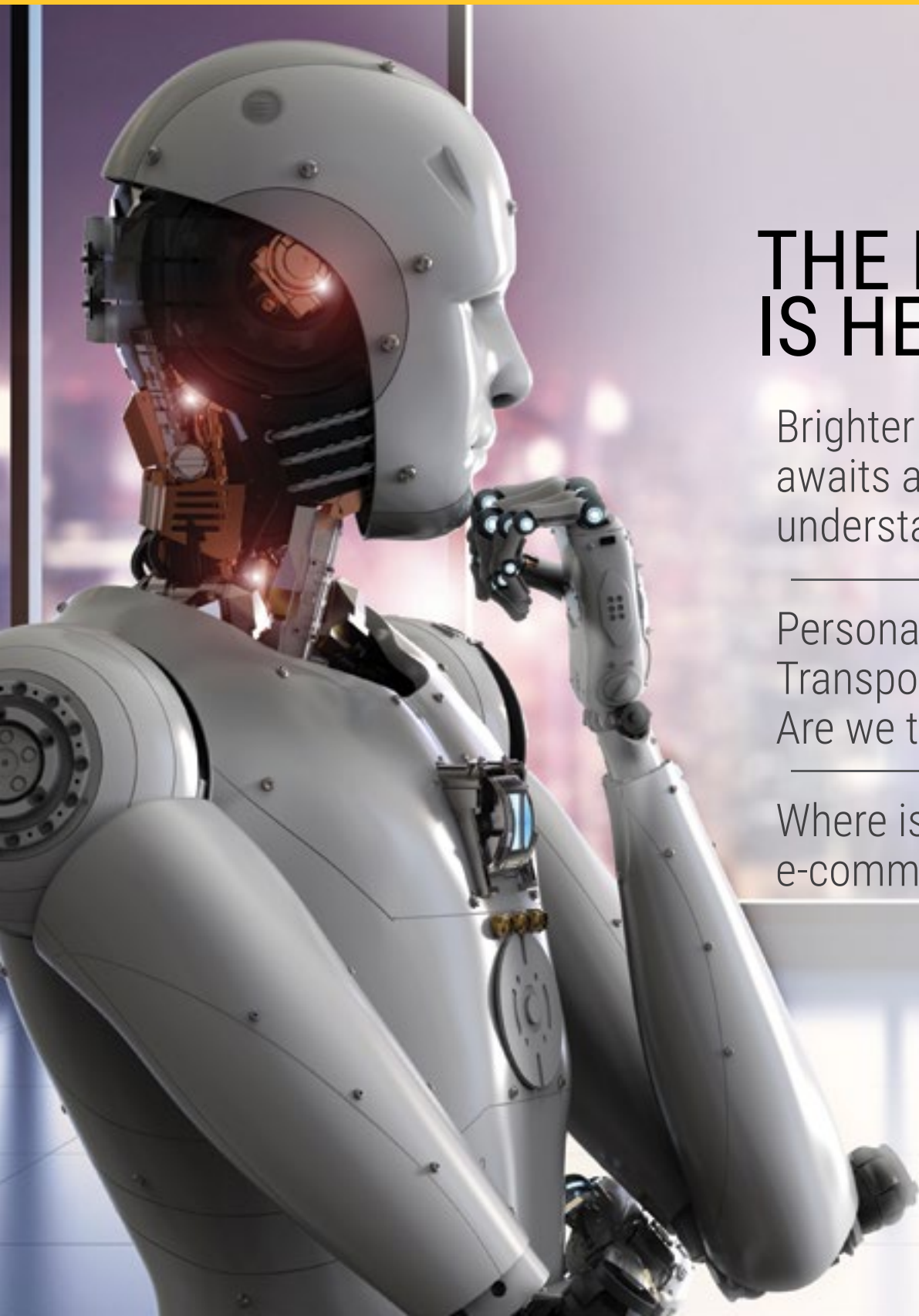


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FORESIGHT

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THE FUTURE IS HERE

Brighter future
awaits a better
understanding of AI

Personal
Transportation —
Are we there yet?

Where is India's
e-commerce headed?

Contents

COVER STORY: THE HUB



PERSONAL TRANSPORTATION — ARE WE THERE YET?

Personal transportation in vehicles fired by fossil fuel is perhaps closer to its grave than most believe. But what will replace it is not just a theoretical discussion anymore.

30



WHERE IS INDIA'S E-COMMERCE HEADED?

Unlike the dotcom bubble seen nearly two decades ago, the e-commerce space, despite the many failures, still holds a lot of promise.

36



BRIGHTER FUTURE AWAITS A BETTER UNDERSTANDING OF AI

AI will create 2.3 million jobs in 2020 while eliminating 1.8 million

42

■ **Staplefare**

TIME FOR PARADIGM SHIFT IN INDIA'S FARMS

Seven decades after taking control of her own destiny, India continues to struggle with her farms. A paradigm shift in policies and investments seems to be the only way out for Indian farmers.

06

■ **Marketplace**

BREXIT — A BRAVE, NEW AND UNCERTAIN WORLD

Britain's decision to leave the European Union in mid-2016 is perhaps one of the most significant changes to rock the world since the fall of the Berlin Wall and the collapse of communism with it.

11

■ **Marketplace**

INDO-US RELATIONS — TIME TO UPGRADE

The Indo-US relationship has now safely nestled in a bipartisan environment. The fostering bonhomie between the largest and oldest democracies in the world has grown from strength to strength.

14

■ **Marketplace**

AFRICA — A LONG OVERDUE PROMISE

Africa as a market has fallen short of what the world expected it to be. While the challenges and the reasons behind them may be obvious, the solutions are not.

20

■ **ASIA**

CHINA'S OBOR AND INDIA'S OPTIONS

OBOR is the undoubtedly the most ambitious economic development project ever, covering 65% of the world's population. What are India's options with QUAD?

26

■ **TechBytes**

FUTURE PORTS — A MAN-MACHINE SYMPHONY IN THE MAKING

Automation and digitisation will leave ports and container terminals completely unrecognizable, but for the better.

48

■ **GreenWorld**

CLIMATE CHANGE AND LOGISTICS

The world has woken up to the climate change challenges. But the logistics business is yet to.

54

■ **Healthcare**

A TRANSFORMATION UNFOLDS

Healthcare delivery is getting ready for a sweeping transformation, thanks to new and emerging technologies and standards arising from the digital revolution.

56

■ **Special Feature**

SAGARMALA — THE \$120 BILLION BET

The one infrastructure project that is likely to have a far-reaching impact on India's future is ironically the one that is discussed least.

64

■ **Conversations**

INNOVATION ON THE FLY

A quick-fix solution or 'innovation on the fly' or *jugaad*, as it is called, has been a native strength in India for long now. But is it over-valued?

72

■ **The Gateway**

DIVERSITY & INCLUSION — MAKING EXCEPTION THE RULE

Diversity and inclusion is not just about accommodating differences, but to flip the situation where accommodating will not be necessary.

81

■ **The Gateway**

THE THIN END OF THE WEDGE

If securing a job is the only goal of education, it is about time we get back to the drawing board and reassess the long-term impact of having such a narrow outcome.

88

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THE FUTURE IS HERE

Thomas Jefferson, one of the founding fathers of the United States of America, said, "I like the dreams of the future better than the history of the past." In many ways, we all live in the future - either consciously or otherwise. For some, it is a daily routine like planning the day ahead, working on the target for the next quarter or securing the future of our children.

While most are busy preparing for the future, a few among us are creating the future. For these men and women, the future is not a destination but a life-long journey. These are scientists, technologists, change agents and in a few cases even status-quo disruptors (like Tesla's Elon Musk) who show the world which way to head.

The future as we imagine can be an exciting and a scary place at once. Note the extreme views on the impact of Artificial Intelligence (AI) on jobs or driverless cars zipping across our neighbourhoods or the idea of drones becoming the tipping technology that finally pushes the world toward a utopian healthcare for all.

These are glimpses of the future which we have already experienced or breakthroughs like gene splicing, the impact of which most of us to are yet to fully understand today, let alone fear or favour it.

I believe few will disagree that the future is what we make of it. The first step in that direction would be to have a good understanding of where we are headed.

To borrow some of Isaac Newton's words, standing on the shoulders of the giants among us who create the future and the exploding proliferation of data, information, and knowledge, it would be safe to say that we have a much better vision of the future than those who were here before us. It is this idea of the future that inspired us to make it the theme of the inaugural edition of *Foresight*.

Starting as a small shipping agency in 1993 in Mumbai, today Allcargo Logistics has grown to become India's largest integrated logistics services provider with operations in over 160 countries and annual revenues of nearly \$1 billion.

Irrespective of the size of the business, logistics is one of the few sectors that is perhaps more affected by global political and economic developments than most businesses are.

In *Foresight*, subject matter experts encapsulate these developments. This new biannual thought-leadership magazine will also look beyond just logistics. We will also write on subjects like healthcare and agriculture that may lack the attraction of topics like AI or automobiles, but are nevertheless critical.

Foresight is our first step in a new and exciting direction, bringing you thought-leadership views that will inspire followers to think like leaders.

Where we go from here also depends on your valuable feedback. Your criticism will make *Foresight* better just as your encouragement will make us proud and do even better the next time around.

Godspeed!

SHASHI KIRAN SHETTY

Chairman, Allcargo Logistics Ltd

TIME FOR PARADIGM SHIFT IN INDIA'S FARMS

SEVEN DECADES AFTER TAKING CONTROL OF HER OWN DESTINY, INDIA CONTINUES TO STRUGGLE WITH ITS FARMS. A PARADIGM SHIFT IN POLICIES AND INVESTMENTS SEEMS TO BE THE ONLY WAY OUT FOR INDIAN FARMERS.

T. R. Vivek





Staplefare

India produced a whopping 275 million tonnes of cereals in 2016-17 and ranks among the two largest producers of every major agricultural commodity, including rice, milk, vegetables, cotton, and sugar. Agriculture contributes roughly a fifth of the country's GDP.

Indian agriculture is the world's second largest employer. India's farms are tended to by nearly 265 million pairs of hands. This is a number topped only by China's 300 million. Two in three Indians living in rural areas depend directly on agriculture for livelihood. Yet, the trickle of media coverage on agriculture portrays it as the direst profession to be in.

The big numbers notwithstanding, Indian agriculture punches far below its actual potential. Crop yields are below the global averages despite high absolute output. Reactive, short-term measures and handouts often become necessary and are a substitute for sustainable policy solutions.

With such a large agricultural base and strong domestic demand with a population of 1.3 billion, farming and food are among the hottest sectors in India.

The current government has set itself an ambitious target of doubling farmers' incomes by 2022. To do that, the real farm income needs to grow at an annual rate of nearly 10% compared to 3.5% now. That is roughly a threefold increase. India's agricultural GDP also needs to grow in double digits.

To put that in perspective, in the decade between 2005-06 and 2014-15 only one among the 29 states and seven union territories, Madhya Pradesh (MP), can boast of the farm GDP growth of 10%. Therefore, is a doubling of farm income possible or even feasible?

Let's look at four aspects that India needs to look at to take a realistic crack at this.

A 2014 survey by the **Centre for Study of Developing Societies** (CSDS) revealed that an overwhelming majority of Indian farmers did not want to continue to work on their lands and preferred a change in their vocation.

1

Make farming lucrative for farmers

Happy and well-rewarded employees will be productive employees. However, this may not be so in the agriculture sector. Even though our Indian farmers have a bumper crop, the price they get for their output is not enough to keep them tilling happily. Not surprisingly, farmers now prefer unskilled jobs in India's big cities.

A 2014 survey by the Centre for Study of Developing Societies (CSDS) revealed that an overwhelming majority of Indian farmers did not want to continue to work on their lands and preferred a change in vocation. Globally, food and agriculture are seen among the most exciting businesses to be in. In India, the farmer is reduced to an object of pity.

The agricultural policy has a very strong urban consumer bias. Governments try to ensure that consumers are protected from price shocks but neglect the need for farmers' profitability.

Farmers are unable to discover the best price for their produce. Among the reasons are the MSP (Minimum Support Price) fixed by the government, ad hoc export bans when the price of onion or tomato shoots up, and a PDS (ration shops) system that gives subsidised grains even to those who are rich enough to not need it.

The Indian state constantly distorts the pricing mechanism. Chinese farmers in comparison sell

their output at a price 13% higher than the world average. In 2015, the average minimum purchase price for wheat for Chinese farmers was \$390 a tonne, compared to India's \$244-a-tonne MSP.

2

Develop farm-to-fork linkages

Besides government intervention in pricing, another big reason why farmers are poorly remunerated is the absence of an efficient supply chain and logistics that prevents the fruits of their hard labour from reaching the consumer.

Indian farmers in most states cannot directly sell to the consumers, wholesale and retail chains and food processing companies. They can sell their produce only through the Agriculture Produce Market Committee (APMC), in markets or mandis that operate in multiple locations in a state or at auctions at the mandis in their region.

The licensed traders at the APMC inevitably form a cartel and keep the auction prices low. This, coupled with the lack of food processing facilities, cold storages and refrigerated agricultural transport,

forces farmers to sell perishable produce at the asking price set by traders. It is for this reason that states like Maharashtra are moving away from the draconian APMC mechanism by removing fruits and vegetables from the ambit of this market.

In several parts of the country, a bumper crop is bad news for the farmers. As prices fall, sometimes it is economically not viable for farmers to harvest the vegetables and take them to the market. The farmer riots in MP and the protests in the capital last year by farmers from Tamil Nadu were a result of such situations.

MP farmers' second successive bumper onion crop had no takers because of the supply glut. The mandi price plummeted to as low as 50 paise a kg, or half the price of a box of safety matches. A panic-stricken MP government promised the state would buy "the last available onion" from farmers at Rs 8 a kg. The government then sold the onions through PDS shops at Rs 2 a kg and had to simply dump most of the stock. In less than a month, the state government lost some Rs. 750 crore, thanks to its direct intervention.

Ironically, the state's annual food processing budget is a paltry Rs. 7 crore. The money that was lost could have been invested in multiple onion dehydration plants that could have prevented such pain for the farmers in the long term.

In several parts of the country, a bumper crop is bad news for the farmers. As prices crash, sometimes it is not economically viable for farmers to harvest the vegetables and take them to the market.

3

Innovate

Among the biggest challenges faced by Indian farmers is often the lack of access to technology. Agriculture forms a fifth of India's GDP, yet less than 1% of the value of the farm output is spent on research and development for the sector. The US seeds giant Monsanto spends nearly \$1.7 billion

annually on R&D while the entire budget of the Indian Council of Agricultural Research is less than a \$ 1 billion.

The smallholders or small farmers make up 80% of India's farmer-base. These small holdings are shrinking in size, even as families grow bigger. Any meaningful and sustainable solution to solve the agriculture problem, will have to revolve around targeted support for smallholders through modern crop solutions, protection, and breeding methods.

As key resources such as arable land and water grow scarce, and fluctuating weather patterns become the new normal, it is only technology that can come to the rescue.

Hybrid crop varieties created in labs, that adapt to low rainfall and poor soil and yet offer farmers up to 50% incremental yields, sowed the seeds of China's agricultural turnaround. Despite smaller average landholding (0.66 hectares compared to India's 1.15 ha) and only 40% irrigated land to India's 50%, China produces twice the amount of India's cereals and about four times the quantity of fruits and vegetables.

All major agricultural economies — US, China and South America — have shifted to GM crops. State-owned ChemChina (China National Chemical Corporation) acquired the Swiss seeds and chemicals giant Syngenta for a whopping \$43 billion in 2016 to be in the crops race with GM. But India remains strangely opposed to GM crops, depriving its farmers of the choice of higher productivity.

4

Reform

Any meaningful and sustainable solution to solve the agriculture problem will have to revolve around targeted support for smallholders through contemporary crop solutions, crop protection, and modern breeding methods.

The 1991-92 Indian economic reforms benefitted the Indian industry, but there hasn't been any matching structural reform for the farm sector. Indian farmers remain prisoners of government-approved technological choices like the ban on GM seeds in food crops, and government mandated procurement prices.

While industrialists had gained the freedom to play to their strengths—buying efficient off-the-shelf technology from overseas, the liberty of letting the market decide the right price for their goods and services —Indian farmers remain prisoners of government-approved technological choices like the ban on GM seeds in food crops, and MSP.

India should reform the moribund APMC Act that stifles the farmers'

ability to access markets. To promote more efficient farming, the government should also consider allowing corporates to lease land from farmers and work directly with them to get the kind of produce that the consumers want.

The government needs to act on a war footing on lucrative farming, farm-to-fork linkages, innovation and reform to make the farmers' ambition of higher crop yields and doubling farm income not a distant dream, but a reality.



Bangalore-based T.R. Vivek, who traces his roots to the fertile Cauvery delta, is a keen, incisive observer and writer on several subjects including his favourite – Indian agriculture.

BREXIT – A BRAVE, NEW AND UNCERTAIN WORLD

BRITAIN'S DECISION TO LEAVE THE EUROPEAN UNION IN MID-2016 IS PERHAPS ONE OF THE MOST SIGNIFICANT CHANGES TO ROCK THE WORLD SINCE THE FALL OF THE BERLIN WALL AND THE COLLAPSE OF COMMUNISM WITH IT. NEARLY TWO YEARS SINCE, THE UNCERTAINTY PERSISTS.

Kalyan Subramani



The irony of Brexit - the British vote to exit from the European Union (EU) - is that the establishment which had ordered it in 2016 did not foresee the victory of those who sensed the opportunity for Britain going alone by taking her out of the EU. The country now stands divided on the approach to adopt on the EU exit negotiations - on whether these should aim for a "hard" or "soft" Brexit.

Given India's special relationship with the UK, which continues through the forum of the Commonwealth, Brexit presents both challenges and opportunities for the former. However, India is now more intimately linked to the global economy than before and, as such, is not immune to its vicissitudes. The Indian economy has weathered the 2008 US financial crisis better than most, and, according to the World Bank, is expected to be the fastest-growing major economy in 2018.

The hard and soft routes

Any kind of cost-benefit analysis of the single most disruptive phenomenon for global trade requires considering the possible impacts of both hard and soft Brexits, as well as a look at the current course of British politics.

With the UK Prime Minister Theresa May's submission of the

Article 50 withdrawal notification on March 29, 2017, setting the countdown to Britain's actual exit on the same date in 2019, hard Brexit means leaving the EU quickly with no restrictions other than a new free trade agreement. A soft Brexit, however, would mean retaining complete access of capital with restricted access of people.

Widespread concern in the UK about an increase in refugees from the Middle East is at the heart of the Brexit issue. This comes on the heels of serious anti-globalising protectionist trends, as highlighted by the election of US President Donald Trump. In fact, the primary reason that people voted for Brexit was to regain the power to prohibit the influx of people.

Besides renegotiating unlimited EU immigration by the time Britain leaves in March 2019, both parties would have to reach an agreement on major issues like guaranteeing the status of EU citizens living in the UK, and vice-versa, work visas, which are currently not required, and the UK's wish to withdraw from the European Court of Judgment.

Britain also wants a customs union with the EU, which means they will not impose tariffs on each other's imports and levy common tariffs on imports from other countries. Also, the EU will require a cash settlement from the UK to meet existing financial commitments, which according to some estimates would be in the region of Euro (€) 50 billion.

The negotiations began a year after the Brexit referendum in

June 2016, and there has been an agreement on three issues - the rights of EU citizens and vice versa, separation payments by the UK and arrangements for the Northern Ireland border. Britain will cut short its transition period from EU membership and leave by December 31, 2020, three months ahead of the original schedule.



The prospect of Brexit, consequently, has put thousands of jobs under threat. British professional services multinational Ernst & Young (EY) recently reported that the UK is expected to lose 10,500 finance jobs by the time of separation in 2019. It also said that about a third of the firms in London had already confirmed their eventual relocating to the EU.

Losing a vantage position

The world's premier financial centre of London is apprehensive about losing its dominant status that has been built over centuries on the foundations of its imperial power. For long, Britain's capital has also served as the base for companies looking to enter the EU market. Brexit has already provoked many big firms to consider relocating to the continent. Multinationals like Citigroup, Morgan Stanley, Daiwa, Nomura, Sumitomo Mitsui Financial Group and Goldman Sachs have all announced their intent to shift some operations to the EU.

The prospect of Brexit, consequently, has put thousands of jobs under threat. British professional services multinational Ernst & Young (EY) recently reported that the UK is expected to lose 10,500 finance jobs by the time of separation in 2019. It also said that about a third of the firms in London had already confirmed their eventual relocation to the EU.

The huge uncertainty unleashed by Brexit and the difficult transition has turned into a dampener for growth for companies that operate

in Europe. American businesses are the largest investors in the UK with investments of nearly \$600 billion, and the UK has similar levels of stake in the US. The uncertainty over their future will be a drag on growth. The Japanese government has observed that a hard Brexit will result in its companies moving their EU headquarters out of Britain. According to analysts, Asian investors are likely to balance their portfolios by reducing the proportion of British assets.

And her former crown jewel...

Britain's strategy for the two years of transition is to negotiate bilateral trade agreements with enough countries to replace the EU, which is where India comes in with her special relationship.

The news of Brexit rocked the Indian stock markets, with the Sensex losing 1,091 points, before regaining to close lower on that day by 605 points. But analysts say the long-term direction of the Indian market is driven by fundamentals strong enough to withstand the shock of such events. They argue, instead, that with its strong

economic fundamentals and large domestic market, India is in a better negotiating position as the UK looks to strike up new trade agreements.

Meanwhile, with India being a major source of FDI for the UK because many Indian firms have used it as a gateway to Europe, Britain's exit now makes it a less attractive destination than before. On the other hand, the weakened pound makes the UK more attractive for travel, education or for imports. Market analysts are worried that the sudden increase in global risk aversion due to Brexit can impact the inflow from foreign portfolio investors to India.

Britain's strategy for the two years of transition is to negotiate bilateral trade agreements with enough countries to replace the EU, which is where India comes in with her special relationship.



Kalyan Subramani is a Bangalore-based writer who covered business for some of India's leading newspapers including Business Standard, where he was the London-based correspondent between 2008 and 2011. During this period, he reported on the recovery after the 2008 global financial meltdown, the transition of the UK government from Labour to Conservative-Liberal Democrat coalition, the Indian diaspora and businesses in the UK.

INDO-US RELATIONS – TIME TO UPGRADE

THE INDO-US RELATIONSHIP HAS NOW SAFELY NESTLED IN A BIPARTISAN ENVIRONMENT. THE FOSTERING BONHOMIE BETWEEN THE LARGEST AND OLDEST DEMOCRACIES IN THE WORLD HAS GROWN FROM STRENGTH TO STRENGTH THROUGH THE OBAMA AND NOW TRUMP WHITE HOUSE THAT HAS SEEN THE REPUBLICAN PRESIDENT IN FAVOUR OF INDIA'S INTERESTS. A FEW WRINKLES CONTINUE TO CHALLENGE THIS STRATEGIC PARTNERSHIP.

Ninad D Sheth

The two democracies are coming together economically with greater geopolitical interaction. They share values of democratic traditions, open sea lines of communications and free markets.

In late 2017, an Indian navy destroyer was refueled by an American oil tanker off the coast of Japan. This maritime cooperation best illustrates the distance the two countries have travelled from estranged democracies to emerging strategic partners.

The days of the Cold War, when the US viewed India from the Soviet prism, are long gone – today there is a fresh impetus in the relationship given the confluence of interest between the global superpower and the rising Asian giant.

The US is the largest supplier of weapons and dual-use technology to India and also sells the latest weapons like the top-of-the-line FH777 Howitzers and Apache attack helicopters. In 2016 the US had pumped in \$40 billion as

foreign direct investment into India, up 7x from 2014. India and the US are also major trading partners with \$ 75 billion in trade in 2016 and a \$ 24 billion trade surplus for India. Away from the limelight, intelligence-sharing between the two nations strengthens the anti-terror cooperation and helps in saving lives.

The two democracies are thus coming together economically with greater geopolitical interaction. They share values of democratic traditions, open-sea lines of communications and free markets.

Both countries are increasingly confronted by the rise of China. While both powers do not say this publicly, dealing with an aggressive China is increasingly the glue that binds Washington and New Delhi. This has not gone unnoticed. The Chinese President Xi Jinping gave PM Modi such a warm reception in Wuhan recently partly to address the imbalance caused by the warm India-US relations. Especially in light of the deterioration in the relationship between Beijing and Washington following the looming trade war.

In its latest strategy paper, the Trump administration declared India as a leading global power. From maritime cooperation to high technology weapons sharing as well as pushing for India's membership into the Nuclear Suppliers Group (NSG), the US is paving the way for a new kind of engagement on the world stage with India. The Trump administration has cut its foreign policy bureaucracy to size, especially the state department that has long held a condescending view of India and discouraged active engagement. For the new foreign policy establishment in the US, India is very much on the radar.

On her part, India, too, has demonstrated strategic commitment when it stood up to the Chinese in Doklam and a willingness to invest in defense and strengthen its armed forces. Rarely in history has there been greater convergence for the two countries. US tariff threats to China and curbs on H1B visa have raised concerns that the relation is back to square one. Far from it, transactional irritants, while significant, do not cloud the clear direction of a closer strategic connect between the two countries.

The bond between the two countries has gone stronger in the wake of President Donald Trump's cutting down of more than a billion dollars in military aid to Pakistan on the issue of Islamabad's terror infrastructure. If the US continues with the punitive action against Pakistan – including surgical intervention, as is possible – it will lift India's role in South Asia and provide a further impetus to the bilateral relationship.

Crucially, the people-to-people bond that goes beyond governments too has grown manifold. If you are an Indian startup in Bangalore, an American customer of silver jewellery, a soldier on the frontline or even an Indian student studying at one of America's great universities, this is a time of great cooperation. The Indian downloading an iPhone app or an American doing Yoga adds up to this relationship in important ways that go beyond what South Block or the White House can achieve.

In fact, with the Indian diaspora now being the wealthiest overseas group in the US, it is also increasingly vocal and has political clout that the previous generation of Americans of Indian origin did not have. Similarly, the US companies that are the leading foreign investors and job creators in India in industries and in services like software and manufacturing like aeronautics are very influential voices. This is the strongest unquantifiable link between the two great democracies of the world.

INDO-US RELATIONS - A TIMELINE

YEAR	WHAT HAPPENED?
1949	India's first Prime Minister Pandit Jawaharlal Nehru visits U.S. and meets President Harry S. Truman
1959	President Dwight Eisenhower is the first serving U.S. president to visit India
1963	US agronomist Norman Borlaug travels to India to begin testing high-yield wheat varieties that marks the beginning of the Green Revolution.
1978	U.S. enacts Non-proliferation Act. India refuses inspection
1998	India tests nuclear devices. Clinton administration imposes economic sanctions, required under U.S. law.
2000	President Bill Clinton visits India. Indo-US relations starts to get warmer.
2001	President George W. Bush administration lifts all remaining U.S. sanctions imposed after 1998.
2005	Energy Security Dialogue starts.
2008	Landmark Civil Nuclear deal concluded.
2010	U.S-India Hold First Strategic Dialogue under the Obama Administration.
2014	Prime Minister Narendra Modi makes his first visit to the US
2015	President Obama makes his second visit to India with the message "America can be India's best partner." PM Modi Tours Silicon Valley followed by UN General Assembly meeting in New York
2016	Prime Minister Modi addresses a joint session of US Congress.
2017	Prime Minister Modi meets President Donald Trump

Top US Trading Partners – as of December 2017

Rank	Country	Exports	Imports	Total Trade	Percent of Total Trade
1	China	130.4	505.6	636	16.40%
2	Canada	282.4	300	582.4	15.00%
3	Mexico	243	314	557	14.30%
4	Japan	67.7	136.5	204.2	5.30%
5	Germany	53.5	117.7	171.2	4.40%
6	Korea, South	48.3	71.2	119.4	3.10%
7	United Kingdom	56.3	53.1	109.4	2.80%
8	France	33.6	48.9	82.5	2.10%
9	India	25.7	48.6	74.3	1.90%
10	Italy	18.3	50	68.3	1.80%

Source: <https://www.census.gov>

work permit for spouses of H1B Visa holders, that is likely to affect around 60,000 Indians in the US.

The US has allowed the generalized system of preferences to lapse; this allowed duty-free access to 3,500 types of products into the US. There are deep differences on the Intellectual property, and many Indian firms fret that they are discriminated in market access. There is also the issue of the trade deficit, with the US threatening a trade war.

There is also a trust factor with the Americans that is harder to overcome on the foreign policy front. This manifests in dealings with Afghanistan or in military exchanges, such as the **ongoing** military exercises on flagship Malabar, where India still does not share codes of communication with the US fleet. Only greater continuous engagement will build long-term confidence and trust between the two powers.

On its part, the US perceives the India story far from done. For India to truly emerge as a partner in whom the US can invest large-scale political and economic capital, she must show a growth rate of at least 8% over the next decade. The truth is that for India to be taken seriously on the world stage her economic project is still considered work in progress. If the GDP growth falls to below 8%, India can at best be middle-ranked power and the US may lose strategic interest in it.

The transaction trap

However, for all the positives, the relationship between the two is far from strategic. In fact, it remains transactional based on piecemeal deals and deep differences in approach to the common good. In essence, the relationship is hostage to the US president's whimsical foreign policy. For one thing, India has had issues with market access to the US. The proposed H1B Visa system revision could hit Indian software firms hard. More recently, the Trump administration said it is also considering withdrawal of

This trust deficit needs to be urgently overcome.

Continuous engagement will build long-term confidence between the two powers.

The road ahead

The time for an incremental change and small steps leading to greater trust is running out for both countries. China's emergence is just one factor. The instability generated by Islamic terrorism, dissonance created by technological disruption and the need to put on a united front to take on global challenges may force the hand of both countries to overcome nagging suspicions that hold them back.

India must be more receptive to taking a leadership role and this may mean a military partnership with the US beyond Indian shores. For its part, the US has to take a leap of faith and nurture India's growth, support its economic structure and ease trade restrictions for a win-win partnership. Perhaps, both countries should take up mega next-generation projects in defense, in manufacturing, and in agriculture. Signature projects that lead to

breakthroughs could well pave the way for the future. Last time it was American help that created the Green Revolution.

This time around India could partner with the US in high-visibility projects like defence, infrastructure, and technology projects that could take this most important relationship in the free world to another level.

One interesting template that India and the US can follow is to develop the bilateral relationship on the Japan-US model. This, however, will call for flexible diplomacy from both sides. Japan had been defeated in the Second World War and could be modulated towards an alliance with US bases and American protection.

That will not happen in the India bilateral. However, with diplomatic initiatives, by developing partnership in their respective armed forces and aligning their diplomatic stances the Tokyo-Washington template can give New Delhi and Washington India is going in for a massive "Make in India" program. This is an opening that the US

India is going in for a massive "Make in India" program. This is an opening that the US could leverage to take the strategic relationship to the next level. Two projects offer scope for transformation here. India is looking for technology to build its own aircraft carriers. The US has the technology - as well as old carriers - that can be sold to India with technology transfer.

The other opportunity is in the development of aircraft engines. India's own project with the Kaveri engine has stalled. She does not

have an engine for the LCA - which currently flies on a US GE 404. If the US comes forward - beyond a transactional approach - with technology for an engine for a new generation of the LCA, it could well poise the India US relationship beyond current tactical constraints.

The key for these partnerships is in providing India access to American technology and personnel for its core defense needs, and in line with American generosity of technology sharing. This will call for bold statesmanship in New Delhi and Washington.

So, the three positives to improve the India-US relationship are: a) defense relationship to be brought much closer, the sharing of advance technologies; b) US supporting India in international forums; and c) work on business to business realignment that catalyze the relationship to a more strategic level.

It is time for both countries to be ambitious as the international security imperatives call for them to realign their interests and cross the fault lines for the larger good of the global democratic order.



Ninad D. Sheth is a New Delhi-based regular contributor to Nikkei Asian Review.

AFRICA — A LONG OVERDUE PROMISE

AFRICA AS A MARKET HAS FALLEN SHORT OF WHAT THE WORLD EXPECTED IT TO BE. WHILE THE CHALLENGES AND THE REASONS BEHIND THEM MAY BE OBVIOUS, THE SOLUTIONS ARE NOT.

Rajiv Wahi





What has happened to the promise that Africa offered for global business? The answers are of keen interest to India for specific reasons. One of these is rooted in the shared similar experience of decolonisation, while the other is India's closeness to Africa because of historical and cultural ties, separated by only the Indian Ocean, which has facilitated contact for centuries.

The third and most compelling reason at present is the need to increase bilateral trade and investment especially against the backdrop of China's impressive economic inroads into Africa, that has brought consequent political leverage in the continent for Beijing. India's pursuit of economic diplomacy with Africa has led to the institutionalisation of the India Africa Forum Summit of leaders that is held every three years.

All talk of Africa's untapped potential and about the failure, so far, to realise it, ultimately centre around the continent's inability to industrialise, while its natural resources continue to constitute the bulk source of earnings.



Untapped for too long

All talk of Africa's untapped potential and its failure to realise it ultimately centres around the continent's inability to industrialise, while its natural resources continue to constitute the bulk of its earnings. Figures show that Africa is currently less industrialised than it was around 40-45 years ago in the period post decolonisation. According to the UN Economic Commission for Africa, the contribution of manufacturing to Africa's gross domestic product (GDP) declined from 12% in 1980 to 11% in 2013, a level around which the continent has been stagnating since then.

The Chinese demand for natural resources to feed its industries led to a boom in commodity prices which triggered rapid economic growth in Africa in the 1990s. This, however, did not help revive African manufacturing as most of the profits were spent on unproductive expenditure. Now, commodity prices have fallen with the recent slowdown in China, leaving Africa vulnerable to the consequences of dismal industrialisation and the vagaries of commodity-driven economic cycles.

Experts point to the continent's poor infrastructure such as roads, ports and electricity as a key cause of the situation, which brings up the question of policies and the responsibility of African governments for the way things have come to pass.

The problems within

What looms large before the observer at this juncture is Africa's contemporary history, dotted with unending civil strife and terrorism, where the large volumes of aid coming from international donors often provide a reason for groups to take up arms to capture the state apparatus and gain control of the aid inflows.

The long-standing Boko Haram insurgency in Nigeria impacting Africa's largest economy, the civil wars in Central and North Africa, or the troubles in Egypt, all illustrate instances of how conflicts put the brakes on economic growth.

The effectiveness of government policies is blunted by the pervasive corruption that has taken root in some African countries. According to a recent survey by Transparency International, many African governments are unable to meet their citizen's expectations owing to rampant corruption.

A recent report prepared by NGOs working in Africa said international aid sent in the form of loans serves only to contribute to the continent's debt crisis, fuels corruption, and is at times even provocation for rebel groups to take up arms to seize control over the distribution of foreign aid.

Aid in Africa serves many functions, according to researcher Ravinder Rena, who elaborates on its double-edged uses through a

Major Exporting and Importing Countries in 2016-17

Top Five Countries of Export	Total Exports (in US\$ mn)	Top Five Countries of Import	Total Imports (in US\$ mn)
South Africa	3554.42	Nigeria	7659.48
Kenya	2198.63	South Africa	5813.53
Egypt	2071.85	Angola	2596.49
Tanzania	1786.22	Ghana	1938.54
Nigeria	1771.34	Botswana	1307.39

Source: Department of Commerce, Government of India

case study of Namibia. He writes that aid can be used, for instance, "to strengthen a military ally, to reward a government for behaviour desired by the donor, to extend the donor's cultural influence, to provide infrastructure needed by the donor for resource extraction from the recipient country, or to gain other kinds of commercial access".

The continent provides numerous instances of over-dependence on foreign aid with expensive preconditions that increase the rate of defaults and deepens the debt crisis, while the interest in such cases is charged in the form of raw materials. The NGO Health Poverty Action gives an insight into this vicious cycle in which Africa has been trapped as donors use their clout to extract natural resources leaving the continent at a net loss.

"While \$134 billion flows into the continent each year, predominantly in the form of loans, foreign investment, and aid; \$192 billion is taken out, mainly in profits made

by foreign companies, tax-dodging and the costs of adapting to climate change. The result is that Africa suffers a net loss of \$58 billion a year," the Health Poverty Action report said.

Another study showed Africa loses nearly \$60 billion a year through tax evasion and the repatriation of profits earned by foreign multinationals. It said while Western countries send about \$30 billion in development aid to Africa every year, more than six times that amount leaves the continent, mainly back to the same countries providing that aid. It also pointed out that African governments spend \$21 billion a year on debt repayments.

What stands out in this situation is that many African countries lack proper democratic systems of governance, which is also a constraint in them in taking an independent stand on policies for fear of dictates and conditionalities of the West.

How much of protectionism?

According to the UN Economic Commission for Africa, African countries should legitimately pursue “smart protectionism” as practised by the developed economies of the West within the multilateral framework of the World Trade Organisation (WTO), basing its suggestion on the fact that “all countries that have industrialized started with degrees of protectionism.”

Following the British vote to leave the European Union (“Brexit”) in 2016, the WTO reported that there is a rapid increase in trade-restrictive or protectionist measures by the world’s leading economies that make up the G20 group – a trend that has accelerated following the election of US President Trump last year and his moves like withdrawing from the Trans Pacific Partnership (PPP) trade agreement and the Paris accord to tackle climate change.

In fact, unfair trade strategies have figured as a major brake on African development. The US and the European Union are among the leading economies protecting key industries that Africa could compete with, like agriculture, for instance, by the breakdown of the WTO ministerial talks in Argentina following America’s veto on the stand of India and other developing countries on public food stockholding.

India - Africa trade relation in numbers

	Export	Import	Annual growth rate of total trade (%)
2010-11	15,727	26,062	34.71
2011-12	19,980	36,648	35.51
2012-13	23,461	34,387	2.15
2013-14	25,785	31,518	-0.94
2014-15	27,130	34,569	7.67
2015-16	20,432	28,774	-20.25

Trade figures in USD (\$) Billion
Source: Ministry of Commerce, Government of India

Another key problem is inadequate skills and knowledge, which cripples the economy for the lack of skilled labour. Making an impassioned plea for African nations to invest in science and technology, a former deputy governor of the Nigerian Central Bank, Kingsley Moghalu, wrote: “Africa has fallen behind because its people, despite their historical abilities in science, have not done this in an organised manner. The more the Western world was able to invent and innovate in the past 300 years, the more ‘civilised’ it became. And as Africa, in comparison, remained closer to nature and was dominated by natural phenomena, the more ‘primitive’ and backward the continent seemed.”

By 2050, more than half the world’s population increase will

come from Africa. That same year, one out of every four people on the planet will be an African. The continent will add 1.3 billion people over the next few decades and is likely to be the only region where population will continue to grow beyond 2050.

While feeding this growing population is a challenge, it must be remembered that Africa is blessed with large tracts of arable land, fertile soil and ample water that can potentially make it the world’s bread-basket. And this can be achieved through rapid farm mechanization, leading to higher farm productivity.

...while Western countries send about \$30 billion in development aid to Africa every year, more than six times that amount leaves the continent mainly back to the same countries that provide the aid.

Lack of access to the sea is a geographical handicap for some African countries. However, landlocked Rwanda and Ethiopia are the two success stories in the continent, even though they were affected with the secession of Eritrea – Ethiopia lost its coastline and the Rwandan economy felt the tremors.

India is the biggest investor in land in Ethiopia, with Indian companies accounting for almost 70% the land acquired by foreigners after 2008. This has also invited charges of exploitation, displacement, and hardships Ethiopia's population is undergoing, as their lands are either given away or leased at throwaway prices to foreign firms. A recent study found

that foreign investors are farming less than 8% of the land they have acquired.

Total trade between India and Africa increased almost five-fold between 2005-06 and 2015-16 and stood at \$ 54 billion at the end of the financial year 2016-17.

Unifying the entire continent as a single market may remain a pipe-dream for a long time to come. That said, it is also difficult to miss the bitter irony that Africa has become – the cradle of civilization that is yet to join the league of economic superpowers both in the West and Asia. With a sixth of the people on this planet living in the continent, the speed of economic progress in Africa may no longer be just a desire but a necessity.



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CHINA'S OBOR AND INDIA'S OPTIONS

OBOR IS THE UNDOUBTEDLY THE MOST AMBITIOUS ECONOMIC DEVELOPMENT PROJECT EVER, COVERING 65% OF THE WORLD'S POPULATION. WHAT ARE INDIA'S OPTIONS WITH QUAD?

Ninad D. Sheth

In January 2017, the world marvelled as a train chugged 12,000 kilometres on three different gauges from Yiwu in Zhejiang province of central China to London. **The old silk route between Europe and Asia was suddenly – and literally – back on track.**

Global geopolitical plate tectonics are shifting again. As the story of China's peaceful rise gives way to a push for aggressive global dominance via the One Belt One Road (OBOR) initiative, it is witnessing a concurrent pushback.

America – the reigning 'empire' – is not about to give up. It is reviving an old idea – that of maritime democracies acting in a strategic concert to take on a totalitarian and expansionist China. This has resonance in India, Japan, and Australia, who are seemingly willing partners to form a quadrilateral grouping (Quad).

Yet, the Quad cannot be called containment. China is no inward-looking Soviet Union; it is arguably the most integrated economy in the world, one whose growth of 9% a year for 20 years has no equal. India has made clear its opposition to OBOR (also known as Belt and Road Initiative) at a recent unofficial meeting in the picturesque Wuhan city of central China between India's Prime Minister Narendra Modi and the Chinese President Xi Jinping, and shown little sign that it is scaling down on the Quad. For its scale, the OBOR initiative too is unrivalled and poses a serious challenge to world order.

When done, this \$1-trillion plan will straddle the world with China at its centre. It revives the trading silk route of yore with China as the Middle Kingdom. The investments include ports, airports, roads, factories power plants, sea lanes, and highways – backed by Chinese loans and project execution expertise. This is the Marshall Plan for the 21st century.

Much of the promise of the OBOR remains in the future, its terms of trade

shrouded in secrecy, its benefits to recipients in terms of return on investment hard to quantify.

Yet, in January 2017, the world marvelled as a train chugged 12,000 kilometres on three different gauges from Yiwu in Zhejiang province of central China to London. The train carried Chinese goods such as crankshafts for automobiles, toys and sheep skin wallets, and British and European goods including cheese, wine, and luxury brands. The old silk route between Europe and Asia was suddenly and literally back on track.

Ironically, this integration with the rest of the world could spur the Quad. China now runs unpopular and ultimately unsustainable trade deficits with the four interested parties. In 2016, its trade imbalance with the US was a mind-boggling \$347 billion (nearly a billion dollars a day). With India it was \$53 billion while with Australia nearly \$30 billion and with Japan \$47 billion.

Altogether the Quad has about half a trillion dollars of trade deficit with China every single year. Add the geopolitics to this economic mix. Wherever Chinese aid goes, its workforce and military follow. In the Horn of Africa, OBOR's critical pivot China helped finance a port in Djibouti in 2017, it set up the first overseas military base there. Similarly, in Pakistan, the port of Gwadar developed by Chinese loans and engineers is being developed as a permanent Navy base. The

The Quad could be the biggest challenge for China. It has to first define its purpose and calibrate its capabilities.

tensions with India over the long-disputed border and with the US for global dominance with Australia over fears of economic sovereignty and historic stress with Japan all come together to script the Quad counter-narrative.

Given these facts, how does the Quad stack up to OBOR? The Quad could be the biggest challenge for China. For that, however, it has to first define its purpose and calibrate its capabilities. The Quad countries first came together in 2004 for Tsunami relief operations. In 2007, Quad was crystallized as a military arrangement for the first time when the navies of Japan, Australia, the US, India, and Singapore held a big-scale exercise – the Malabar – in the Bay of Bengal. However, the very next year China's protests worked against the grouping when first the US and then Australia toned down the agreement, leaving it dormant for a full decade.

This has been the lost decade for the free world's maritime democracies. China inched ahead

by forming bases distributing debt, putting in infrastructure and deepening political ties in central Asia, Africa, and West Asia and then formalized this into the OBOR initiative.

Now, a full decade after the last aircraft carrier turnaround from the Bay of Bengal during the Malabar exercises in 2008, the idea is back on the table. For the Quad to succeed, it would be best to begin small. The scale of the Malabar in 2018 is unprecedented, and includes US Navy's nuclear powered mega aircraft carrier USS Ronald Reagan (CVN 76), the Indian Navy's flagship Sahyadri, a Shivalik-class stealth multi-role frigate and the biggest ship in the Japanese Navy the JS Hyuga a helicopter carrier. This is as good as any beginning and much more than China may have calculated. India has deferred Australia's participation this year to placate China but the Navies can come together at any time and a revival is well on the way.

While China has been dominant in Africa with OBOR projects worth \$20 billion and overseas base to the South China Sea with its aggressive territorial claims, it cannot match the Quad in strategic depth and spatial outreach.

There are factors that could derail the Quad. President Trump's isolationist tendencies are making partners and allies nervous. If America is perceived as tentative on the Quad, it could derail this partnership again.

Then, Australia, with its heavy economic dependence on China, could again chicken out of the arrangement. India, too, has a trust deficit with the other members, and as an example does not share naval codes when big exercises take place, thus limiting the capability of the navies to act in concert. China, thus, has good reason to believe that internal contradictions will derail the Quad.

On their part, the Quad has good reason to believe that China can be successfully countered. For one thing, China has picked up too many quarrels, from the Indian border to the maritime contests in the South

India-China Bilateral Trade

	Import from China	Export to China	Deficit
2013-14	51	14.8	36.2
2014-15	60.4	11.9	48.5
2015-16	61.7	9	52.7
2016-17	61.3	10.2	51.1
2017-18*	63.2	10.3	52.9

Trade figures in USD (\$) Billion

Source: Ministry of Commerce, Government of India; *Data are for April 2017- January 2018

China Sea; it has simply too many disputed parties at once. What is more, a lot of the OBOR projects are at an average interest rate of 6.5%. In contrast, the Japanese interest rate for the Indian bullet train project is, for example, at just 0.01%. So, the bare truth of OBOR is that it is no foreign investment – it is just a cumulative loan instrument.

Another drag for the OBOR is that some of the capacity simply has no trade happening as airports in Sri Lanka and deep-water ports in Myanmar, as well as road links in Africa, are unlikely to be

commercially viable for decades to come. It is critical to understand that with OBOR both China and the host countries are taking a credit risk which could go bad – though for China there is an added geopolitical advantage.

Finally, the Quad has the advantage of the US dollar as the global reserve currency: Despite China's best efforts through the OBOR, its financial system will remain too restrictive in the foreseeable future for the Renminbi to emerge as a contender. Without that, China's \$3 trillion hoard of

foreign reserves cannot match America's hold over the global economy.

Thus, OBOR vs Quad is the story of our times. Often, geopolitics is seen from the metaphor of chess, where one party can checkmate the other. Here, though, it would be more instructive to use the metaphor of the great Chinese game of Go – where the objective is of surrounding a larger total area of the board with one's stones than the opponent – except in this game the board is the whole world and the stakes have never been higher.



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PERSONAL TRANSPORTATION — ARE WE THERE YET?

PERSONAL TRANSPORTATION IN VEHICLES FIRED BY FOSSIL FUEL IS PERHAPS CLOSER TO ITS GRAVE THAN MOST LIKE TO BELIEVE. AND WHAT WILL REPLACE IT IS NOT JUST A THEORETICAL DISCUSSION ANYMORE. NEW AND EXCITING OPTIONS ARE EMERGING WITH GREATER FREQUENCY THAN EVER BEFORE. BUT ARE WE THERE YET?

Muralidhar Swaminathan







New developments in battery technology, higher installed capacities and the progressive reduction in the cost of manufacturing **Lithium-based batteries will enable EVs to gain momentum starting from the middle of the next decade** according to some projections.

“Over the last two centuries, the pace of change became so quick that the social order acquired a dynamic and malleable nature. It now exists in a state of permanent flux.” – From *Sapiens - A Brief History of Humankind*.

Author Yuval Noah Harari’s description of the change in the social order and the consequent change in the outlook of the average urban dweller is more apt today than ever before. Huge jumps in progress driven by science and technology are so embedded in our psyche that there isn’t even a creeping doubt about the plausibility of science fiction becoming tomorrow’s reality.

HG Wells and Isaac Asimov wrote stories that entertained readers, but neither the authors nor the readers were believers. Today’s stories, however, are rooted in a reality that is strongly expected to arrive soon. Tech announcements that sound futuristic have often already been tested and ratified in the laboratory. So, going mainstream is just a matter of when not whether.



But our collective aspiration has also moved on further and **today we are ready to believe in even more futuristic mobility concepts** like the Hyperloop, flying taxis, supersonic passenger jets and self-navigating ships.

The problems within

After the saturation of innovation in the personal communications space, the one industry that is really seeing a flood of new tech is personal mobility. This is a sector that deeply affects all of us, and new technologies capture the popular imagination like no other.

The last few years have seen the most investments flowing into future

vehicles that the automotive industry will be making. We have already absorbed and taken for granted that the future belongs to electric and self-driving cars, and even public transport is expected to replicate these models.

But our collective aspiration has also moved on further and today we are ready to believe in even more futuristic mobility concepts like the Hyperloop, flying taxis, supersonic passenger jets and self-navigating ships.

There is more to it than just plans on paper. Dubai's Roads and Transport Authority, for example, had partnered with Richard Branson's Virgin Hyperloop One to launch Hyperloop by 2020. Similarly, in India, more progressive states like Andhra Pradesh are already in talks with technology providers to bring Hyperloop to the country.

Instant gratification is the credo of today's internet generation. And there is an unending desire to speed up our lives and the need to employ the aids that help us achieve that goal. The point to note here is, however, the way industry is able to bring science to help meet our needs.

Drone deliveries are here already and transmitting emotions online is up next. In the automotive space, electric supercars are setting the pace for this generation. Tesla, for example, recently announced that its next-generation electric Roadster will be capable of mind-blowing

acceleration, doing the standard 0-60mph run in 1.9 seconds, on the way to reaching a top speed of 250mph. That is faster than the fastest supercar of today!

Simultaneously, Tesla also announced an all-electric heavy-duty truck called 'Tesla Semi', that could eventually be the future of trucking and even self-driving tech in commercial goods movement.

The transformation in mobility is not going to be limited to personal transportation alone. Though the internal combustion engine may have still offered development options that could have allowed out-of-the-box ideas and solutions, the advent of electric motors and drivetrains has suddenly thrown up remarkable flexibility in creating deliverable futuristic mobility solutions.

So, while Hyperloop is now a believable, imminent solution for rapid intercity travel, there are a number of other similar electric and battery-based models for small-sized public transportation, like the ones built on maglev (magnetic levitation) that are being planned.

Solutions like the intracity elevated monorail pods currently in design stage show that a compact public transport system can be built quickly with the least disruption to the existing infrastructure in crowded cities. But, electric vehicles (Evs) – self-driving cars or otherwise – will be the transport of choice in the next 30 years.

It is highly unlikely that half the world's population will be driving or commuting in an electric vehicle sometime within the next two decades. **But, what is undeniable is the way the concept that electrics are the future has taken hold in the minds of the masses.**

EV – the likely future

The concept of electric mobility has gained momentum and has moved into the mindspace of the urban population. EVs have already leapfrogged from being technology demonstrators to potentially becoming the inevitable choice of transport for the 21st century.

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The recent VW diesel engine scandal, the rising incidence of smog in cities across the world and, to a lesser extent, a self-motivated urge to go green amongst consumers have led to a growth in awareness about the advantages of electric vehicles – both private and public. But, the future mass adoption of electric vehicles will still depend on multiple factors, including legislations and incentives.

A recent study done by consultants Roland Berger and Lazard outlines the factors that will influence 'powertrain electrification adoption' in the three major emerging markets for EVs currently – US, Europe, and China).

The Global Automotive Supplier Study 2018 mentions that the Total Cost of Ownership (TCO) advantage over ICE (internal combustion engine) vehicles, the evolution of fuel and battery prices, and taxes and incentives will be the big factors that will drive EV sales in the next decade.

EV will trot, not gallop

It is an oft-repeated quote that historically the cars came first, and the roads followed. With Evs, the same observation could be turned around and applied to the charging infrastructure (the current lack of it). But the pace at which new EVs are being developed or have been planned makes it seem they would even arrive ahead of demand kicking in.

More than 100 new EVs have already been planned for rollout within the next five years. And optimistic projections for total EV sales globally by the year 2020 put it at 8 million, which will still be less than 10% of total car sales.

Some of these confusing signals are the reasons why there has been a lot of uncertainty about the immediate future of EVs. But traditional car manufacturers, who are under pressure from their boards and shareholders to perform, and overenthusiastic governments, who are under pressure to convince their vote banks that they are progressive, proactive and responsive to the needs of citizens, are making sales projections for EVs that represent a gallop, when the reality shows that it would only be a trot in the near future.

But an electric changeover is inevitable. Multiple agencies and manufacturers expect the cost of an EV to fall dramatically and achieve parity with conventional fuel cars by 2030. New developments in battery technology, higher

installed capacities and the progressive reduction in the cost of manufacturing Lithium-based batteries will enable EVs to gain momentum starting from the middle of the next decade, according to some projections.

In the run-up to the mass adoption of EVs, the culture of mobility is already seeing a rapid change. Attitudes amongst millennials and the post-millennial population have already changed to a point where car ownership is no more as aspirational as it was to the older generation. Business for cab aggregators is booming and carpooling and adoption of modern public transport is witnessing unprecedented acceptance. The enduring hope for the global automotive industry will be that EVs will fire up people's imagination to a point of making driving and personal mobility aspirational again.

The P1 was the first car designed by Ferdinand Porsche, the founder of German luxury and sports car brand Porsche. It was an electric coupe that hit the streets of Vienna in June 1898. Ludwig Lohner, the owner of the firm that commissioned Porsche to design the octagonal electric motor and battery setup for the P1, felt strongly that the age of the horse-drawn carriage was over and that the electric car was the future.

A 119 years after the P1 made its debut, the electric car is back with a bang, for a completely different set of reasons. Though the mode

of transport it portends to replace looked and drove similarly, the electric car has returned to put us again on the cusp of what seems like a revolution in the automotive industry.



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WHERE IS INDIA'S E-COMMERCE HEADED?

K Ganesh

UNLIKE THE DOTCOM BUBBLE SEEN NEARLY TWO DECADES AGO, THE E-COMMERCE SPACE, DESPITE THE MANY FAILURES, STILL HOLDS A LOT OF PROMISE.





India's internet user-base of ~ 500 million is larger than the population of most countries (except China) and, even some continents. In addition to the massive base, investors and industry observers from around the world are amazed at:

- a the dramatic rise in new internet users month-on-month (about 5-6 million being added every 30 days);
- b the still fairly low penetration of e-commerce as compared to other markets like the US (266 million / ~80%) or even China 650 million / ~50%); and
- c the actual transactions unlike the earlier dotcom days of 15-20 years ago when eyeballs didn't translate to actual transactions, which led to thousands of businesses going belly-up.

On the other hand, India is going digital in a big way and consumers going online is a wave that has already started. For example, digital payments are increasing, thanks to the demonetisation drive of 2016 by the government.

Telcom companies like Reliance Jio are making mobile internet and smartphones affordable for the masses. Crashing cost of data and better connectivity along with affordable smartphones augur well for online transactions to take place and e-commerce businesses to flourish (in theory).

To capitalise on this opportunity, however, one needs to have ongoing capital, scale, technology and huge execution capability. However, the basic infrastructure (power, water, transportation, reliable logistics, reverse logistics etc.) that one would take for granted in other world markets does not exist in India.

While the opportunity is huge, everyone cannot play in this field. So, will e-commerce in India have only a handful of players in the years to come and will mortality of e-commerce continue to remain high?

It is important to realise that horizontal e-commerce is only one portion of ecommerce, and in India will be dominated by a handful of niche e-commerce players –

...It is important to realise that horizontal e-commerce is only one portion of ecommerce, and in India will be dominated by a handful of niche e-commerce players – **perhaps three or four, not just two players – and in multiple verticals.**

So, we are in many ways just seeing the beginning of the e-commerce phenomenon in India. And despite all the front-page news, consolidations, funding, valuations, up-rounds and down-rounds, we have barely scratched the surface in terms of percentage of people shopping online and penetration of e-commerce amongst the masses.

The opportunity is huge, given the brick-and-mortar model has inherent challenges in India to scale and be viable over medium and long term, what with high rental costs, poor infrastructure, high utility costs, major brands and organized retail primarily focussing only on metros and tier-I cities and lack of viable business models?

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perhaps three or four, not just two players – and in multiple verticals.

India is not homogenous, and catering to diverse tastes, geographies, culture cannot be done by one or two players. We have seen this across brands and industries. In 2017, one of the biggest developments in the Indian e-commerce space was SoftBank's investment of a whopping \$2 billion in Flipkart. In 2018, American retail giant Walmart acquired Flipkart, valuing the Indian e-commerce company as much as \$20-22 billion.

Obviously, all this is fantastic for Flipkart, which has added a strong, deep-pocketed investor like Softbank onto its cap table. Softbank's success with Alibaba will ensure that it will continue to back Flipkart. Having deep-pocketed investors with a large appetite is crucial for sectors like horizontal e-commerce, and this is all the more

so when you are competing with the likes of Amazon with a huge war-chest for India.

This investment is also great for the Internet space as a whole in India, which has huge headroom to grow. We have only scratched the surface with the first 30-50 million serious users despite nearly half a billion internet users. The depth in the Indian market is huge and would come from spread of Internet amongst tier-II and III cities, mobile internet, commerce through messaging, vernacular language adoption, etc.

But all of this requires large capital deployment, changing consumer behaviour, incentivising users, removing all the infrastructure challenges and overcoming lack of established logistics, supply chain and other bottlenecks. The fact that the world's leading investors are bullish

and betting on this market means India will get to see world-class service levels in the coming years for the consumer. It will mean more employment and better digital infrastructure to support these transactions.

This latest investment is also very positive for investors in general. Most of the sceptics who had huge reservations on whether Indians will buy online, will credit card be accepted, lack of trust, low PC penetration, a large non-English-speaking population, have been silenced on multiple counts.

Developments have shown that millions of people are transacting every day, be it through cash-on-delivery or the payment-wallet option that local stores are offering. More and more people are accessing and consuming Internet on mobile, too.

A key question for investors to



ask is if there are well-entrenched players like Flipkart or Amazon, what are the other opportunities? There are certain sectors like horizontal e-commerce, wherein the leaders have already emerged, lots of capital has gone in and scale has been built. To put money behind new players will be tough. This applies to certain vertical sectors too such as grocery, furniture etc. That boat has already sailed, unless investors would like to participate in upcoming funding rounds of the key players here.

Outside most of these areas, however, there are still open opportunities for investors to back. The Indian consumer is hungry for brands, and there are lots of sectors where there is very little availability of standard and reliable brands that consumers can shop. Sectors such as wellness, nutrition, health foods are almost completely unaddressed and need special sector and domain focus. These are unlikely to be catered to effectively by horizontal players.

Also, there are businesses

where it is not a clear winner-take-all market and investments will likely flow to several companies as each of these can build a valuable business depending on the sector. For example, in the traditional sectors – hospitals, schools, etc. – which are not winners-take-all businesses.

For e-commerce entrepreneurs, there are also plenty of opportunities (outside horizontal e-commerce). There are enough large niches available where businesses can be built to scale and can attract venture capital. We are seeing this in sectors like grocery, jewellery, furniture and fashion.

Entrepreneurs will have to ensure that the niche is large enough to attract funding, and that they can scale and monetise in 5-10 years' time. Otherwise, the business will remain a lifestyle business, and there's nothing wrong with that; these can also be very rewarding and fulfilling for the entrepreneur.

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How much is too much? Or, knowing what to focus on

There are many causes why startups fail. It is accepted fact that the infant mortality rates in the startup space are anywhere between 80% and 90%, with about 10-15% managing to survive and continuing and just about 5% making it big and monetising.

In many cases we have seen overfunding can definitely lead to eventual failure. If you take the global scenario, Webvan is a good example as it burned through a lot of money focusing on things that ultimately did not matter to the consumer and did not enhance the business model/proposition.

In India, we have seen in 2014 several startups getting funded (not just series A, but also series B), burning through money trying to scale well before any model has been established, the product market fit was proven, or strong foundation laid. Housing.com, hyperlocal delivery companies like Peppertap and Tinyowl are some examples.

This is not unique to a sector or geography but it's more prevalent in B2C business models or where there is a hurry to establish a

brand or do a land grab before everyone else. (This is also likely to be less in B2B businesses and services business which can scale modularly).

There are several reasons why having cash can be a double-edged sword: You cannot fund your way through a broken business model. You need to crack the code and get the product market-fit right before going all out.

The company may be trying to work towards the next round of funding, trying to hit metrics and numbers for raising the next round at higher valuation – rather than focusing on the core business model.

This can also lead to complacency that large funding sometimes provokes: lack of discipline, lack of focus, trying the 'Spray and Pray' approach since you

have the money to be able to do it. Competitors then run away with the game due to their strengths – better product, innovation, reach, funding and a substantial head start. This is especially true in categories where there cannot be too many players.

For instance, in the recent Jawbone case: the wearables market is very tough with several players – Fitbit, Samsung, even Apple. So unless you have a solid, clear differentiator, reason for existence, no amount of funding will not save you.

The solution is not to raise money or even raise a larger amount than originally planned but focus on how to use it. Lock it up and use it first to prove the model, build a proposition, try different experiments at smaller costs, see what works and then use the money to scale – don't reverse the order.

Entrepreneurs will have to ensure that the niche is large enough to attract funding, and that they can scale and monetise in 5-10 years' time.



K Ganesh is a serial entrepreneur and partner at GrowthStory, a venture-builder platform.

BRIGHTER FUTURE AWAITS A BETTER UNDERSTANDING OF AI

AI WILL CREATE
2.3 MILLION JOBS IN 2020
WHILE ELIMINATING
1.8 MILLION

Kamlesh Bhatia





The most calamitous warnings of job losses confuse AI with automation, that overshadows the greatest AI benefit.

AI augmentation, which is a combination of human and artificial intelligence, complement each other.

The hype surrounding Artificial Intelligence (AI) and associated technologies is palpable. Media and industry pundits are labelling AI as the silent job-killer – out to get every job and position and in turn create a society that is ‘self-managed’ and ‘human-less’. This has sparked a public debate on the future of jobs as we know them.

Gartner believes 2020 will be a pivotal year in AI-related employment dynamics as AI will become a positive job creator. To fully understand the impact of AI on jobs, we must first have a good understanding of what exactly is Artificial Intelligence.



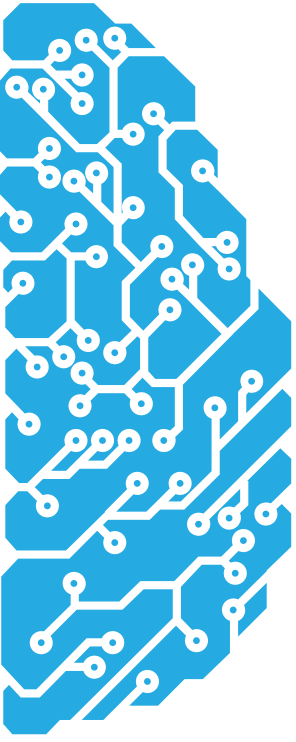
SO, WHAT EXACTLY IS ARTIFICIAL INTELLIGENCE?

AI is a combination of advanced technologies in varying degrees of maturity. Some have been around for decades, while others are relatively new. Many are rapidly evolving, in part due to recent hardware and software breakthroughs. In current popular cases, AI refers to systems that change behaviours without being explicitly programmed,

based on data collected, usage analysis and other observations. These systems learn to identify and classify input patterns, probabilistically predict, and operate unsupervised.

In most current implementations, AI relies on deep neural networks (DNNs) as a critical part of the solution. The DNN converts complex inputs such as images, video or sounds into data that can readily be processed and acted upon by conventional programming solutions, which is at the heart of today's AI resurgence.

POSSIBLE SCENARIOS FOR EMPLOYMENT GROWTH



The number of jobs affected by AI will vary by industry. Through 2019, healthcare, public sector, and education will see a growing job demand, while manufacturing will be hit the hardest. Starting in 2020, AI-related job creation will cross into positive territory, reaching two million net new jobs in 2025.

Many significant innovations in the past have been associated with a transition period of temporary job loss, followed by recovery, then business transformation, and AI will likely follow this route. AI will improve the productivity of many jobs, eliminating millions of middle and low-level positions, but also create millions of more new positions for highly skilled, management and even the entry-level and low-skill varieties.

The most calamitous warnings of job losses confuse AI with automation, which overshadows the greatest AI benefit. AI augmentation is a combination of human and artificial intelligence, which complement each other.

Technology leaders should not just focus on the projected net increase in jobs. With each investment in AI-enabled technologies, they must take into consideration what jobs will be lost, what jobs will be created, how

it will transform and how workers will collaborate with others, make decisions and get work done.

Gartner believes that now is the time to really impact the organisations' long-term AI direction. For maximising the value, the focus must be on augmenting people with AI. This includes enriching people's jobs, reimagining old tasks and creating new industries. Airlines, for example, are providing pilots with AI-driven recommendations during flight to make several decisions involving speed, altitude, route, and other factors that conserve fuel and cut costs. Doctors, on the other hand, are leveraging AI to personalise cancer-care based on evidence from clinical data and ongoing research – saving hours in diagnosis and thus lives.

While a few industries will face an overall job loss, some industries will see net job loss for only a few years, and most industries will never experience net job loss at all.

AI has already been applied to highly repeatable tasks where large quantities of observations and decisions can be analyzed for patterns. However, applying AI to less-routine work that is more varied due to lower repeatability will also start yielding benefits. Using AI to perform non-routine work is more likely to assist humans than replace them with combinations of humans and machines that will perform more effectively than either human experts or AI-driven machines working alone.

Using AI to auto-generate a weekly status report or pick the top five emails in your inbox doesn't have the same wow factor as, say, curing a disease would, which is why these near-term, practical uses go unnoticed. Businesses are just beginning to seize the opportunity to improve non-routine work through AI by applying it to general-purpose tools. Once knowledge workers incorporate AI into their work processes as a virtual secretary or intern, robot-employees will become a competitive necessity.

Leveraging technologies such as AI and robotics, organizations will use intelligent process automation to identify, optimize and automate labour-intensive and repetitive activities that are currently performed by humans. Many retailers, for example, are already expanding the use of technology to improve the in-store check-out process.

Some industries, such as outsourcing, are seeing a fundamental change in their business models, whereby the cost reduction from AI and the resulting productivity improvement must be reinvested to allow reinvention and the perusal of new business model opportunities.

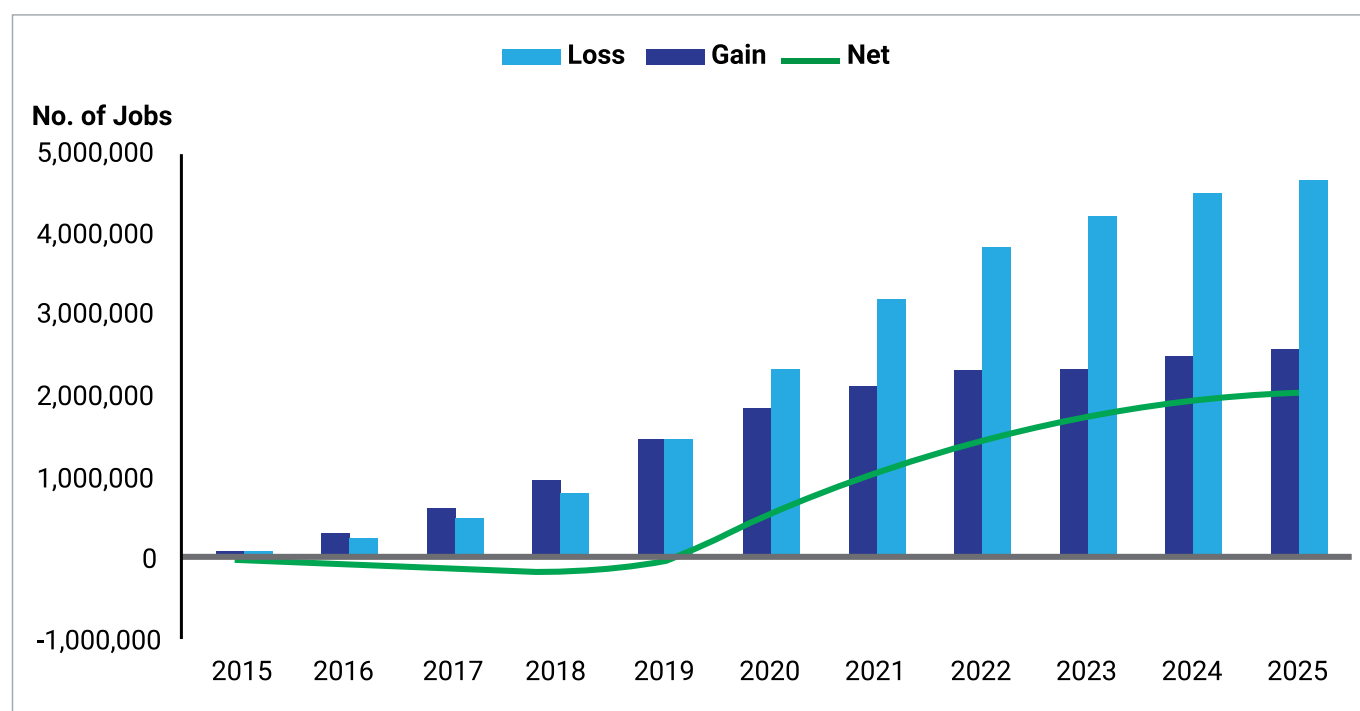
AI can take on repetitive and mundane tasks, freeing humans for other activities, but the symbiosis of humans with AI will be more nuanced and will require reinvestment and reinvention instead of simply automating existing practices. Instead of machines replicating the steps that a human

performs to reach a decision, the entire decision process can be refactored to use the relative strengths and weaknesses of both machine and human to maximize value generation and redistribute decision making. App-based businesses in the sharing economy such as Uber and Airbnb are good examples of how AI driven insights take human and machine interactions further to increase agility.

A single answer about the AI influence on job losses and gains doesn't cover the entire picture. All industries will experience varying levels of time and effort savings. While a few industries will face an overall job loss, some industries will see net job loss for only a few years, and most industries will never experience net job loss at all.

The debate on AI and the impact on jobs will have to be considered alongside other factors that could impact global jobs, such as the emergence of new industries, geopolitical shifts, globally accessible talent pools putting pressure on wages in higher-paying economies, or evolving forms of labour representation to collectively defend workers' interests.

Projected Impact of AI on Jobs Through 2025



Source: Gartner (November 2017)



Kamlesh Bhatia is Senior Executive Partner with Gartner where as a trusted-advisor and coach, he provides strategy, advice, counsel, and customized support to CIOs and senior IT executives across a range of industries.

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FUTURE PORTS — A MAN-MACHINE SYMPHONY IN THE MAKING

**AUTOMATION AND
DIGITISATION WILL LEAVE
PORTS AND CONTAINER
TERMINALS COMPLETELY
UNRECOGNISABLE, BUT FOR
THE BETTER.**

Suresh Kumar M.C.



Converting manual terminals to automated ones can save labour costs by as much as **60%**, while power and fuel costs can be cut by up to **25%**.

A time-travelling terminal manager from 1997 visiting a port or container terminal today will find it hard to recognise what used to be his workplace. If the same terminal manager moves forward another four decades, he is likely to feel he has stepped into an alien world. He will not be witnessing just bigger and better ports and terminals, one where the driving force would not be just large-scale mechanization, but one where data will be behind the wheels.

According to Drewry's 2017 Global Container Terminal Operators Review, the volumes are expected to grow at 4% annually between 2016 and 2021. While ports and terminals will continue to expand to accommodate this growth, there will also be fresh investments in automation at an unprecedented scale to improve port productivity, efficiency, competitiveness, and safety.

As seaborne trade continues to grow, shipping companies have merged and established mega alliances to weather the economic cycles. Today, three of the world's largest ocean alliances (Trans-Pacific, Asia-Europe, and Trans-Atlantic) represent around 80% of global container capacity and 96% of all container capacity on major trade routes.

New alliances have placed orders for even more gigantic vessels to be built in the coming years. And to fill these vessels to an economically viable utilisation rate, alliances are a must. Alliances need terminals that are fit to handle mega vessels and mega volumes. They require deeper water, longer berths, and bigger cranes. Thanks to the alliances, the annual cargo volume in the port of Antwerp, for example, has grown to more than 10 million TEUs (20-foot equivalent unit, a global standard for measuring containers) – a size unimaginable even 10 years ago. The peaking pressure has also increased as big alliances bring in and take away in one go more cargo at a terminal, which calls for increased coordination.

Staring into the crystal ball

To stay competitive, ports and terminal too will have to change, along with super-sized ports and containers that augur to an ever-increasing scale of operations.

But imagining future ports and terminals, only in terms of their physical dimensions will not only be incomplete but will also be missing the real change.

The changes will be driven by data, which will fundamentally alter the way the global trade operates, making it more efficient, safe and sustainable.

Clogged ports and roads cost billions of dollars in the form of time, fuel, and other resources. Trucks and trains still meet the demands for speedy last mile delivery. There is already a need for smart and heavy machinery that can carry and offload cargo in bulk.

In the future, standardised mass-produced cargo systems will enable more personalized and efficient services. Goods will be moved

rapidly around the world in 'smart containers' that know their contents and destination.

Alternative energy resources will replace the cargo handling systems. Wheels may get replaced by air cushion or magnetic levitation technologies like those in 'bullet' trains.

Equipment will be run by an operating system that automatically notifies timely maintenance and repairs needs.

Future terminals will be complete logistic ecosystems that act as global interchange points for an on-demand society. All ports will be automated and run on renewable energy with zero carbon emissions on site. Continuous predictive maintenance will ensure that everything runs smoothly at all times. Big data will have a big role.

Artificial intelligence, combined with human experience and knowledge, will help us predict the future.

The case for automating ports

cannot be overstated. Ports and terminals of today are striving to improve their productivity while meeting the challenges posed by growing size of vessels. The pressure on quicker turnaround time for these super-sized vessels, particularly during peak periods, will be one big challenge.

Automation is an obvious solution that will lend better control and therefore better predictability of outcomes. With precise scheduling of equipment and containers, waiting-time for ships at ports can be lowered significantly. This will result in greater operating efficiency while minimising environmental pressures.

In addition, automation optimises the performance of the entire machine fleet at ports, and the flow of containers, which in turn reduces energy consumption and emissions.

Converting manual terminals to automated ones can save labour costs by up to 60%, while power and fuel costs can be cut by up to 25%.

Automated solutions will also create a safer workplace for port and terminal workers, by lowering the risk of human error caused by direct interaction between people and heavy machinery.

Automation not only requires a thorough change of business processes but also a whole new set of skills and a change in the mindset of people.

Change management is key

The benefits of automation are obvious and significant, but they come with widespread operational changes that need to be addressed, particularly regarding change management processes.

Automation not only requires a thorough change of business processes but also, a whole new set of skills and a change in the mindset of people. Managing this change will, in fact, be more crucial than the technical implementation

of automation solutions itself.

Successful change management requires a lot of effort from the terminals undergoing the transformation. It involves early planning, a continuous open dialogue with all stakeholders, including employees and the trade unions, and making sure that there are tailor-made training programmes to enable the workers to adapt to work in a changing environment.

Cross-industry technology adoption

Based on what we are seeing today, it is quite likely that all future container-handling machines will be fully electric. The driving force behind this change will, however, be from outside the logistics business, particularly changes in the technology we are witnessing in the personal transportation space, combined with a massive jump in the load carrying capacity. This push toward better technology and infrastructure will ultimately bring the cost-benefit equation to a point that will make the adoption of all electric

technology inevitable.

The container-handling business today might be a decade or two behind other industries in adopting automation. But on the other hand, the world we live in is very different from the one that automotive industry faced in the early days of industrial robotics. While the logistics industry may be late in the game, it is adopting automation in the time of an unprecedented convergence of digitisation, wireless connectivity, artificial intelligence, machine learning, IoT (Internet of Things) and big data.

The shape of things to come

Ports and cargo movement will not be anything like we know them today. Some of the major changes would be:

- ▶ Fully automated container handling point-to-point
- ▶ Automated trucks picking up and dropping off containers
- ▶ Virtual port gates allowing automated entry and exit
- ▶ Paperless freight and customs documentation
- ▶ Electronic security seals, verification, and tracking for containers
- ▶ Automated submersible and surface craft for harbour and quay inspections
- ▶ Automated flying vehicles for crane and terrestrial port inspection
- ▶ Dynamic, real-time scheduling for ports and motor freight operators



Suresh Kumar M.C. is the Managing Director for India operations at Cargotec, a Finland-based logistics service provider.

CLIMATE CHANGE AND LOGISTICS

**THE WORLD HAS WOKEN UP TO CLIMATE CHANGE
CHALLENGES. SADLY, THE LOGISTICS BUSINESS IS YET TO.**

Peter Newman





GreenWorld

There is good news and bad news about climate change and the responses from the transport and logistics industry. The good news is there is much leadership happening in our cities which is showing how the future, challenged by climate change, can be created to meet the growing needs and obligations of the world's nations, cities, and companies. The bad news is, there is almost no leadership being shown by the global logistics industry in combating climate change.

In recent decades, there has been a plateau in greenhouse gas emissions with the last two years even showing a small decline. This has occurred without diminishing economic growth, which is now indicating what the United Nations calls 'decoupling' of wealth and climate change responses. This is good news as we need to keep doing both.

The positive part of this has come from cities where new approaches to providing electricity are growing rapidly along with a dramatic new emphasis on electric vehicles and electric transit (rail) systems. In 2017, the largest global new-build in power was solar followed by wind. In my own city of Perth, 30% of houses now use rooftop solar, which at 700 MW is the largest power station in the grid. All of this happened in 7 years without government assistance as the price of solar PV (photovoltaic) had crashed. The next phase of this is battery storage along with electric vehicles as both are growing rapidly with similar decreases in their prices due to mass production and demand.

Electric transit systems are also being installed in cities across the world led by China with 81 new Metros and over 30 in India. Beijing and Shanghai are now reducing the use of cars after years of dramatic growth leading to massive congestion and deterioration of air quality. Autonomous vehicles that are electric are now likely to feed these fast cross-city rail systems which make developed cities like London, Paris, and Tokyo economically more successful.

The better among the logistics companies are using IT systems to plan their operations better and avoid running empty or half empty ships, trucks, aircraft, or containers.

Climate change is driving this move to electric transport, but so is air quality, as evidenced by new bans on diesel that are being introduced.



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Climate change is driving this move to electric transport, but so is air quality, as evidenced by new bans on diesel that are being introduced. Climate change is, however, the main global project and the issues are deep and scary.

We are likely to lose all coral reefs, with significant bleaching already underway leading to loss of marine life. The melting ice caps have raised sea levels by about 15 cm, endangering low-lying cities across the world. Perth's diminishing water supply was recognised as being a problem of climate change 30 years ago. Now, 60% of the water we consume comes from a wind-powered desalination plant drawing from the Indian Ocean.

Cape Town in South Africa was also warned about the impact

of climate change on its water resources. The city administrators are now planning for Day Zero (when it will completely run out of drinking water) sometime in 2019. Many parts of the world are witnessing extreme weathers more frequently, and all the models suggest it will become harder to adapt to.

So, we need to change, and the world's political leaders have set the agenda at achieving a temperature rise of no more than 2° above pre-industrial levels (though preferably 1.5°). We are already at 1.1° above. The transport industry contributes to around 14% of global greenhouse gases. The contribution of freight is hard to estimate, but in the UK, it is estimated to be around 6% of total emissions, with nearly 80% of this from heavy goods vehicles.

The advance of new zero-carbon power systems that can be rapidly adopted is good news. The problem, however, is freight and international transport. Further, it is harder to make ships and airplanes powered by electric, while trucks and locomotives are now beginning to go the electric way.

New demonstrations of short-haul shipping are now appearing with electric haulage systems. The Dutch have a new set of electric barges, while the Scandinavians have a short haul electric container ship.

The issue is whether the world's R&D systems can create a



breakthrough in alternative carbon-free or carbon-neutral fuels. The present biofuels are too expensive to produce and take up way too much agricultural land that should be used for producing food. The potential for using waste cellulose or growing specific algae for liquid fuels is what the industry would need to make a rapid change from oil-based products. If this cannot happen, the long-distance freight and airline industry will be left behind in climate-change response.

They will need to make other transformative changes to reduce their greenhouse emissions or neutralize them through expensive additional costs in carbon trading. The world will be watching and waiting for how aviation, shipping, trucking and the whole freight and logistics industry responds to climate change. There is no reason to expect that the rest of the world will be giving any special dispensation to logistics companies if they continue to be the laggards.

The politics of climate change has a very strong and growing base. The IPCC is a volunteer organization with around 7,000 scientists offering enormous amounts of their time and energy into detailed scientific reporting. Evidence-based research is provided for the politicians, business and community leaders

wanting to see the science of how climate is changing, how we need to adapt in a cost-effective way and reduce impacts by cutting carbon emissions.

The main way these IPCC advisory groups work is to find how the conclusions on long-term climate matters can be made to work along with short-term cobenefits in a range of economic, social and environmental areas.

One of the key ways that cobenefits can be found with the removal of diesel, shipping fuels, and airline fuels is to see that these fuels are now recognized as serious pollutants.

In many harbours, ships are now banned from burning marine fuels while in the harbour. They need to plug in and just use local electricity for their needs. Airline companies are looking at how they can burn less fuel on take-off and landing as well as being towed into docks by electric tow vehicles. Indeed, the best airports are now covering their roofs in solar PV and using only electric vehicles. This is now very good economics with paybacks of just a few years.

But what can we do about trucks? As a small start, logistics companies should cover their sheds with solar panels and adopt some good practices from tech companies that use small electric vehicles inside their work area.

Such small steps will offer economic gains (how much ever small this may be) and also raises

awareness among the generation of workforce.

The better among the logistics companies are using IT systems to plan their operations better and avoid running empty or half-empty ships, trucks, aircraft or containers. Rail locomotives need to be switched over to being electric wherever possible and also move towards battery banks to replace overhead electric cables.

All these matters can be planned into the short term, but beyond that there is a real need for scientific breakthroughs, or there will be a rush to more radical reductions via regulations and taxes. Without short-term action and long-term breakthroughs, the freight and logistics industry will become the source of growing anger from those concerned about climate change and associated environmental issues. It is worth starting a carbon emissions strategy early and supporting researchers to find the much-needed scientific breakthroughs.



Peter Newman is Professor of Sustainability at Curtin University in Perth, Australia, and a Lead Author for Transport at the Intergovernmental Panel on Climate Change (IPCC). His latest book is called Resilient Cities: Overcoming Fossil Fuel Dependence (Island Press).



A TRANSFORMATION UNFOLDS

HEALTHCARE DELIVERY IS GETTING READY FOR A SWEEPING TRANSFORMATION, THANKS TO NEW AND EMERGING TECHNOLOGIES AND STANDARDS ARISING FROM THE DIGITAL REVOLUTION.

Adebayo Alonge



AI will be able to perform tasks far better than human doctors. This will eliminate the need for patients to commute to a hospital for treatment.

We are living in the era of what many consider as the fourth industrial revolution. Between the late 18th and mid-20th century, the industrial world had already witnessed three revolutions, starting from the use of steam to power weaving mills and the assembly plants that were followed by use of electronics and IT to automate production and communication.

The current and fourth industrial revolution relies on data and the digital platforms that enable its generation, collection, storage, cataloguing for search, analysis, and application for decision-making. The technologies that enable this fourth industrial revolution are exponentially more powerful. This is because their performance, relative to their total cost of development, is growing at a much faster rate than Moore's Law. According to Moore's Law, the data-processing performance of transistors or computer processors doubles every 18 months.

Some of these exponential technologies that are powering the fourth industrial revolution are Artificial Intelligence, IoT, GPS, Sensors, Robotics, Additive Manufacturing, Augmented Realities, Blockchain and Quantum Computing.

Two technologies, in particular, will be the key to the healthcare revolution the world is already starting to see.



Digital biology involves the use of computations performed by natural biological processes to understand and solve problems in biology. This enables lower cost and more effective genomic engineering.

Some examples are the use of CRISPR or gene-editing technology, gene-mapping, wearable sensors and big data for treatments, prevention and tracking and development of diseases at the gene level.



Nanotechnology is essentially the manipulation of materials at the atomic and molecular levels to achieve specific physical or application attributes. For example, to decrease odour in socks or to observe drug interactions in the body.

AI, IoT, Robotics, 3D Printing, Augmented Realities and Blockchain will also have the immediate impact on the intersection of healthcare and logistics.

Logistics intersects with healthcare where there is the need to bring the health professional and the patient together. It is also important when it enables the delivery of life-saving commodities to health professionals and patients.

These technologies can be applied differently at various places to improve healthcare.

1

AI can leverage digital platforms to diagnose and treat patients, eliminating the need for primary-care doctors and patients to meet in person: AI can store, decode, analyse, remember and work through large quantities of medical knowledge, case notes, and diagnostic tests. Through language-processing, it can check patients through a digital interface and walk through their case history to reach a diagnosis. It can then recommend a treatment course, and schedule follow-on check-ups. A web or phone-based app enables this. With immense cloud-computing power and big data, AI will be able to perform these tasks far better than human doctors. This will eliminate the need for doctors and patients to commute to a hospital for treatment.

2

IoT, alongside sensors and GPS systems, will enable hospitals, pharmacies, and labs record and track deliveries of vital medical commodities: Inventory systems with integrated IoT sensors can detect when medical supplies are running low. They can reorder supplies automatically. IoT sensors in medical supplies and vehicles making delivery will inform the health professionals about the expected delivery time. This expected delivery time will be communicated to patients and doctors so that they can plan pick-ups or schedule home deliveries. It will be possible for patients to connect their home-based sensors to the health centre if they want home-based services. These sensors will provide information as to when they are at home and allow for on-time delivery of home-based services. Wearable devices and telemedicine (an already-popular mode of communication in Africa) are some examples. These will have the ability to measure and share data on bodily functions to a centralised data processing centre.

3

Robotics will enable unmanned navigation of humanoid robots and drones to deliver healthcare services and supplies: Humanoids like Sophia will be able to get into autonomously navigated vehicles to get to humans needing treatment. They will be able to perform diagnosis, treatment, and surgical interventions. They will be helpful in conflict and remote regions where there are too few doctors. Unmanned aerial vehicles or drones will be able to deliver vital medical supplies to areas that may be difficult to reach and can be delivered at any time of the day. Self-driving trucks will deliver medical supplies working in platoons where truck convoys tail a lead autonomous truck to deliver their loads at a defined location. This will eliminate the need for human drivers and the inefficiencies arising from accidents and truck stops.

4

3D-printing will enable on-demand self-production of medical accessories by health professionals and patients using their own specifications: Medtech (medical technology) companies making medical accessories such as prescription glasses or hearing aids can send a digital design folder to the patient after receiving an e-prescription from the doctor and product customization from the patient. Patients can then 3D-print their accessories at home. This will lower costs, eliminate the lead-time between factory production and delivery, and remove the need for logistics and inventory between the factory and intermediaries.

5

Augmented Realities will enable health professionals to drive behavioural change among patients and policymakers by showing how diseases and epidemics happen: An immersive experience showing the state of deterioration of a smoker's lungs may cause a change in behaviour. Perhaps policymakers at UN will be more effective in urging governments around the world to take a stronger stance in fighting climate change if they understand the real impact of long-dormant viruses that may get released from the melting Arctic permafrost. Digital platforms can deliver these immersive experiences, obviating the need for the audience to commute to the same location as the health educator.

6

Blockchain used to track and verify the provenance of medical supplies eliminating theft and counterfeiting: Blockchain technology allows recording of each step of the supply chain of the movement of medical supplies. Entering these records into a chain of records or blocks will make it possible for end-users to trace the source of a commodity. This will eliminate counterfeiting of spurious drugs and the resale of stolen commodities. Counterfeits will not show up on the ledger and those reselling stolen items will not be able to prove ownership.



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MEDIUM AND LONG-TERM HEALTH VISIONS

As in the case of most new technologies, early adopters will stand to gain more than the rest. With the use of these technologies, we can reduce operational costs of hospitals.

A very nascent but potentially powerful area is 'Smart Rooms', which will help patients record real-time data on their health progression and transmit to the hospitals. Healthcare need not be confined to the four walls of hospitals. Along with engagements with patients, healthcare and logistics have a huge interdependency for critical delivery of medicines to remote places for research and diagnosis.

These applications go beyond just the clinical administration. Proactive professionals in the logistics industry who serve healthcare should be aware of the immense disruptive potential of these technologies.

Some of these technologies are already in use in countries like Rwanda, the landlocked country in East Africa that uses drones to deliver blood supplies. As they become more mainstream in the coming years, only the best-adapted logistics professionals will be able to position themselves to leverage these 'exponentials' to serve the healthcare industry and will emerge as the best partners that healthcare professionals choose to work with.



Adebayo Alonge is a Nigerian entrepreneur and the co-founder of RxAll, an AI platform for pharmaceutical authentication and deliveries.

SAGARMALA — THE \$120 BILLION BET

THE ONE INFRASTRUCTURE PROJECT THAT IS LIKELY TO HAVE A FAR-REACHING IMPACT ON INDIA'S FUTURE IS IRONICALLY THE ONE THAT IS DISCUSSED LEAST. KSHITISH V. NADGAUDA, SENIOR VICE PRESIDENT AND MANAGING DIRECTOR FOR ASIA AT GLOBAL INFRASTRUCTURE CONSULTING FIRM LOUIS BERGER, WRITES WHAT THE \$120 BILLION SAGARMALA PROGRAMME MEANS FOR THE FUTURE OF INDIA.





According to government projections, the annual cargo volume is expected to exceed 2.5 billion tons by 2025; this represents a 150% increase over the volume of cargo handled in fiscal year 2015-2016.

In September 2014, Prime Minister Narendra Modi announced 'Make in India', a major government initiative to transform India into one of the world's leading manufacturing hubs. PM Modi's sweeping vision focuses on 25 industries and sectors, aimed at reducing business hurdles and positioning India as an attractive investment destination straddling East and West.

One of the most ambitious aspects of the 'Make in India' initiative is the Sagarmala programme. With a broad mandate to modernise and expand the nation's shipping infrastructure, the project involves 415 individual projects designed to maximize India's 7,500-kilometre coastline and 14,500-kilometre potentially navigable waterways. To give it a further push, the government also set up the Sagarmala Development Company to identify port-led development projects under the Sagarmala programme and provide equity support to special purpose vehicles or SPVs set up by the ports.

The predicted benefits of the Sagarmala programme are extensive. According to government projections, annual cargo volume is expected to exceed 2.5 billion tons by 2025; this represents a 150% increase over the volume of cargo handled in fiscal year 2015-2016. This growth will be accommodated through the development of six new ports, in addition to the modernisation of existing port infrastructure. Leading to faster and more efficient evacuation of export and import cargo, the improvements to infrastructure brought by the Sagarmala programme will impel enhanced trade competitiveness as well as increased port-linked industrialisation and a revitalised network of coastal communities.

The Sagarmala programme includes 170 port-connectivity projects. These infrastructure enhancements will not only improve export and import connectivity but will also provide a significant boost to internal trade. India's recently-passed National Waterways Act identifies more than 100 inland waterways as suitable candidates for efficient, eco-friendly transportation. Developing this inland network will offer an economic boost to industries, including hospitality, food and beverage, and automobile rentals.

Increased traffic from cruise ships will benefit the travel industry. India's first cruise ship terminal is being constructed in Mumbai and will accommodate nearly 100 cruise ships per year.

The trade growth brought on by improved maritime logistics will also impact nearby coastal

No.	Project Theme	No. of Projects	Project Cost (Rs. Crore)
1.	Port Modernisation	189	Rs. 1,428,280 million (\$22 billion or €18 billion)
2.	Connectivity Enhancement	170	Rs. 2,305,760 million (\$35 billion or €29 billion)
3.	Port-linked Industrialisation	33	Rs. 4,208,810 million (\$64 billion or €54 billion)
4.	Coastal Community Development	23	Rs. 42,160 million (\$650 million or €540 million)
	Total	415	Rs.7,985,000 million (\$120 billion or €100 billion)

Source: <https://en.wikipedia.org/wiki/>

communities. India's 72 coastal districts are home to roughly 18% of the population — more than 23 million people. Increased maritime traffic and shipping volume will inject new economic vitality into the coastal regions.

The Sagarmala programme has 23 specific projects intended to involve coastal communities in the modernisation process.

The key element of India's expected economic growth through the Sagarmala programme is port-linked industrialisation. The nation's ambitious projections anticipate a near-doubling in exports from \$465 billion in 2014-2015 to \$900 billion in 2020.

The basis for this explosive growth is the development of

industrial clusters in India's Coastal Economic Zones (CEZs), and there are few limits to the potential benefits from this industrialisation. From reducing the country's oil dependence through the development of refinery and petrochemical clusters to the significant reduction of logistics costs for a number of industries, the Sagarmala programme's impact on the CEZs cannot be overstated.

In addition to the benefits to travel industries identified through the development of internal waterways, port-linked industrialisation will increase India's trade competitiveness in industries ranging from apparel and furniture exports to food processing and leather goods.

The Sagarmala programme has 23 specific projects intended to involve coastal communities in the modernisation process.

Two and half years into Sagarmala

It has been three years since PM Modi's first speech announcing the 'Make in India' initiative, and two years since the announcement of the Sagarmala programme in July 2015. The programme is now transitioning from the planning and approval stages to construction and implementation. Rajive Kumar, the then Union Shipping Secretary, acknowledged this moment of transition: "Three key areas where states can take up projects are connectivity enhancement, development of cruise ships and promotion of coastal shipping."

Concrete accomplishments of the project thus far include the approval of nine fixed jetties for construction, as well as progress towards the approval of four floating jetties. Massive construction in Chennai has begun on a terminal capable of accommodating two coastal ships. The project is expected to be completed by March 2018. The development of the port in Chennai is amplified by the construction of paved storage yards and a common railway yard to facilitate the handling of export cargo.

Additionally, there have been plans to integrate Bharatmala, a government initiative to enhance

road connectivity across the country, with the Sagarmala programme. Speaking to Money Control, Nitin Gadkari, Union Minister for Road Transport, Highways & Shipping, emphasised, "We would like to develop roads near ports to provide seamless movement of cargo. We have identified ports under Bharatmala that can be integrated with Sagarmala's development plan."

Progress also has been registered in economic terms, with a significant increase in private investment in the nation's ports and coastal industry. The coastal projects have led to major

agreements with Reliance Defence & Engineering (RDEL) and Tata Steel. RDEL will provide 14 vessels for the Indian Coast Guard. Tata Steel has agreed to purchase 51% of Creative Port Development Private Limited (CPDPL), which has been contracted to develop a significant port in Balasore, Odisha.

The development catalysed by the project will impact not just construction and development, but also the manpower necessary to operate billions of dollars of new infrastructure. Sweeping skill-development projects are underway in coastal communities to support the nation's expected export and

import growth. The socio-economic benefits of this investment in local talent are vast, as more than one million jobs are expected to be created in India's CEZs.

The relentless pace necessary to meet the project's ambitious goals generates a special set of challenges. While efforts to educate the coastal workforce move forward, there remains a consequential difference between the demand and supply of skilled labour in the coastal regions. There are also significant environmental considerations to take into account as rapid industrialisation occurs across India's coastlines; erosion and accretion are just two of the important impacts to bear in mind.

The aphorism “a rising tide lifts all boats” describes the Sagarmala programme. Hundreds of projects will elevate the condition and performance of everything, from ports and jetties to communities and employees.

Stepping out on the world's stage

In his introductory speech and in subsequent appearances, PM Modi identified a lengthy list of reasons for his unprecedented vision for the Sagarmala programme. While the rejuvenation of internal resources and the development of coastal communities are key tenets of the initiative, the playing field of international trade will be made more level with India benefiting from its advantageous position between China and Europe.

The wide-ranging and numerous projects of the Sagarmala programme are designed to assert India's position in exports and imports, taking a not-so-insignificant share of the regional market.

The government's efforts to revitalise interior resources have occurred concurrently with new discussions and agreements with neighbouring countries and regional partners. The Andhra Pradesh Economic Development Board has signed a memorandum of understanding with Russia's largest shipbuilding company. This agreement came in advance of a recently-announced \$1-billion fund to promote mutual investments between Russia and India in technology and infrastructure

works.

Coastal security is also a key detail of the Sagarmala programme vision. Investment in the maritime security sector as well as agreements with neighbouring countries demonstrate India's seriousness in its efforts to secure its sprawling coast.

While the benefits of the project can indeed be measured in statistics – in cargo volume and jobs created – the campaign's hundreds of projects and the 'Make in India' initiative in general will impact more than just the national ledger. The Ministry of Shipping's ambitious push will not just bring India on a par with other Western powers, it will bring India to the forefront of smart technology and innovative urban planning. A major aspect of the 'Make in India' initiative is the development of several smart cities: the project includes plans to develop two-three smart CEZs.

Six mega ports are planned in Sagarmala project

S.No.	New Port Location	State	Present Status
1.	Sagar Island	West Bengal	Approval obtained for setting up major sea port Sagar Port at Sagar Island. DPR prepared. Viability being re-examined in view of announcement of new port Tajpur Port at Tajpur by State Govt. of West Bengal.
2.	Paradip Outer Harbour	Odisha	DPR under preparation.
3.	Sirkhazi	Tamil Nadu	Techno Economic Feasibility Report (TEFR) prepared.
4.	Enayam	Tamil Nadu	In principle approval obtained for setting up major port at Enayam. DPR under preparation.
5.	Belikeri	Karnataka	Techno Economic Feasibility Report (TEFR) prepared.
6.	Vadhavan	Maharashtra	DPR under preparation.

Source: <https://en.wikipedia.org/>

Driving forward to 2020 and beyond

According to the aphorism, 'a rising tide lifts all boats'. There are few applications as apt for this saying as the Sagarmala programme, as its hundreds of projects will elevate the condition and performance of everything, from ports and jetties to communities and employees.

The true beneficiaries of the project and the 'Make in India' initiative will be the citizens: the "common man" referenced by PM Modi in a 2016 speech at the Maritime India Summit. As India's coastal communities benefit from an infusion of new money and new education, millions of citizens should enjoy an economic boost and an improved quality of life.

The 415 individual projects comprising the larger Sagarmala programme are still in their early stages, and no doubt challenges may arise as India works determinedly to achieve its goals.

As proposals make their way out of government committees and transition into actual construction and development, it will become far easier to measure the nation's progress as the goals of the project become a reality. India's coastal communities are long overdue for revitalisation. As PM Modi's far-reaching dream comes to fruition, the people of India's CEZs will live and work in a maritime industry that will be the envy of the world.


Summary of projects under Sagarmala

Project Theme	Till 2017-18		2018-19		2019-20	
	No. of Projects	Project Cost (Rs. Cr.)	No. of Projects	Project Cost (Rs. Cr.)	No. of Projects	Project Cost (Rs. Cr.)
Port Modernization	100	38,968	87	29,779	15	8,092
Port Connectivity	81	60,431	73	37,464	39	39,725
Port led Industrialization	18	137,299	1	400	5	3,674
Coastal Community Development	26	2,110	33	4,126	6	740
Total	225	238,808	194	71,768	65	52,231

Source: <http://sagarmala.gov.in>



Kshitish V. Nadgauda, Senior Vice President and Managing Director for Asia at global infrastructure consulting firm Louis Berger



INNOVATION ON THE FLY

A QUICK-FIX SOLUTION OR 'INNOVATION ON THE FLY' OR JUGAAD AS IT IS CALLED, HAS BEEN A NATIVE STRENGTH IN INDIA FOR LONG NOW. BUT IS IT OVER-VALUED? IN AN INTERVIEW WITH FORESIGHT, PROF RISHIKESHA T. KRISHNAN, DIRECTOR, INDIAN INSTITUTE OF MANAGEMENT, INDORE, AND AUTHOR OF TWO BOOKS ON THE SUBJECT, DETAILS WHY AND HOW INDIA SHOULD QUICKLY MOVE TO A MORE INSTITUTIONALISED CULTURE OF INNOVATION.



CONVERSATIONS



Q | What is your definition of *jugaad*?

A | The closest English interpretation of *jugaad* is 'creative improvisation'. But basically, to me, it means doing things with limited resources and under constraint. Solving problems under limited resources and constraints seems to be one meaning of *jugaad*. The only problem is that the term is also associated with taking shortcuts.

Q | Can you give us an example of creative improvisation and shortcut to understand the difference better?

A | There are many examples of creative improvisation. You can look at grassroot innovations that are around. For example, there this girl Remya Jose (in Kerala) wanted to get some exercise and wash cloths while there was no power at home. So, the pedal-run washing machine came up. You have a problem and you have some limitation on resources and you try and solve the problem.

Shortcut, on the other hand, is where you try to find some immediate solution. It is what we can call a 'band-aid' solution. Something is not working, you use some tape or glue, without getting to the heart of the matter. This also takes us to another related issue, which is the whole question of when this *jugaad* approach works and when it does not.

The term *jugaad* came from a vehicle used in many parts of North India – essentially a small truck made from locally-available materials. The engine is, in fact, a reconfigured water pump, not an engine made for a truck. It does the job, but it is very slow and polluting. So essentially not one with what we call product integrity. Does the user get a good experience after using the product?

So, this traditional *jugaad*, while it is functional, certainly doesn't give a good user experience. This also takes us to the point I have been advocating – that *jugaad* is not enough. Today, customers' expectations have increased considerably. People are now accustomed to the fact that you can get a decent mobile phone at Rs 1,000-1,500 that has basic functionalities, is easy to use and basically does perfectly well with its core functionality

CONVERSATIONS

Q | So, is *jugaad* a poor substitution for innovation?

A | There is a good part of *jugaad* that is trying to use people's creative impulses to solve problems. This means you are promoting a culture of people solving problems, which in general is a good thing, rather than depending on companies, R&D or scientists.

So, the creative improvisation part of *jugaad* is the positive part, and as a country, it is good to encourage creative improvisations. But what is probably avoidable is the approach that says anything goes, without being durable or sustainable or doesn't matter what the user experience is. That is the unfortunate part of *jugaad*.

Q | So, it is an evolutionary process – moving from a quick-fix solution to sustainable and durable creative improvisation with product integrity?

A | Yes, that is where the need to have the right skills and knowledge becomes important. If people have some science and engineering skills, then there is a higher chance that they will use those skills to do the improvisation, producing a more robust and durable solution.

Q | Is *jugaad* a very uniquely Indian concept?

A | I don't think so. If you go back in history, the turning point for contemporary innovation was the Industrial Revolution. What it did was it promoted early mass manufacture, which was a way of improving human productivity. That's when the first machines as we know them today were created. That's the time when a lot of ingenuity went into finding ways of increasing human productivity.

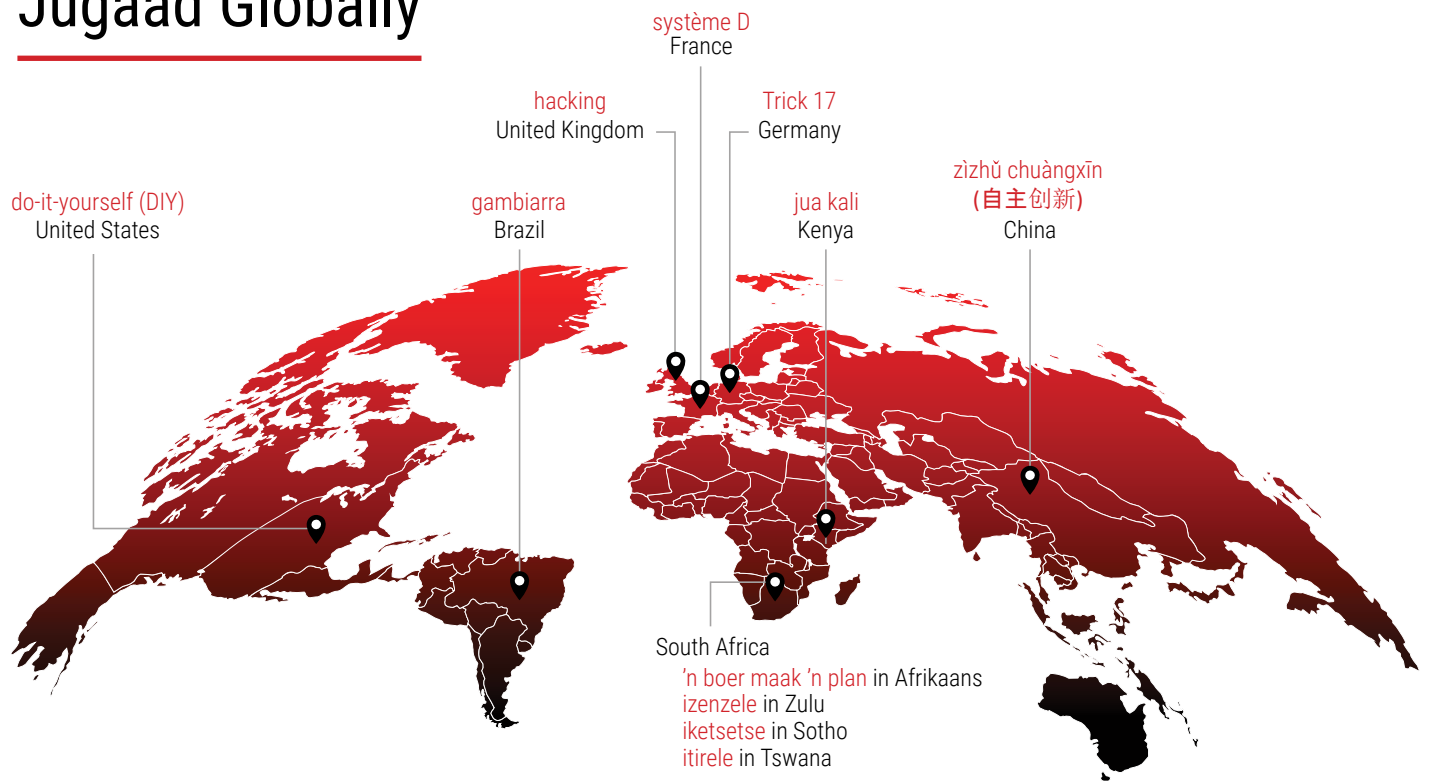
The early machines were probably somewhat '*jugaad-ish*'. People just tried out various things, but then more sophisticated ideas come into play, partly through trial and error, but also partly through superior knowledge, leading to better solutions.

Obviously, evolution does play a role. Most countries at a

“The term *jugaad* has been coined after a vehicle used in many parts of North India, which is essentially a small truck made from locally-available materials. The engine is a reconfigured water pump, not an engine made for a truck. It does the job, but it is very slow and polluting. So essentially not one we call product integrity.”

point in their history would have had a lot of tinkering-around, trying to solve various problems. There was a kind of *jugaad* phase. Maybe in the West, it was from the 19th century till early the 20th century. In developing economies, you find more of such impulses even today. Even in China, there is a local equivalent of *jugaad*. It is not unique to India, but we have had more problems, constraints, more challenges.

Jugaad Globally



Q | Is there a tipping point when *jugaad* took off in India?

A | It is a little different in India. We missed the Industrial Revolution since we were under the British rule at that time. The British did not want us to be industrially developed. Their idea was we would supply the raw material, and they would do all the industrial production and then sell the final product to us – a typical colonial model.

However, we did try to find our local solution, which remained small-scale. But that also meant that we did not really graduate to large-scale production and better products. It was only after Independence we started moving in that direction.

Q | What does the wide prevalence of *jugaad* say about us as a nation, in a cultural context?

A | One must be very careful in drawing these cultural implications. The challenges we face today are a bit different. We seem to place too much value on intellectual work, and not the same value of doing things with our hands. For good innovation, it must be a combination of both.

But if you look at our graduating students from colleges and universities, most of them would much rather go and sit in an air-conditioned environment and do computer coding than get their hands dirty designing some product. Some people attribute this preference for intellectual work to our sociological structure in India and to our caste hierarchy. There has been one view that this is one of the reasons why we have not embraced industrial innovation more vigorously.

CONVERSATIONS

Q | Should we consciously move away from *jugaad* to a more institutionalised creative improvisation?

A | What we need to do is to retain the creative dimension of *jugaad* but give up the shortcut idea. Essentially, we need creativity, improvisation and we need science and engineering inputs. To build on the advantages we have because of *jugaad*, but graduate to a higher level of innovation.

Q | What do we need to do to make that happen, the first steps in this direction?

A | There are three dimensions to this. One is to raise the average education level. Creativity can be distributed across the population and there is no particular reason why it should reside in a particular place or community. This is to make sure that all our creative people have the right tool and the right environment.

Two is we need to move away from 'road learning' to get people to learn by doing. The government is doing it in a small way by setting up digital green labs in schools and that's a step in the right direction. We need to have more practical work in schools. For example, an NGO called Agastya Foundation, based in Kuppam, Andhra Pradesh, is promoting practical science education across the country. This is another way of promoting creative improvisation.

Third is about learning to tolerate failure. Schools projects are becoming more of a competition between parents than kids. Learning is not about finishing the project and getting a good grade. It is about going through the process of solving the problem and learning from whatever mistakes you make along the way. The system must be supportive of the whole exercise of the students trying, possibly failing but learning from the failure itself.

"...The creative improvisation part of *jugaad* is the positive part, and as a country, it is good to encourage more such creative improvisations. **But what probably is avoidable is the approach that says anything goes without being durable or sustainable or doesn't matter what the user experience is.** That is the unfortunate part of *jugaad*."

By creating a whole new segment in the market, Tata Ace micro truck is a good example of how innovation can be a game changer.



<https://www.tatamotors.com>

CONVERSATIONS

Q Can you give us examples of countries that have walked this path and moved from *jugaad* to a more systematic creative improvisation ecosystem.

A I think most countries that have traced the path of development have gone through that cycle. Look at Japan, a country in the 1950s known for very shoddy products, now popular for well-engineered products. Germany is known for its engineering excellence. I am sure they must have also been an improvising culture. Germany is also unique country where there is a very good fusion of career practice across the educational system, and not in vocational education alone. You cannot become an engineer in Germany without a heavy component of practice.

Q Why is it important to institutionalise the innovation spirit?

A I would use the word 'formalise' instead of 'institutionalise'. If you need innovation entirely as an activity left to chance and accident, it may or may not happen. Which is why we need to be a little more deliberate about innovation as an activity in any organisation. That is why many companies actively seek ideas from employees and customers. The companies who do this successfully are the ones who do it quite actively and not leave it to chance. They have people who are mandated to do this and processes that monitor this on a continuing basis.

In most organisations there is pressure to deliver, to be profitable. You need to sometimes sit back, analyse and come up with new ideas. Creativity will get crowded out unless you give it some time and some space. In fact, companies like 3M and Google give people some time off from regular work to enable them to come up with new ideas.

Q Is this happening in India too?

A Obviously it is not uniform across the board. Some industrial groups are doing more or better than others. When Ratan Tata was the chairman, he was so interested in the Nano project, there was a lot of excitement about innovation in the Tata Group and they have done a lot of work trying to formalise those systems. They have a group-level innovation council and an award structure. They have this annual event called Innovista, which has an award category for failed ideas, called the Dare to Try award for people who took up challenging projects and did not succeed but still made a good effort.

Tata Nano showed the world the power of 'frugal engineering' that India is capable of.



<https://www.tatamotors.com>

Q Does it also depend on the kind of business we are talking about? For example, inventing and innovation is fundamental to businesses like pharmaceutical industry?

A Of course, innovation priorities of companies depend on the kind of business they are in. So, if you are in a high-volume chemical industry, the most important kind of innovation will be related to process. It will be about process efficiency.

Take the example of the oil-refining business, where the most important innovation will be improving refining efficiency. Even a 0.01% improvement can have a huge impact in monetary terms. For an e-commerce company, it could be the innovative business model and marketing innovation. Even in the pharma business, their strength is in process innovation, not so much in product innovation – taking a known drug and finding a more efficient way of manufacturing it.

Q What is the role of various stakeholders in this like family, educational and scientific institutions, the private sector and government?

A The first driver of this is society itself. Society needs to encourage people to experiment, be a little more open to change because only when you are open to change you are supportive of experimentation. We also need to find a way to connect people and problems.

For example, we have hundreds of thousands of students studying engineering. Is there some way we can connect these students with real problems that they can solve? Most of the time they don't even get the exposure. They should be taken to rural settings or exposed to where challenges exist, so that their imagination is sparked to find solutions to those problems. If students are given imaginative problems, I think

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they will be excited to solve them. We don't give them more interesting things to do. If we do, they will probably do it.

In Gujarat, thanks to professor Anil Gupta (of IIM-A), there has been an effort to get all the students of engineering colleges to work on problems of small and medium enterprises. It has seen some success. It not only solves SME problems but also builds bridges between industry and engineering colleges.

Lastly, the government can do a lot. One important role it can play is in regulations. Regulations are often a big barrier to innovation because the existing players have a vested interest in certain regulations to be in place. Changing or removing regulations means more products will enter the market. The government should focus on trying to create a level playing field for innovation.

DIVERSITY & INCLUSION – MAKING EXCEPTION THE RULE

DIVERSITY AND INCLUSION IS NOT JUST ABOUT
ACCOMMODATING DIFFERENCES, BUT TO FLIP THE SITUATION
WHERE ACCOMMODATING WILL NOT BE NECESSARY.

Aneish Kumar





In 2015, a study by consulting firm Bain & Company showed that aspiration and confidence levels of women dropped by as much as 60% and 50%, respectively, after two years on the job. The study also showed that these steep drops had nothing to do with their marriage or motherhood status.

In the last decade or so the diversity and inclusion agenda has managed to capture the centre stage not just in corporate boardrooms but across every walk of life. While this has become a topic for serious discussions, what is really needed, but little is yet to be done, is turning these into actionable agenda.

Diversity as a concept is generic, both in meaning and substance. Gender, race, nationality, language, sexual orientation and gender identity, religious beliefs (which includes those who don't) – the list is long, challenging and daunting.

While embracing diversity in every form and shape is both desirable and essential, let us for the sake of discussion consider two that have come to dominate this global conversation – gender and race. It would be fair to say these are the two lowest-hanging fruits, where some progress has already been made but a lot more is left to be done.

Bill de Blasio, Mayor of New York, in the Open For Business report released in Davos in January 2018, observes: “There’s no doubt that the economic future belongs to places that believe in inclusion. There’s no doubt that the economic future belongs to places that are open to connecting with the larger world around them. There’s no doubt that the economic future belongs to places that accept and embrace people from all parts of the world, all backgrounds and all ways of life. In short, the economic future belongs to cities.”

Several studies in the past few years have highlighted the seriousness of the challenges. In 2015, a study by consulting firm Bain & Company showed that aspiration and confidence levels of women dropped by as much as 60% and 50% respectively after two years on the job. The study also showed that these steep drops had nothing to do with their marriage or motherhood status.

Joan C. Williams, distinguished Professor of Law and Founding Director of the Center of Work Life Law at the University of California, Hastings College of the Law, did her study of American women in science, technology, engineering, and math (STEM). She observed in an article in the Harvard Business

Review (also in 2015) that 77% of black women who were interviewed felt the need to provide more evidence of competence than Latin (65%), Asia (64%) and white women (63%).

This means around two-thirds the women who participated in Prof Williams’ study felt the need to prove themselves over and over again with “their successes discounted, and expertise questioned.”

Here lies the heart of the problem – women are expected to play the career game with a loaded dice, and women from a minority race aspiring for better work-life (in the field of STEM) face even greater challenges than white women with similar aspirations.

This is not just a “Western problem.” In an increasingly globalised work environment, these biases and prejudices that cut across borders have serious consequences on our economic and social progress. Some countries in Africa, Eastern Europe, Asia and the Middle East have openly shown their intolerance towards the LGBTQ community by turning the state machinery against them.

Issues much larger than gender or race

Of course, these challenges are not restricted to gender and race. In an organisation I worked with, I remember a new recruit who was at the receiving end of the inherent prejudices people have. This young man had a certain skin condition known as vitiligo or white patches. He felt that the organisation, more specifically his manager, was prejudiced against him, and this was displayed by not considering his views at official meetings, or not being invited to after-work beer-drinking sessions where informal bonds are forged between colleagues.

This is not just a “Western problem.” In an increasingly globalised work environment, these biases and prejudices that

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However, according to the Open For Business report, Indian cities such as New Delhi and Mumbai are on a par with Bangkok and Manila when it comes to businesses that are open to the gay community. In India, the report says several companies are backing the community “despite the country’s anti-LGBT+ laws.”

Systemic problems call for systemic solutions, and the changes must come from within.

While the challenge continues to persist, we are also seeing an increasing number of businesses across the world expanding their D&I agenda by opening up to the LGBTQ community.

Affirmative actions led from the top is one way of fixing this problem.

It is important to remind ourselves that affirmative action can co-exist within a culture of meritocracy. To put this a little less subtly, walking that extra mile to provide equal opportunities for women and people from different ethnic and racial background is not a compromise.

So, before we rush to invite our female colleagues to join the after-work beer sessions or a round of golf on the weekends, let us ask ourselves what the other ways are in which we can foster diversity. Focussed mentoring can help.

In my own field of banking, there needs to be a greater inclusion of women. I have observed that there is an inherent bias favouring men for faster career progress in areas like forex trading or investment banking. Archaic arguments or excuses like international timelines make it harder for women to keep

up with will not cut it anymore. Workflow processes can be reorganised to accommodate greater diversity in terms of gender. Instead of expecting women to fit into international timelines if they wish to have a career in forex trading, we can rejig work shifts that are better equipped to make the best use of their experience and skills.

Similarly, women returning from maternity leave should not be expected to restart their whole career while their male counterparts continue to have uninterrupted career progress after their paternity breaks. Offering opportunities to women across departments before they can choose to land on one for long-term career progress can be a good start to bring greater diversity in fields where men far outnumber women. This will help women to choose what they want to do and not allow a biased system to restrict their choices.

Further, mentoring by senior executives should be mindful of life-stages in a women's career. Expecting women to choose between starting a family and having a career is plain unfair when men don't face similar difficult choices.

Rejigging workflow structures

Even in 2018, it is not uncommon to see women quitting their jobs to accommodate their husband's career growth that comes with changing locations they work in. Organisations must be flexible enough to support such movements without compromising the needs of the women and that of the organisation they work with. Without dwelling deep into it, it would be safe to presume that technology today is more than capable of rejigging the workflow structures.

Stereotyping is an antithesis to the diversity and inclusion agenda. But if Asians are good with jobs that

deal with numbers, then it would be fair to consider Asian women as first among equals when they compete with Asian men for high-flying jobs in their chosen fields.

Having worked in a multinational organisation for many years, it is not hard to see the benefits of fostering diversity and inclusion at work. Let us briefly consider the economic case for greater diversity and inclusion.

Take the case of the young man who had to suffer prejudice because of the skin condition he was born with. Support groups that help people with vitiligo estimate that as many as 1% of the world population

suffers from this skin condition or around 70-80 million people. Denying them a level playing field in the workplace not only affects these individuals but also the larger ecosystem that depends on skilled and hardworking people for it to flourish and benefit all. This argument can be logically extended to every form of bias, the society today is riddled with, be it based on gender, race, language, etc.

Quick action needed for strong D&I

Two reports from consulting firm McKinsey & Company, published in 2015 (based on 2014 data) and 2018 (based on 2017 data), provide some very good reasons why a strong D&I programme in businesses some compelling economic benefits have to offer. "As in 2014, we found that companies with the most ethnically/culturally diverse executive teams – not only in terms of absolute representation but also of the variety or mix of ethnicities –

are 33% more likely to outperform their peers on profitability. This is comparable to the 35% greater likelihood of outperformance reported in 2014, and both findings are statistically significant," the report said

Despite the inherent and obvious benefits in embracing greater diversity and inclusion, the McKinsey report shows how companies are not moving fast enough in the right direction. In the above-cited report titled

Delivering through Diversity, the report said that the 346 companies in its 2015 research (mostly based in the US and UK) have increased average gender representation on their executive teams only 2 percentage points, to 14%, and ethnic and cultural diversity by 1 percentage point, to 13%. "What's more, many companies are still uncertain as to how they can most effectively use I&D to support their growth and value creation goals," the report said.

A new generation of global businesses supporting LGBT+inclusion

29 Global Challengers state that they promote equal opportunity employment, specifically mentioning sexual identity and gender orientation.

Automotive	• Mahindra & Mahindra	India	Resources & commodities	• Braskem S.A • Gerdau • Grupo Mexico • Indorama • Mexichem • Petrobras • Reliance • Votorantim	Brazil Brazil Mexico Singapore Mexico Brazil India Brazil
Consumer Products	• Brasil foods • Conchay Torro • Fermsa • Gruma • Thai Union	Brazil Chile Mexico Mexico Thailand			
Industrial Goods	• Alfa • Apollo tyres • Bidvest • Elsewedy • WEG	Mexico India South Africa Egypt Brazil	Technology, Media & Telecoms	• Axiata Group • Infosys • Tech Mahindra • Wipro	Malaysia India India India
			Healthcare	• Dr.Reddy's • Lupin • Sun Pharma	India India India
			Airline	• AirAsia • LATAM • Turkish Airlines	Malaysia Chile Turkey

Source: Open For Business: a coalition of companies supporting global LGBT+ inclusion

The times they are a-changin'

Thankfully, things have changed for the better. We are now witness to more openness of minds and acceptance of others' ideas as well. One could argue that there was no other option but to do so. We have come to recognise the importance of diversity and inclusivity at workplaces, more so as in a flat and seamless corporate world that's driven by a workforce that is a potpourri of various races and cultures.

More importantly, thanks to media, particularly social media, and constant interaction between people from diverse backgrounds, people have begun to evince interest in learning from such diversity.

The Open For Business report, while pointing out the systemic problems in dealing with diversity and inclusion, discusses in detail the gravity of the issue concerning the LGBTQ community. While the challenge continues to persist, we are also seeing an increasing number of businesses across the

world expanding their D&I agenda by opening up to the LGBTQ community. Countries like India, that have been conservative on this subject, are also seeing large corporations like the Mahindra Group, Tata and pharma and tech companies like Sun Pharma and Infosys working towards a more inclusive workplace (see Table 1).

The next generation of leaders who are at the helm of some of the most successful businesses in India are not shying away from speaking their mind on this subject. In the Open for Business report, Nisaba Godrej, Director at Godrej, said, "I would be proud if we create a culture where our LGBT colleagues can be comfortable."

The incident of the young man with a skin condition in my previous job essentially drives home the point that the most important factor in committing to diversity is to integrate it within the company's culture and core values. Having done this, it is critical and important to cover such

aspects at the time of induction of every new employee through case studies and role plays. In short, "It is OK to be different," and to do it successfully, all we need to do is to admit and accept such differences. Obviously, we are not very familiar with the culture, values and emotions of people whose backgrounds are not the same as ours. We need to try to learn and develop a clearer understanding of how the experiences of others affect their work styles, behaviour, communication, and relationships. Only then can we truly accept diversity.

In a continually evolving society, I believe that diversity will gain more and more acceptance as more and more workplaces make inclusivity and diversity paramount and at a societal level, through interactions and collaborations that are not based on homogeneity of background and values. This is the only way, I believe, that inclusivity can become a norm rather than an exception.



Aneish Kumar is a Mumbai-based banker with long experience in some of the most prominent financial centres of the world. Kumar is also a published author, motivational speaker and is enthusiastic about sharing his experiences as a life coach.

THE THIN END OF THE WEDGE

**IF SECURING A JOB IS THE ONLY GOAL
OF EDUCATION, IT IS ABOUT TIME WE
GET BACK TO THE DRAWING BOARD AND
REASSESS THE LONG-TERM IMPACT OF
HAVING SUCH A NARROW OUTCOME.**

Dr. K. Sai Prasad





This mismatch between thought, word and deed is often manufactured by industry and academia in equal proportions. While industry complains about the yawning gap between its expectations and academic fulfilment, academics say that industry should devote more time for students and bring them up to a plug-and-play level.

During an admission interview recently I asked a student, "What do you think is the end of education?" and she replied promptly, "A job." When I prodded her to think of a better response, she paused for a minute and said, "Sorry, a good job?"

Now, I do not fault her for saying this. Nine out of 10 would probably say this. The education-job linkage is perhaps one of the most potent, yet neglected, aspects of our education system today, not only in India but all over the world. The fact that today students are unable to think of any reason to study other than 'a job' is a poor reflection of the status of education, once considered a noble endeavor, whose place in the social hierarchy was

unchallenged and even revered.

"The essence of education is the concentration of the human mind and not merely a collection of facts," says Sri Sathya Sai Baba, an Indian saint revered as a great humanist for his pioneering efforts in setting up a world-class university offering education free of cost at all levels. The symbolism of free education, beyond its social message, is to let industry, societies and governments become aware that knowledge is a fundamental need for human existence and should not come at a cost.

This philosophy, perhaps, goes against the thinking of modern educationists, who treat education in a superficially-transactional manner, as if it were a competitive

product or service, and less as a noble effort to make mankind more illumined. "Education is simply the soul of a society as it passes from one generation to another," said G. K. Chesterton, the famous *littérateur* also called 'the prince of paradox' by his close friends. Is the soul of society getting corrupted, or wasted, or ignored, not receiving the heft it rightly deserves?

Are we then at a phase when all things around us seem to require quantitative logic or algebraic justification to exist or to prove themselves worthy? It appears so, going by the efforts of even governments to alphanumerically codify human beings. Is this over-dependence on numbers good or bad? This remains an unanswered

question!

As the Greek philosopher Aristotle said, education is an ornament in prosperity and a refuge in adversity. This is what everybody feels now. It appears that the advent of technology, which came with the promise of bridging the chasm between education and work, academic and industry, is no more than an un-understood, untamed power, which has reduced human intellect to the level of a silly code. The same human intelligence that created artificial intelligence, thereby implicitly admitting that human intelligence is 'the real one', is yet to understand either the power or the potential of the leviathan called technology. For most people, technology

is an inevitable enabler and an entertainer, but is rarely a tool of enlightenment.

This has been a Catch-22 situation for education too. Use technology and be damned or don't use technology and be damned. While academia struggles to address this persistent issue, the industry has not covered itself in glory either by extending a helping hand. By aligning industry needs with academic efforts, we can create an on-the-job-training kind of academic system, which will break down barriers to learning and create more cost-effective academic models.

The problem arises when technology is assumed to be a sort of panacea for all ills plaguing

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education at all levels. Open online learning portals with customized learning tools – ‘Massive Open Online Courses’ or simply MOOC – that list practically every concept from every subject for the public to ‘learn’ do not appear to be an ideal solution simply because of their dependence on technology adopting a non-human-centric approach. Simply put, technology ‘cannot’ what human beings ‘can’.

Technology has no doubt altered the learning landscape, but it has undoubtedly subdued the natural learning instincts of an entire generation and, perhaps, many more generations to come. Practitioners seem to miss out on a simple, fundamental, yet vital point, one that insists that true education is the optimal alignment of the head, the heart and the hand – metaphorically speaking, the analytical, the emotional and the

practical aspects of learning.

The success of Research Parks established by Indian Institute of Technology Madras seems to suggest that a conscious approach to amalgamate the two will yield positive results.

Rather than remaining just providers of jobs, industry should encourage knowledge creation and create scope for research, and arouse the basic instinct of human curiosity, which alone can lead to a higher-order learning.

This mismatch between thought, word and deed is often manufactured, by industry and academia in equal proportions. While industry complains about the yawning gap between its expectations and academic fulfilment, academics say that industry should devote more time for students and bring them up to a plug-and-play level. This 'manufactured mismatch', which has resulted in a narrower focus of learning – micro-learning, as experts are fond of calling it – misses the larger picture of holistic learning that is so crucial to 'understanding'. So, we now have a situation of choosing between 'well-trained' few against 'well-educated' many.

For a while now pundits have been hotly debating whether education in India, and elsewhere in the world, is moving in the right

direction. The answer is still elusive because there is disagreement and confusion about what is the 'right direction'. Albert Einstein once said, "Education is that which remains if one has forgotten everything one learned in school." Only education that is rooted in culture can refine personality and enable quicker and meaningful absorption of what is taught, not technology-enabled education 'learning solutions' as they are often referred to as.

If indeed the end of education is a job, as students today seem to think, then it pays for companies to take notice and roll out programmes for active and relevant engagement with colleges and universities. Not through an impersonal medium using the most advanced technology, but in a more direct, humane way. While decentralization of courses and curriculums is the much-

needed oxygen for institutions, greater financial and non-financial support in nurturing academic programmes is a definite strategy to create a mutually-beneficial and mutually-rewarding alignment between academia and industry. In the US, and to a lesser extent in Europe, the industry interface with academic programmes is not merely collaborative but is an open and active strategy with extensive focus on research and proactive knowledge creation.

Rather than remaining just providers of jobs, industry should encourage knowledge creation and create scope for research, and arouse the basic instinct of human curiosity, which alone can lead to a higher order learning. A survey among professors suggests that close to 85% give importance to 'teaching', while it is just 26% for 'industry relationships'.

The Gateway

Relative Importance						
	Not at all Important	Fairly Unimportant	Important	Very Important	Extremely Important	Total
Teaching	0.68	0.82	12.65	33.74	52.11	100
Research	0.45	2.18	14.99	37.19	45.1	100
Entrepreneurial and industrial-Research lab cooperation	1.23	5.46	29.06	37.65	26.6	100
Social/Community service	0.96	5.75	30.1	39.4	23.8	100

Source: *University-Industry Interactions and Innovation in India: Patterns, Determinants, and Effects in Select Industries* by K. J. Joseph and Vinoj Abraham, published by Seoul Journal of Economics (2009).

The success of this strategy is evident in the way Western universities have positioned themselves, as not merely knowledge repositories but as knowledge creators. So, what they create, the rest of the world follows! In the case of India, it is unfortunately an abysmally low ratio. It appears neither the firms nor the universities are forthcoming to collaborate.

Share of firms that collaborated with a university or research lab

Center	Collaborated	Not collaborated	Total
Mumbai	31.46	68.54	100.00
Chennai	10.53	89.47	100.00
Bangalore	13.56	86.44	100.00
Pune	3.77	96.23	100.00
Coimbatore	1.11	98.89	100.00
Delhi	6.78	93.22	100.00
Total	11.26	88.74	100.00

Source: *University-Industry Interactions and Innovation in India: Patterns, Determinants, and Effects in Select Industries* by K.J. Joseph and Vinoj Abraham, published by Seoul Journal of Economics (2009).

India, with its deep and long history of nurturing some of the brightest minds since ancient times, can become a world leader in education if it politically, socially and culturally reinvents itself to confidently tell the world that the end of education is really the transformation of the human heart! My answer, if someone had asked me, "What is the end of education?", would have been, "Transformation."



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