

# The Neoskilling Imperative for Fostering Innovation

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*"And you? When will you begin that long journey into yourself?"* (Rumi)

## The Diagnosis

For decades, the buzzword in Indian companies and government has been *innovation*. Unfortunately, nothing much emerges from these futile efforts to foster development of indigenous technology. Why?

## The Cure

What should Indian companies do to become innovative? The answer: Double and Triple-loop learning, Thinking Obliquely!, and making a Mental Metamorphosis.

## Introduction

The rate at which emerging technologies are bringing about sweeping changes in the business scenario is unprecedented. Digital technologies are a key driver for innovation today, in the corporate world and for the overall society. No innovation today is complete without looking at the digital perspective. It is not feasible for the formal education sector to catch up with this pace in making the graduating students industry-ready.

In an interaction with media on the steps taken by AICTE (All India Council for Technical Education), Chairman Prof Anil Sahasrabudhe spoke about transformation in the education sector and steps taken for periodic revision of the curriculum to suit industry needs. According to him, 60% of graduates from technical institutions were not industry ready, pushing AICTE to revise the curriculum at regular intervals. Autonomy is provided to educational institutions. But it will continue to be a game of catching up.

Industry-academia collaboration becomes vital to bridge this gap between demand and supply. Learning & Development is a vital function in this fast paced industrial world, offering a competitive edge to organizations that are proactive in identifying skills and imparting them. We call this skill identification and training of employees as '**Neoskilling**'. Neoskilling is not just the classroom based imparting of digital skills such as programming. It also involves several soft skills such as critical thinking, negotiation, working coherently as a team, with humans and sometimes machines, algorithms and bots, and most importantly innovation.

The corporate world is relatively more nimble and agile when compared to the academia when it comes to matching the pace of disruption due to technologies or 'digital transformation'. Although much of the content and several channels of delivery are made available, the rate at which Neoskilling reaches the masses is found wanting.

## Neoskilling in the skill development continuum

Neoskilling is all encompassing for the training department and forward looking. It is at the apex in the continuum of different skill development initiatives, as shown in Fig 1. Skilling is the basic imparting of training where the new workforce is taught practical skills it will need for their day-to-day work and employability. Upskilling is incremental improvement in what one does – a conventional machine tool operator learning to operate a numerically controlled machine for example. Reskilling is a complete shift in one's domain of work by picking up new subject matter knowledge along with the tools required for it. In the automotive industry, the replacement of Internal Combustion (IC) engine driven vehicles with Electric Vehicles (EV) would mean a mass shift in the type of skill sets required for vehicle design and manufacturing, making several traditional competencies obsolete. General Motors recently shifted 75% of its power train engineers to EV development. For organizations that do not focus on Neoskilling, the demand-supply gap in emerging areas will become a roadblock for innovation.

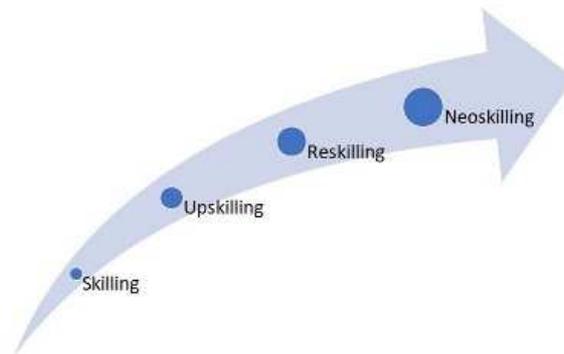
At a macro level, Neoskilling will be required for 'data scientists' to manage and make sense of the large amounts of data that flows in from multiple products and systems. In the automotive industry, its manifestation would be for connected and autonomous driving to guide a vehicle and its performance using inputs from sensors and radars. In healthcare, this would mean the diagnosis of human conditions from x-rays and scans.

For Neoskilling to be successful, leaders planning and implementing it should keep sound incentive plans in place before starting the journey. One of the strong motivating force in the work place for the young working population today is not

just pay or designations but the opportunity to learn and more importantly apply what is learnt in real life, impactful projects. Neoskilling should not stop with imparting the training but go ahead to give opportunities to practice and excel in what is taught. That is the best incentive for skill development in emerging areas.

Neoskilling instills higher-order thinking, including the usage of technology and tools and working with various combinations of digitally driven workforces of the future – robots, collaborative robots, algorithms, bots, virtual colleagues and bosses. It brings about a mental metamorphosis starting from belief in life-long learning to working as coherent teams. It makes a cultural transformation to happen in organizations where the individuals are self-motivated in picking up new skills and putting them to use.

Fig 1. The Neoskilling continuum



According to recent media reports, the Government of India is planning to issue skill vouchers instead of subsidies for its skill development initiatives. These vouchers can be encashed with approved service providers to pick up specific skills ultimately leading to an employment opportunity the individual is aspiring for. Neoskilling is driving democratization of education and employment. Diverse channels of communication from MOOCs, TVs, smart phones, hand held devices and large scale class rooms are used to deliver the content to the masses. No prior experience is required to pick up these skills, attitude to learn being the only requirement.

Recently, a KPMG study found that in 60% of Indian companies, organizational culture was the top barrier to digital transformation. This is not surprising, since in most companies, both managers and employees don't know how to work in *organic, matrix structures* that emphasize an *innovative problem-solving orientation*, and not an *operations orientation*. The result is *risk-averse* sheep and donkeys, but no thorough-bred stallions.

Changing such a mindset calls for fundamental rethinking on the part of both employees and management. While creativity is the conversion of money into ideas, innovation is the conversion of ideas into money. Unless these two activities coexist harmoniously and work together seamlessly, companies will not be able to create value, capture value and deliver value. It helps to understand how and where our companies are failing, and how to rectify this.

### Double/Triple-loop Learning

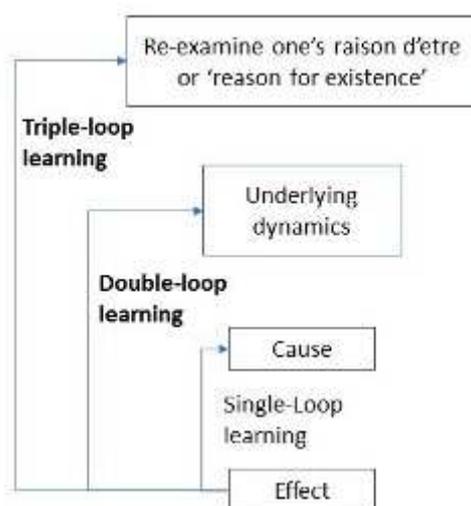
The need of the hour is to eschew the reflexive, knee-jerk, fire-fighting, operations orientation that most managers and administrators excel in, where the emphasis is on short-term *satisficing* to find a course of action that meets minimal requirements to attain a goal. What is needed is a more deliberative, optimized approach.

Single loop is the most commonly used way of learning in which the system works according to set rules in a closed-loop fashion with ongoing feedback, root-cause analyses for issues, solutions, and continuous improvement to operations. Double-loop learning questions the rules, assumptions, and beliefs based on which a system is designed to run. Triple-loop learning questions the very learning process itself and how it happens – learning how to learn, in an effective manner, as shown in Fig 2.

What is lacking in today's organizations is Double and Triple-loop learning, where the feedback goes beyond just day-to-day operations to question the rules and regulations that play a role in the operations. Whistleblower policy will be an example of Double-loop learning. Employees should be given an opportunity to question the policies in an organization. Unfortunately, most of the issues reported in examples of whistleblowing in India are related to financial irregularities and improper conduct in the workplace. They are reactive, after the incident has happened. What is required is proactive reporting of the health of the business in a bottoms-up manner – how well are new products performing in the market, what customers think about them, how relevant are newly introduced policies, how effective are newly signed up partners?

Good organizations should have employee friendly policies that encourage whistleblowing, not just for irregularities but for the performance of the organization, as an opportunity to question the rules. There should be no fear of retaliation.

Fig 2 Double and Triple-loop learning



Another example of Double-loop learning is the Balanced Scorecard approach, proactive in nature, with a 360 degree perspective of a business. It does a roll-down of the strategic objectives of the organization decided at the top most level to metrics at the bottom most level in an organization so that all employees can contribute. It complements financial measures with operational measures<sup>4</sup>.

Madurai based Aravind Eye Care Systems (AECS) was established with the mission of “*Preventing Needless Blindness!*” Around 12 million people in India are blind; 80% of which is needless and could be cured by a simple cataract operation. After a few years, its founder, Dr. G Venkataswamy and his team of Ophthalmologists pondered: “Why do people become blind?”

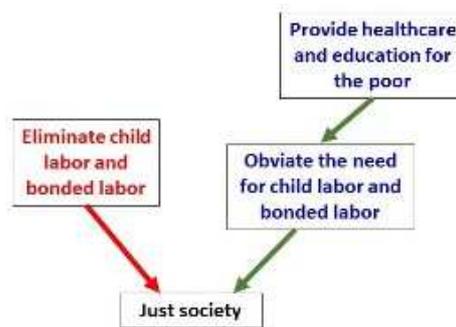
The answer: inadequate nutrition, particularly during childhood. So they established a program of providing nutrition schemes in villages, hoping to obviate the problem of blindness. Aravind is a good example of moving from *curative* - cataract operations (Single-loop), to *preventive* care - nutrition program (Double-loop).

Padma Shree awardee and winner of the Right Livelihood Award, widely known as the 'Alternative Nobel Prize', Dr H Sudarshan's integrated approach to tribal development, with health, education, livelihood, and biodiversity conservation as means to sustainable development and empowerment, is an example for Double and Triple-loop learning. Inspired by Swami Vivekananda (“...they alone live who live for others, the rest are more dead than alive.”), and desiring to emulate Dr. Albert Schweitzer, who went from Germany to Africa, Dr. Sudarshan decided on “Reaching the Unreached!”, in order to ensure a **Just Society**.

The community service he wanted to offer the Solinga tribals in BR Hills near Mysore, was met with resistance initially. He had to win their trust to start offering healthcare services that transformed into preventive care. Preventive healthcare later matured into education and means of livelihood that were skill based. These programs evolved, because it gradually dawned on him that: “...I have no pills to cure poverty!”

Dr Sudarshan's experience in practicing community medicine revealed that the root cause for most of the issues was lack of education. He also realized that merely delivering preventive and curative health care alone was not sufficient to help the impoverished people. So, he started diversifying into community-building and vocational training for skill development, to empower tribals. His underlying philosophy was that poverty should be removed to eliminate diseases. His way of removing poverty was to organize people for their rights, and by fostering self-reliance, as shown in Fig 3.

Fig 3. Making communities self-organizing for a Just Society



A few years ago, an Indian was given the Noble Peace Prize for his efforts at combating child labour. While this is laudable, the laurate did little to address the root causes. Dr. Sudarshan had the intellectual wherewithal to transcend such tunnel vision, and did so through the Vivekananda Girijana Kalayana Kendra (VGKK) that focused on schooling tribal children, and the Karuna Trust that provides primary healthcare in rural India.

Then Dr. Sudarshan asked the logical question: Why is the Government unable to provide education and healthcare to alleviate poverty. Practically every effort, except for a few notable exceptions, is vitiated and stymied by vested interests and bureaucratic inertia. The primary reason: **Pervasive Corruption**, as crooked politicians and venal bureaucrats siphon off the allocated funds. (See Fig. 4)

Fig 4. Ensuring proper flow of funds to alleviate poverty



Corruption in Government, at both Central and State levels is not just pervasive, but very deep rooted. Even a former Prime Minister ruefully noted that not more than 15% of the money allocated goes to the actual recipients or intended beneficiaries.

Dr. Sudarshan therefore became a member of the Kanataka Lokayukta. As the Vigilance Director, he conducted regular visits to government hospitals to take stock of how they were performing and was appreciated for it. He found that the rot started right at the top, and permeated throughout the department. He reported Corruption as the top most concern in his report on Health and Family welfare. He also suggested reforms for good governance and people's movement as a way of preventing corruption (in the form of citizen charters, forums, networking of people with integrity, value based education, using Right to Information Act for transparency, electoral reforms).

In IT, a number of Indian companies like TCS and Infosys, and Cognizant, have made a mark in the ITeS (Information Technology enabled Services) space. They were able to leverage time shift advantage due to the location of the subcontinent, and utilization and deployment of a qualified, low cost, English speaking work force, for onsite or offshore assignments. Now in the face of numerous non-tariff barriers, like H-1B and H4 visa restrictions, they have to re-examine their Theory of Business<sup>6</sup> – the assumptions based on which a business is built, driving its behavior, decisions and results.

They have to be capable of “Providing comprehensive solutions, not just products & services.” For this they must strive to:

- \*\* Become a “one-stop shop” or full services provider;
- \*\* Eschew price-based competition;
- \*\* Differentiate themselves using the “value offered” proposition.

In other words, this calls for Triple-loop thinking. The industry can no longer be limited to working efficiently as per standard operating procedures. What is expected is a collaborative way of working, encouraging two-way communication with customers, decision makers and technology architects, brainstorming for the best possible solution, questioning the rational and finally deciding the best possible approach to a business challenge or opportunity leveraging software and hardware.

### Thinking Obliquely

Thinking Obliquely! is best captured in the book '*Obliquity: Why our goals are best achieved indirectly*', by John Kay (published by Profile, 2010, as reviewed in the UK newspaper The Independent).

“Obliquity is the idea that complex goals are often best pursued indirectly. In general, oblique approaches recognise that complex objectives tend to be imprecisely defined. These objectives contain many elements that aren't necessarily or obviously compatible with each other. Furthermore, we learn about the nature of the objectives and the means of achieving them during a process of experiment and discovery.

“Obliquity recognises that there are no predictable connections between intentions and outcomes. Problem solvers cannot evaluate all available alternatives: they make successive choices from a narrow range of options. Problem solving is iterative and adaptive, rather than direct. Good decision-makers are balancing incompatible and incommensurable objectives. They are eclectic and tend to regard consistency as a mark of stubbornness, or ideological blindness, rather than a virtue.

“Effective decision makers are distinguished, not so much by the superior extent of their knowledge, as by their recognition of the limitations of that knowledge. Rationality is not defined by good processes, irrationality lies in persisting with methods and actions that plainly do not work – including the methods and actions that commonly masquerade as rationality.”

In its heydays before independence, Presidency College, Madras, had a unique approach of selecting students for the coveted Honours program. When the candidates walked into an airy interview room, cooled by an open window to let in the sea breeze, one of the things that caught their attention was a large map of the Indian subcontinent. After being grilled on the usual and expected subjects, the head of the interview panel bowled the googly: “Where is the Bay of Bengal?”

If the candidates pointed to the map, they were admitted into the regular stream; if they pointed to the azure blue waters framed by the window, they were admitted to the Honours stream.

Aravind Eye Care Systems has its own way of selecting candidates with a “service orientation” for the nursing cadre. Since *empathy* is critical in its industry, AECS hires young women from villages only, as those from cities cannot relate to those poor and impoverished individuals from rural areas who are the majority of the patients.

The short-listed candidates are usually accompanied by multiple family members, often parents, a common practice in India. They are first asked to come into the interview room individually, with their relatives. If the young woman was dressed grandly, like a minor film star for this special occasion, while her parents are rather plainly dressed, she is likely a spoiled child, a narcissist who won't fit into the organization's work ethos.

On the other hand, if the candidate was dressed simply, in keeping with her socioeconomic status, she has the maturity to know how to live within the constraints of her family income. The parents were thanked and asked to leave the room so that their daughter could be interviewed.

After questions to test subject matter expertise, near the end the young woman is asked: “How much was the bus/train fare to come from the village to the city for the interview?”

Those who don't know, because their parents or relatives purchased the tickets, are excused. Those who give the correct answer (Rs. XX), are more likely to be given appointment letters. This was because of their awareness of worldly realities and they would appreciate the opportunity costs even “free” patients may incur.

The founder of the TVS empire, hit upon a novel idea to distinguish his bus company, TVS Motors, from its competitors. In the Kaveri delta and other southern regions around Madurai, a major rival was TST. The rib-tickling joke percolating within the company and the general public was, that TVS stood for “*Thalla vaendam, sar!*” (No need to push [the bus], sir!), while TST meant “*Thallunga sar, thallunga!*” (Please push [the bus] sir, please push!) due to a breakdown.

The message to employees was clear: **Don't inconvenience customers.** Since the omnibus is a complex mechanical and electrical contraption, no one could guarantee perfection. Therefore, when the vehicle leaves the depot, it must do so in the best condition possible so as not to breakdown unexpectedly, especially on a scorching summer afternoon, on a desolate

rural road, miles from the nearest village or town, thereby unnecessarily inconveniencing paying passengers and giving them a harrowing time.

This slogan became such a part of TVS's DNA that conductors would often stop the bus some distance from the regular stops, so elderly passengers found it easier to alight and walk home. Because of such a customer friendly attitude of the staff, many passengers would rather wait for a TVS bus they knew was coming shortly, rather than take an earlier one by a competitor.

In his book "Shoe Dog", Phil "Buck" Knight, the founder of Nike tells about a *crazy idea* he had while doing graduate studies at Stanford. If the Japanese could produce high quality, inexpensive cameras and make deep inroads into the US market once dominated by Germans, why couldn't they do the same thing in athletic and running shoes? He then went to Japan and found a shoe company that went along with his crazy idea. He convinced a group of Japanese businessmen to export their popular Tiger sneakers to the United States and grant him exclusivity in selling them. The rest, as they say, is history.

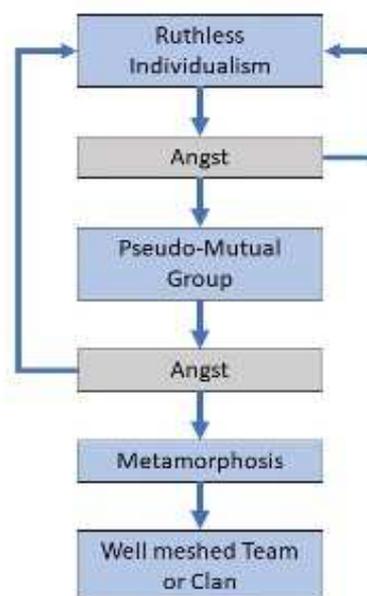
### Making a Mental Metamorphosis

To work in *organic, matrix structures*, where the emphasis is on being *innovative problem-solving orientated*, calls for new ways of thinking and behaving. Fig 5 shows the stages of going through the mental metamorphosis from self-centric individuals with strong points of view to becoming an integrated part of a well-meshed team or a clan.

An analogy is the transformation a caterpillar undergoes to become a butterfly, as explained in Trina Paulis' fable "Hope for the Flowers". Individuals believe one could accomplish anything worthwhile only by just working along. Gradually, as they begin to realize their limitations, a sense of *angst* grips them. Some shrug off any doubts and go back to their preconceived notion that only individual efforts succeed. Others, realizing the importance of working with colleagues, succumb to reluctant membership of Pseudo Mutual Groups. As the futility of working in such groups becomes obvious, some revert to their "dog-eat-dog", zero sum views of the world, and seek refuge in Ruthless Individualism.

Others experience the "Road to Damascus!" revelation, and it dawns on them that unless one undergoes a fundamental shift in their view of the world – an attitudinal transformation, it is not possible to work in well-meshed teams of clans, so essential for Neoskilling in this era of digital transformation and the accompanying AI revolution.

Fig. 5 The stages of metamorphosis – from individualism to a team player



### Bridging the Chasm

However, not everyone is capable of being proactive, thinking holistically and going to the root cause of the issue. Most tend to be reactive, have a piecemeal approach and address the symptoms rather than the underlying causes! How does one know what it takes to be the former? Fortunately, there are a number of litmus tests. How could trundling plebeians shed their blinkers and become transformational patricians?

There are some steps:

- First, read the Apple “Graphing calculator” case study.
- Second, read Leo Lionni’s children’s classic *Frederick*.
- Finally, by watching the video “Infinite Vision,” learn from Dr. G Venkataswamy of AECS, how to manage paradoxes and imbibe the wisdom to:
  - Visualize,
  - Organize, and
  - Energize people.

Then you will begin to understand why it took Corning Inc, USA, decades to find a market and applications for its “Gorilla” glass technology developed nearly fifty years ago<sup>5</sup> (when there were no MBAs around to micromanage Scientists and Engineers), in today’s touch-screen tablets’ displays and high-end TVs, as well as a protective layer over the screens of millions of cell phones and other mobile devices.

### Concluding comments

When IBM realized that its performance management system was traditional in approach<sup>2</sup>, it had to be reimagined to favour speed, innovation and high-performance culture. Innovation and speed were becoming important in the new business model over and beyond efficiency. The new system emphasized beyond project management to ‘how’ it was done including the application of new skills and ongoing, continuous feedback, not the annual style of setting up goals and measuring progress against them at the end of the year. Such an approach stressed upon the importance of not just innovation and agility but on reskilling and life-long learning.

As lifelong learning becomes the economic imperative in the digital world, making it a part of our daily work is what the authors<sup>3</sup> refer to as “learning in the flow of work”. It is an approach where learning is integrated as part of regular work, invisible and aligned to our corporate lives by leveraging technology.

Technologies and business models which leverage them are changing at a rapid pace for any individual or even a team to keep track of. Large enterprises can think of three roles to manage this pace of change – Gardeners focused on today’s needs for training new employees in skill sets required today, Farmers focused on the medium term at upcoming skills and Foresters who have the big picture and long term in mind for futuristic skills and roles, some of which may not be apparent today.

Beyond all these management ideas, it takes a self-motivated work force aware of what Neoskilling is and practicing it day in and day out, believing in and practicing life-long learning. This work-force of the future is keenly watching emerging trends, knows where and whom to reach out to learn new areas and then put them to good use for the betterment of their own professional career, the parent organization and the overall ecosystem.

Deep down in all of us are two opposing personalities – a Steve Jobs or Dilbert’s pointy-haired boss! Depending on who triumphs, the nation either has a vibrant future or is destined to wallow in the cess pool of perpetual mediocrity!

To ensure the former, one must heed the clarion call of the great sage, Swami Vivekananda: “*Come on, O lions, shake off the delusion that you are sheep...*”

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### About the authors



Professor Prasad combines solid academic credentials with the ability to integrate theory with practice, using an interdisciplinary approach that combines the behavioral, structural, marketing and strategic perspectives. When interacting with senior and top management, he emphasizes Triple-loop learning, by getting them to rethink their organization’s *raison d’être*, while focusing on Theory of Business and Symbolic Leadership. For middle management, he facilitates Double-loop learning, i.e., how to be proactive leaders who understand the underlying dynamics of various organizational phenomena. Prof. Prasad has more than 40 years of experience in the USA and India. His professional activities encompass teaching, research, consulting and training, center on the themes: ‘Achieving a

Competitive Edge through People!' and 'Leadership in a VUCA World.' His passion is 'high impact leadership'. He now prefers to explore new horizons as a change agent and facilitator, to assist managers in applying the concepts presented in the classroom. He has therefore begun de-emphasizing one-off programs in favor of greater involvement and long-term partnerships. Prof. Prasad graduated from IIT Madras, has a Postgraduate Diploma in Management from IISc, and PhD from Northwestern University, USA.



Mr. S. Ramachandran (Ram) is a consultant for application of emerging technologies to address business needs, in the manufacturing vertical in Infosys Knowledge Institute. His focus is on developing thought leadership and points-of-views, based on recent trends in management and digitization. Ram also works with internal teams to incubate these ideas and nurture them into new market offerings. He is a regular blogger and also a speaker on topics such as Digital Transformation and Industry 4.0. Ram has more than 20 years of global corporate experience, starting with Hindustan Motors. He spent a significant part of his career in General Electric, in Energy business in the USA and India, leading digitization projects for e-Engineering, PLM and Reliability programs. He was a Supply Chain Transformation Manager in Hewlett-Packard for a couple of years. Prior to Infosys, he was an analyst in IDC Manufacturing Insights, wherein his role involved ongoing industry leadership interaction and collaboration, conducting market research and driving consulting projects. Ram is a Mechanical Engineer with masters in Production Engineering from PSG College of Technology, Coimbatore. He did his executive MBA (PGSEM) from IIM Bangalore. He was a research student in the Robotics Research Center, Nanyang Technological University, Singapore for 2 years.

### ICT Quiz – ICNL19q1

This ICT Quiz has 10 questions. Select the correct answer from one of the two the options or provide the answer depending on the question statement.

1. The brand ambassador of PhonePe, a mobile payment service is Sharuk/Aamir Khan
2. Google : Stadia = Apple : -----
3. 178 is a valid Octal number True/False
4. The most popular 4Vs of Big Data are -- Volume, Variety, Velocity and -----
5. IBM : Red Hat = Microsoft : -----
6. "Invent" was the old tagline of the IT major HP. What is its new tagline?
7. Both Yahoo and Google had their roots at Stanford/Harvard University. True / False
8. In COD, D stands for Demand/Delivery/Despatch/None
9. Amazon/Apple is the first company to be valued over \$ one trillion
10. QR Code was first designed for Retail/Auto Industry

**Participate in this quiz and win a book. If many qualify with all correct answers, a draw will select the winner.**

Send your answers by email to [ieee.icnl@gmail.com](mailto:ieee.icnl@gmail.com)

Pl. keep the subject of email as "ICT Quiz – ICNL19q1". Mails with any other subject may miss our attention.

Enter the question no and the related answer (in each line)

After answering all the questions, pl. provide your

- Name,
- Affiliation (Designation if employed / mention as Student is studying)
- Company / Institution Name
- Full postal address
- Mobile no

Responses without these info will not be considered.