used in the corporate world as powerful tools for motivating staff for superior performance. Behavioral Economists are criticizing this overemphasis on financial incentives and are in fact questioning the effectiveness of these incentives in the absence of intrinsic motivation, which they advocate is lot more critical to deliver results.

Social scientists talk about two types of motivation, the intrinsic motivation, which makes us indulge in activities for their own inherent satisfaction and then the extrinsic motivation that makes us do things for some external incentives including financial rewards, promotions and performance recognitions.

The interplay between the extrinsic inducements that are expected to influence an individual's behavior in the right direction and the intrinsic motivation that is inherent in human nature is the territory of Self-Determination Theory.

Research indicates that certain types of extrinsic motivation tools like financial rewards, deadlines, and the threat of punishment may actually turn out to be counter productive as the following case illustrates.

An Israeli daycare company with two centers tried to evaluate the effect on behavior induced by punishment and comparing it with the behavior that is generated by implicit motivation. Both their daycare centers had a rule that parents must pick up their children well before four pm in the evening. This was to avoid the necessity, for one teacher to stay back late till the last child was picked up. To improve compliance by parents, they tried an experiment, just in one location imposing a fine of $3 for each time the child was picked up late. At the end of three weeks, strangely, the center with the $3 fine for late pick up, saw a doubling of the parents who came late. It was as though the fine removed the implicit moral motivation or a certain feeling of guilt associated with making a teacher stay late. Instead the penalty felt like a service payment for the extra time spent by the teacher.

Similarly, researchers found that employees showed the least improvement in the areas that were criticized during performance feedback, indicating that criticism actually had a negative effect on their performance.

This behavior is explained by the compelling need that all people feel for maintaining a certain positive self-image. When their self-image is threatened by any negative feedback, people simply ignore, discount, or rationalize it away.

At a macro level, the same logic holds good when evaluating effectiveness of regulatory versus voluntary compliance. According to studies published in Journal of Economic Behavior & Organization, the threat of penalties tends to crowd out the honest behaviors that most people, most of the time, try to display. Research suggests that heavily regulated economies are more likely to have higher levels of moral violations and India is a prime example.

It is, some times, very amusing that all of us, without exception, can be so irrational in our decision-making and I will illustrate this using the 'anchoring bias' as an example.

Anchoring bias refers to the tendency of relying too heavily on one reference anchor or piece of information when making decisions.

All experienced salesmen effectively leverage this weakness by showing you a higher-priced item first, anchoring that price point in your mind.

Let me explain this using a scenario.

Imagine that you walk into a clothing store and instantly get attracted to a leather jacket. You try it on, look in the mirror and decide that you must have it. You imagine yourself in that jacket attracting a lot of attention. Then you lift the sleeve to check the price and it shows $800.

Well, that's too much to pay. You start to head back to the hanger when a salesperson stops you. "Do you like it?" he asks.

"I love it, but the price is just too much" is your comment.

"Not really, that jacket is on sale right now for just $400."

If you analyze, the jacket is still expensive, and you don't need it really. But a great jacket from a well known brand at half the regular price seems like a steal.

You walk to the payment counter, make the payment through your credit card, unaware that you've been tricked by the oldest retail con game in the business.

Here is another fascinating experiment.

We are all familiar with auctions. Let me take the example where people enter an auction for several items, such as cordless phones, books, chocolates, bottles of wine etc. The bidders write down for each of the items, the maximum amount of money that they are willing to pay. Whoever submits the highest bid for an item, wins that item and pays the amount. People who are keen to buy a specific item are expected to enter higher bids than others, because they place higher value for the item at that point of time.

But here's the ingenious twist introduced by Behavioral Economist Dan Ariely. Before people entered their bids for each item, he asked them first to write down the last two digits of their Social Security number and then write down their bids for various items.

Ariely's experiment threw up surprising positive correlation between the last two digits of the Social Security numbers and the bids that people entered. In other words, bidders whose last two digits of the Social Security numbers were larger in numerical value, for some reason, were driven to enter higher bids for a given item. For example, those whose last two digits were between 00-19 were willing to pay $8.64 for a cordless trackball on an average. In sharp contrast, those whose last two digits of the Social Security number were between 80-99 were willing to pay $26.18 for the same item, more than three times as much. The question to ask is, how the last two digits of bidders' Social Security numbers, by any stretch of imagination, can possibly affect how much they are actually willing to pay for a whole host of items?

Daniel Kahneman, considered the "father" of behavioral economics, has an explanation. He says, that when people are thinking about quantities, the first number that gets their full attention has enormous impact in all future numbers.

Much of our behavior is strongly influenced by other people's behavior and it therefore becomes imperative that all leaders demonstrate good behavior all the time. Neuroscience strongly endorses the need for leaders to lead by example.

Researcher Michelle vanDellen has shown that picking social influences that are positive can improve ones own self-control and more importantly, by exhibiting self-control, they are also helping others around them to do the same.

While it is generally known that people do tend to mimic the behavior of those around them, what vanDellen's study showed for the first time was that self-control is contagious across all behaviors.

What this signifies is that thinking about someone who exhibits good self-control, for example regularly exercising, can make you improve your own self-control in many other areas like sticking to your financial goals, or attending to your self-improvement programs, or cutting out those unnecessary calories etc.

The effect is so powerful that seeing the name of someone with good or bad self-control flashing on a screen for just 10 milliseconds had direct impact on the self-control behavior of volunteers in an experiment.

Similarly, the theory that bad behavior begets bad behavior was well proven by a series of field experiments in Groningen, Netherlands which was designed to test this "broken window" theory. The theory posits that if someone sees, say, graffiti scrawled on a building, he or she will be tempted to do the same or commit some other illegal or mischievous act.

In fact, sociologists often cite this theory as a possible reason that petty or small crimes in New York City dropped substantially in the 1990s after the city scrubbed its buildings, trains, buses, walls etc. clean of graffiti.

From the organization perspective, it is found that merely observing a leader publicly blaming an individual for a problem, greatly increases the odds that the practice of blaming others will spread with the tenacity of an epidemic, according to research from the USC Marshall School of Business and Stanford University.

Nathanael J. Fast and Larissa Tiedens conducted four different experiments and found that publicly blaming others dramatically increases the likelihood that the practice will become viral. The reason they cite for this behavior is that blame spreads quickly since it triggers the perception that one's self-image is under assault and must be protected.

On the positive side, researchers have found that kindness is equally contagious and good acts by a handful of individuals can really make a big difference.

Professor James Fowler of Harvard claims that co-operative behavior is contagious and will spread quickly from person to person. When people benefit from kindness from some one, they tend to "pay it forward" by helping others who were not originally involved, and this creates a cascading effect of co-operation that positively influences many more in the social network.

Without our explicit awareness, our brains are being primed all the time.

To bring out the unconscious priming effect, psychologist Aaron Kay of Stanford University had students take part in a one-on-one investment game with another unseen player.

One half of the students played the game while sitting at a large table, at the other end of which was a briefcase and a black leather portfolio. The other half of students sat at a table that had a backpack placed at the end.

It was found that the students at the table with the briefcase and leather portfolio were far stingier with their money than the students at the other table.

The mere presence of the briefcase, noticed but not consciously registered, generated business-related associations and expectations leading their brains to get into a competitive mode of playing the game.

In another experiment, Dutch psychologist Henk Aarts made the undergraduates sit in a cubicle to fill out a questionnaire. Out of sight, he placed a bucket of water in the room with a splash of citrus-scented cleaning fluid that gave off a faint smell. He also arranged snacks in the next room, for consumption after the test. After completing the answers to the questionnaire the young men and women were provided crumbly biscuits as snack.

The researchers covertly filmed the snack time and found that the students who had smelled the cleaning fluid went on to clear away biscuit crumbs three times more often than the comparison group, who had taken the same questionnaire in a room with no cleaning scent.

Dr. Schaller at Northwestern University asked undergraduates in an experiment to recall either an unethical action from their past, like betraying a friend, or a virtuous deed, like returning a lost property. After completing this task the students were asked to choose one of two gifts, an antiseptic wipe or a pencil. It was found that those who had recalled bad behavior in the experiment preferred the antiseptic wipe twice as much as the others. They were primed to psychologically "cleanse" their consciences.

In another interesting experiment, psychologists at Yale managed to alter people's judgments of a stranger by simply handing them a cup of coffee.

The study participants were college students who had no idea that their social instincts were being deliberately manipulated. On the way to their laboratory, the students had bumped into a laboratory assistant, who was carrying textbooks, a clipboard and some papers. He was also holding a cup of either hot coffee or iced coffee for which he requested students to give a hand in holding the cup.

That was all it took to prime their brains. When asked to rate a hypothetical person that they later read about, all those students who held a cup of iced coffee rated the person as being much colder, much less social and lot more selfish compared to their fellow students, who had momentarily held a cup of hot coffee.

Findings like this one, as improbable as they seem, have been pouring forth in psychological research over the last few years.

One area that is attracting lot of attention in the recent years is Neuro-marketing.

Neuromarketers study and analyze the brain activity of consumers while subjecting them to various stimuli, as opposed to market researchers who depend on conscious responses to survey questionnaires.

Neuromarketers use leading-edge technologies to measure brain activity of consumers using FMRI, EEG, galvanic skin response, eye-tracking sensors and other biometric approaches.

Advertisers have known for a long time now, that it is the unconscious mind and not the conscious mind that drives people's response to advertisements, brands and products. Research now confirms that, by and large, customers do not really know what drives their decision to buy a product or service. This is exactly the reason why traditional market research fails to provide meaningful and reliable results most of the time.

Neuro-marketing on the other hand claims to possess effective tools to better understand the customer minds. Well-known brands like Google, Facebook and ITV are commissioning neuro-marketing companies to help them create more impactful advertisements for their products and services.

US company NeuroFocus founded by Dr. A.K. Pradeep, now part of The Nielsen Company, is pioneering the concept of neuro-marketing by using brain scanners to probe emotional responses of customers.

Significantly, Citi, Google, HP, and Microsoft, as well as soda companies, brewers, retailers, manufacturers, and media companies have all become clients of NeuroFocus in the past six years.

Barry Herstein who left American Express to join PayPal is one who successfully leveraged Neurofocus tools to accurately identify brand attributes of PayPal that people really liked.

When conventional online survey threw up attributes very different from those of Neurofocus, he trusted the findings of NeuroFocus and set out to create a coherent global branding for the company, based on these attributes.

Herstein said that his boss, PayPal president Scott Thompson was extremely skeptical about this new technology, but Herstein staked his reputation on the new approach.

His gamble paid off and in the world of direct marketing, where going from 1.2 percent to 1.3 percent improvement in response rates was itself considered significant, his campaign managed unheard of improvement from 4 percent to 16 percent.

Gemma Calvert, a former Oxford University neurologist, founded rival company Neurosense and claims that her advanced neuro-marketing techniques that monitor blood flow levels in various parts of brain can predict with high degree of accuracy how customers respond to various advertisements.

Neurosense also has an impressive list of clients including McDonald's, Unilever, Procter & Gamble, and GlaxoSmithKline.

Let me quickly touch upon the role of instinct that experts rely upon while taking decisions.

Let me first define who an "Expert" is. Niels Bohr, the physicist, defined expert as one who has made all the mistakes that can be made in a very narrow field. Brain research supports this perspective. Research indicates that when an expert evaluates any situation or an idea, contrary to popular expectation, he does not follow the process of systematic comparison of all options available. He also does not do extensive analysis of data or use complex spreadsheets or 'what if' analysis tools. The expert, in fact, depends on the emotions naturally generated by his dopamine neurons. The reason why the expert's advice still turns out to be good is because of his rich knowledge base. All of his previous prediction errors have been converted into useful knowledge and is stored away in his brain and this stored knowledge generates a set of accurate feelings while evaluating a situation. For instance, Gary Kasparov, the grand master of chess, obsessively studies and analyses his past matches and stores away all the slightest imperfections in his past games. However, when he sits down to play his game, he simply plays by instinct or feelings.

It should be clear by now, ladies and gentlemen, that I can keep talking about the fascinating findings of brain research, if only there was no time constraint.

I would have, for example, loved to explain why our memories are wrong at least as often as they are right and how false memories are the primary cause for mistaken eyewitness identifications contributing to approximately 75 percent of the 297 wrongful convictions in the United States. These convictions were later

overturned by post-conviction DNA evidences and very unfortunately, these wrongly convicted people served on an average 13 years in prison (according to "Innocence Project").

I would have liked to talk about Self-Serving Bias that causes an individual to attribute all positive outcomes to personal and internal factors while completely blaming external factors for all negative outcomes.

I would have also liked to show you that we are all without exception unaware of what "we are unaware of" and that all of us who are more than six years old operate from unconscious levels of mind almost 95 percent of the time.

I would have liked to show that our minds have evolved over the years to maintain the status quo and this comfortable status quo bias keeps away many senior leaders from taking bold initiatives and new strategies that are so critically needed for the growth of their organizations.

There are so many interesting topics.

However I will stop here before you ask me to.

It is my fervent hope that I have kindled enough interest in all of you to think seriously of incorporating in your MBA curriculum, some of the more critical insights from brain research.

I have even a better suggestion. Create a short Senior Management Program with emphasis on Neuroeconomics and Behavioral Economics. The title of such a course could be "Unleashing Human Potential keeping the Brain in Mind".

Such a course should address the issue raised by Prof Robert Grant of Bocconi University in a recent interview with DNA. Prof Grant rightly feels that the critical role of any CEO is not really decision-making, but to build and manage robust organization culture and enable initiatives that will develop the skills, knowledge and intrinsic motivation of his mangers. He points out that CEOs of large companies are aware of just about 2 percent of what is going on in their organizations. They should, therefore delegate most of the decision-making responsibilities to the enabled and empowered managers at various levels of hierarchy.

Let me stop here and once again I thank the organizers for giving me this wonderful opportunity. Thank you all for your patient hearing.

N.S. Raghavan was the co-founder and former Joint Managing Director of Infosys which was founded in 1981. NSR, as he is known, took voluntary retirement from Infosys in 2000 to promote his vision of entrepreneurship and India-based global companies on a broader scale. To help create world-class enterprises and to support Indian entrepreneurs, he, along with a few associates, started the Nadathur Holdings & Investments. Today, the Nadathur Holdings & Investments supports a portfolio of over seventeen companies across industries such as Life Sciences, Information Technology, and High-End Engineering Services and Hospitality. To encourage entrepreneurship in the country and help incubate start-ups, he helped set up the N. S. Raghavan Centre for Entrepreneurial Learning (NSRCEL) at Indian Institute of Management, Bangalore (IIMB) with the vision "To be a world class centre of excellence for seeding, nurturing and promoting entrepreneurship with emphasis on startups and existing organisations with growth potential". NSRCEL was set up with a contribution of US$ 2.7 Million by N S Raghavan. NSR received the Dhirubai Ambani Award for Excellence in Entrepreneurship for the year 2004 on the 57th Independence Day of India banquet held in Los Angeles. Currently he is a Non-Executive Director of Corporate Board in ABB India Limited. He has served as a Non-Executive Director of Corporate Board in IDFC Private Equity Ltd, Murugappa Corporate Board, and Sobha Developers Ltd. He is the founder Director of Nadathur Estates Pvt Ltd, founder Chairman of Nadathur Fareast Pte Ltd, Singapore, chairman of Indegene Lifesystems Pvt Ltd., and the founding Trustee of FAME India, (Foundation for Action, Motivation & Empowerment).