The Journal of Governance

Volume 17 July 2018

IC Centre for Governance
NEW DELHI

The Journal of Governance
IC Centre for Governance
3, Palam Marg, 3rd Floor, Vasant Vihar, New Delhi-110057

The IC Centre for Governance has been set up in with the objective of collective thinking and acting on important issues of governance. It believes that public governance is too serious a matter to be left entirely to the state and that the involvement of the Civil Society is not only desirable but also essential. The Centre seeks to strengthen the capacity of Civil Society and government for ensuring good governance.

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The Journal of Governance is printed and published by Mahesh Kapoor on behalf of the IC Centre for Governance, New Delhi-100057

Publication Coordinator - Nandita Sinha

Printed at Rakmo Press Pvt. Ltd. C-59, Okhla Industrial Area, Phase I, New Delhi-110020

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"If we stop thinking of the poor as victims or as burden and start recognizing them as resilient and creative entrepreneurs and value conscious consumers, a whole new world of opportunity will open up."

- C K Prahalad

The other day in a discussion with the Vice Chairman of Niti Aayog, I learned that the Aayog was pursuing in-depth studies in many important areas of development including Agriculture, Health Care, Nutrition, Water, Environment etc. Though employment was not one of them, he agreed that employment, particularly in the unorganized sector of the Indian economy, needed greater focused attention in the near future. Then I mentioned to him about a recent study on the Micro, Small and Medium Enterprises.

Like several other reports of the commissions and committees constituted by the Government of India, the report of the One Man Committee to suggest policy imperatives for the Micro, Small and Medium Enterprises seems to have been confined to bottomless cupboards of Udyog Bhavan. It was two years ago that the present NDA government had requested me to preside over the Committee. A fully furnished office complex was provided and a senior officer of the Ministry was assigned the task of assisting me. Visits to different parts of the country and meetings with various associations and experts on the subject were organized meticulously. One has to admit that the government agencies take good care of the members of the committees.

I saw a new horizon for micro and small entrepreneurs during the tenure of a decisive, determined and forward looking government. After many decades the establishment viewed the tiniest entrepreneur in a comprehensive manner and I considered it as a beginning of a big movement for the small man. For decades, there were large programmes for large industries and small schemes for small industries. Therefore, it appeared to be the first bold move towards realizing Gandhi's talisman about the last man in the society. (*"I will* *give you a talisman. Whenever you are in doubt, or when the self becomes too much with you, apply the following test. Recall the face of the poorest and the weakest man whom you may have seen, and ask yourself, if the step you contemplate is going to be of any use to him")*

The MSME sector deserves to be high on Prime Minister's agenda of economic growth, social reconstruction and poverty alleviation. One wonders why an explicit statement in this context had not yet been put forth. Though some of the frontline initiatives of the Prime Minister like Mudra Yojana are indirectly indicative of PM's support to the small entrepreneur, what's required is an up-front declaration of Government's intention of building this sector.

If the Government does not realize the singular importance of MSME development, then it will be unrealistic to expect a higher and more inclusive economic growth. There is a general feeling of stagnation in the sector for some time. It is felt that MSME's are not giving their best because of certain amount of stagnancy in policy making.

The overall objectives of the MSMEs development are (i) create employment opportunities, (ii) generate incomes, (iii) contribute to regional development, and (iv) meet local demands for goods and services. Besides, they are crucibles for nurturing entrepreneurship among the young population and an avenue for growth of economic participation of women and weaker sections of population.

Like in most other countries, MSMEs in India start as proprietorships. They are by nature highly dispersed and can sustain themselves with minimal infrastructural support. Unfortunately, even that minimal support is not available to most of them. They are starved of adequate capital, market access, technology adaptation and skilled manpower. Consequently, they have to struggle to survive.

In my discussions with the then minister of MSME, he made a clear statement that his main interest was in the development of village economy by empowering the rural youth to become productive entrepreneurs. He wanted to reach out to the young men and women through skills development and entrepreneurship development training, in order to equip them with the ability to set up tiny and small units in the villages. Surprisingly, nothing has been done in this direction yet.

After much exploratory study and interaction, I came to the conclusion that changing the mindset of the institutional stakeholders, honouring the entrepreneurship spirit and restoring the dignity of entrepreneurship should be the focal thrust of our MSME policy. As a nation, we have failed to accord the respect to our entrepreneurs which they legitimately deserve. The state establishment needs to develop an 'I care' syndrome in supporting and servicing the enterprises. Therefore, it is absolutely essential to bring about a change in the mindset of the functionaries of different public institutions at various levels; and this includes the staff of the banks and financial institutions too.

Among the recommendations made by me, the policy formulation in the Central Government for Micro, Small and Medium Enterprises that suffers from fragmentation and silo-thinking, received focused attention. In government of India, there are at least seven ministries dealing with an aspect of MSME. Each ministry concerned with a part of MSMEs looks after the interest of their units to the exclusion of others.

Therefore, an overarching structure needs to be created with Prime Minister as Chairman for broad policy formulation at the Centre with adequate institutional arrangements for coordination with state governments. It is my belief that without the direct involvement of the highest decision making authority, MSME sector will continue to stagnate.

It is universally recognized that the micro sub sector accounts for more than 90% of the total number of enterprises in the country as also more than 90% of non-agriculture employment. In my view, while the micro units are eligible for all the schemes for small units, they do not normally figure in the scheme of things because of historical significance of small scale industries. I believe that the focus of policy making in the government has not been the micro enterprise sector, which can be an effective instrument of poverty alleviation and a dampener on rural-urban migration. Therefore, I recommended the need to strike a balance between the interests of the upward mobile small and medium manufacturing sub sectors and the vast aggregation of livelihood oriented micro enterprises.

The lack of and asymmetry of requisite information regarding the constituents of MSME universes are visible inadequacies of the available data. Therefore, I felt that it is absolutely essential to have a transparent database that can be gainfully used by the key stakeholders at the national, state and local levels. Such a database should be maintained and managed by an autonomous agency; should be made available to key stakeholders e.g. central government institutions, state institutions, accredited associations, local bodies, entrepreneurs etc on a 'need to know' basis; should be dynamic; with relevant information to be shared by all including banks and financial institutions , based on the principle of universal registration; all the schemes etc of central and state governments should be properly displayed.

It is chilling to see how the great socio-economic idea of 'small is beautiful' is being progressively silenced in the deadening chorus of large foreign investments and globalization. I think something needs to be done today to resuscitate the small entrepreneur. Tomorrow may be too late.

Prabhat Kumar

Deepak Nayyar

Future of Globalization*

I intend to speak about the Future of Globalization as it says here but something different from what I have done in the past about learning from history. Globalization means different things to different people. It can be defined simply as an expansion of the economic transactions across national boundaries where international trade, international investment and international finance provide its cutting edge. More precisely, it can be defined as a process associated with increasing economic openness, growing economic interdependence and deepening economic integration among countries in the world economy. This process extends beyond trade flows, investment flows and financial flows to flows of services, technology, information knowledge and ideas across borders even if the movement of people is restricted and regulated. The last quarter of the 20th century and the first decade of the 21st century witnessed a phenomenal acceleration in this process of globalization. There is a common presumption that this world is altogether new and represents a fundamental departure from the past. But this belief is wrong, completely wrong. Globalization is not new. In fact, there was a similar phase of globalization which began around 1870 and gathered momentum until 1914 when it came to an abrupt end. In fact, a comparison of these two epochs of globalization reveals parallels in many characteristics of the world economy. In some ways, the 2010s also resembles the 1910s. History does not repeat itself. Even so, there is much that we can learn from history for there is

* Abid Hussain Memorial Lecture delivered by Prof. Deepak Nayyar at the India International Centre, New Delhi, 22nd December 2017.

the past in our present. Indeed, the past might also help us explore how the future might unfold and that is precisely what I intend to do this evening.

For this purpose, we need a historical perspective that is longer than just one century. Globalization began life much earlier. The movement of goods, people, skills ideas, knowledge, cultures and religions across the world even before there were borders or nation states goes back a very long time. Some beginnings are discernable in the first millennium. During the second millennium, there were waves of globalization and de-globalization which straddled continents and geographies driven by trade and geopolitics, war and peace or technology and politics. For people who lived on those times, at every juncture, the process deemed unstoppable. But history suggests that globalization has always been a fragile and reversible process that has come to an abrupt or unexpected end. The underlying reasons have been embedded in the consequences of the process of globalization ranging from the spread of disease or pandemics to economic strains and political conflict between winners and losers whether countries or people. Of course, the backlash has taken different forms at different times. Thus globalization has never been the end of either history or geography.

In this lecture, I will begin with the long-term perspective to set the stage before the play begins. Thereafter, I will analyze the two recent eras of globalization which began life in the last quarters of the 19th and 20th centuries, to focus on the present conjuncture when globalization is in crisis and reflect on its future.

Let me begin with the first millennium. It is a prologue on the beginnings of the globalization to come centuries later. The movement of people across geographies is as old as humankind. For centuries, communication routes and trade paths both land and sea crisscross the Eurasian landmass linking east and west. Such routes traded in a wide range of goods and meant the movement of large numbers of people. The traders were Arabs, Armenians, Chinese, Georgians, Greeks, Indians, Persians, Romans, Sogdians and Syrians. Moreover, the vast networks were about far more than merchandise trade as knowledge, ideas, cultures, beliefs, languages and religion traversed the same paths to influence each other in ways that sometimes change history. These ancient routes had no names. In fact, it was only in the late 19th century that a German geologist, Ferdinand von Richthofen named the network of routes as Die Seidenstrasse (The Silk Roads). The term is an entirely colonial construct. There were three historical routes connecting Asia and Europe – the southern land routes via Central Asia, a route to its north along the southern edge of Mongolia that was used little and a maritime route across the Indian Ocean.

There was no single overland route that ran directly from China to the Mediterranean. It was made up of segments each of which was a loop in a chain which was also not a single named entity. To begin with, Han rulers in China exchanged gifts – silk and horses – with the nomads of central Asia. Large-scale commercial exchange came later. The central Asians as traders took the silk West to Oxus Valley from where it went to India and Iran. It went from Iran to eastern Mediterranean, through local traders, from where it was sent to Rome through their traders.

Much else was traded besides silk from China. That is a myth. Lots of other goods moved from east to west, while Buddhism travelled from India through Central Asia to China and East Asia, with site after site of Buddhist shrines along the route. The routes were not subject to any centralized political control. Trade and commerce recognized that none had a monopoly on trade which flowed through many, many channels. In that sense, it was a precursor to what could be described as globalization.

Asia and Europe were also connected by sea. There were three segments in this maritime route: the Red Sea to the coasts of India; the Bay of Bengal to South East Asia; and South East Asia to South China. It all began with trade in spices, and the demand for spices took Indians to South East Asia. Religions—Hinduism, Buddhism and Islam—also moved on these routes. It was the Arabs and Indians who dominated the maritime trade in the first two segments, while the Chinese dominated the third segment.

There were three profound historical events. As I said, this was a precursor to globalization. There were three profound historical events during the second millennium which were conducive for globalization in a more substantive sense that connected different region and peoples of the world. The first was what I call Pax Mongolica in the early 13th century. The second was Voyages of Discovery Circa 1500 and the third was the Industrial Revolution in Britain in the late 18th century. Pax Mongolica, the nomads of Central Asia, the Mongol tribes were forged into an effective Union by the genius of a person called Temujin who was proclaimed Genghis Khan, universal ruler in 1206. Under his leadership, until his death in 1227 followed by his descendants in the same tradition, the entire Eurasian landmass from China in the east to Iraq, Iran and Russia in the West extending to Hungary and the Adriatic Sea by 1240 was conquered to establish the Mongol Empire. Globalization has always required an infrastructure of law, order and security provided by political hegemony.

The Mongols were the hegemons in this area who unified the Eurasian landmass under the political control and encouraged trade flows between all regions across this vast geographical space. In fact, it was only the Mughal Empire that welded the segments in loops of the Silk Roads in a single route. Once established, every region Central Asia, South Asia, Southeast Asia, East Asia, the Islamic world in Europe participated in international trade. The geographical unification drove economic interaction but there was a flip side. Bacteria, germs and viruses that were local to particular regions also moved long distances carried by people and animals. Plague germs were carried by Mongol troops with their horses from Central Asia to the Black Sea in 1347. These were transmitted by ships to ports around the Mediterranean and then across Europe. It is estimated that the plague described as the black death killed more than 25 million out of a total population of 75 million in Europe in just three years from 1348-1351. Its impact on the Islamic world was worse. This was amongst the most devastating catastrophes in human history. The global spread of disease was a corollary of economic integration brought about by the Mughal Empire. It led to the formation of common market not only for goods but also for microbes and germs.

The mid 14th century witnessed the disintegration of Pax Mongolica when the internal conflict among Mongol States coincided with the loss of Persia and of China. In the absence of such imperial rule, trade routes were no longer safe, secure and open. The Silk Route too was closed down by the Ottoman Empire in the early 15th century. It would seem that in this epoch, globalization sowed the seeds of its own destruction.

The voyages of discovery in the late 15th century led by the Iberian states were perhaps the next major turning point. The Europeans were trying to bypass the Arabs who had monopolized the Asian maritime trade. Hence, there was a need to find a direct sea route to India which could also lead further east. The first milestone was obtained in 1488 when Bartolomeu Dias found the Southern tip of Africa that was aptly named as the Cape of Good Hope. Christopher Columbus, native of Genoa, Italy peddled his idea of sailing West across the Atlantic to many European States which was ultimately supported by the monarchs of Spain in Aragon and Castile. Columbus sailed from Cadiz in 1492, with just 90 men in three ships, to his momentous discovery even as historians know that he rarely knew where he was, let alone where he was going. He ended up there by accident.

Vasco da Gama left Lisbon in 1497, with two ships and a support vessel, to reach Calicut on the Malabar Coast of India in May 1498. The voyages of Columbus to the Caribbean were followed by several Spanish expeditions. The exploratory flotilla, led by Hernan Cortes of 11 ships, 100 sailors and 500 soldiers touched the Mexican coast in Yucatan and landed at Vera Cruz in April 1519. Just two years later, the mighty Aztec Empire was destroyed. These voyages were brought to completion by Megellen's circumnavigation of the globe in 1521.

These voyages of discovery led the first phase of European colonial expansion in the early 16th century. It began with Spain and Portugal. The slave trade from Africa, the search for silver in the New World and the colonization of the Americas was part of this process which unleashed a somewhat different dynamic in the formation of the world economy. It was the age of mercantilism in

Europe. The acquisition of colonies was associated with a mercantile expansion of trade. Old World trade and New World silver turned out to be powerful complements in stimulating trade flows, as Europe paid for its imports of textiles, spices, porcelains and silks from Asia by exports of silver obtained from the Americas. The New World provided Europe with a source of primary commodities such as sugar, tobacco, cotton and timber apart from the windfall ecological gains through access to indigenous plants in the New World Like maize and potatoes, just as these colonies provided export markets for manufactured goods from Europe. The slaves from Africa provided the labour for plantations, mines and agriculture while the migrants from Europe provided entrepreneurs in the New World. At the same time, profits from the slave trade generated resources. This period from 1500 to 1780 was clearly the second wave of globalization during second millennium in which Europe, Asia, the Americas and Africa were all part of that process.

The growing network of world trade laid the foundations for a specialisation in production between countries, the benefits of which accrued in large parts to Europe. It is no surprise that there was a struggle for hegemony in this emerging world. In the late 16th century, Portugal and Spain which has led until then were displaced by Holland, a merchant oligarchy, as the Dutch Rose to primacy in world trade. Their dominance continued into the 18th century before it was lost to the British. In this world where 'guns and sails' were critical, power provided for plenty. This power was obviously sustained by economy and technology. Geopolitics shaped the possibilities. Economic primacy was essentially about state power and naval power which provided protection for economic interests in distant lands and merchant ships in distant waters.

Such competition for power unleashed political rivalries in Europe. The period after 1980s experienced a worldwide military conflict. It culminated in the Napoleonic Wars from 1803 to 1815. Trade was severely disrupted. But that was not all. Independence for the United States in 1776 and for most countries in Latin America beginning around 1810 deprived the European powers of most of their colonies in the New world. In 1807, Britain abolished the slave trade between its colonies in Africa while the United States banned the transatlantic slave trade in 1807.

Globalization which had evolved over three centuries in this age of mercantilism came to an end once again essentially because of the political challenges and conflicts it created. It is ironical that disruption coincided in time with the beginnings of the industrial revolution in Britain which laid the foundation of the third wave globalization that was to surface a century later. The mercantile expansion of trade during the period 1500 to 1780 supported by state power and naval power led to an expansion of commerce and an increase in urbanization which were conducive to social, political and institutional change that created the initial conditions for capitalist development in Western Europe and the industrial revolution in Britain.

There is a wide range of factors underlying that industrial revolution during the late 18th century so that single explanations are futile. High wages combined with cheap capital and cheap energy made it profitable to invent and use new technologies, while the substitution of coal for wood as a source of energy made an enormous difference. But the search for new technologies in Britain was also driven by competition from Asian manufacturers and shortages of wood that followed deforestation in Britain. International and overseas expansion in the mercantilist era laid the foundation while state action in the form of trade policies that protected domestic industry in Britain or patronage for science and technology performed a critical role. It was not about laissez faire.

The industrial revolution in Europe had far-reaching implications and consequences not only for Europe but also for Asia and the world. Its beginnings, the steam engine, cheap iron and the spinning jenny with the cotton mill turned out to be transformative. It seems strange in the world we live in now. The cotton mill pioneered the mechanization of industrial production. The steam engine produced energy through technology by using water and burning coal. The cheap iron came from coal that made it possible to substitute coke for charcoal in smelting. Taken together, these developments helped create an engineering industry that could produce machinery to unleash large productivity increases. The process was reinforced by improved technologies that reduced coal consumption for a more fuel- efficient steam engine. This led to an industrial and geographical spread in the use of new technologies. More was to come later in the mid 19th century, from the same beginnings. The idea of railways began life much earlier, to haul coal in mines and from mines to rivers. It was iron rails and steam locomotives that made it into a means of surface transport on land when roads did not exist or were not suitable for that purpose. The substitution of steam for sails and of iron for wooden hulls in ships led to a revolution in shipping. Both led to an enormous reduction in the time needed, as also the cost incurred, in traversing geographical distances.

The revolutionary change in methods of manufacturing which were developed in Britain in the late 18th century and spread to countries in Western Europe through the early 19th century meant profound changes in the economic life of Europe. Innovation, followed by continuous improvements in technologies, yielded sharp increases in productivity, output and incomes. The rapid diffusion of new technologies, combined with their geographical spread brought about rapid industrialization in Western Europe, particularly Britain, Belgium, the Netherlands, France and Germany.

The 19th century and I move to the third wave of globalization which came a century after the industrial revolution witnessed the evolution of international economic order that led to a profound change in the balance of economic and political power in the world. It was attributable to three developments. The first was the industrial revolution in Britain in the late 18th century which spread to Western Europe, even if slowly, during the first half of the 19th century. The second was the emergence of newer, somewhat different, forms of colonialism in the early 19th century starting in Asia and spreading to Africa which culminated in the advent of the British and European imperialisms that gathered momentum through that century. The third was the revolution in transport and communication in the mid 19th century, manifest in the railway, the telegraph and the steamship which dismantled the geographical barriers of distance and time to shrink the world.

These three developments, which overlapped and partly coincided in time, transformed the world economy by creating patterns of specialization in production associated with a division of labour through trade reinforced by the politics of imperialism.

These three developments provided the foundations of the next wave of globalization. It began around 1870 and came to an end in 1914, an epoch of half a century coinciding with what Eric Hobsbawm has described as the 'Age of Empire'. It was the age of laissez faire, the movement of goods, capital and labour across national boundaries were almost unhindered, government intervention in economic activities was minimal. There were, of course, differences among countries. The openness of economies that characterized with this era was a rapid expansion in trade, investment and finance across borders.

During this era, growth in imports and exports and imports was much faster than growth in national income for most countries so that the share of world trade in world output grows rapidly. It is believed that rapid expansion of trade was attributed to trade liberalization. It was but only in part. Britain and Netherlands were two countries that practiced free trade. But most countries in Europe and the United States practiced protection with import tariff levels that ranged from 20 to 50% in this period. Free trade was, however, imposed on the rest of the world.

Imperialism prised open markets in Asia, Africa and Latin America through gunboat diplomacy or colonial dominance. Reality did not mirror the myth of free trade.

There was a similar expansion of international investment and by 1914, the stock of foreign direct investment in the world was the equivalent of about 10% of the world output. The stock of portfolio investment was twice that of direct foreign investment. Britain, Germany and France were the primary source of foreign capital and accounted for three fourths of the total. For Britain, income from foreign investment was as much as 10% of national income. About half of the total foreign investment went to Asia, Latin America and Africa. It was equal to one-third their GDP, much higher that was of the world, while the remaining half, in equal parts, went to Europe and North America, the newly industrializing countries, where it financed about half of total investments.

There was also a significant integration of international financial markets to provide a channel for portfolio investment flows. They existed a long time ago. The cross border ownership of securities including government bonds was high. In 1913, for example, of the total securities traded in London and Paris, more than half were foreign securities. Interest rates, exchange rates and stock prices in the leading markets were closely related. This is in 1914,100 years ago. There was also an established market for government bonds. Moody's, all of you have heard of Moody's in 1914 rated bonds issued by 50 governments. International bank lending was substantial. Private investors in government floated long-term bonds in financial markets of London, Paris and New York and essentially, individuals and institutions in Europe bought bonds from banks which financed the railways that were built in Latin America, Asia and Africa. This epoch of globalization being forced by the politics of imperialism created huge asymmetries and inequalities in the world economy which was divided into countries mostly with temperate climates that industrialized and countries mostly with tropical climates that did not industrialize. The geographical divides turned into economic divides.

The industrialized countries prospered but for countries in Asia and Africa the same integration into the world economy led to underdevelopment. The rise of 'The West' was concentrated in Western Europe and North America. The decline of 'The Rest' was concentrated in Asia, much of it attributable to China and India. This process was associated with a growing divergence in levels of income. In the year 1000, most countries in the world had roughly the same per capita income. Now between 1870 and 1914, as a percentage of GDP per capita in Western Europe and North America, GDP per capita in Asia and Africa dropped from one-fourth to one-sixth. It also led to a major transformation in the international division of labour what I call the 'Great Specialization', that was the Great Divergence, rising income differences which meant that Western

Europe followed by the United States produced manufactured goods while Asia, Africa and Latin America produced primary commodities. Between 1860 and 1914, the share of Asia, Africa and Latin America in world manufacturing production attributable essentially to Asia in particular China and India collapsed from 40% in 1860 to 7% in 1913 while the share of Europe and North America rose from 62% or 60% to 93%. The much greater competitiveness of industry in Britain and Europe attributable to scale economies that sharply reduced prices of manufactured goods also led to the demise of traditional industries in Asia particularly China and India which reduced their skill levels and technological capabilities over time. This process was reinforced by the politics of imperialism that imposed free trade and the economics of the transport revolution that dismantled the natural protection provided by geography implicit in distance and time to hasten the process of de-industrialization in Asia, with a devastating impact on China and India. During this phase of globalization from 1870 to 1914, some of the most open economies which practiced free trade and were amongst the large recipients of foreign investments, India, China and Indonesia experienced an economic decline that led to their underdevelopment. The outcome was similar elsewhere in Asia and Africa. Export-oriented production in mines, plantations and cash crop agriculture created enclaves within these economies which were integrated into the world economy in a vertical division of labour. But there were almost no linkages with the domestic economy. They were just enclaves. The income gap between the West and the Rest widened.

Much of the gains from international integration in this era accrue to imperial countries that exported capital and imported commodities. There were a few countries though like the United States and Canada, new lands with temperate climates and white settlers, that also derived benefits. In these countries, the pre-conditions for industrialization were already being created so that foreign direct investment in manufacturing stimulated by rising tariff barriers, tariff barriers were very high in the US, combined with technological and managerial flows strengthened industrialization and development. But this did not happen everywhere. Development was uneven even in the West.

Most of Southern and Eastern Europe lagged behind. This meant divergence not convergence in income, industrialization and growth. At the same time, inequality rose, rose very rapidly in the resource rich, labour scarce industrializing economies of the new world.

Now the end of this phase of globalization, I can do no better than quote you a passage from John Maynard Keynes in a pamphlet called Economic Consequences of the Peace which was published in 1919 after the end of the Great War. I quote, "What an extraordinary episode in the economic progress of man that age was which came to an end in August, 1914! The inhabitant of London could order by telephone, sipping his morning tea in bed, the various products of the whole earth, in such quantity as he might see fit, and reasonably expect their early delivery upon his doorstep; he could at the same moment and by the same means adventure his wealth in the natural resources and new enterprises of any quarter of the world, and share, without exertion or even trouble, in their prospective fruits and advantages. He could secure forthwith, if he wished it, cheap and comfortable means of transit to any country or climate without passport or other formality, and could then proceed abroad to foreign quarters, without knowledge of their religion, language, or customs, bearing coined wealth upon his person, and would consider himself greatly aggrieved and much surprised at the least interference. But, most important of all, he regarded this state of affairs as normal, certain, and permanent, except in the direction of further improvement, and any deviation from it as aberrant, scandalous, and avoidable. The projects and politics of militarism and imperialism, of racial and cultural rivalries, of monopolies, restrictions, and exclusion, which were to play the serpent to this paradise, were little more than the amusements of his daily newspaper, and appeared to exercise almost no influence at all on the ordinary course of social and economic life, the internationalization of which was nearly complete in practice." That is how the second or third wave of globalization came to an end.

Now let me turn to the time we live in, the late 20th and the early 21st centuries. Now the growing inequalities between and within countries particularly in the industrialized world, were perhaps a significant factor underlying the retreat from globalization after 1914. The economic consequences of the peace in 1918 had political consequences. The Great Depression accentuated these trends and induced autarchy. World War II followed. International economic transactions were constrained. Progressively were barriers and regulations that were erected during this period of economic and political conflict. In effect, the world economy experienced de-globalization for more than three decades. But the return of economic openness took another three decades until 1970s. In industrialized countries particularly Western Europe, there was a period of economic reconstruction after the war. This coincided with the politics of social democracy and the idea of a welfare state in Europe. Economic openness in trade and investment remained restricted for some time. In developing countries, at the beginning of the post colonial era, they were concerns about unregulated markets and open economies which were perceived as causes of underdevelopment in the past.

There was a consensus that the developing countries must industrialize in which state intervention and calibrated openness were an integral part of their strategic development. Such thinking began to change around the mid 1970s. The world economy experienced a rapid internationalization of trade, investment and finance during the last quarter of the 20th century which gathered momentum in the first decade of the 21st. This was made possible by the dismantling of barriers to international economic regulations. Globalization followed the sequence of deregulation. Trade liberalization came first which led to a remarkable expansion of international trade between the mid 50s and the mid 1970s. The liberalization of regimes for foreign investment came next so that there was a surge in international investment from the mid 1970s. Financial liberalization came last and gathered momentum from the mid 80s. This had two dimensions – the deregulation of domestic financial sectors which began in the United States and convertibility on capital account in the balance of payments in the industrialized countries and this was followed by time lag in emerging economies in the developing world. This led to the internationalization of finance at a scorching pace.

Now the gathering momentum of globalization brought about profound changes in the world economy. It had three attributes – an increasing proportion of world output entered into world trade while an increasing proportion of world trade was intra-firm trade. It was trade between countries within the same firm. Between 1975 and 2010, the share of world merchandise exports in world GDP rose from 14% to 25% while the share of intra-firm trade in world trade rose from 20% to 40%. Between 1975 and 2010, the stock of direct foreign investment in the world as proportion of the world output rose from less than 5% to 33% while flows of foreign direct investments in the world as portion of investment in the world including domestic rose from 2% to 25%. The growth in international finance was explosive so much so that, in terms of magnitude, trade and investment were simply dwarfed by finance.

A comparison of the world economy in the early 21st century, the age we live in, with that in the early 20th century, 100 years earlier reveals striking similarities between these two epochs of globalization. Both coincided with a technological revolution in transport and communication which brought about an enormous reduction in time needed and cost incurred in traversing geographical distances. The second half of the 19th century, as I said earlier, saw the advent of the steamship, the railway and the telegraph The second half of the 20th century witnessed the advent of jet aircrafts, computers and satellites and information technology that had an even more dramatic impact in transcending geographical barriers. Obviously, enabling technologies made the globalization of its activities that much easier in both phases. But the politics of hegemony that go back to the Mongol Empire or the British Guns and Sails was just as necessary for globalization. The first epoch from 1870 to 1914 coincided with the Age of Empire when British more or less ruled the world. The second epoch starting around 1975 coincided with the political dominance of the United States as the superpower that grew stronger with the collapse of communism. Globalization has always needed such hegemony. But Pax Britannia and Pax Americana were also conducive to the economics of globalization in providing national currencies, the pound sterling and the US dollar which became the equivalent of international money as a unit of account, a medium of exchange and a store of value.

Outcomes in development also revealed strong parallels between these two epochs of globalization. In the four decades since the mid-1970, the process has been characterized by uneven development and growing divergences. It seems to me that the globalization created two worlds that coexist in space even if they are far apart in well-being. For some, in a world more interconnected than ever before, globalization opened the door to many benefits through innovation, entrepreneurship and wealth creation. For many, the problems of poverty and unemployment persist which existed earlier too but have been accentuated by globalization. There is inclusion for a few but exclusion for the many. It is perhaps necessary to identify in broad categories the winners and the losers. If we think of economies, capital-exporters, technology- leaders, net lenders, those with a strong physical and human infrastructure and those endowed with structural flexibility are the winners whereas capital-importers, technology-followers, net borrowers, those with a weak physical or weak human infrastructure and those characterized by strict structural rigidities are the losers. If we think of people, asset-owners, profit-earners, rentiers, the educated and those with professional managerial or technical skills are the winners whereas the asset less, wage-earners, the debtors, the uneducated, the immobile and the semi-skilled or the unskilled are the losers. This classification which paints a very broad brush picture of a more nuanced situation does convey the simultaneous, yet asymmetrical, inclusion and exclusion that characterizes the process of globalization.

Among countries, the benefits of prosperity created by globalization have accrued essentially to the industrialized countries but also to a few developing countries. Yet development has been most uneven across geographical space. In the industrial societies, Southern Europe and transition economies in Eastern Europe had fared much worse and had fallen behind. In developing countries, the benefits of globalization have been captured by a few emerging economies essentially in Asia, China, India, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan, Thailand, Turkey and

Vietnam. These countries were late comers to industrialization but created the initial conditions combined with institutions and policies to benefit from economic openness just as the United States and Canada did in the late 19th century. But even amongst the small group in Asia, some have done much better than others. China is far in a way the major beneficiary of this process. Latin America stayed roughly where it was around 1980 while much of Africa experienced regress. In all countries, most of the benefits have accrued to relatively small proportions or the populations. Hence this era of globalization has witnessed a marked increase in economic inequality between people within countries and between the rich and the poor in the world irrespective of where they live. There has been an alarming increase in the share of the super rich, the top one percent or the ultra rich, the top 0.1% in national income everywhere as income distribution has worsened across the world so that you have popular movements saying we are the 99%. It is no surprise that inequality in wealth is even more pronounced as the distribution of assets has become even more unequal. This has made Thomas Piketty a household name. These mounting inequalities, I believe, are ethically unacceptable and politically unsustainable in open societies. The strains are beginning to surface. Globalization is confronted with mounting economic problems and political challenges. These have begun to disrupt the smooth existence of globalization so that the future is far from certain.

Let us see the economic problems. The present phase of globalization experienced its first setback with the financial crisis in the United States that surfaced in late 2008. It was attributable, please remember, to the deregulation of the financial sectors, the essence of globalization. Globalization of finance meant that it spread through contagion across the world. Its transmission to the real sector of economy was also rapid because of openness and its independence and it led to a very sharp contraction in output and employment. International trade and international investment also contacted. This downturn moved quickly into a recession what some of us have described as the Great Recession. Even if cycles are embedded in the nature of capitalism, it is clear that this great recession which persists

10 years after it began is the deepest crisis in world capitalism since the Great Depression 8 years ago. Recovery is slow, uneven and fragile and the prospects are uncertain. It would seem that the problem has been compounded by a return to orthodox macroeconomic policies which seek to focus on managing inflation and controlling public debt but at the expense of growth and employment. In the industrialized world, the United States and Japan are exceptions. There is some recovery in output but not as much in employment. This is attributable essentially to what economists call countercyclical macro policies in these two countries. So when the economy is in the downturn, you try and stimulate the economy. When it is in an upturn, you try and dampen it.

The rest of the world, I am afraid, was countercyclical just for a short while but went back to conservatism with the fiscal stimuli that were withdrawn. In the European Union, not just the economies in crisis but also countries such as Germany, Britain and France, decisions to sharply reduce fiscal deficits are being implemented. I think this solution will turn out to be worse than the problem. Unemployment levels remain high while real wages for a large portion of workers have stagnated and declined in industrial societies.

Many of the emerging economies have also experienced a distinct slowdown in growth. This is attributable partly to the great recession that persists in the markets of industrialized countries but it is also significantly attributable to their own mistakes as macroeconomic policies are back to being procyclical, the opposite of what they should be. High interest rates, India as an example, have stifled private investments while reduce fiscal deficits have squeezed public investment and curbed domestic demand both of which have dampened growth. Strong exchange rates to maintain portfolio investment inflows have adversely affected export performance. Such policy responses, the point that I want to make, you may agree or disagree, is that such policy responses are, in fact, shaped by globalization as governments worry about credit rating agencies and international financial markets. See how much hoo hah there was when Moody's upgraded our junk status. High unemployment in industrialized countries and persistent poverty in developing countries is juxtaposed with the rising share of profits and falling share of wages in national income everywhere. There are no exceptions. The super rich have become richer so that income inequalities among people have risen sharply. The richest 1% have about 25% of the national income in the United States.

The distribution of assets has become even more unequal. The constitution of wealth is much greater. The problem is that the consumption patterns and the lifestyles of the rich associated with globalization have powerful demonstration effects as the electronic media spreads the consumer its message far and wide. It creates frustration and alienation amongst those excluded. The reaction of people who experience this exclusion differs. Some seek shortcuts through crime, drugs or violence. Some seek refuge in cultural identities, national chauvinism or religious fundamentalism. Thus such economic problems do have social and political consequences within countries which bring me to the political challenges. The most common manifestation of a political backlash is research and nationalisms. As Prabhat cited in the beginning, economies might have become global but politics remains national or local. Citizens like governments to be responsive to their concerns instead of catering to international financial markets or to global economic obligations and in democracies, governments are accountable to their people. Even authoritarian regimes we know are not immune from this accountability in a globalised world. In the industrial societies, recent election outcomes highlight the political consequences of globalization which with a stark clarity. The referendum in Britain on whether to stay or leave the EU was an early warning. It was the first sign of such discontents amongst people. The election of Donald Trump who campaigned against economic openness with a tirade about immigration and trade as President of the United States came next. It showed the resentment of the people against the establishment in American politics whether republicans or democrats. France did elect Emmanuel Macron as the President decisively in the second round but in the first round of elections, he had a lead of only three percentage points over Marine Le Pen of the National Front. The rejection mainstream political parties in France, both

Republicans and Socialists, was explicit. There is a political impasse in Germany. Most people are not conscious of it as the share of the erstwhile grand coalition partners, the Christian Democrats and the Social Democrats in the total vote dropped from more than two-thirds, more than 70% to about half while the nationalist party, the alternative for Deutschland became the third largest party in the Bundestag with close to 100 seats. Austria has just elected Sebastian Kurz as Chancellor leading a political coalition of the People's Party and the Freedom Party on the far-Right. He is only 31 years old. There are already far-Right political parties that rule Poland and Hungary but that is not all. Far-Right populist nationalist political parties which are anti-immigrant and anti-European Union are emerging as significant political forces in Denmark, Finland, Italy, Germany, Netherlands and Sweden. It would seem that political parties on the Right and the far-Right are capturing the political space created by unequal economic outcomes associated with globalization. Now their political mobilization of economic discontents is based on populism and on nationalism which exploits fears about openness in immigration and trade as threat to jobs and that's how they mobilize political support.

The changed international context poses another political challenge. With that Chairman, I am going to conclude. Globalization has always required hegemony to set the rules of the game and ensure conformity by the players. In the 1990s, after communism collapsed, the United States appeared stronger than before as the sole superpower. But that appearance was deceptive. Starting around then, the economic resurgence of Asia and the rising share of developing countries in world output trade and manufacturing, which I have written about in a book called Catch Up, attributable partly to globalization which gathered momentum over the two decades that followed, began to chip away at its economic hegemony and political dominance. The global economic crisis led to a further erosion of US hegemony. There was a de facto recognition of this reality as George W Bush in his twilight months recognized the reality to replace the G7 by a more representative G20 for any international coordination of economic policies to follow the financial crisis. Under President

Donald Trump, however, it seems to me that Pax Americana is in voluntary decline. Indeed, a withdrawal syndrome is discernible as the United States seems to be relinquishing its political leadership role in the world. President Xi Jinping of China seems anxious to move into that vacant space but Pax Sinica is not on the horizon at least not yet and it will be a long time before the Chinese Yuan is equivalent of international money.

In retrospect, the early 19th century was a turning point in the world economy. It was the beginning of the end of Asia's overwhelming significance in the world, particularly China and India. And it was the beginning of the rise of Europe, in particular, Britain to dominance in the world. The early 20th century was the next turning point. It was the beginning of the end of Britain's dominance and it was the beginning of the rise of the United States to dominance in the world. This transformation of the world spanned half a century in a period of de-globalization from 1914 to say 1964. The early 21st century perhaps represents a similar turning point, I speculate. It could be the beginning of the end of dominance of the United States in the world. Be assured, it will remain a leading political and economic power but the dominance will decline. There is a discernible shift in the balance of economic if not political power. The emergence of the developing world, particularly, the powerhouse economies of Asia, constitutes a striking consummation. Developing countries now account for 40% of world income, 40% of world GDP. They account for 40% of world manufacturing value added. They account 40% of world trade. But history shows that dominant powers are reluctant to cede economic and political space to new congress. That is what the two World Wars were about. Germany and Japan were both late comers to empire. Such processes of change are always slow, complex and unpredictable. The outcome 50 years from now, I think, will be a multipolar world without any single dominant power. This uncertain future does not augur well for globalization that needs the hegemony.

In my view, our era of globalization is under stress. Its present is disrupted and its future is uncertain. The problems and the challenges that have service are largely attributable to its own economic and political consequences. It has not come from elsewhere. It is the effects of globalization.

Learning from history suggests that earlier epochs of globalization during the past millennium have come to an end because of their consequences embedded in the process. It is clearly not the end of geography. Nation states are alive and well and I believe, it's not the end of history either. But I will not attempt to speculate about how the future might unfold for the age of globalization that we live in that would be reckless even for an economist and as Abid might have said, even for the buck.

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R.A. Mashelkar

Dismantling Inequality through ASSURED Innovation*

Kocheril Raman Narayanan was the tenth President of India, and one of our most accomplished civil servants, distinguished diplomats and stellar academicians. I met him for the very first time in 1982. He was visiting my National Chemical laboratory. I had the unique opportunity to demonstrate an innovation from my team of a super absorbing polymer - the Jalshakti, which could absorb water, amazingly, over hundred times its own weight. I still remember the probing questions that President Narayanan asked me about the potential use of Jalshakti in agriculture in rain starved areas in India. And then I had the privilege of interacting with him on issues concerning science and innovation in India on numerous occasions.

President Narayanan and I were born 22 years apart – but his life's story bears a striking resemblance to mine. He was born in a small village in Kerala; I was born in a small village in Goa. He walked 15 kilometres to get to school, much like I walked barefoot to a municipal school. He sometimes stood outside class and eavesdropped on lectures because his family didn't have enough money for tuition. Due to extreme poverty, my widowed mother could not afford notebooks or shoes, and I remember many nights on which I studied under street lights. He took his brother's help to copy notebooks and books and return them, and I remember sitting on a footpath, borrowing books from a kind bookstall owner, quickly reading them and returning them.

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*2018 K.R. Narayanan Oration, Australian National University, 19th April 2018

In fact, we both even share the turning point of our academic lives. Both of us were Tata scholars. We both left India, only to return when we were fairly young with a zeal to do more for our homeland, he at the age of 27 and I, at the age of 32.

President Narayanan once said "I see and understand both the symbolic as well as the substantive elements of my life. Sometimes I visualise it as a journey of an individual from a remote village on the side-lines of society to the hub of social standing. But at the same time I also realise that my life encapsulates the ability of the democratic system to accommodate and empower marginalised sections of society."

You can see how right he was. I would have had to leave studies despite standing 11th among 1,35,000 students in Maharashtra at the matriculation exam in 1960. But it was the Tata scholarship of 60 rupees per month for six years that helped me study. In 1960, when I used to go to Bombay House, Tata headquarters to collect that sixty rupees a month, if someone would have said that you and Ratan Tata, the head of the Tata family, will be among the only seven Indians from the time of establishment of American Academy of Arts & Science in 1870, who would be elected as Foreign Fellows of that Academy; or that you both will sign the Academy's Fellows book one after the other on the same page on 15 October 2011, I would not have believed it.

And here is yet another validation of what President Narayanan had said.

On 30 March 2000, one of the highest civilian honours in India, Padmabhushan, was bestowed on both me, a Tata scholar, and Ratan Tata, head of the house of Tatas. By whom? President Narayanan, another Tata scholar. This was the best endorsement of President Narayanan's remarks about moving from the `side-lines of the society to the hub of social standing'.

CSR 1.0: Doing well and doing good

Tata scholarships that President Narayanan and I received were a direct result of the sense of corporate trusteeship that Tatas had always demonstrated. Perhaps it is not widely known that world's first ever charitable trust was set up by Jamsetji Tata in 1892, a long time before the Andrew Carnegie Trust (1901), Rockefeller Foundation (1913), the Ford Foundation (1936) and the Lord Lever Hulme Trust (1925).

The establishment of these trusts was driven by the Tatas' belief in giving back to the people what came from the people.

As J.R.D. Tata had once said, "The wealth gathered by Jamsetji Tata and his sons in half a century of industrial pioneering formed but a minute fraction of the amount by which they enriched the nation. The whole of that wealth is held in trust for the people and used exclusively for their benefit. The cycle is thus complete. What came from the people has gone back to the people many times over."

The meaning of such philanthropy has changed over the years. What was considered as corporate trusteeship is now being called Corporate Social Responsibility (CSR). The Tatas did CSR, since they considered it to be their moral responsibility. The Government of India has recently legislated that 2% of the net profits earned by the corporates must be spent on CSR. I would call this as CSR 1.0. Here, part of the surplus wealth goes back to people, either by free will (as in the case of charitable or foundations trusts) or because of the need to comply with government legislation (like India's CSR Act). So I would consider CSR 1.0 as `doing well and doing good'. This means after one has done `well' by amassing wealth, one turns to doing `good', by setting up charitable trusts or foundations.

What I wish to propose is CSR 2.0; not replacing CSR 1.0 but complementing it and bringing a far greater impact by touching the lives of millions. I call this as `doing well by doing good'. This means `doing good' itself becoming a `good business'.

But why should doing good be considered important? The answer is simple – because rising inequality is one of the greatest challenges of our time. Income inequalities, for instance, create access inequalities, which leads to social disharmony. However, reducing income inequalities takes generations. Can we do the magic of creating access equality despite income inequality? Yes, we can – through CSR 2.0.

CSR 2.0: Doing Well by Doing Good

How do we achieve CSR 2.0? We have to make a change in the way we do business, a change in which we the policy makers think, the way in which we do science, etc. I will talk about the why, what and how of CSR 2.0 through which enterprises can `do well by doing good'.

What do Indian businesses need to do to achieve CSR2.0?

I propose that private sector can do well by doing good, if they adopt an ASSURED innovation strategy.

For me, ASSURED stands for the following:

A (Affordable)

S (Scalable)

S (Sustainable)

U (Universal)

R (Rapid)

E (Excellent)

D (Distinctive)

A (Affordability) is required to create access for everyone across the economic pyramid, especially the bottom. "Affordability" obviously depends on the target consumer's position in the economic pyramid, the type of product, and its value and the opportunities it may help create. But for the 2.6 billion people in the world earning less than US$2 per day, such affordable products cannot just be "low-cost" but must be "ultra-low-cost". Such extreme reduction targets require disruptive and not just incremental innovation.

S (Scalability) is required to make real impact by reaching out to every individual in the society, not just a privileged few. Depending on the product, the target population may only be a few hundred thousand, or a few million, though in some cases, it may reach hundreds of millions. We will cite examples of each.

S (Sustainability) is required in many contexts; environmental, economic and societal. In the long term, ASSURED innovation must promote affordable access by relying on basic market principles with which the private sector works comfortably, and not on continued government subsidies or procurement support. The crucial importance of this feature is obvious: higher output, better competition (i.e., competition induced by market-oriented players and not intermediated by political actors), lower cost to taxpayers, and – most importantly – the critical market check that ensures inclusive products provide a good value to consumers and represent a genuine social undertaking. It must be noted that the principle of long-term sustainable production does not negate – rather helps to highlight – the critical role of the government to establish and maintain a well-functioning innovation ecosystem capable of producing ASSURED innovations at a socially optimal level.

U (Universal) implies user friendliness, so that the innovation can be used irrespective of the skill levels of an individual citizen across the economic pyramid.

R (Rapid) means speedy movement from mind to market place. Acceleration in inclusive growth cannot be achieved without speed of action matching the speed of innovative thoughts.

E (Excellence) in technological as well non-technological innovation (such as business model) , product quality, and service quality is required, not just for the elite few but for everyone in the society, since the rising aspirations of resource-poor people have to be fulfilled.

D (Distinctive) is required, since one does not want to promote copycat, ‘me too’ products and services. In fact, we should raise our ambitions and make D as in `disruptive’, which will be truly game changing.

Achieving all the individual elements of ASSURED Innovation looks seemingly impossible but not necessarily so as we show now.

Let us ask some challenging questions:

- Can we make high speed 4G internet available at 10 cents per GB, and make all voice calls free of cost – that too in a large and diverse country like India?
- Can we make high-quality but simple breast cancer screening available to every woman, that too at the extremely affordable cost of $1 per scan?

- Can we make a portable, high-tech ECG machine which can provide reports immediately and that too at the cost of 8 cents a test?
- Can we make an eye imaging device that is portable, non-invasive and costs 3 times less that conventional devices?
- Can we make a robust test for mosquito-borne dengue, which can detect the disease on day 1, and that too at the cost of $2 per test?

Amazingly, all this has been achieved in India, not only by using technological innovation but also non-technological innovation.

ASSURED Indian Innovation

An exemplar in ASSURED innovation has been recently very successfully demonstrated by Indian private sector.

One of India's early successes was the mobile revolution. In the two decades from 1995 to 2014, about 910 million mobile phone subscribers were added – the numbers are incredible in themselves, but especially so if you consider that this was 18 times the number of landline connections in 2006 when landline subscriptions peaked at 50 million. The era of 'trunk calls' and ISD and STD booths had come to a definitive end. Thanks to liberalisation, the private sector rose to the occasion and innovation flourished in devices, processes, and business models, among others. It represented a joint victory for the public sector, for private enterprise and for people.

Despite India's impressive achievements, the benefits of the digital revolution were not shared by all, thus creating the 'digital divide'. In spite of having a phone and a telecom connection, many could not afford to actually make calls. Some of you may have heard of the Indian term 'jugaad' – the Oxford dictionary defines it as "a flexible approach to problem-solving that uses limited resources in an innovative way." So Indian jugaad came to the rescue and people began using 'missed calls' to communicate. Many a parent, spouse and loved one signalled that they have arrived at their destination by giving a missed call to their anxious relatives and friends. Restaurants that catered to students started 'missed call ordering' – the students would place a missed call, and the restaurant would call them back and take their meal orders. In fact, an entire marketing field called Missed Call Marketing was born.

Look around yourself today, and you will see that the situation has changed drastically. Competition in the Indian telecom sector reached a fever pitch in 2016 with the entry of Reliance Jio Infocomm Ltd., or Jio. Today, millions of Indians enjoy the benefits of free voice calling and extremely affordable (10 cents per GB!) high-speed 4G internet using their Jio connections. Communication behaviours are changing across India as we speak, with the focus shifting from exchanging information to expressing emotion.

One incredible example is that of speech and hearing impaired people using video calls to communicate with each other in sign language. Earlier, they were confined to using SMS and other texting apps. This transformation has happened through myriad technological, product and business model innovations at Jio.

One of the most important innovations at Jio was its configuration-Jio's greenfield LTE network is the first countrywide deployment of VoLTE or voice over LTE in India. Jio has a 4G LTE network with no legacy 3G or 2G services, making it the only network in the world with this configuration. This unique configuration allowed Jio to offer free voice calls to any network across the country – at a time when it accounted for the majority of revenue for other telecom operators. Jio also did away with national 'roaming charges', marking the first time in India's history that the length and breadth of the nation are truly connected.

There are many other product, business model, process and service innovations at Jio, which fulfil all the elements of ASSURED innovation. Consider this: Jio fast-tracked Aadhaar-based eKYC (Know Your Customer) roll-out across thousands of stores. This allowed SIM activation in under 5 minutes! Before Jio, the activation process usually took hours if not days and racked up significant costs for the telecom companies. Each one of its over 100,000 telecom towers erected was pre-fabricated and consumes 3 times less power than conventional towers. Other equally important infrastructure development included 250,000 route kilometres of fibre optic cables laid, done using high-tech machines that laid the fibre deep underground with minimal surface disturbance just by drilling two holes.

The JioPhone is an Indian innovation – by Indians, for Indians – and is offered effectively free of cost to customers. It is a feature phone that again fulfils all the elements of ASSURED innovation and allows users to benefit from access to the internet. I am convinced this will fast track access to high speed internet across the country and empower each Indian to enhance their quality of life.

All these efforts have risen India's rank from #155 just one year ago to #1 today in global mobile internet usage and India now has one of the most competitive telecom networks anywhere in the world. More importantly, Jio has moved India from missed call to video call, a shift from Jugaad to systematic innovation. Jio is a true exemplar in ASSURED innovation.

You will say, but this is doing good for the people of India. But is Jio doing well? Is it making a profit? Yes, it is. In the very second quarter of operations, it has turned profitable. So this is indeed a case of doing well by doing good.

Young Innovators Doing Well by Doing Good

Now one might say, a company like Reliance has deep pockets, so they could do it. What about small businesses? What about start-ups? Yes, they can also aspire to do well by doing good, and many of them do.

Let me illustrate the point by talking about some winners of the Anjani Mashelkar Inclusive Innovation Award – an award I instituted in my mother's name for innovations that will do good to the society at large, not just a privileged few.

The awardees are those who believe in not just 'best practices', but 'next practices'. And most importantly meet those tough criteria of ASSURED innovations that represent 'affordable excellence', breaking the myth that 'affordability' and 'excellence' cannot go together. Let me talk about young Indian startups with their hearts in the right place and how they are proving that all this is indeed possible!

In 2015, breast cancer replaced cervical cancer as the leading cause of cancer deaths among women in India. In India alone, almost 200 million women aged 35 to 55 do not undergo necessary annual breast exams which could potentially save their lives. Worldwide, this number is even higher. Late stage detection is the main reason behind breast cancer deaths. So how can we ensure that women in every corner of India – in fact, the world – undergoes breast cancer screening?

UE LifeSciences led by Mihir Shah has developed a handheld device that is used for early detection of breast tumours. It is simple, accurate, and affordable. It is painless because it is non-invasive. Mammography and radiation are eliminated. Screenings are safe, pain-free and private. They have also deployed an innovative pay-per-use model – instead of targeting direct sales – which can empower doctors in every corner of the country to start screening women for breast cancer at the earliest. The device is US FDA cleared and CE marked. It is operable by any community health worker. And it only costs an amazing Rs. 65 ($1) per scan!

But UE Lifesciences is not only doing good, it is also doing well. In the last year or so, the device has earned nearly 1 million dollars in revenue and received purchase orders totalling nearly 2 million dollars. The company has also entered into a strategic partnership with GE Healthcare for marketing and distribution of iBreastExam across more than 25+ countries in Africa, South Asia and South-East Asia and benefit more than 500 million women. Most recently, it was launched in Botswana with a local partner.

This example is not a one-off success story. Here is another: cardiovascular diseases are predicted to be the largest cause of death and disability in India by 2020. Amidst the rising incidents of cardiac diseases – even among younger people – there is a pressing need to affordably, speedily and accurately monitor the heart health of Indians. This has been achieved by another awardee, Rahul Rastogi, who created a portable match box size 12- lead ECG machine. The cost is just Rs. 5 (8 cents) per ECG test. His company created a disruptive high-tech innovative solution for personal cardiac care – the 'Sanket' electrocardiogram (ECG) device.

Sanket is a credit card-sized heart monitor, which acts like a portable ECG machine, making it possible to monitor the heart condition, making it as simple as monitoring the body temperature. The high-tech 12-lead ECG recorder connects to a smartphone wirelessly, and displays and records ECG graphs on a smartphone. The ECG report can be shared instantly with a doctor via e-mail, Bluetooth or message. The affordable device marks a dramatic shift in the way we approach cardiac care – doing away with expensive ECG machines, distant hospitals or laboratories, and skilled technicians. Sanket has filed multiple patents and is all set to bring about a revolution in cardiac care and disrupt this space.

Most recently, they partnered with Tata Trusts to deploy 45 devices in clinics in Tripura for quick screening and diagnosis of cardiac diseases. In the remote and hilly state of Tripura, regular screening would have been virtually impossible.

And then there is the third Anjani Mashelkar Inclusive Innovation Awardee, 3nethra, an eye screening device.

It is so sad that 80% of all blindness is avoidable or curable. India is home to the largest number of vision impaired individuals – but it is not just a numbers problem. The problem of preventable blindness is fraught with challenges such as the significantly low number of properly trained ophthalmologists, lack of awareness, un-scalable solutions and inadequate reach which in turn magnifies the problem manifold. Adding to these challenges are problems of cost and accessibility barriers for diagnostic services.

Eye screening device 3nethra provides a portable and cost-effective solution. The innovation comes at a cost that is one fifth of a regular ophthalmic screening device and one that can be operated by a minimally trained operator. It is an intelligent, portable, non-invasive, non-mydriatic (meaning not requiring eye dilation) low cost device that helps in pre-screening of five major eye diseases, namely, cataract, diabetic retinopathy, glaucoma, defects in the cornea & refractive errors with a powerful inbuilt auto detection software.

It is a combination of robust hardware with cloud based computing and sophisticated image analysis solutions. The unique feature of the product is its versatile functionality – detection of five common eye problems in a single screening, automated analysis and report generation; and cloud based storage of individual data, all rolled into a single, compact machine. Today, they have 1,700 device installations across 26 countries and have touched 2 million lives.

Public Procurement Policy for ASSURED Innovation

I have shared with you a few examples of ASSURED innovations, but India is home to dozens, perhaps hundreds of such innovations, which could have been ASSURED Innovations. There are many young Indians championing the cause of development and who have been endowed with unique attributes of innovation, compassion and passion.

But it is a sad fact that in terms of ASSURED innovation, from supply side, they managed the elements of A, U, R, E and D but missed on S & S, meaning they could not achieve scale and sustainability. One was a near miss. Another was a total miss. Let me talk about the near miss first.

We covered Anjani Mashelkar Inclusive Innovation Award in three of India's most pressing health concerns – cancer, cardiovascular disease and needless blindness. But there's another that demands our attention: dengue. The winner last year was Navin Khanna dealing with the challenge of Dengue detection. Dengue is a neglected mosquito born viral disease that is rapidly spreading globally. Dengue incidence has increased by more than 30-fold in the past 50 years. Currently, half of the global population lives under dengue threat.

At the International Centre for Genetic Engineering and Biotechnology in India, Dr. Navin Khanna developed a test that can help address this problem. The three-in-one 'Dengue Day 1 Test' can detect dengue fever within minutes on day one of the fever, affordably in resource-poor settings. It can differentiate between primary and secondary dengue virus infections, which is so vital for clinical management of dengue infected individuals. Interestingly, it can also detect the presence of the virus in a mosquito.

The test kit is now a market leader in India, having captured more than 80% market share. Its cost is 3 to 4 times less than a conventional test at a little over $2 per test. The test kit is now being exported to other countries too. However, their path to success wasn't an easy one.

Despite having a high-performing rapid dengue test that could detect both primary and secondary dengue virus infections in a reliable manner, it was still an uphill task to get it accepted by the end-users. It was 2013, and many cities in India witnessed a large number of dengue cases. Three companies from USA, Australia and South Korea sold their yearly stock of dengue test kits within a few weeks and no test kit was available for use in the Indian market. When the India-made kit was offered to them, it was met with a great resistance. Most end-users were unwilling to try a new kit and were waiting for arrival of new consignments of dengue kits from other countries.

Because of the extensive paperwork required for import of these tests, companies from USA and Australia were unable to make the next shipment of dengue kits to India, however, a South Korean company was able to ship a new consignment to India. This shipment landed up in Africa by mistake instead of reaching India! So the scenario was bleak in India, no dengue kits were available and suspected dengue cases were increasing and creating mass panic. It was at this stage that the end-users relented and tried the Indian kit – after which there was no looking back. All stakeholders were delighted with the easy availability, high performing, and affordable dengue test kit. When stocks of imported kits finally showed up in India, there were no takers. In this case, serendipity and not a system played the biggest role.

So the near miss was Navin Khanna's Dengue Day 1 test. The total miss was Simputer. Let me explain.

Simputer was designed to be a low cost and portable alternative to PCs. The idea was to create shared devices that permit truly simple and natural user interfaces based on sight, touch and audio. Simputer was to read and speak in several Indian languages in its initial release. Simputer prototypes were launched by the Simputer Trust on April 25th, 2001.

It was hailed for its 'radical simplicity for universal access' Before the arrival of the smart phone in 2003, Simputer had anticipated some breakthrough technologies that are now commonplace in mobile devices. One of them was the accelerometer, introduced to the rest of the world for the first time in the iPhone. The other was doodle on mail, the ability to write on a phone, that was later a major feature on the Samsung Galaxy phones.

Bruce Sterling writing in New York Times magazine had said, "The most significant innovation in computer technology in 2001 was not Apple's gleaming titanium PowerBook G4 or Microsoft's Windows XP. It was the Simputer, a net-linked, radically simple portable computer, intended to bring the computer revolution to the third world...."

Despite having achieved the elements of A, U, R, E & D in ASSURED, what went missing was S & S, namely scale and sustainability. This was because of the absence of innovation-friendly public procurement policy despite many rural-specific demonstrations.

Innovations are products of creative interaction of supply and demand. Besides supply side initiatives, we need aggressive demand side initiatives – and public procurement is an obvious choice. With large procurement budgets, the government can not only be the biggest, but also the most influential and demanding customer of these innovations, making them truly ASSURED.

The government approach could be based on three pillars. First, government could act as the `first buyer' and an 'early user' for small, innovative firms and manage the consequent risk thus providing the initial revenue and customer feedback they need to survive and refine their products and services so that they can later compete effectively in the global marketplace. Interestingly, based on a survey of 1,100 innovative firms in Germany, it was found that public procurement is especially effective for smaller firms in regions under economic stress, a helpful lesson for India.

Second, government can set up regulations that can successfully drive innovation either indirectly through altering market structure and affecting the funds available for investment, or directly through boosting or limiting demand for particular products and services.

Third, government can set standards that can create market power by creating demand for innovation. Agreed standards will ensure that the risk taken by both early adopters and innovators is lower, thus increasing investment in innovation. The standards should be set at a demanding level of functionality without specifying which solution must be followed. By not prescribing a specific route, innovation is bound to flourish.

Role of Strong Public Policy

There is also a case where private sector wanted to do public good, but due to lack of public policy, it did not scale up.

As we all know – and some of us may have experienced – poverty forms a vicious circle. People are poor because they are illiterate. They are illiterate because they are poor. India's National Literacy Mission has been making slow progress to address the challenge of adult literacy in India since 1988 – 'slow progress' because there are still almost 300 million adult illiterates in India.

An Indian company developed a unique technique to address this problem. FC Kohli from Tata Consultancy Services came up with an innovative teaching method based on the theory of cognition and laws of perception. Their initiative, called Computer Based Functional Literacy or CBFL could teach an illiterate individual to read a newspaper with only 40 hours of training! They took a systems approach and used multimedia to focus on words rather than the alphabet. Their technique harmonized visual and audio patterns to enable reading, and helped retention of cognized patterns in subconscious memory. The cost worked out to only \$2 per person, as opposed to \$16 per person using conventional methods.

CBFL didn't require any certified professional teachers – only para-teachers called 'preraks', which is Hindi for inspirers. CBFL's dropout rates at 10-12% were much lower than that of conventional initiatives. It allowed for both flexibility in learning and standardisation in teaching. While the method focused on reading, it acted as a trigger for people to learn to write on their own. This experiment was first conducted in Medak village near Hyderabad. Without a trained teacher, the women started reading the newspaper in Telugu in 8 to 10 weeks. Thereafter, FC Kohli's team carried out more experiments at 80 centres, and with over 1000 adult participants. The results were spectacular.

If we had wholeheartedly adopted this in India, our entire population could have been made literate in just 5 to 7 years! The potential was massive - there are 800 million illiterates in the world – this innovation could make them literate by spending less than US$2 billion. However, lack of the right policy environment limited CBFL's scale-up. IT ministries or literacy departments didn't partner with CBFL. There was no infrastructure support for network and the mass procurement of IT hardware posed huge logistical problems. Add to that issues related to customs clearances, octroi and other similar tariffs. This is a glaring example of when an innovation could have impacted not just India, but the entire world, but still failed to scale up due to lack of support.

But here is a contrary example of how a hard and strong public policy can work. Just over a year ago, I would have said that we stand on the cusp of a digital revolution. Today, I can say without any ambiguity that we are right in the midst of it. Our nation created history in 2014 when under the Pradhan Mantri Jan Dhan Yojna 1,80,96,130 bank accounts were opened in India in just one week, creating a Guinness World Record. It will provide access to various basic financial services for the excluded - basic savings bank account, need-based credit, remittance facility, insurance and pension. JAM combining J (Pradhan Mantri Jan Dhan Yojna), A (Aaadhar identification and authentication) and M (mobile telecommunications) created the fastest and largest financial inclusion in the world, with 300 million plus bank accounts opening up in record time. Before JAM, the disadvantaged sections of society were exploited by money lenders – both in rural and urban area. This bold policy innovation will allow for large-scale, technology-enabled, and real-time delivery of welfare services.

Just like India jumped from landline to mobile telephony, Jan Dhan, Aadhar & Mobile (JAM) will together allow us to leapfrog into the next phase of financial inclusion. It will allow millions of people to become a part of the mainstream economy and provide them access equality despite income inequality. JAM has all the 7 elements of ASSURED.

It is glaringly obvious that the tide of exponential technology, where performance is rising exponentially and costs are falling exponentially, will make many things previously considered impossible possible in entirely unbelievable ways and timelines making the goal of achieving ASSURED innovation easier. ASSURED innovation can greatly help any country in achieving multiple objectives. First, social harmony. It will help in creating access equality despite income inequality. Second, affordability. It will lead to scale, thus bringing equity to any population. Third, excellence. On one hand, excellence will meet the rising aspirations of local populace for high quality goods and services. On the other hand, excellence will open up opportunities for competitive exports to global markets.

Indian Business can do well by doing Good – How?

Many of these game-changing ASSURED innovations have some tenets in common. For instance, converting non consumers to consumers; rethinking – not just remodelling – offerings; innovating across product, process and business model; and putting 'better' before 'cheaper'. The perspective should shift to seeing suppliers as partners, employees as innovators and customers as people.

On the consumer front, it is important to foster empathy and explore co-creation, attack problems that MUST be solved, not those that CAN be solved. What can be done internally? Setting 'stretch goals' that sound impossible, challenging the fundamentals, putting your best minds to work, learning from unrelated domains, and interacting with top notch innovators. Making high technology work for the poor is important, but even more important is believing that they can adapt to it – they always do. They are demanding and exacting about what they want from a product or service.

The research, design and development teams must change their mind sets. Besides aiming at technologically sophisticated performance rich products, they must move towards frugal, functional but high quality products. Rather than removing features to reduce costs, they must reinvent the products ground up. Rather than 'technology push product out' approach, they must move to 'customer centric market based' approach. Rather than using developed world products to transform the existing markets, they must build new global growth platforms based on emerging market needs. Further, business must try to straddle the entire economic pyramid by not just aiming for premium price high margin products but also going for affordable price high volume products. Finally, they must move from current markets-old money mind set, where they keep on fighting for increasing share of a constant sized pie, to new markets -new money mind set, which will help them take a share of the resultant bigger sized pie.

But fundamentally, more than anything else, it requires one to believe in the idea that happiness, health, prosperity, and peace are basic human rights. That people, regardless of caste, creed, gender, nationality etc. are people first. Innovation not just for those who can afford it – but for those who need it most.

Let me sum this up. ASSURED Innovation is the backbone of CSR 2.0. ASSURED Innovation is the way by which private sector can achieve the noble goal of doing well by doing good'. ASSURED Innovation can be a "two word" National Innovation Policy statement for many countries in the world. ASSURED Innovation can dismantle inequalities by creating the magic of access equality despite income inequality, thereby bringing back social harmony, which is the need of the hour.

Finally, as a proud Indian, I constantly remind myself that India has been a nation that has always been an ambassador of peace and goodwill for the rest of the world. I am confident that India is well-placed to become the next global ambassador of ASSURED innovation for our assured future, and that too not for a privileged few, but for all.

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Anil Chowdhry, Kamal Kumar & Harish Iyer

Securing Society and Infrastructure

Technology Foresight and Future

Introduction

In a live experiment reported by the BBC, it required the Chinese police of Guiyang a mere seven minutes to locate its correspondent. China's network of over 170 million CCTV cameras loaded with facial recognition and artificial intelligence capabilities ensure that few are able to avoid the watchful eyes of the police. Even in India, if one were in the state of Telangana, one should be worried if one's intentions were malicious and actions were aimed at disrupting security. Based on Aadhar number, the police of Telangana can build a 3600 profile of an individual and construct, on the fly, a network of his or her family, the details of vehicles and properties owned and, if required, even a GPS map of his or her movement. The Telangana police may not be able to match the 7 minutes record yet, but it is in the process of getting there.

The importance of security cannot be sufficiently underscored. The relationship between development and security has been proven in a number of contexts. At a time when even the most prosperous of cities around the world are proving to be vulnerable to assaults on their physical and cyber public safety, it is critical for India to embark on a technology enabled, modern approach to public safety. As the first responder, it is incumbent, especially on the police, to be ahead of the adversaries on the technology curve. After all, as technologies improve and adversaries infiltrate all knowledge strata of society – from the academia to government research cells and commercial scientific endeavours - the administration's charter to protect one of the largest numbers of citizens and infrastructure anywhere in the world will not be fulfilled by archaic "manpower sans technology" approaches.

A 2018 newspaper headline which reads LeT has developed mobile which Intel cannot trace[1] best illustrates this point. If security agencies equip themselves with technologies to gather intelligence through a surveillance of telephone calls of terrorists, the terrorists devise technological countermeasures which render their telephone calls invisible. The result of such perpetual cycle of technological one-upmanship is akin to a civilian arms race which produces an incredibly complex, technology enabled crime-policing-and-security governance topography. In addition to the competitive forces involving threat agents and security agencies, technologies derive their motive energies from other forces such as globalisation. It is in this immanent disposition of technologies where no single source or force is ever able to exercise defining influence over their adoption that one locates important justification for Governance through security technologies and governance of security technologies.

Current issues in technology governance

The internet in the form of cloud, the networks in the form of superfast highways, the analytics which can look both to the past and predict the future, cyber physical sensors which have intelligence built into them and many other improvements to technologies hold out genuine promise of promethean reconstruction of the security landscape – especially of the police - in India. Though there are visible signs of changes in technology adoption by the police, the current technology governance scenario is beset with several issues.

The first of these is the uneven spread of technologies within various geographies. As of 2017, over 250 police stations in India had no telephone facilities and a similar number had no vehicles[2]. About 50 police stations were largely incommunicado since they had

1 https://timesofindia.indiatimes.com/india/let-has-developed-an-untraceable-mobile-trains-terrorists-in-underground-facility-claims-captured-militant/articleshow/64280478.cms [23rd May 2018, Times of India]

2 Data on police organisations as on January , 2017, Bureau of Police Research & Development

neither telephones nor wireless sets. While the state of Telangana had 15 vehicles per 100 police personnel, the state of UP had just about 3. The example of the state-of-the-art command and control centre of the Telangana police cited earlier with its video surveillance and data analytics capabilities is therefore by no means typical of the technological preparedness of the police forces across the country. There are few nationwide standards and yardsticks to guide the technology enablement process, and the technology procurement by the central and state police forces in India is highly fragmented. Policing being a state subject, the equipment procurement decisions and training is by and large left to the discretion and perspectives of the state Chief Ministers who generally also hold the Sate Home portfolios[3].

The R & D pertaining to the internal security forces in India – especially the police – resemble more an afterthought rather than a foresight. For more than a decade up to 2018, the technology adoption initiatives of the police and other agencies have consisted largely of unambitious solutions aimed at reduction of paper work and some uninspiring moves in the direction of complaint registration and crime statistics generation. This is in spite of the fact that there have been numerous initiatives aimed at police force modernisation in India covering nearly 2.5 million police personnel operating from over 15,000 police stations. If the technological sensibilities reflected in various modernisation efforts are rather uninspiring, it is due to these strategic levels of visioning exercises being mechanical efforts devoid of collaborative efforts involving the law enforcement agencies, scientists, researchers, and academicians. Instead, technical questions are more likely to be judged on the basis of political ideology rather than scientific metrics and "ideology and short-term fixes are too often substituted for depth and objectivity" .

It is little wonder that the ad-hoc and simplistic approaches that characterise the current technology governance processes evoke only reticence from those tasked with the modernisation efforts and reluctance from those who need to implement the recommendations.

[3] James J. RICHARDSON, Whitney MATSON and Robert PETERS Promoting Science and Technology to Serve National Security, Potomac Institute for Policy Studies

To understand how the security related technology governance processes can be reformed and enabled to keep pace with changes in technologies and to remain future proof, one needs to first understand the kinds of changes that technologies are bringing about in life styles of citizens and operational characteristics of infrastructure.

Individuals and public spaces

Individuals are the foundation elements of a society. The personal security of individuals and their collective security in a home, office and cultural setting form the very bedrock from which the internal security of a country is derived. The array of technological choices available to a modern day individual to secure his or her person, family, and property is truly formidable. Mobile phone applications which can trigger an alert to the police are one of the most ubiquitous of facilities. Though these are directed mainly towards improving the safety of women, they are appropriate for all citizens. Many variations of this idea have evolved and grown on the strength of advanced sensor technologies. Inner garments, outer garments, fashion accessories such as pendants, watches, key chains are all able to send out distress signals at the touch of a button or as a result of some violent action such as tearing of garments. Such applications are also able to track the location of the distressed, record voices and videos.

Smart CCTV cameras which can pan, tilt and zoom are a useful tool for situational crime prevention[4] . It is therefore no surprise that many residential units and most commercial establishments deploy them to harden their perimeter security. It is estimated that in the UK, there are over 4 million CCTV cameras. These cameras watch over both public spaces and private establishments and it is estimated that an average British citizen is caught on a camera about 300 times a day. Most countries across the world have CCTV programs of some kind – even if they are not state-sponsored to the same extent as the UK. Even in the USA, it was from video footage that the threat

[4] 147 - This is an approach that is focused on reducing opportunities for crime and increasing perceived risk through modification of the physical environment

agents involved in Boston Marathon bombings – one wearing a black hat and the other white – were first identified as the prime suspects. Not only does video surveillance have official support in many states in India, the CCTV assembly and installation industry too is a highly competitive, low margin "cottage" industry with very little regulation and oversight. It should come as no surprise if in India too, "caught-on-CCTV-camera" figures reveal a steeply climbing trend – should a study be undertaken.

Smartness is becoming an inexorable part of security technologies – smart phones, smart wearables, and smart homes. One is able to witness the most visible and dramatic representation of the smartness in devices such as Google assistant and Amazon's Echo and Alexa. Devices such as Alexa are powered by artificial intelligence and their repertoire of skills - already numbering over 15,000 is truly staggering. These skills include the ability to control AI powered home surveillance cameras, video door bells, lights and any number of other appliances. They can even be wired to fire gun shots at the shout of a command and this says everything about their relevance to security.

Infrastructure

Even though the pace of change of technologies that concern individual and families is breathtaking, it is nothing compared to the changes that are taking place in the critical infrastructure sphere. Advances in SCADA systems and sensor technologies, cutting-edge networks of cyber-physical systems, deep neural network based control systems, modern telecommunication facilities have all combined to blur the boundaries that once separated the transportation, energy, communication, information, and other infrastructure segments.

A potentially telling impact that these converging technologies are having is on making what were once distinct infrastructure sectors increasingly lose their uniqueness and their rather tight boundaries. Metaphorically speaking, it is as though the unique "genes" that characterised the various infra sectors and differentiated them from one another have all mutated and become part of this new DNA in which technologies such as image sensors, ultrasonic sensors, GPS navigation systems, radars, Lidars, and AI driven data analytics are the dominant strands.

Because many of the infrastructure segments share the same technological DNA strands, they appear to be travelling along very similar technological trajectories. For instance, various sensor technologies, radars, Lidars etc have become the building blocks the ground breaking driverless, autonomous vehicles technology. Self-driving taxis, cargo trucks, private vehicles are all current realities. Similar sets of technology are driving the shipping, aviation and railways sectors on the unmanned technology trajectory. Autonomous airborne vehicles – drones for instance – are not only in use in the current times but are also mature enough and powerful enough to be feared for their threat capabilities.

Similarly, the "cyber-physical" strand of the new technological DNA is giving rise to several shared traits among critical infra organisations. Cyber-physical systems imbue physical systems with cyber characteristics through the use of modern communication technologies to create a new class of computational systems. Reconfigurability from anywhere in the world is one of the key characteristics of such systems.

The final shared trait among the infra elements which needs to be highlighted – which, as already noted, is implied in their CPS nature - is in the use of modern communication systems. Heterogeneous networks [Hetnets] are an important enabler of communication within and among infra sectors. Hetnets are the result of taming of multiple technologies, standards, and speeds through the use of technological bridges. An amalgam of seamlessly integrated system that emerges from Hetnets is intended to support and co-ordinate multiple modes [GSM, UMTS, Wi-Fi etc] and multiple layers [low-frequency macro coverage, pico, femto etc] of communication. The coming decade might witness 5G providing massive machine-type communications and facilitating ultra-reliable low-latency and enhanced mobile broadband experience.

Shared technologies – shared threats

Because of the common set of technological DNAs that characterise them, the entire ecosystem of individuals, society, and critical infrastructure sectors find themselves susceptible to very similar technologically driven attack possibilities. For instance, GPS spoofing – which refers to misdirecting of any artefact that relies on GPS for direction determination – can be directed with the same felicity at an unmanned car as against even a fully manned cargo or passenger vessel. The Stuxnet attack of 2008 on an Iranian nuclear facility is the most publicised and well known of Cyber-physical systems attacks. As was revealed by a well publicised 2018 experiment, even smart home appliances such as Google assistant can be wired to trigger gun shots remotely – an attack pattern that individuals share with Cyber-physical systems of infrastructure. While an IMSI catcher may do the trick for intruding into private conversations, attacks on communication system of aeroplanes – such as its Automatic Dependent Surveillance–Broadcast (ADS-B) system - may involve more sustained effort. But little is outside the capabilities of modern day threat agents – especially those who have backing of rogue states.

There is really no escaping from the cyber data trails that users of modern technologies and appliances leave behind and the types of information that can be gleaned from them. The more smart IoT appliances invade homes of private individuals and protected persons – not to mention government offices and barracks of security agencies – the more will be the probability that privacy breaching information will be broadcast - intentionally or otherwise. For instance, 2018 dawned with Strava, a GPS service provider, publishing GPS maps generated from data captured from devices such as Fitbit. The map revealed the location of secret military bases compiled from IoT data collected from security personnel who may have gone about their daily exercises while being ignorant about the threat potential of such connected devices.

The point is clear enough. Dual-use nature of such current and emerging technologies need to be governed well.

Technology enabled countermeasures

Before reviewing the key governance options for the future, it would be pertinent to reaffirm that neither threat sources nor security agencies of country exercise hegemony over technology usage. If threat agents are able to turn current and emerging technologies against societal elements, the security processes and practices too are quite a bit different technologically in many a respect than those of even 20 years ago. Much of the beat work of the police today happens from GPS enabled vehicles equipped with modern communication systems. Even the individual beat constable is likely to carry smart phones or tablets furnished with face recognition systems. Interactions between the beat constable and citizens are likely to be recorded on body worn cameras. Many of the transactions between the police and the citizens – such as issue of challans, collection of fines etc - are paperless and cashless.

Technology adoption by security agencies – especially the police - has contributed significantly to their transformation into autonomous professional institutions. Information and communication technologies have increased the capacity of security agencies to put data analytics, machine learning, GPS and other forms of both conventional and converging technologies to advanced use. The preponderance of social media and other internet based tools have led law enforcement agencies too to develop tools to investigate offenses online. The usefulness of CCTV in crime prevention and detection has been amply affirmed.

If one may engage in a foresight exercise and look for signs of nuanced security methods that one is likely to witness in the coming decade, one need look no further than the colourful, Mickey mouse embossed RFID MagicBands worn by visitors to the Disney world. Though there can be nothing farther from security than the childlike innocence that Disney stands for, one may still find in the MagicBands a semiotic nesting doll of surveillance actions. The band transparently facilitates everything from entry to one's hotel room in Disney world to making payments, and to obtaining photographs of enjoyment at various attractions. However, behind this immersive experience are a constant surveillance of movement, a persistent surveillance and prediction of preferences, and a generation of extended connectivity and linkages to phone numbers, facial features, credit cards and numerous other data.

Fitbits, pacemakers, Google assistant are all similar to the MagicBands in one sense. They too are sensors and they too serve as surveillance tools. These technologies are still evolving and their potential as security technologies is as yet inchoate. The modern day law enforcement officer however already understands their potential as evidenced by several criminal incidents that have been solved on the strength of IoT generated surveillance data.

Future proofing security technology Governance

As citizens entrust more and more of their lives to the technologies they use, governance responses must move from reactionary knee-jerk policies to a visionary, future ready, and future proof frameworks. As to the constituents of the framework, one may look to principles stated by Sir Robert Peel in creating the London metropolitan police force in the 19th century - a model which sought to balance enforcement of security with respect for individual freedom.

Security data governance: It is in the fact that technologies such as MagicBands are intended for enhancing visitor experience and not surveillance that one begins to understand the need for disambiguation of their benign utilitarian nature and their hidden power of surveillance. We derive our early set of security governance goals from the need to exercise control over such dual-use nature technologies. It should be immediately obvious that no government will be able to exercise effective control over the distribution and use of devices such as MagicBands, Fitbit, pace makers, smart televisions and any number of other IoT devices. It is however critical that as a first step, data generated by various technologies be very carefully governed from protection and cognisance of privacy angles. Even an occasional data leak such as the Strava experience might prove immensely damaging for it might, in an instant, undo all the carefully planned movement patterns of security agents.

There is yet another angle to governance of data generated by technologies – one involving not raw but processed data. Accompanying the explosion in the volume and types of data generated by technologies that one is already witnessing in the present is an emphasis on information led, predictive policing practices that rely on advanced data analytics. Predictive security practices revolve around drawing inferences about future behaviour of individuals from current data patterns. While predictive powers of data are not to be denied, it is alarming that there is almost a worshipful trust in their infallibility to produce completely trustworthy predictive models. Greatly aided by such ready to use AI tools as Google's Tensorflow, a machine learning wave is sweeping across all spheres of research, academic and commercial activities.

Overstating the power of technology is a sure way to ill-judged security policy responses The plethora of experience with false news, hacked data, planted information, and the emerging technology of adversarial machine learning provide us with ample warning that all important practices in security governance through data must necessarily involve checks and balances for establishing the quality and provenance of data.

Security technology governance: One might best understand the need for security technology governance using the example of CCTVs since they are among the most visible, ubiquitous, and utilitarian of security technologies. From the time of launch of the modernisation of police force scheme [MPF] by the ministry of home affairs of India and the subsequent introduction of Megacity policing plan under the MPF scheme, there has been considerable emphasis on video surveillance systems. Several states in India – Karnataka and Telangana, for instance – require mandatory installation of CCTVs in establishments with footfalls over a certain limit and this contributes in no small measure to the spread of the technology.

Whether CCTVs or predictive policing or GPS technologies, it is important to note that technologies yield to network effects where, once they cross a certain threshold of usage, more and more individuals, homes and organisations – as the case may be - will adopt them unquestioningly. Such intense and overt sanction for wide spread use of technology might produce a heightened level of feeling of security among citizens – which is certainly desirable – while also creating an undesirable habit forming situation among law enforcement agencies and a concomitant dilution in their skills. A most egregious example of such habit formation is to be found in a real-life instance when a family of a victim is asked by a law enforcement agency to scour the area of an incident on their own and collect clear video footage to help the case to proceed[5] .

Unfortunately, such intense backing for certain technologies betrays a unquestioning belief in their power to keep threats away. Such approaches to designing of living spaces where persistent surveillance is expected to keep threats at bay can only be termed optimistic, at best. One research found that the effect of camera surveillance was significant in car parks but not in other public spaces[6]. The point is not that surveillance using cameras are not effective. It is that Situational crime prevention and CPtED (Crime Prevention through Environmental Design) strategies have their limitations and that technology governance structures – such as a camera commissioner and video surveillance code of practice - should first be in place before permitting technologies with significant security implication to proliferate.

While data need to be governed, the physical forms of selected technologies and the actions of their manufacture, installation and use too need be subjected to policy guidelines.

Governance of technology foresight process: The key to designing future proof technology foresight process lies in acknowledging the failure of today's reductionist approaches which views homes, offices, airports, chemical plants, water bodies etc as distinct, siloed entities. This approach perceives elements of the society as functioning neatly within their own traditional spheres. Traditional however is hardly the right epithet to describe the pace at which technological changes are causing natural systems, man-made physical structures, and human-built cyber artefacts to transmute into complex adaptive systems. In many cities around the world, street lights are monitoring traffic flows, football fields are getting lit by kinetic energy generated by player footfall and high rise roof tops are beginning to be used as drone ports. Suddenly therefore

5 https://timesofindia.indiatimes.com/city/hyderabad/hit-and-run-kin-told-to-get-clear-footage-to-nail-culprit/articleshow/63980380.cms

6 Brandon C. Welsh & David P. Farrington (2009) Public Area CCTV and Crime Prevention: An Updated Systematic Review and Meta-Analysis, Justice Quarterly, 26:4, 716-745

one is faced with the prospect that the power infrastructure of tomorrow may not look much like the system of generation plants, towers and transmission lines of today. Instead, it may well be a few centimetre thick energy generating tiles buried underground. Cargo movement of tomorrow may not entirely be through aeroplanes or trucks. Instead, a swarm of drones operating from high rise civilian buildings may fulfil door-to-door delivery. Under such drastically changing scenario, of what value might be the traditional approaches to security planning where the aviation sector, the chemical sector, the telecom sector, the police, the para-military forces all try to heuristically predict a technological future from their own bounded world-view?

What is required in these information-dense, highly integrated, rapidly evolving societal systems is acquiring new abilities to envision on a global scale, a technology driven future with all its new age vulnerabilities and threats. Unfortunately, the current structures within security agencies and infrastructure domains are no match for the complexity of the task. Nor is the academia and the scientific community preoccupied that they are with their narrow research focus. A dedicated national level apex body is therefore required whose charter will be to filter through the current talents, stitch together new fields of study such as industrial ecology, systems engineering, adaptive management with the current knowledge domains, and create a dynamic body of experts which will constantly engage in technology foresight from a security perspective and help develop risk models and threat scenarios.

Conclusion

Technological changes are increasing the power of individuals, governments and threat agents alike. The rapidity of the change is also provoking efforts at technological one-upmanship among the cast of stakeholders. This pernicious cat and mouse game may consume considerable amount of resources and, at times, the adversaries may come to have an upper hand. After all, existence of threats occurs naturally given human nature. What matters most is whether the security forces are responding from a platform which encourages technological innovation in deterring the capabilities of threat elements.

Technologies also create new tensions, such as the recent debates about data encryption, intrusion into privacy, the need for cyber westphalian world etc. Since no easy or quick answers are to be found to the uncertainties that accompany technological upheavals, creation of strong technological governance structures becomes imperative. Scientifically tempered technological policies and a permanent national level engagement in acquiring technological foresight through a dedicated institution are perhaps the key responses that will create future-proof internal security apparatus in the country.

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Tarun Agarwal

Twin Pillars of Banking in India

Financial Literacy and Financial Inclusion

"The future of our country depends upon making every individual, young and old, fully realize the obligations and responsibilities belonging to citizenship...The future of each individual rests in the individual, providing each is given a fair and proper education and training in the useful things of life…Habits of life are formed in youth…What we need in this country now…is to teach the growing generations to realize that thrift and economy, coupled with industry, are necessary now as they were in past generations." Theodore Vail, President of AT&T and first chairman of the Junior Achievement Bureau (1919, as quoted in Francomano, Lavitt and Lavitt, 1988)

"Just as it was not possible to live in an industrialized society without print literacy—the ability to read and write, so it is not possible to live in today's world without being financially literate… Financial literacy is an essential tool for anyone who wants to be able to succeed in today's society, make sound financial decisions, and—ultimately—be a good citizen." Annamaria Lusardi (2011)

Introduction

Government agencies around the world today are recognising the benefits to individuals and national economies of having a financially literate population that has access to appropriate financial products with relevant consumer protection in place. In recent years, the G20 (World Bank) has endorsed upon three sets of principles in this regard i.e. financial consumer protection, financial inclusion and national strategies for financial education, indicating firm commitment towards financial integration, thus bringing out the importance of Educational theory & practice, relationship and importance of Results. A measure of financial literacy can be used to indicate the need for level of financial education across population and more detailed analysis can be useful to identify aspects related to it that need the targeted support.

Financial Literacy (Education)

Financial literacy is an understanding of the most basic economic concepts education needed to make saving, borrowing and investment decisions. Financial Literacy is the base and primary step for financial inclusion (Education and the results). It provides knowledge on merits and demerits of financial products and services, based on that an individual can select the right product which suits his/her needs. In the words of **Shri Pranab Mukherjee, (2013)** financial literacy refers "Financial literacy and education plays a vital role in financial inclusion, inclusive growth and sustainable prosperity". Financial Education ensures that financial services reach the weaker sections of the society. In order to improve the awareness around financial literacy, several schemes have been implemented by the Reserve Bank of India (RBI), the Security and Exchange Board of India (SEBI), Insurance Regulatory Development Authority, Pension Fund Regulatory and Development Authority (PFRADA).

An efficient financial market depends upon its participants, making rationale and prudent decisions. Financial literacy is an effective tool for financial inclusion, as they both go hand in hand. Accordingly, the need for FL and its importance for FI have been acknowledged by most of the stakeholders - policymakers, bankers, practitioners, researchers and academics – across the globe.

Financial Inclusion:

Financial Inclusion has become the buzzword. What is Financial Inclusion? Dr. Rangarajan's committee on financial inclusion defines it as: "Financial inclusion may be defined as the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low income groups at an affordable cost." The financial services include the entire gamut - savings, loans, insurance, credit, payments etc. People who are financially excluded are mostly poor and financially illiterate.

So far, the focus has only been on delivering credit and has been quite successful. Similar success has to be seen in other aspects of finance as well. Accordingly, the first question that comes to mind is why can't financial inclusion happen on its own? Why do we need to make a policy to increase the same? Like any other product or service, why can't it find a market of its own? The reasons could be:

Financial exclusion in general, High cost of financial services, ***Non-price barriers*** (Access to formal financial services - distance between the bank and their residence, poor infrastructure etc., proof regarding a persons' identity, income etc.), and ***Behavioural aspects*** (missing comfort of using formal financial services, difficulty in understanding language, various documents and conditions applicable). These reasons go on to show that financial inclusion will not happen on its own.

Objectives of the Study: To study the correlation between Twin Pillars of Banking in India Financial Literacy (Education Theory) and Financial Inclusion (Practice) and importance of the same

Literature Review

As per the literature review, it is seen that the status of financial literacy is not satisfactory in India, especially in rural areas. According to a survey conducted by Standard & Poor's, over 76% Indian adults lack basic financial literacy and they don't understand the most basic and key financial concepts. In rural area people keep their saving in their homes which fetches them no interest and is risky too. They borrow from local money lenders charging them high interest rates. Moreover, traditional methods of availing financial services are more popular in rural areas. Some of the steps initiated by various leading institutions in India for increasing financial literacy are as follows.

a. RBI Reserve Bank of India **(RBI)** under its Financial Initiative programmes has undertaken a project titled 'project financial literacy' the objective of this project is to provide information about RBI and general banking concept to its target people especially villagers, women, students of schools & colleges, senior citizen, defence people etc. These informative projects disseminate information regarding RBI, basic banking, microfinance and benefits of availing services of SHG, risk capacity analysis etc.

b. Securities and Exchange Board of India **(SEBI)** runs campaign called securities market awareness campaign (SMAC) under motto "an educated investor is a protected investor". Under this campaign SEBI conducts various work shops across the country. To undertake financial education to various target segments viz. school students, college students, working executives, middle income group, home makers, retired personnel, self-help groups etc. Programs/workshops on various aspects viz. savings, investment, financial planning, banking, insurance, retirement planning etc. are organised.

c. Insurance Regulatory and Development Authority **(IRDA**) organises awareness programmes on television and radio and simple messages about the rights and duties of policyholders, channels available for dispute redressal etc. in English, Hindi and other Indian languages.

d. The Pension Fund Regulatory and Development Authority **(PFRDA)** has been engaged in spreading social security messages to the public. It has developed FAQ on pension related topics on its web and has been associated with various non-government organizations in India in taking the pension services to the disadvantaged community.

e. **Commercial Banks:** In view of the national emphasis on electronic benefit transfer the commercial banks have initiated various measures for creating awareness through Financial Literacy and Counselling Canters and Rural Self Employment Training Institutes on financial literacy. The objective of these canters is to advise people on gaining access to the financial system including banks, creating awareness among the public about financial management, counselling people who are struggling to meet their repayment obligations and help them resolve their problems of indebtedness, helping in rehabilitation of borrowers in distress etc. Some of these credit counselling canters even train farmers/women groups to enable them to start their own income generating activities to earn a reasonable livelihood.

f. Similarly, **Stock Exchanges, Broking Houses and Mutual Funds** have initiated efforts in the field of financial education like conducting seminars, issuance of do's and don'ts, and newspaper campaigns.

Financial literacy is rapidly being recognised as a core skill, essential for consumers operating in an increasingly complex financial landscape. It is therefore no surprise that governments around the world are interested in finding effective approaches to improve the level of financial literacy amongst their population and that many are in the process of creating or leading a national strategy for financial education to provide learning opportunities throughout a person's life (OECD/INFE, 2013b). The OECD definition of financial education goes like this - "Financial education is the process by which individuals improve their understanding of financial products and concepts; and through information, instruction and/or objective advice develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being and protection (OECD 2005a)".

Accordingly to an article on Financial Inclusion as published in The Economic Times, "No matter how many banks you open and how many boots you have on the ground, if a person does not know about the financial options that are open - policies, schemes and financial instruments will mean little. It is important for a person to firstly know what to look for and only then think of the benefits that he can obtain from it."

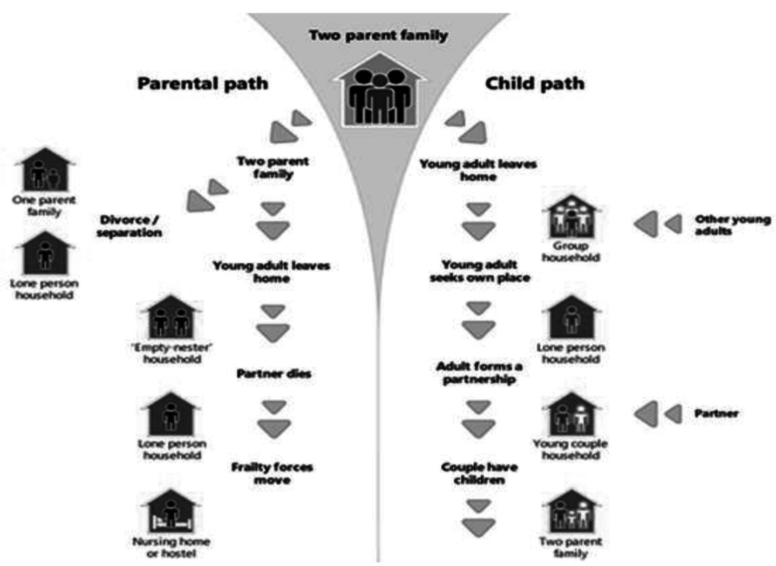
Methodology

In the absence of not much of data being available on the subject yet and in order to draw an inference about the relationship between Financial Literacy and Inclusion, two pronged methodology has been adapted here – First, an ***assumptive approach*** - studying the life cycle financial services needs of a normal human being. While doing the above, have kept the financial cum social status as constant. Secondly, ***secondary data collection*** from the RBI website on state-wise statistics published related to education and practice as available in public domain

Analytical Research: Financial Literacy and Financial Inclusion: assumptive approach:

Life cycle of an individual - children initially stay with parents and go to school. Following studies, they may move out of the parents' house and begin to live on their own. They then get married, form a couple and start their own family. By this stage, the parents are old, with reduced income levels because of lower physical capacity to work. They seek support from their children who have just been endowed with new responsibilities of a family, with children of their own to raise. The cycle continues with these children getting educated, moving out to find a job and then eventually raising their own families, while assisting their parents.

Figure 1. Life cycle of an individual/ household



Credits: This figure is based upon studies conducted by IFMR on the subject of financial literacy

Story of a typical household involves an exchange of dependency and responsibilities at each stage. Considering just the financial services' needs of the household over its life cycle, we observe that both are specific to the stage that the household or individual is in at a given point of time. For instance, as a school going kid (in his/ her teenage), an individual might require know-how of savings so that he/ she can save pocket money or scholarship and utilise it effectively. A young person who has just started working and receiving a salary, would require a banking service, complex investment products (given that youth are more inclined to risk-taking and are open to experimentation) and remittance services that would enable him/ her to send a portion of earnings to parents who are not able to do as much physical labour as they could earlier. As time progresses and the individual gets married and starts a family, he/ she is required to think about safer financial products and longer term investments. His/ her dependency ratio is highest at this point – both children and parents are dependent on the individual. As the individual becomes older, simple banking services are required to access remittances transferred by children, and welfare transfers from the government.

Considering these specific financial services' requirements at various junctures in life, we find four educational/teachable moments: school-going child (grown up enough to understand money and saving), youth (stepping into employment), middle-aged (married, and starting a family), and old age. These are the specific stages of transition in one's life, when the need for financial products/ services takes a leap highlighting the importance of understanding aspects related to these stages and to make the right financial decisions.

Post understanding the above mentioned stages of one's life cycle – various efforts have been made by Government, RBI, Commercial Banks, NGO's, NBFC's, MFI's, Business Correspondents, IRDA, PFRDA, Mutual Funds and other relevant bodies in the space of Financial Education. The theory and the practice has brought about the following appreciable/noticeable results: that as of 31st March, 2016 financial inclusion (Result) in the country stands at more than 67%. Thus, proving that there is a high correlation between the two. To substantiate our above approach, researchers have gone ahead to prove the same through a set of data as below.

Data Collection, analysis and Hypothesis: Financial Literacy and Financial Inclusion

Data Collection: Secondary data has been collected from the RBI website – statistical section. Secondary data is the data that have been already collected by and readily available from other sources. Such data are quickly obtainable than the primary data and also comes handy when primary data cannot be obtained at all. Researchers are well aware of the advantages and disadvantages of secondary data and the same have been kept in mind while conducting the data analysis.

Data Analysis:

As per 2011 census the average literacy (both, men and women taken together) rate of all states & Union Territories (UTs) taken together is 78%, Kerala being the highest literate state & Bihar having lowest scores of 63% in the data analysed. Similarly in terms of 'Number of Saving accounts per 100 populations' is highest in Puducherry having 183 account per 100 populations and lowest in Nagaland with 53 accounts per 100 population.

Chart 1: Descriptive Statistics

	Mean	Std. Deviation	N
LITERACY	78.3042	8.26601	36
DEPOSIT	1.3790E2	65.64117	36

From the Pearson coefficient of correlation as shown in Chart 2 below, it clearly brings out the 'Positive correlation' between both the variable literacy and saving accounts in other words 'literacy' with 'financial inclusion'.

Chart 2: Correlations

		LITERACY	DEPOSIT
LITERACY	Pearson Correlation	1	.452**
	Sig. (2-tailed)		.006
	N	36	36
DEPOSIT	Pearson Correlation	.452**	1
	Sig. (2-tailed)	.006	
	N	36	36

**. Correlation is significant at the 0.01 level (2-tailed).

Where, Sig (2 Tailed): Significance Level

N: Number of cases

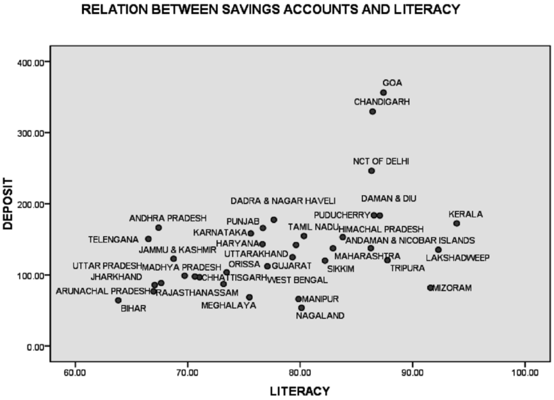
The above SPSS output shows there is A 45% correlation between literacy (THEORY) and financial inclusion (PRACTICE) and the result is statistically significant as the level of Significance is 0.006. Please refer chart 2 above.

Scatterplot between Dependent Variable – Deposit and Independent Variable –Literacy

The pictorial representation through scatter plot (Chart 3 below) shows is quite interesting and following observations need special attention:

1. Delhi, Chandigarh & Goa are among the top states with number of deposit accounts however, the literacy rate is not highest in these states. This may be due to availability of labour, employment, industries, and various income generation activities.
2. Excluding the 3 states mentioned earlier, there is seems to be a perfect linear relationship between the variables
3. Though Manipur & Nagaland have literacy rate more than 80% however the number saving accounts is lowest as can be seen, this may be due geographical reasons, unavailability of infrastructure, poor connectivity, migration etc.

Chart3 : Relation between Savings Accounts and Financial Literacy



Regression:

SPSS output of bivariate linear correlation between financial literacy and inclusion states that both variable are positively correlated and are independent variables – literacy explains 20% of the variation in the dependent variable and the result is significant with level of significance 0.6%. Please refer to chart 4 and 5 below

Chart 4: Model Summaryb

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.452a	.204	.181	59.40538

a. Predictors: (Constant), LITERACY

b. Dependent Variable: DEPOSIT

Where, R: Coefficient of correlation

R Square: Coefficient of regression

ANOVA^b

We have a null hypothesis that 'the literacy rate has no impact on 'number bank accounts', however the ANOVA (Analysis of Variance) through SPPS programme provide a F* value of 8.73 which is higher than the 'F Critical value' i.e. F (0.05,1 , 34) = 4.13 with a probability level 0.05, hence we reject the null hypothesis and accept the alternative hypothesis 'Literacy has impact on the number of Bank Accounts.

Chart 5

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	30820.736	1	30820.736	8.734	.006a
	Residual	119985.990	34	3529.000		
	Total	150806.726	35			

a. Predictors: (Constant), LITERACY

b. Dependent Variable: DEPOSIT

The predictive value of the dependent variable 'Number of Saving Bank Account per 100 populations' can be calculated by the equation 'Number of Saving Bank Account per 100 populations' = 3.59 * Literacy % + (-143) where -143 is constant of equation and 3.5 is the slope of equation. Please refer to chart 6 below.

Coefficients[a]

Chart 6:

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-143.211	95.636		-1.497	.143		
	LITERACY	3.590	1.215	.452	2.955	.006	1.000	1.000

a. Dependent Variable: DEPOSIT

4.2.2.5. Result: Nature of Educational theory & practice has strong relationship and has great importance, thus, bringing in excellent results: The above research goes on to explain the same in terms of Financial Literacy & Financial Inclusion - one of the important major agendas of the Government, Policy makers and various other stake holders in Indian Sub-continent today. Financial Literacy and Inclusion goes hand in hand, they complement each other and are highly correlated proving themselves as the twin pillars of Banking in India.

Limitations:

As is the case with any other such research, the effectiveness of the relationship so presented between theory and practice is heavily determined by the quantity and quality of data that flows into it. Since the parameters were carefully chosen on the basis of the kind of data that is available in the States and with various other stakeholders, the scope of this research is perforce restricted at the moment to assess the level of financial literacy and financial inclusion at the geographical level. The silver lining, though, is that the correlation seems so tempting that it goes on to say that the derived values prompts to say that as and when more varied, reliable data becomes available, the scope of the above study can be expanded to measure the contribution towards financial inclusion by each city/district/

village and even banks and nonbanking financial companies, as well as accommodate more parameters and refinements and encompass other forms of lending (such as by non-banking financial companies) and other financial services (including insurance and pension). The conclusions of the report are critically dependent on data received at the State level, and the scholars have not independently verified the accuracy of this data. However, this has no bearing on the final conclusions. Another limitation is that the data used in the analysis is granular in nature, and therefore, is available only with a lag. This report, for instance, assesses the extent of financial inclusion as on March 2016 along with Literacy rates as available both for Male and Females separately as per 2011 census data. Dimensions like cost of transaction and ease of doing transactions have not been considered due to non-availability of the reliable data, data related to various other aspects of financial inclusion, like; insurance, payment and remittances etc. have not been considered on account of non-availability of consistency and authenticity.

Conclusion:

Financial literacy is a key factor to financial inclusion and a necessary pre-condition for success in its drive. Both, financial literacy and inclusion needs to be treated as twin pillars (Theory and practice goes hand in hand and understanding of each other is mutually dependent). Without increased financial literacy, people will be increasingly at risk of making poor financial decisions which leave them to confront financial hardship, including an insecure old age. Financial literacy is making people aware of what they can and should expect from the banking sector, as their right. In this context, financial literacy and inclusion are a win-win opportunity for the poor, for the banks and for the nation as a whole. There is urgent need for concerted efforts, focus and improvement in the space of education. Whatever products available today are not known to the majority of the population especially, in the rural areas. The situation can be improved by banks / Government by opening number of inclusive banking innovative outfits, wherein staff can explain rural people about different financial products and their benefits. Efforts should be made to make the poor people confident in coming to the bank branches and connecting with main GDP streamline of the country. Even the staff of rural branches needs to be trained to deal with rural people. Various IT tools can be used for providing financial services at their door – steps to build their confidence. Savings account opening and loan sanction / disbursement process should be kept simple as far as possible. Thus, it is clear that financial literacy is a must for financial inclusion. Population should have proper knowledge, behaviours and attitude then only successful implementation of financial inclusion plan can be achieved. Financial service providers needs to focus on financial literacy, simple and flexible products and speedy transactions.

Even though there is no blueprint to a successful financial literacy programme as yet, the efforts that are being put in by stakeholders to empower people while making them financially literate are commendable (in order to achieve the objective of greater Financial Inclusion) but need to be more focused and customised as the rule of 'one size fits all' doesn't seem to apply. Providing the right advice at the right time and with the right approach is the key and hence the vast scope for work and innovation.

To make things clear, financial inclusion focuses on volume or quantity whereas financial literacy is more about quality. While financial inclusion emphasises on creating more accounts in order to make the common banking facilities easily accessible to all, financial literacy emphasises on expanding the knowledge on financial matters and products so that one can,

- Understand how to use and manage money and minimize financial risk
- Manage personal finance quite efficiently
- Identify the benefits and facilities offered by banks and boycott the dodgy moneylenders.
- Derive the long-term benefits of savings

And eventually, it will further the financial inclusion movement in India.

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Sana Moid

Environmental Accounting

An Analysis of Indian Corporate Sector

The concept of sustainable development is becoming popular in different countries of the world, including India, where society has realized the important role of ecological requirements for economical development. Accounting is no longer limited to description of financial performances; rather, it is now considered as one of the most important services of society. The ecological role of corporate sectors responsible for their business activities on the environment is becoming particularly explicit. Along with the finance and production results of business activities, their environmental and social effects are also critical. As environmental or natural resources are invaluable and hence there is an immediate need to maintain accounts of such resources, and as a result, a new area of accounting under the heading "Environmental Accounting" has emerged.

Different uses of environmental accounting arise from three distinct contexts:

Type of Environmental Accounting	Focus	Audience
National Income Accounting	Nation	External
Financial Accounting	Firm	External
Managerial or Management Accounting	Firm, division, facility, product line or system	Internal

National income accounting is a macro-economic measure like Gross Domestic Product (GDP). The GDP is measure of the flow of goods and services through the economy. It is often considered as a key measure of our society's economic well-being. The term environmental accounting may refer to this national economic context.

Financial accounting helps in preparation of financial reports for use by investors, lenders, and others. Publicly held corporations report information on their financial condition and performance through quarterly and annual reports, governed by rules set by the U.S. Securities and Exchange Commission (SEC) with input from industry's self-regulatory body, the Financial Accounting Standards Board (FASB).

Management accounting is the process of identifying, collecting, and analyzing information principally for internal purposes. Because a key role of management accounting is to support a business's forward-looking management decisions, it is the focus of the remainder of this primer.

Environmental accounting is completely an emerging and dynamic concept. Environmental accounting is concerned with accounting for environment encompassing business. Environmental accounting attempts to identify and bring to the light the resources exhausted and costs rendered reciprocally to the environment by business houses. In other words, environmental accounting attempts to make the best assessment of the costs and benefits to an enterprise for activities specifically directed to environmental preservation. Environment brings together all organism and forces functioning in nature including man. Environmental accounting refers to the measurement and communication of information about the environmental responsibility performance of an organization to interested parties.

Literature Review

The period 1971-1980 marked the beginning of environmental accounting in the guise of 'social responsibility accounting'. Social responsibility accounting sought to establish the degree of responsibility that companies should have towards stakeholders other than the firm's shareholders. Part of this responsibility is concerned with the interaction of firm and ecological environment. This represented a preoccupation with environment visible among academics at that time.

During the period 1981-1990 emphasis of accounting literature shifted from 'social responsible accounting' to 'environmental accounting' reflecting interest in the latter. Research became more analytical in approach and the philosophical debate began to focus more on what kind of environmental information it was fit for companies to disclose. From 1990 to date the emphasis continues unabated and engages the interest of both academic and practicing accountants. The latter have found their interest stimulated by government legislation.

Rob Gray, Jan Babington (2010), discussed in the chapter entitled 'Environmental accounting, managerialism and sustainability: "Is the planet safe in the hands of business and accounting"? to provide a reflection of current state of art in environmental accounting research through this managerialist lens and then goes on to illustrate the essence of the problem through the reporting of a new analysis of data from an international study of accounting, sustainability and transnational corporations.

Heba Y.M. Abdel-Rahim and Yousef M. Abdel-Rahim entitled "Green Accounting – A Proposition for EA/ER Conceptual Implementation Methodology" discussed about the concept and understanding on the environmental accounting education. This article explores the concepts of environmental accounting and the possibility of broadening the applicability of environmental reporting concept to be utilized by governments to make businesses more responsible for their externalities. Further contribution is offered by De Villiers and Van Staden (2006) who utilizes annual report content analysis to investigate the environmental disclosure practice of companies operating in South Africa. They made an analysis of more than 140 corporate annual reports over 9 year period in order to identify trends in environmental disclosure by South Africa companies. A further contribution by Bhate (2002) investigated the extent to which consumers of India are aware of environmental issues.

However, in India, very few corporations provide required information regarding environmental issues. As per requirement of applicable law, companies have to prepare and submit information relevant to environment they have to make necessary preparation.

The Environment Ministry has issued instructions in this regard for preparation of environmental statement. It can be observed through their accounts that mainly the following type of information is given:

a. Type of devices installed for controlling pollution
b. Steps taken for energy conservation.
c. Steps taken for conservation raw material
d. Step taken for waste water and production process waste
e. Step taken for improvement of quality of product and services, process of production, etc

It was also found that most of the companies disclose the environment information in descriptive manner rather than financial type i.e., no account is made for the degradation of natural capital when calculating corporate profits. Like this, many studies have been undertaken and completed in the past by the researchers. However, this initial survey of available literature revealed that no work focused on the evaluation of Environmental Accounting Practices followed by Indian Companies.

Objective and Methodology

This paper is basically based on concepts and throws light on certain fundamental and theoretical aspects of "Environmental Accounting". It also attempts to examine the drawbacks of the traditional accounting system and importance of environmental accounting today. In light of this, the motivation for this paper is not to seek new solutions to the underlying problems facing environmental accounting, rather it is, however, considered that some light will be shed on the theoretical development of environmental accounting research.

The primary objective of the proposed study is to evaluate the corporate practices relating to measurement, recognition and disclosure of environmental costs and benefits. This primary objective is supported by the following:

a) To do review of accounting regulations and government rules relating to Environmental Accounting.

b) To analyze the corporate strategies towards environmental safety and protection.

c) To evaluate the corporate practices relating to the quantification of environmental costs and benefits.

d) To analyze the recognition procedure – i.e., recognition of environmental costs and benefits in the books of account – either in the financial statements and/or in the annual reports.

e) To do an evaluation of environmental accounting practices, including disclosure practices, of selected Indian companies

f) To offer suggestions for the improvement.

Why Environmental Accounting?

An environmental cost is one of the many different types of costs that businesses incur with providing goods and services to their customers. Environmental performance is one of the many important measures of business success. Environmental costs and performance deserve attention because of the following reasons:

(1) Environmental costs can be **significantly reduced or eliminated** as a result of business decisions, ranging from operational and housekeeping changes, to investment in "greener" process technology, redesign of processes/ products.

(2) Environmental costs (and, thus, potential cost savings) **may be obscured in overhead accounts or otherwise overlooked.**

(3) Better management of environmental costs can result in **improved environmental performance and significant benefits to human health** along with business success.

(4) Understanding the environmental costs and performance of processes and products can promote **more accurate costing and pricing** of products and can aid companies in **design of more environmentally preferable** processes, products, and services for the future.

(5) **Competitive advantag**e with customers can result from processes, products, and services that can be demonstrated to be environmentally preferable.

(6) Accounting for environmental costs and performance can support an overall **environmental management system**. Such a system will soon be a necessity for companies engaged in international trade due to pending international consensus standard ISO 14001, developed by the International Organization for Standardization.

What Is Environmental Accounting?

Unlike financial accounting governed by Generally Accepted Accounting Principles (GAAP), management accounting practices and systems differ according to the needs of the businesses they serve. Some businesses have simple systems while others have elaborate. Just as management accounting refers to the use of a broad set of cost and performance data by a company's managers in making a myriad of business decisions, environmental accounting refers to the use of data about environmental costs and performance in business decisions and operations.

Environmental accounting seeks to provide fiscal information display of company's environmental expenditures and the subsequent benefits of this spending. Environmental activities like environmental protection and occupational safety and health, were converted into fiscal or accounting data through systematic methods. This information was then disclosed and market mechanisms then employed to improve or resolve environmental issues. The ultimate result is to have companies, industries, and even entire nations take steps to ensure sustainability.

The disclosure of all environmental activities with financial statements or other means can accurately reflect the cost and effect relationship between companies and the environment. The data disclosed can be a help for measuring a nation's industry and reveal the degree to which a nation emphasizes environmental quality, the measurement is known as Green GNP.

Environmental accounting involves information, environmental protection, and accounting. An integrated platform is required to compile data on these three fronts and then to disclose environmental-related corporate value hidden in this data via a firm's financial statements or reports.

Rationale of Environmental Accounting

Better insight into the potential benefits of investment and costs related to environmental conversation activities does not only help in improving its efficiency of activities, but environmental accounting plays an important role in supporting rational decision-making. As a result, environmental accounting helps companies and other organizations in boosting the public trust and confidence and is associated with receiving a fair assessment. Through environmental accounting, an enterprise can enjoy the following benefits:

- Environmental accounting encourages consumers and helps them to purchase environmentally friendly products produced by the corporate, and as such, both consumers and corporate benefit.
- Corporate sectors can show their commitments towards introduction and change, and thus seem to be responding to new factors. Countries giving importance to the ecological aspect of activities are becoming more and more popular, particularly in Western countries.
- Natural resources taking place in the production like inputs are revealed in the accounting system. Shadow prices of environmental resources are usually defined as the value added attributable to them in the activities.
- As far as topic of pollution control is concerned, environmental accounting shows the extent to which pollution has been controlled by the corporate sectors.
- Environmental accounting is of the ultimate importance in answering certain queries, like the extent of natural resources available in countries, what are the incomes arising out of them, what are the expenses incurred to protect the resources,

what is its importance from the view of the nation, and at what values should they be shown in the nation's balance sheet, etc.?

- Environmental accounting is also beneficial as it offers an idea about industrial development that also reflects nation's economic progress and social welfare and the fulfillment of responsibility towards society.
- The current national accounting practice does not consider the value of natural resources, and as such, it becomes a complicated task to measure the interrelationship between environment and development. Environmental accounting is justified when the arguments related to market, society, etc., are considered.
- Environment accounting helps in discharging organizational accountability and increasing transparency. Sustainable development is possible with the help of environmental accounting as it helps include improving ecological ability of enterprise.
- Negotiation between the environment and society is helpful for organizations that seek to strategically manage a new and emerging issue with different categories of users.
- Corporate sectors may be successful in attracting funds from green individuals and new groups with the help of sustaining an environmentally-friendly green image.
- In the global economy there is presence of a strong environmental lobby against environmentally unfriendly industries. Green reporting can be used to combat effectively all negative public opinions.
- A corporate sector can be considered as an enlightened sector if it takes the enlightenment approach of environment accounting and thus increases its image of awareness to the outside world. Environment accounting expressing the concept of sustainable development is often used as an efficient tool for improving the management of enterprise.
- Environmental accounting minimizes the risk arising from

the management of product liabilities. A business cannot fully include the necessary environmental changes until and unless accounting and finance do so.

- Environmental accounting improves environmental performance through better management of environmental cost and thus, benefits the natural and human environments.
- By minimizing environmental effects through improved design of products, packages and processes, environmental accounting takes the competitive advantage. Inter and intra firm comparison reveals whether environmental costs are sufficient or not.
- Environmental accounting detects that part of the gross domestic product which represents the requisite cost to compensate for the negative impact of economic growth.
- Environmental accounting estimates the total expenditure on production or enhancement of the environment. Companies seeking long-term profits are possible only when the ecological aspect in its business strategy and policy is considered.
- Environmental accounting reflects true maximum income that accounting can actually consume without exhausting the stock of natural resources.
- Government can use the data through changes in financial budget and by other ways to achieve optimal allocation of scarce resources in the economy of a country.

Factors inhibiting development of Environmental Accounting

Environmental aspects of sustainable development add another dimension as to how to share the benefits and costs between current generation and future generation. This makes more sense to identify and measure environmental costs. Accounting information system is an important component of management information systems. It plays an important role in helping to protect the environment by making polluting production companies to take responsibility for the environmental protection - how the companies reflect in their accounts or how they might expose issues, etc. However, necessary rules and regulations are necessary to protect the environment. Further, well established accounting guidelines are required.

- Environmental accountings have no economic value.
- The method of estimating the social value of environmental goods and services are Imperfect, often misleading and construers.
- Estimated values for environmental goods quantified or qualified in terms which have no fixed conversion into money.
- On account of unrecorded environmental costs and difficulty in extracting and separating environmental cost the industry data is virally unreliable.
- Social value placed on environmental goods and services are changing so fast that the estimates are likely to be obsolete before they are available for use.
- Lack of accounting standards for environmental accounting
- Assumptions that are Inapplicable.
- Comparison between two firms or countries is not possible if method of accounting is different which is quite obvious.
- Input for EA is not easily available because costs and benefits relevant to the environment are not easily measurable.
- EA cannot work independently and should be integrated with the financial accounting, which is not easy.
- EA must be analyzed along with other aspects of accounting. Because costs and benefits related to environment itself depends upon the results of the financial accounting, management accounting, cost accounting, tax accounting, national accounting, etc.

Hurdles for Environmental Accounting

There is no standard accounting method to be followed universally by al the firms.

Comparison between different firms or countries is not possible if method of accounting is different which is obvious.

Input for Environmental Accounting is not properly available because costs and benefits relevant to the environment are not easily measurable.

Many businesses and the Government organizations including large and well managed ones don t adequately track the use of energy and material or the cost of inefficient materials use, waste management and related issue.

It mainly considers the cost internal to the company and excludes cost to society.

Environmental Accounting cannot work independently and should be integrated with the financial accounting, which is not easy.

The user of information contained in the EA needs adequate knowledge of the process of EA as well as rules and regulations prevailing in that country either directly or indirectly related to environmental aspects.

Findings and Suggestions:

Environmental accounting is a crucial issue as economic development as well as environmental protection is important but contradictory issue. Therefore a careful assessment of the benefits and costs of environmental damages is important to find the allowed limit of environmental degradation and the required level of development. This needs a proper framework that can provide guidelines on the issue of environmental cost, environmental liability, environmental assets and liability and reporting framework.

Again environmental costs could affect reported profit stated in financial statement as well as product pricing. Study of corporate reporting practices reflects that there is an increasing tendency among the corporate managers to disclose some information in their annual report to inform about their efforts to shareholders and public in general.

It is also clear that most of environmental information presented by the companies is non-financial and reflects efforts made by the company. The information on amount of money spent for such initiatives and its material effect on financial results is grossly missing in such information.

Again there is wide variation noticed in the style of reporting and theme the companies selected to report. This can add to other dimension of the problem of lack of comparability and verifiability. So it is felt that such information should be integrated with financial accounting information to have reliability. For integration it is necessary for monetary measurement of environmental cost and benefits.

It is very difficult to decide that how much loss has occurred to the environment because of establishment of a specific business unit making difficult the total integration of environmental accounting within the framework of existing GAAP. However, it is possible to disclose internal cost and benefit of environmental measures undertaken by a business unit and its material effects in reported profit by disclosing the way of recognition. In case of events like level emission, waste generation, afforestation etc. though monetary assessment is not possible but business can make some quantitative measurement like for water management cubic kilometres, for emission level concentration of specified particles in terms of ppm, area of land afforested, quantitative facts on expenditures incurred of such activities, and targets set and achieved.

Environment reporting expands beyond financial and environmental performance. A major issue to reporting community at large in India is for improving comparability among environmental reports. Most of the reports reviewed did not showed clearly how Indian companies decide on what issues to be addressed or left out in its environmental report. It is left to the discretion of readers to come up with their own conclusions.

Statement showing disclosures of the conservation of energy and natural resources and expenditures incurred for protection of environment and for replacing environmental degradation needs to be developed and shown as an annexure to a Director's Report. Installation of pollution control equipment or use of improved technology may be considered as positive contribution.

Environmental expenditures must be separated for improving decision making and accountability for environmental responsibilities. Every company should set aside a part of their funds for environmental and ecological balance. Environmental accounting requires analysis of the business environment, business activities and capabilities and restricts its operations. In the absence of specific guidelines with regard to environmental accounting and reporting techniques, usually social cost is a measure of cost of the resources used by an organization during its activities.

There is confusion among accountants about how to fit environmental data in financial statements and the techniques available for valuation are also uncertain. In different countries, the accounting and disclosure practices in respect of environmental issues have become compulsory. There is now an urgent need to take steps globally and particularly for formulating the accounting and valuation techniques regarding environmental issues.

It is clearly indicated that Companies have already given much effort in the field of environmental protection. However, the current accounting system does not reflect such efforts for its stakeholders. So, Companies should start the initiative showing such activities in their accounts.

Companies should calculate and report some specific ratios for reflecting their environmental performance. These ratios, being relative measure may be used for comparing the performance of the companies on environmental related issues.

A successful environmental management system should have a method for accounting for full environmental costs and should integrate private environmental costs into capital budgeting, cost allocation, process/product design and other forward-looking decisions. Companies can make progress in environmental accounting incrementally, beginning with limited scale, scope, and applications.

Companies can start with the costs that they know the most and work toward the more difficult to estimate costs and revenues. Where private costs or revenues are difficult to estimate, and there is little management support for integrating them, then it may be best to handle them qualitatively.

Efforts to integrate societal costs into business decisions should continue to expand. Most corporate information and decision systems do not currently support such proactive and prospective decision making. The capital markets do not yet have adequate ways to evaluate the financial performance of progressive companies who do so.

Unless common people of India are not made aware towards environmental safety, development of accounting in this regard is bit doubtful. It is the call of the time that corporate prepares a firm environmental policy, take steps for pollution control, comply with related rules and regulations, and mention adequate details of environmental aspects in the annual statements.

Conclusion

The existence for a number of viewpoints from which environmental research has been developed has resulted in lack of cohesion in the expectations and desired outcomes of environmental accounting. Further lack of cohesion seeking explanation about intention behind corporate environmental accounting adds fuel to this. It can also be said that, even if environmental goods and services can be quantified in monetary terms, then also certain questions arises as to how far society will benefit from the effects of environmental accounting? However, despite these irregularities, the slogan for environmental accounting has won constant benefit inherent in it. The international awareness and acceptance of the importance of natural and environmental resources has laid to the development of environmental accounting.

Environmental accounting requires analysis of business environment, business activities and capabilities and the limitations upon its operations. In the absence of specific guidelines with regard to environmental accounting and reporting techniques, usually social cost is considered as a cost of the resources used by an organization during its activities. Unless comprehensive records for use of natural resources and environment and their services is maintained, reliable and sustainable development cannot be planned and achieved. To foster, create and encourage this practice all over the world nobody can deny social costs alone to atmospheric pollution arising out of the discharge of dangerous affluent and wastes.

The existence of different viewpoints from which environmental research has been developed has resulted in a lack of cohesion in the expectations and desired outcomes of environmental accounting. Further lack of cohesion seeking explanation about motivation behind corporate environmental accounting adds further confusion. It can also be said that, even if environmental goods and services can be quantified in monetary terms, then also certain questions arise as to how far society will gain from environmental accounting? The social values placed on environmental goods and services are changing so fast that estimates are likely to be outdated before being available for use. Planning for sustainable development requires an estimate of environmentally adjusted GNP. Most of the application of environmental accounting techniques requires shadow pricing because we cannot establish market values, since the economic goods and services concerned are never traded or because we do not want them to be traded, but we do not want to know what they are worth. However, despite these theoretical irregularities, the slogan for environmental accounting has won perpetual benefit inherent in it. There is confusion among accountants about how to fit environmental data into financial statements and the techniques available for valuation are also not free from uncertainty. There is also an urgent need to take global steps particularly for formulating the accounting and valuation techniques regarding environmental issues. The dedication which work for the development of environmental accounting is going on will surely lead to a more stable and effective position in the coming future, as it could greatly improve the value of economics as a decision-making tool, particularly in determining national policy. The implementation of environmental accounting is expected to bring about a change in the managerial attitudes and thinking. Despite problems associated with environmental accounting, there is much evidence to show that a large number of countries around the world have honestly attempted to pick-up the new challenges and threats. Economic activity should not be guided by "profit motive" alone, but should also include "quality of life" and "ecological balance". Environmental accounting, as a part of social accounting, results in an environmentally conscious atmosphere in corporate sectors and prepares environmental balance sheets that would pave the way for the increased earnestness among corporate. Environmental expenditures must be separated to improve decision making and accountability for environmental responsibilities. Every company should focus and set aside a part of their funds for environmental and ecological balance. Environmental accounting requires comprehension of the business environment, business activities and capabilities and the constraints upon its operations. In the absence of specific guidelines with regard to environmental accounting and reporting techniques, usually social cost is considered as a measure of cost of the resources used by an organization during its activities. Unless complete records for the use of natural resources and environment and their services is maintained, reliable and sustainable development cannot be planned and achieved. To create and encourage greening all over the world it cannot be denied that social costs attribute to atmospheric pollution arising out of the discharge of dangerous affluent and wastes. It is considered essential to make an effort to incorporate the impact of environmental resources in the entire business function of a business corporation. Current disclosure practices by most companies in India do not completely reflect the environmental effect of corporate operations. There is a need for companies to become greener when marching towards industrialization and globalization. No company has a secure future unless it is environmentally acceptable. Companies aiming at long-term profits must consider an ecological aspect in its business strategy and policy. The sooner precautions are taken to safeguard them, the better it would be. However in the beginning, developing countries can adopt any method with necessary alterations as experiences are gained and requirements are increased. Following steps are suggested:

- Financial statements showing disclosures of the conservation of energy and natural resources and expenditures incurred to protect the environment and for replacing environmental degradation. Installation of pollution control equipment or use of better technology may be considered as positive contribution. Annexure may be added to a Director's Report with necessary amendment in the Company's Act for development of pollution standards for industries or products vs. actual pollution generation position of the company.

- Necessary changes to be made in the rating guideline as companies contributing to environmental degradation are generally rated low.
- Environmental accounting is in preliminary stage in India as very few corporations give proper information regarding environmental issue. Environmental accounts provide data which highlight both the contribution of natural resources to economic well-being and the costs imposed by pollution or resource degradation. It is required that industries should focus and set aside a part of their funds for environmental protection and ecological balance.
- Although efforts are being made for preparation of financial statements from the national angle, what is required is setting up of framework of environmental accounting in determining the environmental policy at the state and national level where the revenues and costs of natural resources, their estimates, dedication, values and assets must be recorded in books of accounts. With increasing social awareness on the environment, accounting fills an expectation role to measure environmental performance. However, in India, the level of environmental related disclosures in corporate annual reports is not encouraging.

Lack of awareness, lack of commitment, poor environmental performance, poor enforcement of the environment protection acts, etc., can be considered responsible to some extent for making companies free from obligation of disclosure of such information. Hence, it can be concluded that absence of standardized environmental accounting practices and disclosure techniques, both at national and international levels, and their legal enforcement, necessitates the urgent and pressing need to take steps nationally and globally for formulating the techniques and practices relating to environmental issues.

The findings of the study reveal that companies are completely aware of the facts that environmental issues will affect the business and industry in the near future. They are totally convinced of the need for environmental information. Despite of this awareness, there is an absence of external environmental accounting. The companies do not have a proper environmental accounting system for determining the environment related costs, benefits, assets and liabilities. Companies fail to provide proper disclosure on the environment. Without any strict accounting pronouncements and disclosure norms by regulatory authorities, companies generally provide only statutorily required, qualitative, and positive information on environment.

It is clear that companies are completely aware of the facts that environmental issues will affect the business and industry in the near future. They are fully convinced with the need for environmental information. Still there is an absence of external environmental accounting. Companies here do not have a proper environmental accounting system for determining the environment related costs, benefits, assets and liabilities. Indian companies fail to provide adequate disclosure on the environment.

The conventional accounting system which is mainly the source of information regarding the organization's operations must be adjusted for including environment cost assessment. Incorporating environmental accounting into managerial system could be a better step in this regard. If the environmental liabilities are to be considered, they are characterized by uncertainties. There is immense challenge posed to the organizations to deal with the critical issue.

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Parameswaran Iyer

Swachh Bharat Mission

The biggest behaviour change programme in history

The world's biggest sanitation program, the Swachh Bharat Mission is also the world's largest behavioural change programme. The scale of the Swachh Bharat Mission, aiming to change the behaviour of hundreds of millions of people in five years, is unprecedented in the world.

This article looks to discuss the challenges faced in this quest for behaviour change, and how these challenges are being overcome. It begins with setting the context about the program, its beginnings, key stakeholders and progress made. It then leads to barriers and challenges for Social Behaviour Change and Communication (SBCC) and the efforts made to counter the same. The article ends with the way forward, specifically with respect to the foundation of the program, in behaviour change and its implementation.

On 2nd October 2014, the Prime Minister called for a tall order to say the least – a Swachh Bharat to mark the 150th birth anniversary of Mahatma Gandhi on 2nd October 2019. The milestone announcement, made at the Red Fort, set India on an incredible journey. Since 2014, over 6 crore household toilets have been constructed; meaning that the rural sanitation coverage in India has almost doubled from 39% in Oct 2014 to 76% today. To put this in perspective, the sanitation coverage has increased by almost the same amount as it did in the preceding 67 years since India's independence! Over 3 lakh villages, 300 districts, seven States (Sikkim, Kerala, Himachal Pradesh, Uttarakhand, Haryana, Gujarat, and Arunachal Pradesh) and two Union Territories (Chandigarh and Daman & Diu) have become Open Defecation Free (ODF).

So how will we make India's Swachh Dream possible? How will we change the habits and mindsets around hygiene and sanitation in communities? The success of the Swachh Bharat Mission is linked to the participation of the very people who would be the beneficiaries of the program – the 105-year old woman from Chattisgarh trying to educate her fellow villagers about the importance of toilets, the 36-year old man cycling from one tip of the country to another spreading the message of cleanliness, and the group of students armed with whistles trying to stop the practice of open defecation. It depends on people changing their attitudes towards cleanliness, building and using toilets, and maintaining personal hygiene among other things.

The Swachh Bharat Mission was arguably one of the most ambitious and bold declarations by a head of state towards cleanliness and sanitation in the world. Sanitation was squarely placed at the forefront of national policy and development. UNICEF estimates that the age old practice of open defecation causes over 100,000 preventable child deaths every year through diarrhoeal infections. The World Bank estimates that nearly 40% of India's children are stunted, primarily because of lack of sanitation. Our children are stunted which leads to a less productive future workforce, affecting our famed demographic dividend. Women's safety and dignity are often comprised. On the flip side, not only would improved sanitation aid health standards, but also would result in major household savings. Every rupee invested in improving sanitation leads to a saving of Rs. 4.30, shows a recent study by UNICEF. These benefits are the highest for the poorest.

Our Prime Minister saw that there is a strong need for affirmative action on this, and that the issue needed to be addressed in a time bound manner in mission mode. A 21st century India on the path to becoming a global economic super power should have no place for filth and open defecation. He decided to put his political capital behind sanitation and cleanliness and make it a national priority! And this is the biggest factor that sets SBM apart from its counterparts from earlier years. Sanitation programs themselves are not a new occurrence for India, with strong programs being run since 1981. However, in contrast to the construction or supply led programs of before, SBM has a demand centric model. The program focuses on behaviour change to generate demand for sanitation services by the rural population which is consequently followed by supply. Moreover, the Prime Minister is, for the first time, personally championing the cause and has also set a timeline for achievement, a sunset clause of 2nd October 2019, Mahatma Gandhi's 150thbirth anniversary. This means that SBM has a clear goal to work towards which brings in a necessary sense of urgency to move out of the incremental improvement model and think change at scale and speed.

Furthermore, the policy shift from the output of toilet construction to the outcome of open defecation free (ODF) communities squarely pins the focus on behaviour change as the fulcrum around which the mission revolves. While 100% access to sanitary toilets remains a prerequisite, it is not seen as an end in itself. 'ODF', today, has become a household term.It reflects a state where a particular geographical area,every individual has access to a safe toilet, and there are no visible traces of fecal matter in that area. The term also addresses the issues of insanitary toilets or lack of proper toilet technology, which may lead to contamination of surroundings.

The entire process of becoming Open Defecation Free is rather democratic in its functioning. Through targeted behaviour change communication and community approaches to sanitation, people are brought together, and they decide to make their village ODF themselves. When the village becomes ODF, they themselves declare this in their respective Gram Sabhas.

Different activities are run parallel to the declaration and verification of an ODF village to reinforce its status. Nigrani Samitis remain active to keep all individuals sensitised towards the goal. They perform regular morning and evening follow-ups at traditional open defecation sites to reinforce the community's commitment to the goal and to ensure usage of toilets built. The declaration of ODF villages or and ODF Gram Panchayat are accompanied by Gaurav Yatras, a celebration parade, run by the entire community through the village with components of music and dance, street plays, puppet shows, parades with horses or cows, etc.

For technical sustainability and maintenance, the village sanitation coverage is formally verified by the district and then by the State teams. Further, large national sample based surveys are being conducted on a regular basis by the Ministry of Drinking Water and Sanitation. Surveys are carried out by third party agencies such as that undertaken by the Quality Council of India (QCI) between May and June 2017 to take into account status of rural sanitation in all States and UTs. The survey covered 4626 villages across all States and Union territories and reflected toilet usage at 91.29%, and pegged the States of Sikkim, Nagaland, Manipur, Himachal Pradesh and Uttarakhand as the top performers.

It is relatively easier to build a road, bridge or an airport, but trying to change human behaviour is complex. At stake are ingrained habits running through the ages and difficult to change. Traditional attitudes in many areas do not encourage the promotion and adoption of sanitary practices. The very basis of cultural diversity in the country accounts to challenges for SBM. To tackle this state, SBM guidelines give sufficient flexibility for States for developing local solution to tackle local cultural and mindset issues. In this manner, all households are free to design their own toilets. The results are highly noticeable in States like Punjab and Rajasthan, where bathing facilities and colourful tiling is being added at the household's own cost. Technical assistance is being given to tackles challenges such as the scarcity for water. The 'rural pan' is being promoted in these instances, which has a steep slope, requiring minimal water for cleaning purposes, amounting to only about a litre of water per usage. In addition to this, piped water supply in these areas is being provided on priority to ODF villages. Other challenges, such as the patriarchal reality of villages, wherein women don't have a say and men don't feel the need for an individual household latrine is being countered with mass campaigns celebrating women as champions, not victims. Campaigns focused on men for behaviour change such as the Darwaza Bandcampaign are being launched, featuring actors such as Shri Amitabh Bachchan and Ms. Anushka Sharma.

Even with the twin-pit toilet technology, which is best suited environmentally and economically for the rural setting, there is at times a stigma attached to emptying these pits after closing them for six months or a year. Once the pit is closed for months, the excreta gets converted into clean compost. In this manner, the two pits be used in a cycle and repeated. Setting an unprecedented example, senior officers of the Ministry of Drinking Water and Sanitation team, who were visiting Gangadevipally village in Warangal to promote and observe the twin pit composting toilets as a low-cost sanitation solution, themselves entered a pit and took out the now converted compost from it – hitting hard the stigma associated with the work, and spreading a welcome message towards sanitation.

To roll out behaviour change at such a large scale, India's diversity, complexity and differentiation must be taken into account. There are a number of programmatic innovations taking place under the Swachh Bharat Abhiyan. Community approach to sanitation succeeds most easily in relatively small and homogenous villages while larger and multiplayer-caste villages are more difficult. Two practices in these conditions have been shown to work. One is pre-triggering. The success of triggering behaviour change depends a lot on the quality and thoroughness of preparation made through pre-triggering. This involves collecting information about the village and its inhabitants, establishing contacts with them and preparing officers and the village for triggering. In the community approach to rural sanitation, triggering is used for all sections of society. We deal with one community as a unit so it may understand the importance, take responsibility and accountability for the cleanliness of their village.

SBM on the field is being led by local elected people's representatives which aid to converge and create new social norms around new behaviours.ODF village Sarpanchs are emerging as champions to trigger other villages. In some areas of UP, Pradhans are often well-respected and listened to. Evidence is emerging that they succeed in motivating male members of the community to abandon the practice.

Emphasis is being laid on conducting awareness programs, and citizen engagement in the reform process. Inter-Personal Communication (IPC), in this regard, is a critical component of SBM activities. IPC sets the "ground-game" and tone for behaviour change. It is at this juncture that engagement with the citizens is done at a personal level, thus creating influence through the village. The Ministry of Drinking Water and Sanitation (MDWS) supports the State through capacity building, human resource support, behaviour change communication, knowledge sharing and monitoring and evaluation. In that context, armies of the 'Swachhagrahis' have been created and trained through multiple capacity building programs in all villages of the country who base their foundations in IPC. Currently, there are approximately 3.5 lakh Swachhagrahis registered with the Management Information System (MIS) and the numbers are rising by the day. The goal is to have at least one Swachhagrahi in each village of India.

The Ministry is keeping the buzz alive with a multitude of events. In an attempt to reward and recognise not just the work being done in the field but also the stakeholders doing the work, "Swachh Shakti" was organised in Gujarat in March 8th, 2017, Women's Day, bringing together 6000 women Sarpanchs from across India to celebrate their the role of women in the Swachh Bharat Mission. The event was centered on women champions in the field to motivate and inspire them. Asha Bhambi, one of those felicitated by the Prime Minister himself at the event, is a woman Raj Mistri from Khadel Gram Panchayat in Ajmer district, Rajasthan. Motivated by the desire to achieve an Open Defecation Free Gram Panchayat, she trained a group of women as masons and drove the GP towards the set out goal. Similarly, the Indian Conference on Sanitation (INDOSAN 2016), inaugurated by the Prime Minister,took stock of the progress in rural areas under Swachh Bharat Mission over its first two years and looking forward, renewed the commitment at the highest political level to ensure Clean India by 2019.

In the Ministry of Drinking Water and Sanitation's 'Swachhta Hi Seva' fortnight, celebrated in September 2017 in the run-up to the third anniversary of the Swachh Bharat Mission, over 9 crore individuals come together in their respective communities. The turnout was marked by the citizens, political leaders, government officials and citizens alike, celebrating the fortnight as they undertook shramdaan for Swachhata,Swachhata Shapaths, initiated essay and painting competitions and screened films. Inspiring such a spike in citizen engagement serves as a platform for the way forward. The heightened momentum gave way to a new normal, thus, inculcating an upward curve in community participation and consequently, in the progress of SBM-G. In his address to the nation on Swachh Bharat Diwas on 2nd October 2017, also the 148th birth anniversary of Mahatma Gandhi, and the conclusion of "Swachhta hi Seva" fortnight, the Prime Minister highlighted how people today are expressing their desire in one voice. He asserted that Swachhata cannot be achieved through the efforts of lesser and governments, but can only be achieved through the efforts of the society. And most importantly, he participated in the shramdaan himself by helping a household in Bihar build a twin-pit toilet.

Other such campaign like 'Swachhathon 1.0', the first of its kind in the Swachh Bharat Mission, received over 3050 entries on innovation and ideas for six different themes of the program. 'Shaucha Singh', a radio campaign, had the national audience glued to their radios as he debunked myths associated with the Mission and added a bit of humour to the same. The Swachh Bharat Mission through various means caters to India's population of over 1.2 billion.

Information, Education and Communication (IEC) remains the essence of creating a mass movement and enabling behaviour change on the ground. Swachhta Raths are set out to cover village after village wherein audio visual aids are used to generate awareness. In Uttar Pradesh, Swachhta Raths incorporate a stage for nukkad nataks, puppeteers and other local performers to aid communication and reception by the masses. The Zila Swachh Bharat Preraks – Young professionals given to the mission by a private sector philanthropy, are working in the district teams and bringing even more innovation and energy to the IEC activities.

Indian film industry's recent addition to the Mission - 'Toilet Ek Prem Katha', has witnessed massive reception, stemming for the spirit of the community to relate and take lead from the silver screen. Celebrities, in many ways, have been aiding the Mission's reach to the masses with big names like Sachin Tendulkar, Vidya Balan, Amitabh Bachchan and Anushka Sharma running campaigns with the program as brand ambassadors. The 'Darwaza Band' campaign with Amitabh

Bachchan and Anushka Sharma was launched with much enthusiasm. The Indian Cricket team, too, joined the movement with short videos on Swachhata spread across the televising of their matches.

Being deemed as "Everybody's business", everyone in this country is a key stakeholder of the Swachh Bharat Mission. Even at the Union government level, every government ministry has Swachhta Action Plans (SAPs) and celebrate Swachhata Pakhwada (Cleanliness fortnights), for innovative activities for 2017-2018 and 2018-2019, funded mostly from their own budgets. A separate budget head has been created for this by the Ministry of Finance. During the financial year 2017-18, 77 Ministries/Departments committed funds worth over Rs.12,000 Cr. for their SAPs. An excellent example would be the Agriculture Ministry, which has taken it upon themselves to ensure cleanliness of all agricultural mandies. The Ministry of Road Transport and Highways is ensuring the construction of proper toilet facilities along highways at toll plazas, while the Ministry of Petroleum is doing the same for petrol stations.

The SBM views waste as a resource, and Solid and Liquid Resource Management (SLRM) is an important component of the Mission. To implement SLRM initiatives economically and efficiently, ownership at grass root level and community involvement at all stages is critical. One initiative for the same is the rolling out of a comprehensive self-assessment tool called Village Swachhta Index (VSI) developed to measure cleanliness. The VSI arrives at a Swachhta score based on percentage of households with access to safe toilets and usage, littering around the households and public places, and stagnant waste water around the households. The democratic self-assessment is made in Gram Sabhas by the village people themselves. Recently 20th December, 2017, was celebrated as Village Swachhata Day, wherein over 13 lakhs citizens participated, completing over 1 lakh activities and taking resolutions in Gram Sabhas towards the updating of their VSI.

By all counts, developing an attitude towards cleanliness and sanitation is the only way the country is moving towards realising the dream of a 'Swachh Bharat'. Behaviour change is the solution and the mass movement the country sees today is what is required. Taking ownership of their own sanitation and of their surroundings, rural India is poised to deliver on time, its resolution for a Swachh Bharatby 2nd October 2019. The SBM is setting an example for the rest of the world to move towards improving sanitation for all and achieving the United Nation's Sustainable Development Goal 6 in mission mode, and ensuring a that behaviour change communication in all its forms is the only tool for sustainable change. The Swachh Bharat model of sanitation has led India into a sanitation revolution.

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Delhi Metro

*A Study in Institutional Ethics**

Foreword

Ethics of Governance has consistently been an article of faith with IC Centre for Governance (ICCfG hereafter). It wouldn't be an overstatement to say that its creation was caused by the realization of continuing erosion of ethical values in the delivery of services by state functionaries. One of the main recommendations of an international conference on Globalization that the systems and processes of governance must be made more transparent and robust to derive optimum benefits from Globalization induced a large group of professionals to set up a forum for collective thinking on governance issues. They concluded that ethics is the soul of good governance and the aggregate ethical conduct of public servants determines in no small measure the quality of public governance.

Ethics introduces a new dimension in transactions between the citizen and the government agencies. The Centre has been conducting investigations in the actual working of individual civil servants as well as the departments interacting with the people. While our research in individual ethical requisites has reached a certain stage, we have not done much in studying institutions.

In its pursuit of expanding the concept of ethics of governance, the Centre stumbled on the concept of collective integrity of an organization as an adjunct to individual integrity of the employees of the organization. It found that when the ingredients of ethics were embedded in the systems and processes of an institution, it was easier

* The report is the outcome of the labour put in by the members of the Core Group of the IC Centre for Governance under the convenorship of Shri Rajiv Sachdeva.

to influence individuals associated with the institution. Consequently, the Centre started on a quest for a suitable institution in India's public sector to act as a benchmark for institutional integrity.

We looked around and found very few instances of systemic best practices. For example, I have not seen any official website with full disclosure of information required under Section 4 of the Right to Information Act. Similarly, unlike the compilation of instances of ethical failures by the US government (i.e. Encyclopedia of ethical failures), no department of the Central or state governments has brought out cases of unethical practices in our country. Also, not many public sector organizations have codified the ethical requirements of their employees.

Therefore, Delhi Metro Rail Corporation (hereafter DMRC) came as a breath of fresh air in the realm of institutional ethics. That I had been associated with it from its inception helped us to identify DMRC as a subject of our study.

Role of Institutional Ethics

Institutions play a dominant role in shaping our society. The public and the society at large expect that institutions display a profound commitment to ethics in all their activities. The ethical demands placed on institutions fall into two important categories:

a) Refrainment from negative actions such as deception or causing harm.
b) Undertaking positive duties which contribute to the well-being and improvement of the society and environment.

Although the second category may not be legally enforceable, it is a requirement whose fulfillment vastly contributes to the image, public perception and performance of an institution.

The relevance of institutional ethics has increased multifold during the last couple of decades primarily because modern technology has made it possible to scrutinize and analyze every step that an organization takes. In fact, the proper implementation of a well-documented Code of Ethics is considered one of the key factors for sustainable success and growth. A flawed ethical system is considered synonymous with poor governance and weak leadership. The leadership is therefore under intense pressure to implement a Code of Ethics throughout the organization and even show commitment to it through personal example.

India has a vast and diverse network of public institutions which are either wholly or partially under the control of the central or state governments. Although most of these institutions have a document on the Code of Ethics, the integration of ethics in their actions is practically non-existent. Many of the employees are either not aware of the existence of such a document or have never cared to go through its contents. There is also little effort on the part of the leadership to increase awareness and impart training on this crucial subject. It is also well known that the performance of such institutions is far from satisfactory. The general public impression is also that they are inefficient, sluggish and corrupt and, consequently, a drain on the country's economy. This thereby strengthens the argument that there exists a direct correlation between an institution's performance and the extent to which it implements a proper Code of Ethics.

Based upon the above knowledge, IC Centre for Governance (ICCfG hereafter) decided to create an appropriate module to increase awareness and impart training on institutional ethics to all types of Government institutions, which include constitutional entities, municipalities, authorities, corporations, banks, commercial organizations, undertakings etc. We are of the firm belief that our efforts in this direction will result in the improvement of transparency, efficiency, productivity and public perception of the institutions and consequently benefit the country.

Selecting Delhi Metro Rail Corporation

Our first step was to study and analyze a model Indian institution which has shown high performance, consistent success and commands the respect of the public. After examining various options, we zeroed down to Delhi Metro Rail Corporation (DMRC hereafter) for the following reasons:

a) Efficient and timely execution of all projects since inception.

b) DMRC has ensured that the disturbance and distress caused to the public during the construction phase is kept to the bare minimum.

c) Enviable track record of operations. DMRC is considered a benchmark for its well-designed stations, use of latest technologies, convenient ticketing systems, comfortable and clean trains, friendly and helpful service, continuous improvements and expansions, eco-friendly approach and, above all, punctuality.

d) Excellent public perception. Within a relatively short time, DMRC has altered the public transport concept of Delhi and NCR. It is often stated that without this efficient metro system, the capital and its surroundings would have choked and come to a grinding halt.

e) Proud track record on safety. Barring a couple of accidents during the construction phase, travelling on DMRC trains has proved to be a very safe experience for its commuters.

f) Phenomenal growth rate both in terms of its network and the number of passengers. According to the DMRC, the cumulative ridership for the financial year 2016-17 crossed one billion. During the next few years, DMRC's reach is planned to be extended to every corner of the NCR, which could make it among the three largest metro networks in the world.

g) Financially viable with positive operating profits, despite offering very economical fares. DMRC has been servicing its debts efficiently without payment default.

h) A clean organization without any reported scams or scandals. While many Indian companies have been in the news for all the wrong reasons, DMRC has been free of corruption charges and investigations. Moreover, there have been also no major reports of unrests, disputes and legal cases.

i) An organization which can be proud of exemplary leadership. Its first Managing Director Dr. E. Sreedharan (1997-2012) is held in high esteem as a man of integrity, dynamism

> and professionalism. He has been awarded the Padma Shri and Padma Vibushan by the Government of India. His successor Dr. Mangu Singh has also displayed admirable leadership qualities in an increasingly difficult and demanding environment.

Fortunately, the Management of DMRC was willing and forthcoming. It readily agreed to our request to carry out this Case Study and assured us of full cooperation.

Delhi Metro Rail Corporation

Delhi Metro Rail Corporation (DMRC) is a Metro System serving Delhi and its satellite cities of Faridabad, Gurugram, Noida and Ghaziabad in the National Capital Region. It was incorporated in 1995 and started its operations in 2002. It has equal equity (50% each) participation from Central Government and the Delhi State Government. Organised as a corporation, DMRC has a Chairman, board of four directors and the Managing Director who is also the executive head of the organization. The work of DMRC is broadly divided into several functions such as Projects, Operation and Maintenance, Finance, Human Resources etc. which are controlled by the respective Directors who report to the Managing Director. The employee strength of DMRC is currently around 11000.

Delhi Metro is the world's twelfth largest Metro system in length and sixteenth largest in ridership. The network consists of six colour coded regular lines – Red, Yellow, Blue, Violet, Green and Magenta. In addition, two more lines are presently under construction. It also has an Airport express line for serving the passengers travelling by air. It has a track route of 218 kms served by 170 stations. The system has a mix of underground and elevated sections using both Broad and Standard gauges. The ongoing projects of DMRC include building another 160 km of Metro lines which will weave a web of Metro corridors along the city's Ring Road besides connecting with many localities in the NCR. DMRC currently has 235 train sets of four, six and eight coaches. More than a hundred trains of six coach configuration and over 60 trains of eight coach configuration are in operation. DMRC operates 3000 trips daily. In Financial Year

2016-2017, DMRC had an average daily ridership of 2.76 million passengers and served 1 billion riders during the year.

DMRC has served as the project consultant for most of the metro projects in India. It is also involved in the construction of Metros in Jaipur and Lucknow.

Apart from providing the people of Delhi and NCR with a comfortable public transport option, DMRC has also been contributing significantly towards controlling pollution as well as reducing vehicular congestion on the roads. According to a study, it has helped in removing about 390,000 vehicles from the roads of Delhi.

The Case Study

DMRC has a documented Code of Ethics (CoE) entitled "Values, Ethics & DMRC Environmental Policies". After going through it, we laid down the main objectives of our case study as follows:

a) To ascertain the penetration of CoE in the processes, systems and operations of DMRC. In other words, to observe whether CoE is being followed diligently in all the activities of the organization.

b) To establish those unique features and actions of DMRC which have resulted in its phenomenal success.

c) To gauge the sustainability of the success of DMRC.

d) To prepare a training module on Institutional Ethics based upon our findings and use it to impart training to other organizations.

The Vision and Mission Statements of DMRC are reproduced below.

VISION:

Commuting experience in Delhi Metro to be customer's delight.

MISSION:

- To cover the whole of Delhi & adjoining areas with a Metro Network by the year 2021.

- To serve customers including 'differently abled' commuters with passion.
- To sustain the image of being Number One in the transportation sector in India and to be among Top 3 Metro Rail systems in Asia, with regard to:

  Safety, reliability, punctuality, quality and responsiveness to customer.
- To make Delhi Metro self-sustainable.

Findings of the Study

Ownership:

DMRC has a unique structure, where fifty per cent of the ownership is with the Central Government and the other fifty per cent is with Delhi Government. Since none of these two entities have a majority holding, DMRC has been granted almost complete autonomy without political interference. The decision making in both strategic and operational aspects has been left almost entirely to the Managing Director and the Board of Directors. This freedom from political interference allows DMRC to function as an independent corporate entity which is capable of unleashing its full potential and reach the highest standards of global performance.

A few days before the commencement of operations, the Government of India appointed Sh. M. L. Khurana, a former Chief Minister of Delhi, as the Chairman of DMRC. This was clearly a political move, intended probably to oversee and control DMRC. Sensing political interference, Dr. Sreedharan promptly called upon Sh. Khurana and explained to him the advisory role of a Chairman. He further appraised him with the executive role and responsibility of the Managing Director. Down the hierarchy, Dr. Sreedharan also explicitly clarified to the senior management that his authority as Managing Director on all executive issues was final. The tenure of the political appointee to the Chairman's post did not last long. Within a few months, Sh. Khurana vacated the post. Since then, the Chairman's post has invariably been occupied by a bureaucrat and not by a politician.

Leadership:

For a new organisation it is important for the leader to set the norms and values to steer it successfully during turbulent times and under challenging circumstances. Dr. E. Sreedharan, the first MD, set the tone by chalking out an ethical and fearless path. He inculcated a deep value system within the organization by leading from the front through personal example. DMRC has thereby become an organization where ethical practices are not merely confined to a rule book but have become an integral part of the daily routine. By following the course set by his predecessor, the current leader Dr. Mangu Singh is taking DMRC to greater heights of growth and success. Most importantly, the good leadership practices are not merely confined to the top but are being followed at every level down the hierarchy.

DMRC firmly believes that taking a decision is far better than procrastinating or not taking a decision at all. It therefore encourages and empowers its employees to take decisions instead of waiting for the bureaucratic process to take its course. If the urgency of a situation demands, decision-making takes precedence over the hierarchy. Under such situations, an employee is only expected to keep the Management informed of the decision taken. The Management supports its employees even if a wrong decision is taken as long as the intention is right and no malpractice is detected. This high degree of empowerment and encouragement has made a significant contribution in making the organization more effective and to complete projects on time. Tolerance for genuine mistakes and absence of witch-hunting have helped to build trust within the organisation.

DMRC is well-known for its open, transparent and swift communication channels. It starts from the top with the Managing Director holding regular Monday morning meetings with his directors and departmental heads. There are no formal Minutes of Meetings and everyone is encouraged to come up with their problems without any fear of repercussions. Decisions are then taken on the spot with the intention that the managers leave the meeting room equipped with solutions. This culture of trust and transparency runs down the organization with managers following the same good practices within their respective areas of responsibility.

Procurement Process and Professional Competence:

The procurement system of DMRC is fair, clean and transparent. Employees working in the contract management departments are well versed with the procurement manual and guidelines. DMRC lays considerable emphasis on having every vacancy filled with persons with the right professional competence. The selection and promotion policies therefore do not follow conventional time-based processes where persons often land up in jobs for which they possess neither the competence nor the experience. For filling up critical positions, the Managing Director makes an effective contribution by being part of the process for selecting the right candidate.

The Management and HR departments are instructed to resist any internal or external pressures which can lead to irregularities in the processes of recruitment, transfers, promotions etc. If any Manager is threatened or coerced to do something wrong, she/he is advised and encouraged to bring it directly to the notice of the Managing Director. If despite the good efforts and practices in the selection process, a selected candidate does not come up to the expectations, correction is made promptly by making effective changes.

Apart from selecting the right candidate for the right job, DMRC places considerable emphasis on the development of professional competence across the entire organization, be it a train driver or a purchase manager or an automation engineer. Employees are encouraged to make progress in their careers by focussing on enhancing professional competence and following ethical practices. Apart from offering a wide variety of training courses, DMRC has invested in latest training tools which include online real-time simulators.

To meet training requirements, DMRC established its own Training Institute at Shastri Park train depot. The Training Institute is ISO 9001:2015 accredited for design, development and delivery of training programmes. It is equipped with state-of-art training infrastructure including most- advanced simulators for training in the field of operations and maintenance. Apart from professional training, the institute also provides training in soft skills and ethics. Every day of training starts with a morning prayer and concludes with a session on Yoga and Meditation. To keep abreast with the latest trends, training programmes are reviewed periodically and adapted to the latest requirements. DMRC has an excellent in-house faculty. It also depends on external faculty and renowned academic institutes, particularly for imparting training on soft skills. It is mandatory for every employee to undertake specific trainings at the time of induction as well as before a change of assignment such as a transfer or promotion. Need-based refresher courses are also offered.

The DMRC training model is exemplary and needs to be emulated by other organizations in India. Once a serious training culture sets in, we can expect a significant improvement in the performance and ethical conduct of Indian organizations which will make them amongst the best in the world.

Adherence to Code of Ethics (CoE):

The Code of Ethics of DMRC has been written in a simple and comprehensive manner which makes it easy to read and understand.

Our observation is that the CoE is deeply entrenched in the processes of DMRC. The employees are familiar with it and follow it as part of their daily work routine. For example, when we asked a few randomly-selected employees whether they were aware of terms such as Conflict of Interest, Insider Trading and Money Laundering, they could not only properly explain them to us but went on further to show us where we would find their context in the CoE. The role of the Management in ensuring a high degree of compliance to the CoE is noteworthy. Many senior managers have prominently displayed in their cabins important extracts from the policy. Such displays not only act as constant reminders for themselves but also provide a direction to the employees and visitors who come to them for discussions.

Our meetings with their former MD, current MD, several directors, heads of procurement and other departments revealed a strong undercurrent of ethics while discussing diverse topics such as training, processes, projects, finances, operations and maintenance. Another positive aspect is that even the business partners of DMRC are acquainted with the Code of Ethics and realize that its compliance is an essential prerequisite for a conducive business environment and achievement of desired results. This deep embedment of ethics in the DMRC culture is one of the significant factors which is contributing to the success of DMRC. It is without doubt the most important aspect which needs to be emulated by other Indian organizations in public service.

Punctuality:

This is one work ethics which is severely lacking in several Indian organizations and has been a major hurdle to becoming world-class establishments. Realizing this weakness, DMRC has placed great emphasis on punctuality. It is being practiced like a religion or 'Dharma' in DMRC. It is not just about coming to office on time, but it encompasses every activity be it starting a meeting on time or clearing a file as per deadline or finishing a project on time. The notion that "Time is Money" is firmly entrenched in the minds of the employees. To emphasize the importance of time, Dr. Sreedharan and his team had made an initial calculation that every day of delay in project completion costs DMRC a staggering loss of Rs. 23 million. This quantified message has had a profound impact on all employees. They have become time conscious and feel guilty if something is delayed because of their inaction.

Being a stickler for punctuality, Dr. Sreedharan personally set this trend and this has taken deep roots within the organization. We, from ICCfG, were late for our very first meeting with DMRC by around 15 minutes. A senior level DMRC team was waiting for us as we scurried into the conference room. We apologized for the delay and put the blame on the huge traffic of the Delhi roads. Our hosts were polite and understanding but one of the Directors did mention softly that the public expects DMRC services to be always punctual irrespective of the prevailing circumstances. After this meeting we made it a point to be punctual for all our subsequent meetings. In fact we would reach the meetings at least 5 minutes ahead of schedule to test the punctuality of DMRC officials. It is no exaggeration to mention here that DMRC passed the test with full marks. All our meetings invariably took place exactly on time. Even the Managing Director and Directors exhibited exemplary punctuality.

All this eventually gets reflected in the delivery of services to the public. DMRC has set new benchmarks for timely completion of its projects and in the operations of its trains. For example, any delay beyond 59 seconds for a train is flagged as 'late' and considered underperformance which needs improvement. To avoid time overruns in the completion of projects, reverse countdown clocks are installed at work sites and offices to act as constant reminders.

Zero Tolerance to Corruption:

DMRC has a zero-tolerance policy when dealing with corruption, which means that the organization strives to be an absolutely clean organization in the challenging Indian environment which is otherwise known to breed illegal and unethical practices. The absence of any reported scams, scandals or malpractices is a positive indication that this policy is being successfully implemented at all levels of the organization.

A constant vigil is kept within the organization to monitor and detect corrupt practices. All employees are aware that their services would be terminated if any corruption charges against them are proven. As part of their initial orientation program and subsequent refresher training, it is explicitly explained to them to neither receive nor offer, directly or indirectly, any illegal payments, remuneration, gifts, donations or any other benefits that are intended to obtain favours for discharge of their official duties. Whistle-blowing is encouraged to weed out any corrupt practices. Whistle-blowers are assured anonymity and protection.

As a further measure to check corruption, the organization is completely cashless since 2002. A major drive towards automatic and cashless ticketing is presently underway. All sites, stations, stores and ticket counters are continuously monitored by CCTVs. Critical displays are also available in the Central Control Rooms located in the Head Office (Metro Bhavan) and Training Centre (Shastri Park). Despite the strict policy on corrupt practices, DMRC follows a humane approach. In case of a minor offence which has taken place either out of ignorance or where the benefit of doubt exists, DMRC believes in settling such cases locally by having a one to one dialogue with the concerned person.

Integrity and Sense of Purpose:

In line with the direction laid down by its first Managing Director Dr. Sreedharan, DMRC believes that integrity is more than just mere honesty. It is a combination of Honesty (an internal value) and Public Perception (an external value).The public perception is a function of the impact an organization makes on the society. For an organization to possess high integrity, it must score well on both these aspects. Integrity building therefore receives very high priority within the organization. DMRC has accordingly set up a very effective Public Relations team to regularly disseminate information to the media in an honest and transparent manner. This forthright and open approach has helped DMRC to develop a positive public tone.

Before the commencement of operations of DMRC, Dr. Sreedharan received many requests from politicians, VIPs and public institutions for free or concessional travel on Delhi Metro. The first metro line from Tees Hazari to Shahdara was formally inaugurated by the then Prime Minister of India, Sh. Atal Bihari Vajpayee, on 24th December 2002. He also took the first metro ride from ISBT station. Just before this ride started, Dr. Sreedharan took him to the ticket counter and requested him to buy a ticket. The Prime Minister graciously obliged. This set the tone for all future operations of DMRC. The message was clear. There would be no concessions and anybody, irrespective of his position and status, who wanted to use Delhi Metro had to purchase a ticket. This is a classic example of integrity and an excellent lesson in institutional ethics.

One of the significant achievements of the DMRC Management has been to instil a genuine sense of purpose among the employees. Employees are taught that they are not merely doing a job but are performing the noble duty of serving the public and society at large.

It is emphasized to them that the operations of DMRC improve the quality of life of an average citizen by decreasing commuting time, increasing comfort, reducing stress and improving well-being. All these factors enhance the ability of a commuter to perform better in his/her profession. To emphasize this point, a comparison is made with the public bus service. The general public perception on the performance of DTC is very poor. It is considered inefficient, unreliable, customer-unfriendly and, above all, corrupt. DTC is also a drain on the exchequer because it continues to make huge financial losses year after year without any turnaround strategy. A large number of public opinions have been expressed against DTC. Many would like the organization to be completely revamped or even disbanded. Most recently, there is a school of thought to dissolve the organization and sell its existing fleet of buses to DMRC who could then be entrusted to provide the much-needed last-mile connectivity. The metro is much faster, very punctual and provides a comfortable air-conditioned ride. By taking the metro to work, a person is fresh and relaxed on reaching the workplace. On the other hand, a person using a public bus service is exhausted and hassled before starting work. The metro thereby makes a significant contribution towards raising the productivity and efficiency of the people and the city as a whole

The glaring contrast between the performances of DMRC and DTC is testimony to the fact that an ethical framework goes a long way in shaping the path and destiny of an organization. The positive aspect is that DMRC's leadership and employees are well aware of this. They know that the essential difference between their organization and others lies in following the Code of Ethics and the policies based upon it. At the same time, this realization of contributing positively towards the uplift of the society has instilled a sense of pride amongst the DMRC employees and has increased their motivation and passion to perform better and achieve higher objectives.

Productivity:

DMRC has made productivity improvement one of its primary goals and is committed to compete with the best in the world. The international norm is to have 35 employees per route kilometre. DMRC started with 40 employees per route kilometre and through sustained efforts and measures, has now reached the figure of 32. The target is to improve to 30.

Vendor Relationship:

DMRC has adopted the latest tendering practices such as e-notifications and e-auctions. No internal or external interference in the tendering process is tolerated. Individual meetings with bidders are not permitted. Tender evaluation is carried out in a time-bound manner maintaining complete secrecy. It is made clear to vendors that their bids would be disqualified and even existing contracts would be terminated if any evidence of mischief or corruption is found. Middle-men and agents are strictly debarred. By following these practices from inception, DMRC has instilled confidence among the bidders that they are dealing with an organization of high integrity where success depends upon delivering high quality and performance at competitive rates within the stipulated time schedule.

DMRC treats and respects their vendors as trustworthy and responsible partners and stakeholders in the timely completion of projects and providing satisfactory after-sales services. DMRC realizes that its own success depends upon the success of the vendors. It therefore tries to ensure that a vendor does not suffer financial difficulties which could delay or jeopardize projects. Vendors never feel the need to beseech DMRC for their due or justified payments. On the contrary, DMRC, in true spirit of cooperation, releases as much as 80% of the due milestone payment unconditionally within 7 days and the remaining 20% within 14 days after verification and certification. This ensures that vendors have adequate financial liquidity to execute the projects as per stipulated schedules. There have also been several instances where DMRC has gone out of the way by lending money to vendors in financial distress. This has also helped to complete projects on time. This fair and forthright relationship with vendors has resulted in development of mutual trust. Vendors assign priority to the contracts with DMRC and take great pride in timely and satisfactory execution of the projects.

Concern for the Employees:

DMRC is very concerned about the physical and mental well-being of its employees. The organization has correctly realized that its productivity and efficiency depend upon the health of people who work for it. Employees are therefore encouraged through awareness programmes to be fit through proper diet, physical exercises, participation in sports, reciting morning prayers and, above all, by doing Yoga and Meditation. Successive MDs and senior functionaries have set personal examples by following these good practices.

Most of the employees feel secure and comfortable working with DMRC because they know that their organization would take care of them during a crisis. A case of a trainee who fell seriously ill one evening in his hostel room was narrated to us. He was rushed to the nearby hospital by his roommate and the hostel attendant. Senior officials of DMRC also reached the hospital to ensure that he was properly looked after and was given the best possible treatment. Since the trainee did not have any medical insurance, the officials took an on-the-spot decision that DMRC would take over the entire cost of treatment. Thanks to this timely help, the treatment proceeded smoothly and the young man was back on his feet within a few days.

Concern for the People:

DMRC has demonstrated how good public service in India can be. It has raised the level of public service to an extent that its commuters experience not merely satisfaction but a feeling of delight while using the metro services. Beyond the clockwork precision of running the trains, DMRC has undertaken several measures to continuously enhance customer satisfaction and public perception.

DMRC is member of the international metro communities Nova and CoMET. DMRC was part of the Nova group of metros until 2014. Due to its rapid expansion and increase of passenger traffic, it has been elevated to the CoMET group since January 2015. There are a total of 34 metros across 32 cities of the world who are members of CoMET and Nova. The members voluntarily share their important statistics to benchmark their performance across metros. The key objective is to identify and share good practices within a confidential framework. For a Customer Satisfaction Survey conducted by CoMET in 2016, DMRC achieved a weighted average of 7.45 on a scale of 10. This indicates a high degree of satisfaction among the commuters and is indeed a proud achievement for an Indian company.

The excellent public perception and good scores in customer satisfaction surveys are not entirely because of the efficient and comfortable metro service being operated by DMRC. It is also because people consider DMRC as a humane organization that cares for them and is concerned about their welfare. DMRC has set some excellent examples which support such an impression. Given below is one such case.

The old Daryaganj area houses a number of dilapidated buildings and structures. During the tunneling process, people had to be evacuated from these buildings as a precautionary measure. A total of 2000 persons were evacuated in phases. They were put up in various guest houses situated in nearby areas and DMRC paid for their lodging and boarding. DMRC also repaired their houses before shifting the residents back.

During festive times in Delhi and NCR, many people prefer to travel by metro in order to avoid traffic jams on the roads. In anticipation of this, DMRC runs more trains and increases the frequency of service. Furthermore, DMRC management directs its staff to travel via metro on their way to duty to ensure immediate assistance to commuters in case of any operational or technical glitches. In this manner, any minor issue or incidence which may adversely affect the travel experience of millions of passengers in the festive season is directly monitored and attended to in the least possible time. This is yet another example of people-centric measures taken by DMRC to provide world-class travelling experience.

Safety, Health and Environment (SHE):

DMRC's devotion and commitment to the cause of Safety, Health and Environment are commendable. DMRC has formulated concise and comprehensible, and yet very effective, policies covering practically every aspect of SHE. These include, for example, distinct policies on Energy, Water and Waste Management. As a constant reminder to employees, business partners and general public, these policies are prominently displayed at strategic locations. The emphasis can also be seen in the monthly newsletters of DMRC where these subjects find prominence. DMRC also insists that all its contractors comply fully with its guidelines on SHE. In fact, contractors are liable for disqualification or rejection for non-compliance. It is mandatory for a vendor to have a tie-up with a local hospital for medical emergencies. All SHE activities of DMRC are regularly audited by independent external agencies for conformance to the applicable national standards.

Concern for Environment:

DMRC has also formulated a unique policy to plant 10 saplings for every tree felled by them for their construction projects. To ensure that correct saplings are planted and maintained, it has engaged the services of the Forest Department, Government of Delhi.

The Delhi Metro has also contributed tremendously to the environment by becoming the first ever railway project in the world to claim carbon credits for regenerative braking. The United Nations in 2010 certified Delhi Metro as the first Metro rail in the world to get "Carbon Credits" for reducing greenhouse gas emissions. Besides reducing vehicular traffic congestion, it has helped Delhi and NCR region to reduce pollution levels by 630,000 tons every year which is indeed very commendable. All new stations are being constructed as green buildings.

Prakriti Metro Park is a unique park created by DMRC using 25 tonnes of scrap and 5600 cubic meters of muck from various metro construction sites. Spread over an area of over 10 acres, this park has a host of recreational and artistic attractions. Facilities such as an auditorium, amphitheater, meditation alcove, playground for children and gymnasium have been provided for the visitors. A lake with a fountain and a rainforest has also been created inside the park.

The main highlights of the park are 12 beautiful installations created entirely out of waste and scrap materials. The artistic Tellis

Court, right in the centre of the park, has eight pillars of progressively increasing height. They depict the growth of DMRC from a nascent organization to a confident and evolved organization. The park reflects the concern and care of DMRC for the environment. A gallery has paintings about the importance of environmental protection. Top soil from several underground station sites has been utilized for the gardens, which house medicinal and pollution-absorbing plants. Trees and bushes that attract birds, as well as those which repel mosquitoes, are planted all around the park. The water requirement is met by a sewerage treatment unit in the vicinity. The lake has been integrated with the rainwater harvesting pit. Electric power is fed by solar panels mounted above the auditorium. Dried leaves and grass are used to make natural manure.

In recognition of its numerous environmental-friendly features, the Indian Green Building Council (IGBC) has given the park 'Platinum' rating. By creating such a park, DMRC has set a benchmark in Corporate Social Responsibility (CSR). This wonderful gift to the citizens of Delhi has proved that DMRC is an organization that cares for the people and is making a conscious effort to improve the environment.

Sustainability:

While DMRC has very good systems and processes presently in place, there is scope for improvement in some areas to ensure its successful journey into the future. It will need to strengthen itself and become more agile to adapt to a rapidly changing environment. This is particularly important because the coming years are expected to be far more turbulent than what the previous decades have been. Rapid technological advancements such as e-shopping, increasing automation/robotics, bullet trains, driverless electric cars, drone courier services, underground/ flying vehicles, hyper loop mobility etc. will make a significant impact on the operations of conventional metro rail systems. DMRC therefore needs to focus intensely on preparing itself to face the challenges lying ahead so that it can remain the backbone of the city's transportation system for at least the next 4 to 5 decades.

Based upon our study, we have made some suggestions which would help to improve the long-term sustainability of Delhi Metro. These suggestions are in line with some of the best practices being followed by world-class organizations and have been attached at Annexure II.

Institutional Ethics

The purpose of this study was to identify the Best Practices being followed by Institutions/ Organisations which when replicated can lead to improved Institutional Ethics and overall effectiveness. This certainly is not the end of our Study but the beginning of a long journey. The experience of associating with DMRC has been rewarding and educative. It has provided us with energy, vigour and above all, hope that institutions in India can do much more and be amongst the best in the world by following the path of ethics.

Institutional ethics can be likened to a road on which a vehicle, which in this case is the Institution itself, travels. If this road is well maintained and smooth, the Institution can expect to have a smooth and comfortable journey to achieve many milestones of success and growth. However, if this road is slippery and full of potholes, the ride is bumpy and hazardous. It is then only a question of time before the Institution falls into a state of ruin or completely collapses.

The driver of the vehicle is the institutional leader. She/he has to ensure that the path of ethics is followed against all odds and hurdles. There is no dearth of negative forces which are constantly seeking opportunities to create roadblocks. These forces challenge the intrinsic ethical strength of an Institution and it is then that the leadership has to exhibit unflinching integrity to steer it out of trouble.

To summarize, institutions can function efficiently and effectively if they ensure that:

- They have a well-documented Code of Ethics which is an integral part of all their policies, processes and procedures and
- Its leadership and employees imbibe the spirit of these documents and adhere to them in their daily routine.

Our next step would be to create a training module on Institutional Ethics based upon our learnings from DMRC. We intend to use this module to increase the awareness of other Indian Institutions on the importance of ethics. We are confident that our efforts will bear fruit. Once this awareness seeps in and creates strong roots, we can expect a significant improvement in the levels of Public Service and Governance in our country.

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Prasanth Nair

Administrative Communication according to Popular Culture

Every voice has to be heard and acknowledged. We need to understand and attune the language of administrative communication according to the popular culture and ethos of the mass.

In India, the phrase 'work is worship' is taken so seriously that people tend to exhaust decades of their lifetime toiling in a work environment devoid of fun and enjoyment. The idea that one's working place can only function properly if there is extreme order and hierarchical reverence is something that is unquestioningly practised in India in all Government offices and most private concerns.

Why can't workspaces in our country be less rigid and decorum-centric, and instead be work-centric, letting employees enjoy what they do – instead of making them continually dreading about what could go wrong? Why should we be obsessed with formal procedures and least concerned of the actual results?

Why should a boss desperately try and show 'who is the boss' by picking faults and shouting at the subordinates? And why should a subordinate be servile to the boss?

One stark difference that I've noticed between India and many other countries, especially the European countries, concerning work culture is that, employees, irrespective of which sector they are engaged in, appear much happier. And this has more to do with work-culture than with the general prosperity of the place. It has more to do with equity and informality at the work-place and not compromising the self-respect of the employees.

Is it good to get emotional or personal with work? Yes, provided it's the fun part. As a junior IAS Officer, I headed two World Bank

Projects where we all addressed each other by first name and no sky fell upon us.

Generally, in India, saying ‘sir’ to express ‘official’ respect is the divine rule. But it was a great learning experience to work in an environment where you were a team – not seeking to desperately prove at every moment that you are the boss.

Getting personal with work is cool, taking your work into your personal private space is uncool.

In Germany, there is a fine line between work and private life and this is valued so vehemently that their government has legally banned official calls and emails after office hours. This applies to private and government employees. And regarding productivity, we all know that they are at the top in the game.

In France, there the right to disconnect under the ‘El Khomri Law’, which has been emulated to different measures in Germany, Italy and other European countries. They all seem to know that all work and no play really makes Jack a dull, inefficient and ineffective boy.

Good humour is the best medicine to beat dullness at work. Not only does this open up doors for cordiality and directness in an organisational structure, but it also helps dissolve the hierarchical gap that has always remained between higher and lower echelons.

Breaking the hierarchical divide, using humour as a tool, has been one of my fundamental obsessions. This I believe, has enabled people working in my team, irrespective of their position, to feel free to pitch in their ideas and offer suggestions without feeling scared or apprehensive of rejection.

Not only have I received some of the best feedback and advice through this process, but I have also observed that our workspaces showcased better productivity and happier staffs.

The ‘Compassionate Kozhikode’ initiative, which had innovations like ‘Operation Sulaimani’ and ‘Tere Mere Beach Me’, wouldn’t have been possible without the collective brain-storming effort of the entire team. We collectively tried out more than hundred innovative experimental projects, some of which were partial failures as well.

Not being scared of failure is tough in government because you have no incentive for innovation, but you have plenty of penalties for even bonafide mistakes. Taking up such tasks as a team makes the risk seem lighter and having open informal channels of feedback communication makes failure less probable. Humour even helps the team take failure in the chin. This could be cited as another instance of how approachability and friendly work culture can do the spadework for innovative and effective output.

On February 23, 2015, when the official Facebook page was launched for the District Collector, Kozhikode, it was one of the first official social media engagements of that nature. In 2018 nobody would think much of it, but back then it was a first in India. We could establish it as the preferred mode of communication by citizens to sort out their problems, throw up an idea or even mark a protest.

I would like to share one incident – a man turned up at our office with a written complaint and casually mentioned that he had sent it on FB a day before.

When I told him that his grievance has already been tended to based on his FB complaint, the expression of surprise on the man is something I will never forget! That sort of experience is what I would love to have got as a citizen, when I was at the other end of the table.

As for the impact that social media can create and how we can put it to use for better governance, I can't come up with a better example than the Kozhikode administration page. The number of followers was over 2.5 lakh and the post reaches were well beyond 10 lakh. All organic. This iterates my conviction over social media being the next big thing for governance and as a change-propelling platform.

What worked for us was the informal light-hearted communication that we adopted.

What did not work for us was that we were the first to do so.

I was vehemently criticised by the status-quoists, the technologically challenged, a few politicians and the middle-men who benefitted from the lack of direct access.

Criticism was also dealt in good measure by an ample dose of humour.

Quite amusingly, the moniker, "Collector Bro" was coined through these various FB exchanges, when people started addressing me as 'bro' instead of 'sir'. The name stuck.

For India to have an enhanced work culture that rises above dense and rigid working environments and paves the way for a friendlier atmosphere and satisfied employees, the first step for organisations and its management is to break barriers between its echelons by encouraging collective participation.

Every voice has to be heard and acknowledged. We need to understand and attune the language of administrative communication according to the popular culture and ethos of the mass. Creativity should be unleashed and innovation should be encouraged. Humour and informality should be in the air.

When we launched 'Operation Sulaimani', the name inspired by the Malayalam film, 'Ustad Hotel', we harped on an iconic dialogue from the film, "Every Sulaimani needs a bit of Mohabbat in it. When you sip, the world should slow down and pause here."

This is precisely how anything in life should be undertaken—with a bit of Mohabbat. So why not emulate the same in one's work and workplace to make a better India?

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COMMENT

K. Mahesh

Elected Representatives & Indian Civil Servants

Evolving a Code of Conduct

INDIA is not just a Democracy, but a Constitutional Democracy, governed by the rule of law and guided by principles enshrined in our Constitution. And, for any Constitutional Democracy to survive and thrive, it is critical that the institutions of governance work in a manner which is in sync with our Constitutional principles. By Institutions of Governance, I mean both the elected as well as the non elected institutions of governance, such as the judiciary, the press, the Indian Civil Services and other non-elected, non-representative institutions. However, the Civil Services play a critical role as a non-representative and non-elected institution, in enhancing the efficiency and effectiveness of a political democracy in tandem with the political will of the elected representatives and the political executive to steer the nation on the path of development and progress.

The role of the Civil Services in the task of nation and character building cannot be overstated. Sardar Patel, the iron man of India and often regarded as the Father of the Indian Civil Services was of the firm view that independent, apolitical civil services, which could provide objective and fearless advice to the Ministers, were necessary for India's future. Notably, it was only due to the insistence of Sardar Patel that specific provisions were incorporated in the Constitution of India to create the two all India services to serve the Centre and the States, and give protection to service matters of all civil services.

Dr. Rajendra Prasad, as the President of the Constituent Assembly had with great foresight, stated in 1949 as follows:

"Whatever the Constitution may or may not provide, the welfare of the country will depend upon the way in which the country is administered. This will depend upon the men who administer it."

It is only when a collective spirit of public administration is inculcated by the bureaucracy and the political executive, that we can hope to achieve true progress. This, I repeat, is only possible with the convergence of political and administrative will of the civil servants and the elected representatives and the political executive. The progress of a nation hinges on this critical balance; which brings us to the core of the issue at hand today i.e. how do we maintain and follow the delicate but critical relationship between the elected representatives including political executive and the civil servants in public interest.

While we do have codes of conduct, governing both civil servants and elected representatives, there is a crucial void in respect to defining the relationship between the two. The Code of Conduct for Ministers issued by the Ministry of Home Affairs in 2013 on the recommendations of the Second Administrative Reforms Commission, 2007, incorporated Clause Pr. 2 (f) and I quote:

"Uphold the political impartiality of the civil services and not ask the civil servants to act in any way which would conflict with the duties and responsibilities of the civil servants."

However, this solitary provision is sadly not enough. More needs to be done. While the code of conduct governing the civil servants does take into account the behaviour of a civil servant when dealing with Ministers/MPs/MLAs, there is no such provision with respect to the conduct of Ministers (both Union and the States) in their conduct with Civil Servants.

The relationship of the bureaucracy and elected representatives is one of trust, collective responsibility and most importantly mutual respect. Various nations across the globe such as the United Kingdom, Singapore and Australia, amongst many others, have realised this and have enacted various codes and guidelines to bridge and define the relationship between the Civil Servants and elected representatives.

We have stated the problem? But what are the possible solutions? In my view, the first step is to enact a code of conduct specifically governing the relationship between the political executive and civil servants. My humble request to the Chief Minister of Delhi, on behalf of the Forum and Associations, in addition to rendering an unconditional apology and providing a safe environment for the Civil Servants, is to have the first such code, governing the relationship between the elected representatives, political executives and the Civil Servants. Not only would this go a long way in incorporating and instilling mutual respect between the institutions of governance, but would also bring about transparency, probity, honesty and integrity in governance. Such a code must reinstate the values enshrined in the preamble of our constitution and should be based on Lord Nolan's seven Principles of Public life, which are (i) Selflessness, (ii) Integrity, (iii) Objectivity, (iv) Accountability, (v) Openness, (vi) Honesty and (vii) Leadership.

The second point for consideration by the elected representatives and political executive is that the Civil Services across the Globe are process oriented. In the Indian Context, a Civil Servant is duty bound to take decisions as per laws and rules framed there under and scrutiny by the Courts of law; Comptroller & Auditor General of India ; Central Bureau of Investigation; Central Information Commission; and Central Vigilance Commission. Here I would like to point out that when Civil Servants are forced to take decisions at the behest of the Political Executive, they are often targeted when there is a change in Government leading to harassment through investigations/departmental actions and so on.

This is in addition to the scrutiny by the relentless Press (when the Bureaucrats do not have a level playing field in addressing the media), the Parliament, State Assemblies and its various Committees monitoring the actions and decisions of the Civil Servants. By contrast, the political executive wants a response to their orders with a lightning speed. If a task is assigned on 1st January, it must be done by the 31st of December in the previous year. There is a deep disconnect between the understanding of the functioning of each other. Therefore an orientation programme in the form of training regarding the functioning of the bureaucracy is need of the hour.

Thirdly, I believe that the biggest threat to the Civil Services lies within the Civil Services, I repeat "within the Civil Services"; due to lack of courage and fraternity among the civil servants to follow established rules and regulations followed by our predecessors. As and when the political representative does not find the Civil Servant compliant and convenient, he is transferred, but what does his own colleagues do? His batch- mate or his junior or his senior? Is he ready to do their bidding? Ambitious Civil Servants are no less to blame. Civil Servants often become pawns in the set-up in forging a partnership with politicians and Business interests in not only bending rules but sometimes breaking the rules. In doing so, they forget the oath they took to uphold the Constitution and its values. This is the biggest problem. This is all the more alarming in-spite of the constitutional guarantees and protections provided to the members of the civil services. There is no doubt in my mind that the Civil Services need a wake up call.

The question before us is the following: Does this country need to evolve a code of conduct to define the relationship between the elected representatives, including the political executive and the civil servants of this country?

The above issue has always been relevant, but has acquired criticality today because of the ongoing standoff between the elected government and the Civil Services in the Govt. of National Capital Territory of Delhi following the deplorable midnight assault on the distinguished Chief Secretary, known for his integrity, transparency, for building bridges and leading from the front. This assault took place at the official residence of the Chief Minister. Another issue which arises is can the state legislature act as a disciplinary authority for the civil servants when it is not the appointing authority? Is this not a Constitutional outrage?

The question is: Who is suffering in the consequent fallout? I can assure you that the elected representatives as well as the selected civil services corps (CORE) can take care of themselves. Delhi administration has been run before without a political mantle, so to speak, but what happens to the people of Delhi, the so called Aam Aadmi? Is the elected government not concerned about them? If yes, how come we see no sign whatever, of a truce, between the two sides? Even after a string of apologies by the Hon'ble Chief Minister one has read about or seen on the electronic media, there is no attempt to patch up with the aggrieved civil services manning Delhi. How long will this stalemate continue, with the bureaucracy continuing to observe their silent protest? If India and Pakistan at the Diplomatic level can resolve to revisit the 1992 code of conduct between them to facilitate their diplomats to do their work in the two countries, why can't we at home work on a similar code of conduct, facilitating the sadly deteriorating relationship between the countries' political executive and its Civil Services, starting with Delhi?

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