

Education

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● A LAKH DIGITAL VILLAGES

Aditya Malik, CEO & MD, Talentedge

The Budget announcement of 1 lakh digital villages to be created by the government over five years is a positive sign. With the availability of voice and data, tech-enabled education platforms can provide a classroom experience from top universities to these villages.

● INTERIM BUDGET 2019

Strong in spirit and substance, not so strong on specifics

PAUL DUPUIS

TRUE OF ANY government presenting its final Budget, the Interim Budget 2019 was presented as one that underscored the importance of the reforms being driven by this administration. As the finance minister pointed out, these were structural not incremental ones that will bode well for the country over the long term. To give the government its due credit, the India of 2019 is more formal, transparent and vibrant one vis-à-vis that of 2014.

This Budget goes beyond being a mere report card as it attempts to walk the fine balance in appealing to and addressing key constituencies (farmers, the middle class, SMBs), while trying to stay true to its reformist credentials.

While having populist overtones—the announcement of a direct benefit transfer scheme for marginal farmers, a universal pension scheme that strengthens the social safety net for even the informal workforce, and relaxation of income taxes for those making up to Rs 5 lakh—the government indicated that it will stick to the path of prudence with the fiscal deficit target for the year marginally increasing to 3.4% of GDP. The announcements underscore India's consumption-led economic



growth model. Incremental disposable income in the hands of a majority of the population should bode well for the growth prospects of several consumer-focused industries—retail, FMCG, food & beverages, financial services, insurance,

travel and hospitality, to name a few.

Most importantly, the government's vision for what the country should be by 2030 is both aspirational and, if the right elements fall in place, achievable. From the identification of artificial intelligence as a

critical pillar to ensure the continued sustenance of India's IT industry, to India's leading role in the adoption of renewable energy—evidenced by its status as a founding member of the International Solar Alliance and the 10x increase in installed solar capacity—the government is clear that the pathway to its goal of becoming a \$10-trillion economy is a solid one. All this in addition to the continued focus on infrastructure, a liberalised regulatory compliance framework, the continued effort to include the marginalised in India's economic growth story, and modernising the government's way of functioning.

While it would have been nice to have seen some policy announcements encouraging formal job creation, it was heartening to note that India is now home to the second-largest number of start-ups. A true testament to the entrepreneurial spirit of the nation's citizens and the enabling framework put together by the current government. In short, I would sum this Interim Budget as one that is strong in spirit and substance—although it could have been stronger on specifics.

The author is MD and CEO, Randstad India

Edtech will pave way for a 'new India'

Digitisation of villages will enable delivery of online education in these areas

VIKAS SINGH

THE GOVERNMENT HAS presented a people-friendly Budget with an emphasis on taxation, rural economy, education, agriculture and infrastructure. It was based on strong fundamentals, including containing double-digit inflation and restoring fiscal balance. Projects such as aspirational districts and providing targeted development to 115 districts achieved improved performance across health, nutrition, education, agriculture and water resources, financial inclusion, and skill development. The government is also promoting inclusion by mandating 10% reservation in educational institutions and government services for the underprivileged segment.

The government has been continuously working towards improving education and skill development to increase employability of Indian youth. Allocation for the National Education Mission has been increased from Rs 32,334 crore in RE2018-19 to Rs 38,572 crore in BE2019-20. The government is focused towards building science-oriented educational system with Institutes of Excellence providing leadership. Thus, with renewed focus on quality education, with technology as the pivot, the education sector in India is set to make several major positive changes in the years to come.

An initiative to skill India, but far more needs to be done

The government must consider imparting skill development in longer-term programmes and also provide opportunities for upgrading current skills

NARENDRA SHYAMSUKHA

AS INDIA RIDES into the cusp of a new decade with great economic speed, its ritualistic Annual Financial Statement, or the Budget, as it is popularly known, was presented with expected sops to farmers, the disadvantaged and the middle class. It is estimated that, by 2020, the average age of India's people will be just 27 years, while that of people in the US, Europe and Japan will all be over 42 years. This, supposedly, gives us a competitive advantage over those advanced economies in terms of bagging employment and business projects. However, the demographic dividend



can only be realised if we can provide the requisite skills that future workplaces require to our youth.

Last year's Budget had one of the lowest allocation for education, at just 3.5% of GDP. This year, interim finance minister Piyush Goyal announced Rs 38,572 crore will be allocated to this sector, amid calls by the sector for greater public funding.

However, there is a real challenge to increase workplace productivity in order to sustain economic growth. Emerging technologies such as artificial intelligence, data analytics and Internet of Things are altering the pattern of employee demand by industry. All-weather competencies such as accounting and information technology are being significantly impacted by new data security risks and exposure to unsafe micro-environments in cyberspace. Users need to be simultaneously upskilled to deal with these challenges.

The government's flagship Pradhan Mantri Kaushal Vikas Yojana is in the process of providing skilling to over 1 crore youth in various parts of the country, to help them prepare to earn a livelihood. Over Rs 7 lakh crore have been disbursed as loans under the MUDRA and Stand-up India schemes to start-ups and self-employment ventures to the needy. However, the current plans have been criticised for their disjointed connect with the current employment patterns in the industry. They have also been unable to address aspirations of new-age youth in their quest for more convenient lifestyles.

In order to address these concerns, the government must consider imparting skill development in longer-term programmes and also provide opportunities for upgrading current skills, as job roles keep changing with time. Changing workplace practices such as digitalisation, automation and statistically-determined decision-making must also be made part of skilling curricula and greater independent experts be called upon to design and deliver trainings for long-lasting careers.

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ChildFund launches ART in Childhood campaign

Last week, in line with its focus on child protection, ChildFund India launched a campaign called Khilta Bachpan that aims to provide kids aged 6-18 years, in underserved communities, access to art education, in order to promote cognitive, social and emotional learning, encourage creative expression, and inculcate in them appreciation for richness and diversity of arts. ChildFund hopes to reach 2.5 lakh children over two years in 15 states, and is initiating this campaign in 60 government schools in low-income communities of Delhi, while simultaneously expanding to over 2,000 schools across the country.

FE BUREAU

Science & tech

No dumping, please

Recent events highlight an unpleasant scientific practice: ethics dumping. Rich-world scientists conduct questionable experiments in poor countries



THE ANNOUNCEMENT IN November of the editing of the genomes of two embryos that are now baby girls, by He Jiankui, a Chinese DNA-sequencing expert—brought much righteous, and rightful, condemnation. But it also brought a lot of tut-tutting from the outside world about how this sort of thing was to be expected in a place like China, where regulations, whatever they may say on paper, are laxly enforced. Dig deeper, though, and what happened starts to look more intriguing than just the story of a lone maverick having gone off the rails in a place with lax regulation. It may instead be an example of a phenomenon called ethics dumping.

Ethics dumping is the carrying out by researchers from one country (usually rich, and with strict regulations) in another (usually less well off, and with laxer laws) of an experiment that would not be permitted at home, or of one that might be permitted, but in a way that would be frowned on. The most worrisome cases involve medical research, in which health, and possibly lives, are at stake. But other investigations—anthropological ones, for example—may also be carried out in a more cavalier fashion abroad. As science becomes more international, the risk of ethics dumping has risen. The suggestion in this case is that Dr He was encouraged and assisted in his project by a researcher at an American university.

The scientist in question is Michael Deem of Rice University in Houston, Texas. Dr Deem was Dr He's PhD supervisor between 2007 and 2010, and has continued to collaborate with him. The two are co-authors of at least eight published papers and several as-yet-unpublished manuscripts. Dr Deem also appears (along with nine others, all Chinese, including Dr He) on the author list of a paper, "Birth of twins after genome editing for HIV resistance", which Dr He submitted to Nature before his announcement of his work at a meeting in Hong Kong. Nature's editors rejected the paper (and will not, as is normal procedure in the case of rejection, confirm that they actually received it).

According to a Chinese scientist involved in the genetically modified embryo project, which used a technique known as CRISPR-Cas9 to disable the gene for CCR5, a protein that HIV attaches itself to when entering a cell, Dr Deem participated as a member of the project team in the procedures in which potential volunteers gave their consent. Dr Deem will not comment. But a statement from his lawyers said, "Michael Deem has done theoretical work on CRISPR in bacteria in the past, and he wrote a review article on the physics of CRISPR-Cas. But Dr Deem has not designed, carried out, or executed studies or experiments related to CRISPR-Cas9 gene editing—something very different. He did not authorise submission of manuscripts related to CCR5 or PCSK9 [an unrelated protein involved in cholesterol transport] with any journal, and he was not the lead, last, or corresponding author on any such manuscript. And Dr Deem was not in China, and he did not otherwise participate, when the parents of the reported CCR5-edited children provided informed consent."

In the US, in effect, the implantation of GM embryos into a woman's womb is forbidden. Such an experimental medical procedure would require permission from the country's FDA, and such permission would not be forthcoming. Carrying on regardless would be a federal crime and one that, according to Hank Greely, a lawyer and bioethicist at Stanford University, might attract a fine of as much as \$100,000, and a year in jail.

For an American to support the execution of such work in another country is, though, a different matter. That would not be illegal under American law—though it would still violate federal rules if Dr Deem participated in the project without the approval of his university, which is investigating his role in the affair. Rice says it "had no knowledge of the work", and, to its best knowledge, "none of the clinical work was performed in the United States." It would not comment on the ongoing investigation. Neither Dr Deem nor his lawyers would comment on the specific suggestion that he had committed ethics dumping.

Across the Atlantic from America, the Commission of the European Union (EU) has sponsored a three-year, €2.7m investigation into ethics dumping. TRUST, as it is called, has been a collaboration between researchers from Europe, Africa and Asia, which came to an end last year. It scrutinised past examples of ethics dumping and sought ways of stopping similar things happening in the future. As Doris Schroeder of the University of Central Lancashire, in England, who led the TRUST project, observes, "sometimes it's because of the lack of awareness [of the laws in other nations]. Sometimes it's about having double standards. We've certainly seen cases where there was a definite attempt to avoid legislation in European countries."

Zhai Xiaomei, the executive director of the Centre for Bioethics at the Chinese Academy of Medical Sciences, in Beijing,

who is also deputy director of the health ministry's ethics committee, welcomes what TRUST has done. "China's weak ethics governance has made it an attractive destination for the export of unethical practices from the developed world," she says. One high-profile case in China concerns Sergio Canavero, an Italian neurosurgeon who resigned from the University of Turin in 2015 because of fierce opposition to his plan to perform head transplants on human beings. Knowing that no country in Europe or North America would approve such procedures, Dr Canavero went to China, which he says "is quite different from the West" and "has a different ethics".

There, he collaborated with Ren Xiaoping, an orthopaedic surgeon at Harbin Medical University, on dogs, monkeys and human cadavers, and planned, last year, to graft the head of a patient paralysed from the neck down onto the body of a deceased donor—only to be stopped by China's health ministry at the last minute. "The proposed procedure is based on astonishingly thin scientific evidence," says Dr Zhai. "It's not only ethically indefensible but against the Chinese law." For his part Dr Canavero says, "we shouldn't have announced the plan before the two papers [on dogs and on human cadavers] came out."

A dozen similar cases in Asia and Africa fill "Ethics Dumping: Case Studies from North-South Research Collaboration", a book published by TRUST. Three notable examples are American-financed clinical trials that happened in India between 1998 and 2015. These were testing the efficacy of cheap cervical-screening methods. Such trials require control groups, which, in America, would be composed of women undergoing an established screening procedure. In the Indian trials, however, the controls—a total of 141,000 women—were not offered the pap smears

that were supposed (though they were in practice often unavailable) to be the standard for screening in India at the time.

Nor need behaving badly abroad as a researcher be life-threatening to be unacceptable. Another case highlighted by TRUST involved the San, a group of people in southern Africa well known to (and well studied by) the outside world because of their hunter-gatherer way of life, click-laden languages and ancient rock art. In 2010 a paper published in Nature on the first San genome to be sequenced caused an outcry among some San. According to Roger Chennells, a human-rights lawyer at Stellenbosch University, in South Africa, they found the consent procedures inappropriate and some of the language used in the paper, such as "Bushmen", pejorative.

As part of the TRUST project, Mr Chennells and his colleagues helped groups of San develop the first code of ethics created by an indigenous group in Africa. It requires researchers wishing to study San culture, genes or heritage to submit proposals to a review panel set up by San communities. It also asks researchers to treat people with respect, and to consider how their work could benefit local health care, education and jobs.

Analysis of past transgressions has led TRUST's researchers to suggest a set of guidelines called the Global Code of Conduct for Research in Resource-Poor Settings. This aims to raise awareness of bad practices, and to identify potential offences. A cornerstone of the code is that ethics reviews be conducted in all participating countries—those where the work will be carried out as well as those paying for it. According to Dr Schroeder, two European funding agencies—the commission itself, and the European & Developing Countries Clinical Trials Partnership, a joint effort by the EU, Norway, Switzerland and a group of drug companies—have already accepted the code. Meanwhile, in America, Kiran Musunuru, a gene-editing expert at the University of Pennsylvania, who was one of the first to look at Dr He's data last year, suggests the creation of an international register for research involving the genetic modification of human embryos, with registration being a condition for subsequent publication.

The latest twist in the CRISPR-babies saga itself is that Dr Deem was supposed to take up a position this month as Dean of the College of Engineering at the City University of Hong Kong. The offer was made before news of the birth of genetically modified babies broke. Dr Deem's possible involvement in the affair has led the City University to put the contract on hold—at least until the investigation at Rice comes to a conclusion. The City University's press office would not say whether the university would terminate the contract if Dr Deem is found to have been involved in the project, and neither Dr Deem nor his lawyers would comment on the matter. But, as one senior faculty member of the City University, who spoke on condition of anonymity, puts it, if the accusations being made turn out to be true, then "Dr Deem has committed a grave error of judgment and violated international norms. He is obviously not fit for such a senior academic position. We don't want ethics dumping here."

The Economist



The push towards technology and digitisation will bring a transformation in people's lives and also in the broader education sector. Digitisation will result in an accelerated shift towards blended, concept and skill-based learning both in K12 and higher education sector. The rise in digital technologies will bring new innovations and reduce gaps in delivery of education.

The expanding mobile and data network will play a major role in the growth of distance education, focused on training and skill development. Digitisation of 5 lakh villages will enable the delivery of online education in these areas, bridging the urban-rural divide with respect to internet connectivity. It will be a catalyst for the online delivery of education, leading to widespread skill development.

Residual income from increased tax benefit will help in allocation of spends towards child education. It will also enable the younger generation of employees to save money and reinvest it into continuing education, to build skill-sets for a dynamic marketplace and be relevant to their industries. We appreciate the efforts of the government in spearheading development and the allocation of resources towards education, skilling and job creation. Even though this is an Interim Budget, these are steps in the right direction, and we hope this proposal gets formalised once the new government is elected.

'People' being the key and 'development' a mass-movement, the 'new India' can achieve its dream of becoming a \$10-trillion economy in the next eight years.

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Education didn't get due attention: Prateek Bhargava

While it is an interim Budget, many important measures have been announced for sectors such as agriculture and defence. Education, meanwhile, has not received the same attention. Although the finance minister has rightly emphasised on harnessing youth energy through various government schemes aimed at promoting entrepreneurship and the start-up culture, one would have liked to see more allocation for technology upgrade and teacher training—the two critical elements that will allow schools to leverage the power of digital solutions and prepare students for new-age jobs and careers. We, at Mindler, believe the allocation of funds to drive career counselling and guidance initiatives—a critical need at the ground level—has been ignored yet again. We hope to see the same addressed in the full Budget later this year.

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