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Confederation of Indian Industry
125 Years: 1895-2020

SkillTech university blueprint

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Foreword – KPMG in India

The world today is rapidly becoming technology driven. Words like AI, Industry 4.0, IoT, Machine Learning have caught the imagination of public and industry alike. India is in the position to ride this tide of digital transformation. What is needed is an appropriately and adequately skilled workforce. If India can create an ecosystem to skill its youth on these emerging technologies and skills, there is no denying the fact that we can create ample growth opportunities for millions of youth.

The government recognised and created a dedicated Ministry for Skilling Development and Entrepreneurship to usher India into the new era of skill development. Policy initiatives like National Education Policy 2020 have also laid down the blueprint for increasing the use of technology in skills and education delivery. Also, with the favourable technological advancements, there is an opportunity for training and providing employability to millions of youth in the country. Skilling through technology is the answer to create a global and a future ready workforce.

Realising this scenario, KPMG in India has conceptualised a unique model in skill delivery-SkillTech. This paper traces the need for technology-led skill development in India and proposes a state-of-the-art model in the form of SkillTech university. The paper also captures some interesting suggestions and recommendations for all the stakeholders concerned with potential establishment of a SkillTech university in India. SkillTech is a progressive concept, an amalgamation of skills and technology. It has been envisioned as a solution that delivers skills-led education primarily focussed on new-age skills coupled with technology interventions. This solution would be one of its kind in the futures skills development space in India.

I truly believe that this paper would help the readers understand the magnitude importance of establishing a SkillTech university soon, the key building blocks required and the road ahead.

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KPMG in India

Foreword - CII

Recent crisis has created unprecedented challenges for the world and has changed multiple aspects of the human lifestyle, possibly forever. There are significant disruptions in the way people work, study and interact. Concepts like work-from-home, online-learning which did not enjoy mass acceptability have now become commonplace. Technology and connectivity have not only become essential but irreplaceable part of our daily lives. Human-to-human interactions have changed to Human-to-digital-to-human format.

Such challenging times call for a focussed blueprint and an action plan to regain growth. Fortunately, India's quick adoption of digital technologies has created an enabling ecosystem for facilitating industrial growth. Skilled manpower, automation, digitisation, future technologies are the factors that will be further propelling this growth and CII is committed to creating an enabling environment for businesses to thrive in the times ahead. Along with Government of India's call to create an '*Atmanirbhar Bharat*'- numerous policy initiatives, economic reforms and focus on reviving the economy using future technologies has opened new avenues for growth. It is up to us to adapt to the newer ways of doing business and take India on a growth trajectory. The theme for CII Connect 2020 'Technology as an enabler for Getting Growth Back' is a step in this endeavour.

Driving the idea of creating a technology enabled learning environment, CII is proud to associate with KPMG in India to unveil the concept of a SkillTech university. This paper outlines this novel idea which is the need of the hour. India's road to digital transformation has to be coupled with a new-age learning solution that is disruptive in its delivery and futuristic in its approach. The SkillTech university offers the freedom to learners to curate their learning path at the same time ensures deep industry involvement in the entire learning value chain. Industry participation reduces the time to acquire a skill and its actual deployment at the workplace.

CII congratulates KPMG in India for envisioning this innovative concept of technology led skill development. This is undoubtedly a major step towards creating a future workforce for the Indian economy.

Hari K Thiagarajan

Chairman

CII Tamil Nadu

Confederation of Indian Industry

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Executive summary

Technology-enabled learning has made significant inroads in the past decade and the pace at which technology is changing, it will be right to assume that the future of learning is going to be tremendously different from what it is today. The recent pandemic has also further accelerated the mass acceptance of online mode of learning. The National Education Policy 2020, announced by Ministry of Education emphasises on the growing need for usage of technology in education. It is in this light that India must take the lead in creating an enabling ecosystem that not only supports digital mode of learning but also empowers the young Indian in becoming future ready. In such a scenario, a SkillTech university model becomes the need of the hour. It offers flexi-learning environment with skills-oriented towards employability in a technology-powered environment for the learners and can disrupt the global education and skill development landscape.

SkillTech university is futuristic model focussed on emerging trends and skills for the future. It offers flexi-learning environment, pivoted around skills-led education with strong participation from both industry as well as academia. **Key differentiators of a SkillTech university include industry as faculty, choice-based learning, simulative virtual lab experience, focus on future skills, technology-enabled learning environment, social groupings and AI-driven counselling.** SkillTech takes a learner-centric approach to provide them with employment-oriented skills and make them future ready.

SkillTech as a model will have ownership and representation from across the board including government, industry and academia. The industry plays a key role in providing assistance with curriculum design, experiential learning and employment opportunities. From the governance standpoint, SkillTech will have two major workstreams- academic and management. SkillTech has been conceptualised as a predominantly an online university with options for hands-on learning component through industry tie-ups.

The learners will have an option of credit transfers and equivalence to facilitate flexible movement across learning streams. There will be provisions for multiple entry and exit points for the learners. Learners opting to take a break will be evaluated through bespoke assessments that will be specially designed to complement the learner's real-life experience. The university will be focussed on creating a future-ready workforce by curating the curriculum to have the right balance of cross-functional, vertical skills (sector-focussed) along with cognitive and other essential skills. An innovation centre of excellence will also be established alongside the SkillTech, to encompass next-generation technology and tools, commit to an industry-linked learning model and provide leadership, best practices and research support to the university.

Tamil Nadu has reflected the right mix of synergies to be the first state to institutionalise a SkillTech university. Tamil Nadu is witnessing a number of emerging clusters of future industries along with a favourable economic scenario. Strong government support and deep industry commitments are the key to success for this university. It is proposed to be a joint initiative between three key departments – Information Technology, Higher Education, and Labour and Employment. There will also be adequate representation from industry along with government in setting up a SkillTech university.

This blueprint of a SkillTech university is the first step towards envisioning this progressive first-of-its-kind institution that has the potential to disrupt skills and education delivery in India and making it a reality through government-industry-academic partnerships.

Context setting

India's education system has exponentially evolved in the last few years. Initiatives such as Right to Education, creation of institutions of eminence, National Institutional Ranking Framework and to top it all, a progressive National Education Policy (NEP) 2020 – all are a testament to Government of India's commitment towards creating a robust and a quality educational ecosystem in the country. The next leg of this evolution is the advent of technology in advancing the student learning process and shifting away from the conventional education structures.

Technology, with its multiplier effect, can become a mighty social leveller, creating access and insightful education for all. There is only one way technology adoption in education will be moving and it is upwards. Today's learner aspires for holistic development. NEP 2020 clearly calls out to leverage technology for improving learning outcomes, providing access to quality education at scale and shift towards a learner-centric model of education. Online learning in India has become a growing trend with various education-technology (EdTech) providers offering short- as well as long-term courses (including diploma and degree programmes) in an e-format. Everyone, from a school going student to a head of multinational corporation has become a potential learner.

Online learning has indeed led to greater access and reach among the learners, however it is still constrained by formal degree over practical-based skills-led education. As we enter the next decade, skills such as Blockchain, Artificial Intelligence (AI), Big Data, Machine Learning (ML), Internet of Things (IoT) etc. are gaining significant focus. The recent pandemic has further stressed upon the need to develop relevant skills other than having a conventional educational degree, in order to stay relevant at the workplace.

Melding technology with existing training infrastructure to create online learning platforms can empower the workforce with next-generation skills. Moreover, the advent of 5G technology and availability of smart devices also open up the doors for tech-based skills delivery. Requirements pertaining to various types of roles are expected to rapidly change as technology ripples through the economy in the near future. It is therefore the right time for India to start thinking about the next-generation trends and disruptions and incorporate them in education and skills delivery.

Need for new-age skill development in India

Emerging technologies are rapidly changing the future of work. The entire ecosystem is undergoing a digital transformation featuring automated assembly lines, AI-enabled bots, connected systems among other things. In this transformational journey, it has become imperative to continuously upskill the existing workforce and train the fresh entrants on future needs in order for them to be employable. However, the current training mechanisms are getting archaic quickly, and require a major overhaul. Technology-led education and skill development is need of the hour. Things such as simulative-learning, gamification, augmented and virtual reality (AR/VR), mixed reality, cloud etc. will transform the way skills are delivered in India. Quite often, online or e-training delivery is confused with technology-enabled skills delivery. It only forms a miniscule part of what technology can offer in the skill development space.

There are only limited service providers who are leveraging technology to offer skills-focussed programmes. The void between the evolving industry requirements and the skills possessed by the workforce still exists. Other challenges relating to curriculum flexibility, career path curation, life-long leaning etc. are only at a deliberation stage. This certainly calls upon a new-age skilling solution which can be integrated within our educational structures, leverage technology big time, brings in industry perspective, focusses on future skills and enhancing employment readiness, and most importantly provides choice-based learning to the students.

Tamil Nadu – pioneering the efforts

The state of Tamil Nadu is expected to witness a number of emerging clusters of future industries wherein automation and digital transformation would be an integral part of the growth story. Upcoming set-ups include an aircraft Maintenance, Repair and Overhaul (MRO) facility in Krishnagiri, another one in Chennai, solar parks at Kadaladi and Ramnad districts, fintech city planned in Kattupakkam near Chennai, Information Technology Special Economic Zone (SEZ) in Madurai, Salem, Hosur, Tirunelveli[1]. These have the potential to substantially impact the demand for workforce with future skills in the sectors such as aerospace and defence, renewable energy, digital engineering and Information Technology and Information Technology enabled Services (IT-ITeS) among others. Other existing clusters such as automobile and auto components, pharmaceuticals, textiles, plastics, etc. are expected to further fuel in the demand for next-generation skills.

The state is working towards education and training of youth, providing them with industry-oriented skills to make them employable and help them earn sustainable livelihoods. The Tamil Nadu government wishes to transform the state into the hub for future skills development in India. A pioneering effort by the state to institutionalise a technology-led, employment oriented future skills ecosystem, would help achieve this objective. It is estimated that more than one lakh[2] students, over 200[2] faculty and as many as 50[2] different industries will be directly benefitted from technology-led skill development and training. This will help address the shortage of skilled manpower and at the same time improve the potential of workforce to take up roles in emerging fields requiring data science, AI, ML, IoT etc. related capabilities. Various government departments- Department of IT, Department of Labour and Employment, and Department for Higher Education can together play a pivotal role in pooling their resources, sharing the knowledge capacities to institutionalise a progressive solution around future skills development in Tamil Nadu.

1. Guidance Tamil Nadu, accessed on 1 Sep 2020
2. KPMG in India analysis

To establish the SkillTech university as an institute of repute in education space, Tamil Nadu government must unequivocally endorse the model as a relevant alternative to traditional education. At the same time industry should own up the concept. SkillTech university should highlight its focus on experiential learning and preparing industry-ready workforce through skill-led curriculum.

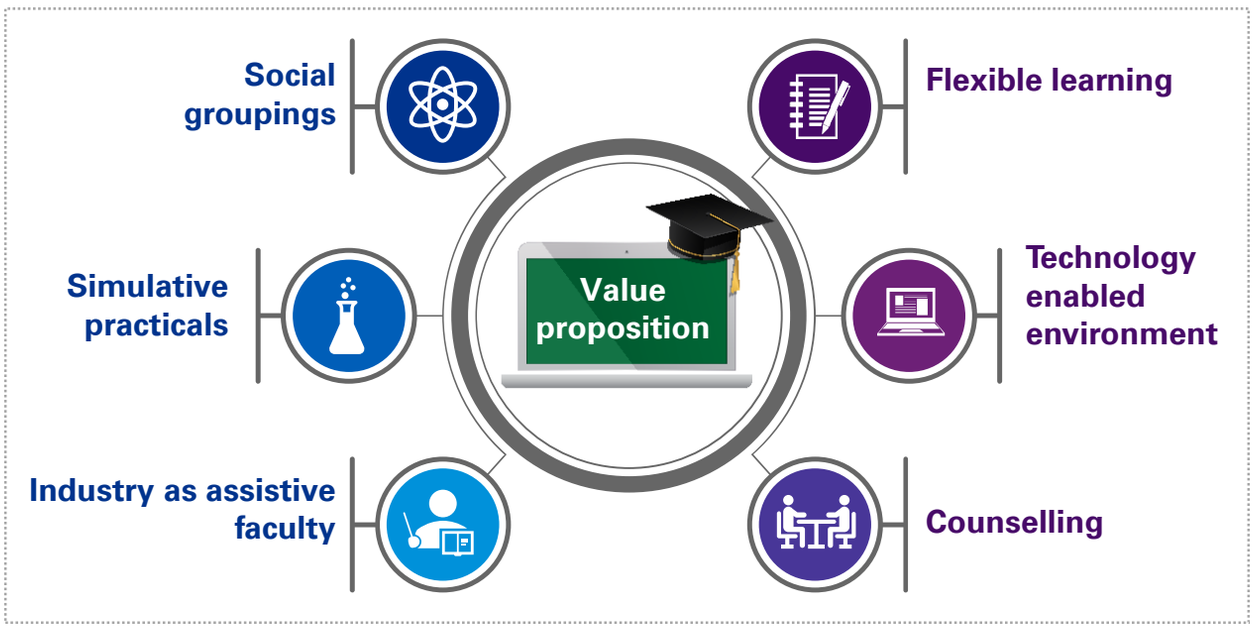
SkillTech university – A futuristic model

This report analyses an innovative concept, a fully technology-led, employment-oriented skill development model which equips the learner with future skills, delivered in a predominantly virtual mode. The envisaged institution- 'SkillTech university' will address the concerns related to industry-academic collaboration, flexible new-age curriculum and employability oriented future skills. SkillTech is futuristic model with a focus on industry oriented next-generation skills, delivered through live sessions, pre-recorded video lectures, adaptive learning methodologies by various industry experts, SMEs, practitioners along with academia. The objective of SkillTech university is to transform the way skills are currently delivered in the country and bring about the mindset shift from conventional education structures to skills-led education amongst the stakeholders. Focus on industry requirements and demands would be a key differentiator in the future of skills training and delivery. The subsequent sections in this chapter highlights the differentiators, key building blocks of SkillTech and dipstick view of operational as well as governance structure for SkillTech university.

Value proposition of SkillTech

SkillTech university is first of its kind model and is being envisaged considering evolving landscape of education and skill requirements of the industry. There are existing platforms and institutions which offers skills-oriented programmes however SkillTech is a cut above. Some of the key differentiators of SkillTech include:

- **Flexible learning** – SkillTech will overcome the barrier of linear learning. It will adopt self-paced, independent learning structure. Students will experience an adaptive learning path i.e. flexibility to curate their own learning path by opting for courses basis self interest and industry demands. SkillTech will also provide option for multiple entry and exit points with bespoke assessments to accommodate diverse experiences for each learner



- **Technology enabled environment** – SkillTech is an online university set up with state-of-the-art tech- enabled learning management systems. Users will be able to access SkillTech from anywhere, anytime. Once enrolled for a programme, the learners and the teachers would be able to monitor the progress on-the-go. In-built intelligent analytics layer will be used to devise personalised learning experience for the students. Online classrooms, virtual labs, discussion forums etc. will anchor asynchronous and synchronous forms of learning
- **Counselling driven by AI** – a crucial aspect in designing learning path. SkillTech university will provide AI-enabled career counselling. It will help students assess current career opportunities, draft a customised curriculum basis future opportunities across host of fields and define an optimal career direction. Students can undertake periodic psychometric assessments, track their progress and compare it against their charted career path, and seek in person guidance from industry mentors and in house counsellors
- **Industry at the fulcrum of SkillTech** – it is of paramount importance that the learners are taken as much as closer to the real industry experience. The university will provide relevant industry exposure through continuous interactions with the industry- in form of lectures, mentorship, live project opportunities etc. SkillTech will also ensure strong academic and industry collaborations for curriculum design and courseware development. The industry will largely benefit from this approach leading to reduction in expenditure on induction training, tech-orientation sessions etc. Moreover, industry will have a direct access the job-ready pool of skilled workforce
- **Simulative practical experience** – exposure to future skills would be complemented with sufficient practical exposure. SkillTech will adopt top of the line simulators to acquaint learners with practical aspects. There will be AR/VR led practical projects along with capstone features. Along with adoption of simulative lab experience, university will engage with fulfilment centres through relevant industry tie-ups to create shop floor experience. This approach will also ensure that the learning outcomes and practical metrics are diligently tracked and adopted to curate the future learning path for each individual
- **Social groupings** – SkillTech in its virtual model also offers to establish interest-based social groups to facilitate community learning. This engagement forum would allow participation of national and international experts, topic enthusiasts, thus furthering the collaborative learning amongst the learners.

Key stakeholders and their roles

SkillTech is a novel concept. It would require inputs, support and continuous feedback from across the stakeholder value chain. For instance, government stakeholders would provide policy level guidance along with initial investment commitment to institutionalise the SkillTech university. Similarly, representatives from the industry will incubate operations and functioning of SkillTech. Roles and responsibility areas of some of these stakeholders have been provided in the table below.

Stakeholders	Roles and responsibility areas
Government and regulatory authorities 	• Providing continual strategic guidance and policy level support • Financial assistance in the form of monetary grants and cost-sharing to institutionalise SkillTech university • Liaise with cross-functional departments to establish governance and management structures for SkillTech • Affiliation and course accreditation related approvals
Industry 	• Inputs in designing new-age course and curriculum attuned to industry requirements • Organise guest lectures, experiential learning modules and industrial visits in capacity of assistive faculty • Provide opportunities for live projects, internships and on-the-job training • Offer joint certification to students through course endorsement • Assistance in creating skills-focussed employment opportunities
Advisory council(s) and management 	• Foster national and global industry-academic collaborations • Design programme structure to focus on future skills with arrangements for simulative practical based pedagogy, recruit part- and full-time faculty members • Manage end-to-end student life-cycle including counselling and assessments • Ensure robust assessment mechanisms at multiple entry-exit points • Seek feedback and continuously evolve programme structures in close consultation with the industry • SkillTech brand promotion and advocacy to mainstream skills-focussed education
Faculty, trainers and students 	• Personalised training delivery for the learners, as well as peer-to-peer learning through relevant social groupings • Course development, creating training videos (both synchronous and asynchronous), takeaway notes, practice sessions, doubt clearing sessions • Students to undertake counselling sessions to self-curate a learning path, seek hands-on learning experience
Technology and education service providers 	• Develop and host a robust learning management system to manage student e-life-cycle, including troubleshooting and debugging • Continuous capacity building of users to adapt to virtual training delivery format • Support in seamless progress tracking on-the-go • Collaborate with cross-functional education service providers to host next-generation skills-focussed content on SkillTech

Building blocks of SkillTech university

SkillTech has been envisaged with an objective to provide employability oriented future skills, using technology as a delivery medium. There will be both short- as well as long-term duration courses to cater to a wide variety of learners, at different points of their careers. SkillTech would have provisions for choice-based learning wherein the learners would earn credits basis the duration and the type of programme they opt for. These credits would be accumulated in a digital bank of the learner. These credits would be transferable across institutions. Other building blocks of the SkillTech have been delineated in the below sections.

Different types of certificate credentials

SkillTech would offer a host of options to the learner to design and curate a learning plan, and correspondingly earn credits which translate to certificate, diploma or degree upon successful course completion. Some of these credentials are provided below:

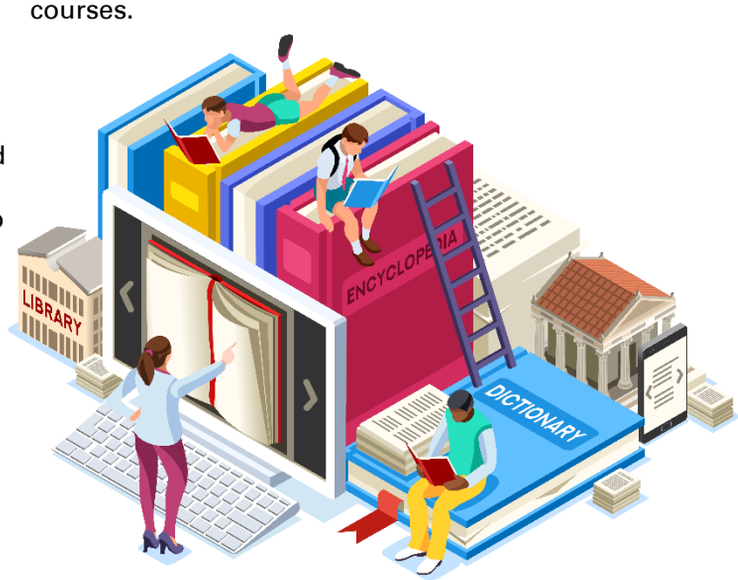
Certificate courses – short term modules (up to six months, ~20 academic credits) aimed at acquisition of specific employment focussed skills and competencies. These would be relevant for working professionals who are looking to upskill themselves on emerging technologies. Certificate courses would also be useful for the students who are undergoing a regular degree programme and would like to add practical component to their learning.

Diploma and degrees – long term one- or two-year programmes (more than 40 academic credits) focussed on sector specific roles with real-time scenario-based problem solving and critical thinking skills. These courses would be built at par with regular degree programmes and will be pivoted around future skills. A learner can choose to club multiple certificate courses to create a diploma or a degree programme depending upon his/her choice of sector or skills. Advance diploma or degree courses would help the learner to acquire an in-depth understanding of a domain or a sector. These courses, depending upon duration, will have components of live projects, virtual lab projects, on-the-job training (OJT) component, experiential learning etc.

Flexible learning curriculum and credit mobility

SkillTech takes a learner-centric approach by providing the flexibility to choose courses depending upon student's interest and focus areas. All the programmes will comprise of multiple modules (or credit-based courses) that can be delivered within as short as two month time period. Each student will complete a minimum number of credits to ensure a completion certificate at the end of the module. SkillTech will also enable credit transfer i.e. those students those who opt and successfully complete a module(s) from SkillTech can plug the corresponding credits in their existing degrees. This credit mobility to start with, will be initiated between SkillTech and other state institutions.

The university will offer a library of courses designed on future skills. Students will additionally have an option to replace or upgrade their on-going programmes with additional modules (along with assessments) relating to any emergent skill that they feel is relevant and can help them in securing better employment opportunity. Moreover, students will have the provision to discontinue the programme (post completion of threshold number of academic credits) and pursue any working opportunity in the industry. Their credits would be stored in a digital bank which can be re-utilised at a later date in order to help them complete a diploma or a degree programme. Adopting this approach will bring in increased flexibility in education and will improve the completion rates for SkillTech courses.



Focus on skills for future workforce

More than 60[3] per cent of India's population is in the working age group (15-59 years) and more than 50[3] per cent is 25 years or older. On one hand, millennials are on the brink of coming into workforce and on the other hand we have emerging business models and technologies that are reimagining future enterprises. With the advent of Industry 4.0, companies are harnessing new technologies to reach higher levels of productivity and efficiency, developing new solutions for an international customer base and are bringing in digital innovations at the workplace. It calls for acquisition of skills which will make an employee relevant in the new workplace. This is where SkillTech provides a concerted solution around future skills development attuned to evolving industry requirements. The courses to be offered at SkillTech university would include:

- **Cross-functional or non-sector skills** – skills that can be leveraged across job profiles, such as those related to data science; emerging tech (AI, Machine Learning, Blockchain and Internet of Things); e-Governance; cloud computing and Robotic Process Automation (RPA) etc.
- **Verticals or sector-focussed skills** – skills that would provide an in-depth understanding of emerging tech within a conventional sector
- **Cognitive skills** – skills related to decision making; design thinking; problem solving; critical reasoning etc. These would be clubbed with other functional competencies such as product management, digital marketing, impact assessment; entrepreneurship; innovation and strategy which are essential in the evolving workplace

States such as Tamil Nadu are experiencing an increased workforce demand, skilled in the upcoming technologies and job roles of tomorrow. Digital transformation and automation are expected to impact and disrupt almost all the major industries. Courses that will be offered at SkillTech would focus on some of these key skills into consideration. Key trends from skills perspective across some of these areas include:

Focus areas	Emerging trends and skills
Cross-functional skills	
Data science and analytics 	• Big data and business analytics, statistical modelling • Augmented data management, data warehousing and mining • Natural language processing
Emerging tech 	• Introduction to Industry 4.0 • Commercial AI and ML, neural networks and deep learning • Additive Manufacturing, IoT
Cyber security 	• Cyber security and algorithms, cyber forensics • Secure coding practices • Applied cryptography
Cloud and RPA 	• Cloud architecture and engineering • Introduction to cloud strategy and solutions • Security in the cloud platform

3. National Policy for Skill Development and Entrepreneurship, Ministry of Skill Development and Entrepreneurship, July 2015

Focus areas	Emerging trends and skills
Sector-focussed skills	
Automotive 	• Digital innovation – connected car technologies, enhanced information cum entertainment, automated navigation • Autonomous vehicles
Energy and renewables 	• Intelligent automation in solar/ wind energy generation • Usage of data analytics to predict usage patterns, load fore-casting etc. • Manufacturing of smart meters and usage of smart grids
Manufacturing 	• Efficient design models – green designs, Three Dimensional (3D) modelling, smart designs • Automated control systems, usage of drones
Healthcare 	• Advanced medical appliances, 3D tech • Applied data analytics in medical diagnosis • Use and repair of smart medical instruments for healthcare workers
Cognitive and other key skills	
Leadership and innovation 	• Inspirational leadership and management • Leading projects in agile environment • Innovation, creativity and entrepreneurship theory
Design thinking 	• Critical thinking and decision making • Workplace transformational practices – digital and others • Leading the organisations of the future
Soft skills 	• Communication and confidence – theory and practice • Advanced negotiations • Basics and advanced techniques for effective writing • Presentation and making effective pitches
Quantitative ability 	• Basic numeracy to advanced financial and statistical skills • Linear programming, problems in quantitative analysis • Financial modelling and analysis

Industry experts believe that the initial set of focus sectors for SkillTech university should include information technology, manufacturing, construction, automobiles. Another key area is to build capacity of trainers to absorb the emerging trends. Teachers' training will ensure robust delivery system and seamless imparting of traning in skills relevant for the workforce of the future. Collaborations with international institutions of repute would enable next-gen course design.

Hands-on learning through simulative practical experience

SkillTech will imbibe various methods as part of its pedagogy to provide hands-on learning experience. Some of the approaches will include the following options:

- **Simulation modules** – help the learners to better understand and visualise the concepts and functioning of a machine or process. Critical physical scenarios or tasks in the courses will be simulated and will be part of session plan. Simulation modules will also include interactive games to further enhance learner engagement
- **Virtual labs** – will be facilitated by interactive simulators powered by AR/VR to mimic the physical laboratory set-ups. Basis discipline of study, these virtual labs will supplement the learning curve with select number of hours of practical sessions. Virtual labs will be embedded in the learning management platform to give learners a consistent and seamless experience as they move between lectures, simulations and other content
- **Capstone exercise** – will help students apply their knowledge in real-time business scenarios during the final leg of coursework. These exercises also promote integration and connections between general education and the industrial skill. Some of the capstone exercises would include business case analysis, web or mobile-based simulation (re-enact physical scenarios as per the decisions taken based on the learning outcomes) etc. which would be designed and facilitated with the help of industry partners. Capstone projects will be complemented with virtual discussions with course instructors, industry mentors to gain market insights and guidance
- **On-the-job training** – to strengthen the hands-on experience, short-term practical programmes will be organised in partnership with local industry players. Leaners would be assigned with real-life problem cases to under the guidance of an industry mentor. OJT will be specially integrated with manufacturing oriented skills
- **Live projects and internships** – will enable the learners to gain practical knowledge for an occupation. Live projects and internships will be designed in partnership with industry clusters to enable direct application of the programme learning in real-life scenarios. Such projects would entail designated mentorship from the industry to provide required data and guide the learners in problem-solving.

Simulations and virtual labs as a replacement of actual shop floor experience might sound far-fetched, today. However, there was a time when driving or flying simulators were also not sufficiently advanced. It is quite possible that an advanced simulator experience coupled with short industrial visit (depending upon the course type) can provide the right environment for practical learning for the students.

Innovation centre of excellence

SkillTech will also establish an Innovation Centre of Excellence (ICoE) in collaboration with industry. ICoE would encompass state-of-the-art tools and next-generation technology for experiential learning and incubating cutting-edge research. The envisaged ICoE will bring in cross-discipline team members, faculty, industry experts and practising professionals to engage on real-life problems and identify solutions. Moreover, ICoE will house a central repository cum knowledge bank of sector trends and leading practices around emerging technologies.

ICoE will also act as a research hub wherein the industries can cross-utilise time and resources of the SkillTech. Simulators and extensive use of emerging technologies would be key factors in widening the reach and accessibility of the ICoE. Some of the key themes of ICoE works would include experience designing, new product engineering, data science and analytics, automation and agile operations for the partnering industries among others.

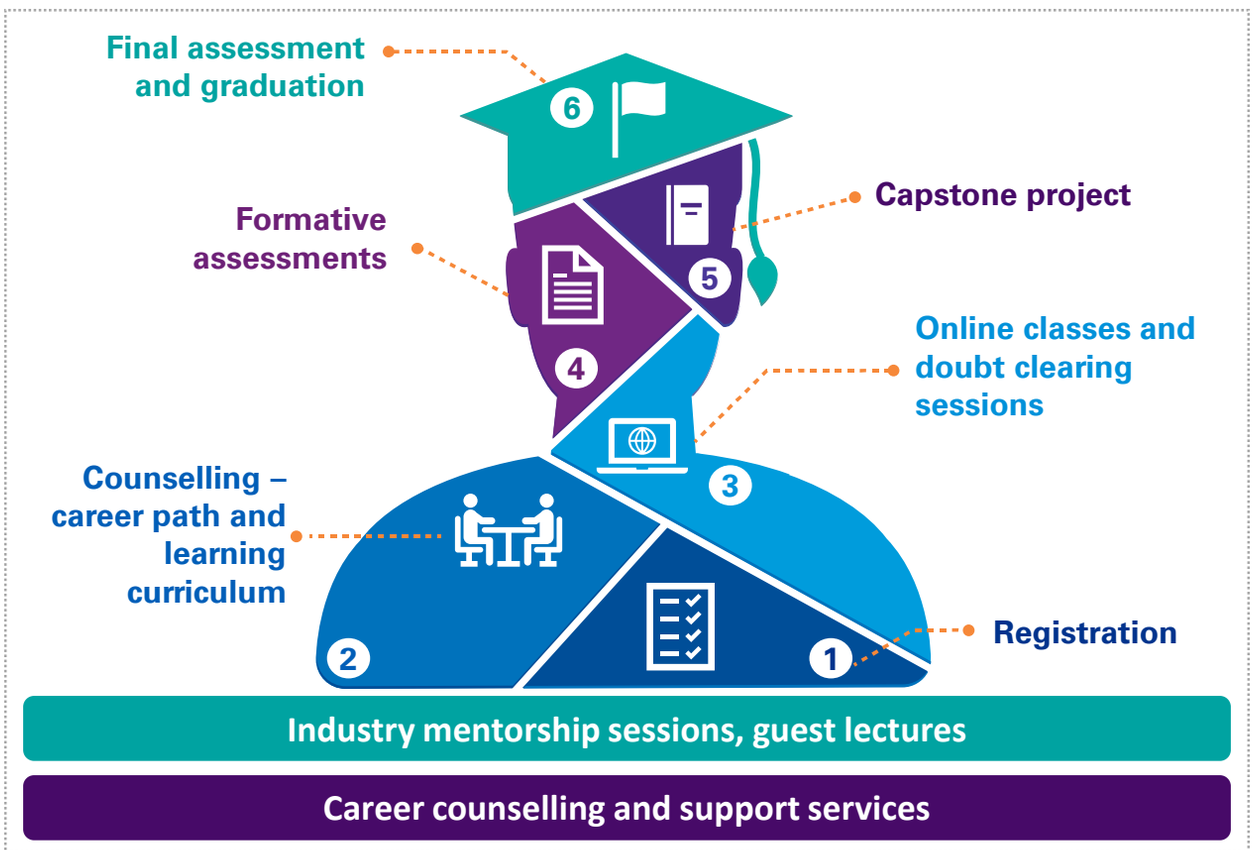
Career support services

SkillTech university will focus on holistic development of the students- not only providing employability linked skills but also help them develop a workplace mindset. The section on value proposition of SkillTech highlights industry focus, social groupings, skills-led education, next-generation simulative learning among others. This workstream at SkillTech would focus on complementary services that would be offered to the learners, including:

- **Personalised career coaching** – counsellors to help the students with career planning, job applications, hone interview skills. The career coaches would be able to leverage the AI-enabled counselling tool to guide the students on decisions related to alternative career paths etc.
- **Resume building** – students would be able to seek assistance in developing a sharp profile in the form of curriculum vitae (CV) or resume or cover letters to get shortlisted by potential recruiters
- **Job board** – SkillTech will have dedicated job board accessible to all the students. The potential recruiters would also be able to access student profiles, courses undertaken and interest areas. The university would facilitate tie-ups with various employers to list any suitable openings on university's job board. One of the other features of the board would be to provide evolving scenario of the job market in various geographies
- **Career fairs** – pooled job drives in various cities to connect students with potential employers. SkillTech would co-organise these fairs with placement service providers and industry associations
- **Access to knowledge bank** – an unlimited repository of latest content in the form of pre-made videos, reading text, case problem exercises, short assessments etc.
- **Alumni support** – SkillTech will have a dedicated alumni section highlighting the journeys undertaken by students in the past. There will be provisions for alumni connect sessions and mentorship assistance.

Operational model of SkillTech university

Right from the registration to certification, the entire student life-cycle is phased in broadly six stages viz. registration, counselling and defining the learning path, virtual classroom sessions, assessments, capstone project and final certification. Additionally, the students would have the necessary support from industry mentors and may also access the career support services.



Student registration – students would register online at SkillTech and sign up for a particular credential type (certificate, diploma, advance diploma or degree).

Counselling and learning path curation – all the students will undergo an automated career counselling process to chart out possible learning plans and career paths, subjects that may be opted for, suitable programme type, possible job opportunities post-completion etc. The system will automatically refer to the job board basis students' interest

Online classes – once the learning path is identified, the course(s) will be delivered online via asynchronous and synchronous modes. There will be doubt clearing sessions with industry experts and faculty. Web forums for discussion among peers and teachers, social groupings with like-minded students would also be created.

Assessments – will be an integral part of the course design itself. At every entry-exit point, the learner will undergo formative assessments. These assessments will be adaptive in nature to complement the learning paths, practical knowledge gained during industry stints and future interest areas. There will also be a summative assessment at the end of the course. Credits earned by the learner would be stored in the digital bank

Capstone or industry projects – each learner will need to execute a capstone or an industry project. This project will be developed in collaboration with the industry experts so as to understand the application skills of the learner.

SkillTech will have a dedicated online web portal and a mobile version for training delivery and progress tracking. The mobile app would help students to receive push notifications regarding schedules, special sessions, guest lectures, job postings etc.

Governance structure

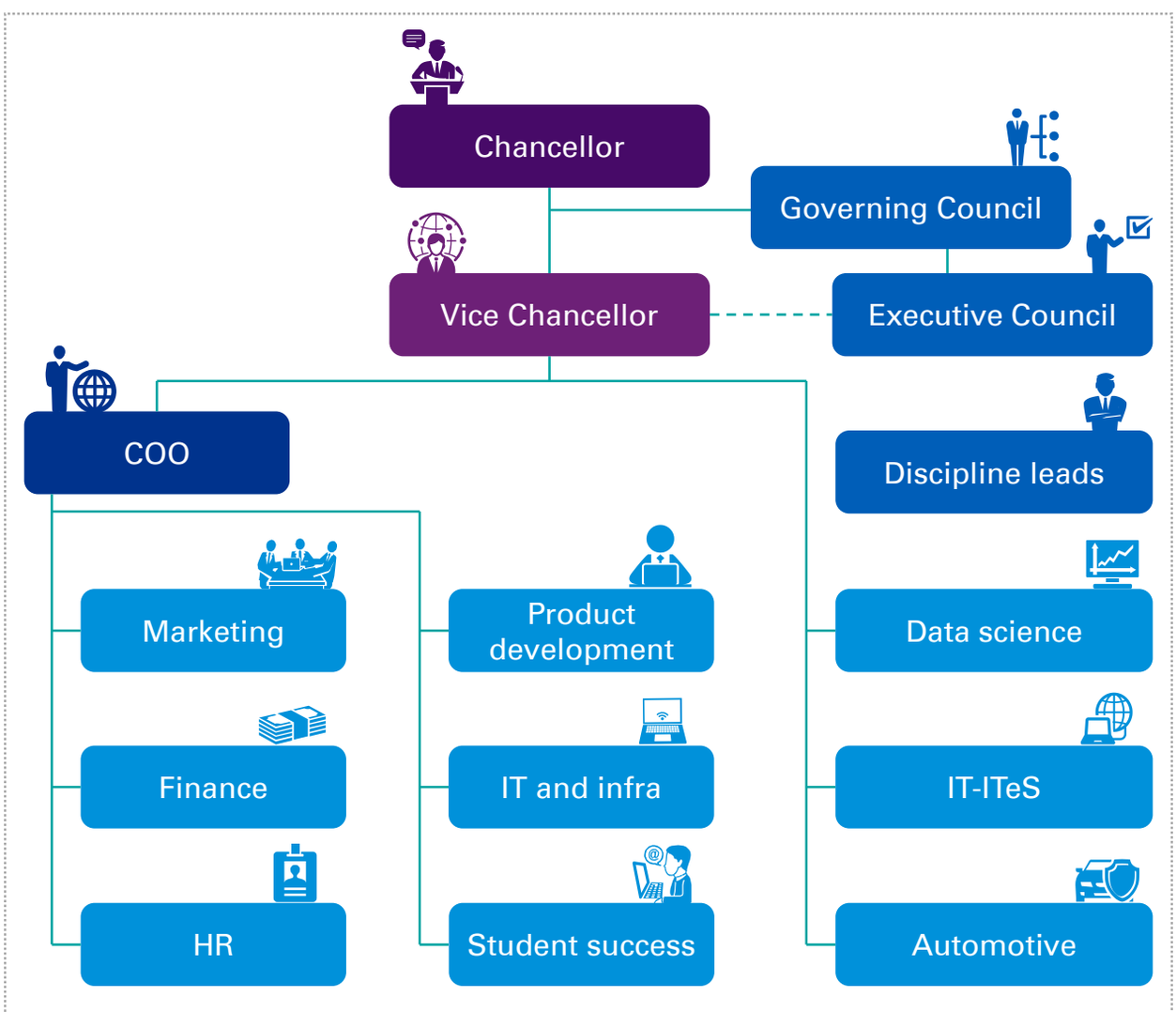
SkillTech university will have a robust governance structure to provide strategic as well as operational direction. Roles and responsibilities of all the members would be clearly defined. The overall responsibility would be with the Chancellor who would be supported by his/her deputy – the Vice Chancellor. They will be guided by governing and the executive councils. There will be two broad verticals i.e. academic and management.

Management vertical would be headed by a Chief Operating Officer (COO) and would consist of departments related to career support services, product development, product development, HR, finance etc. This vertical will also consist of other key departments such as corporate relations and collaborations etc.

Academic vertical would consist of various disciplines such as data science, automotive, emerging tech, healthcare, energy, entrepreneurship and innovation etc. along with faculty of the respective discipline. These disciplines would be led by dedicated Heads of Discipline (HODs). HODs and COO would report to Vice Chancellor of the university.

SkillTech's governing council would have representation from government, private sector and academia. It would provide strategic guidance whereas the executive council would work closely on the aspects related to programme design, operations of SkillTech, industry collaborations among others.

SkillTech university will be set up with the joint responsibility between the government and the private sector bodies. With its launch, the university will gradually start generating revenues and become self-sustainable. The associated ICoE will also open up a channel for research related revenues.



Way forward

Technology enabled skills delivery will transform the training landscape in India. SkillTech model has been carefully designed taking into consideration, various issues and challenges highlighted by industry, students and academia. With features such as choice-based credit system, self-paced learning, flexibility in choosing courses, multiple entry-exit points, SkillTech has been conceptualised as first of its kind, state-of-the-art institute focussing on future skills with significant industry participation on different fronts. Tamil Nadu has shown interest in incubating the model and pioneering the efforts of institutionalising Tamil Nadu SkillTech university. With its unique value proposition and support from the industry leaders, SkillTech is expected to revolutionise the workforce development plans for the state, placing it ahead of its times. This paper has presented key features of a SkillTech however it is equally important to attend to some of the unanswered elements associated with this novel concept and seek continuous feedback from across the stakeholder value chain.

Key operational considerations

This section highlights some of the anticipated operational considerations associated with SkillTech.

- Capacity building of faculty, industry experts and practitioners to design and deliver online course modules – introduce course building sessions and standardise the module development process
- Foster industry collaborations through governing council members, leverage faculty with industry connects, work with industry clusters and bring industry associations on board
- Work with technology leaders to overcome bandwidth and technology related issues. Integrate cutting-edge tech solutions and customise them to meet the needs of SkillTech programmes
- Completion rate for Massive Open Online Courses (MOOCs) and other online programmes is moderately low. Multiple levels of interaction and touch points with students need to be established along with counselling sessions, industry interactions and periodic tracking of course progress

- With an online model, there are information security risks, phishing, legal issues around accessibility, copyright, licensing and other risks. Measures such as Digital Right Management (DRM) for license agreement and copyright protection, strong firewalls and cryptographic security for preventing breach of privacy ensuring safety of user data needs to be built in and regularly updated
- Curriculum customisation and schedule which would require real-time adjustments in faculty availability.

Regulatory support required

SkillTech is an e-university with no precedence in India. SkillTech needs amendments from the regulatory standpoint to achieve its vision of building skills for the future workforce through a flexi-learning model. university Grants Commission of India has prescribed norms for Online Courses or Programmes or Open and Distance Learning (ODL). To institutionalise SkillTech in India, government bodies and regulatory authorities need to revise their guidelines and norms, to accommodate such futuristic models. Some of the suggestive measures include:

- SkillTech can be established as a state open e-university through a state act that outlines the characteristics of an open university and e-university for future skills
- Blended learning programmes may not be categorised as ODL and should be allowed to conduct technology-enabled online tests
- Programmes offered by SkillTech can be considered for credit mobility. For students undergoing a formal degree programme, these credits may also be awarded at module level similar to that of courses on SWAYAM
- The online programmes should be allowed to start anytime through the year or commence on fulfilling a sanctioned batch size
- Regulations on full-time faculty may be relaxed to enable faculty collaborations. Adjunct faculty from industry or from other universities (domestic as well as global) should be allowed to interface as programme or module coordinators. Part-time faculty or doctorate students or teaching assistants may also become course mentors.
- Relaxation to offer programmes designed by faculty in from institutions (domestic or international) and to allow offering of programmes led by industry professionals
- Definition of learning elements to include teaching hours, self-learning hours and practice hours based on the pedagogy. Programmes may be allowed to get divided into multiple modules with two, four or eight credits to offer flexibility and accommodate multiple entry-exit provisions and a choice-based credit system.

Representatives from leading skill training providers opined that service providers should be well integrated under the fold of SkillTech. Students undertaking vocational courses will be eager to learn these future skills in order to improve their earning potential. Training providers expect government to support with relevant subsidies for the students to take up online courses and facilitate creation of a separate regulatory body to effectuate the SkillTech model.

Next steps

SkillTech university is expected to be a stepping stone in the area of employability oriented skill training. This model will not only create a future ready workforce but will also help the industry in harnessing this human capital to generate higher economic value. It is envisaged that in the first five years of its launch, SkillTech university has the potential to create a training capacity for more than one lakh[4] learners. To realise this impact, from an action plan perspective, government would need to create an enabling framework to institutionalise the SkillTech university and fulfill the regulatory requirements. Simultaneously, governing and executive councils should be constituted with due participation from industry as well as academia to operationalise the plan for SkillTech. Private sector along with government needs to commit financial assistance in the formative years of the SkillTech university. Industry stakeholders can additionally contribute towards curriculum design, programme development attuned to industry needs, offer research labs and access to shop floors for hands-on learning components of SkillTech.

4. KPMG in India analysis

About KPMG in India

KPMG in India, a professional services firm, is the Indian member firm affiliated with KPMG International and was established in September 1993. Our professionals leverage the global network of firms, providing detailed knowledge of local laws, regulations, markets and competition. KPMG has offices across India in Ahmedabad, Bengaluru, Chandigarh, Chennai, Gurugram, Hyderabad, Jaipur, Kochi, Kolkata, Mumbai, Noida, Pune, Vadodara and Vijayawada.

KPMG in India offers services to national and international clients in India across sectors. We strive to provide rapid, performance-based, industry-focussed and technology-enabled services, which reflect a shared knowledge of global and local industries and our experience of the Indian business environment.

About CII

The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the development of India, partnering industry, Government and civil society, through advisory and consultative processes.

For 125 years, CII has been working on shaping India's development journey and, this year, more than ever before, it will continue to proactively transform Indian industry's engagement in national development.

CII is a non-government, not-for-profit, industry-led and industry-managed organization, with about 9100 members from the private as well as public sectors, including SMEs and MNCs, and an indirect membership of over 300,000 enterprises from 288 national and regional sectoral industry bodies.

CII charts change by working closely with Government on policy issues, interfacing with thought leaders, and enhancing efficiency, competitiveness and business opportunities for industry through a range of specialized services and strategic global linkages. It also provides a platform for consensus-building and networking on key issues.

Extending its agenda beyond business, CII assists industry to identify and execute corporate citizenship programmes. Partnerships with civil society organizations carry forward corporate initiatives for integrated and inclusive development across diverse domains including affirmative action, livelihoods, diversity management, skill development, empowerment of women, and sustainable development, to name a few.

With the Theme for 2020-21 as Building India for a New World: Lives, Livelihood, Growth, CII will work with Government and industry to bring back growth to the economy and mitigate the enormous human cost of the pandemic by protecting jobs and livelihoods.

With 68 offices, including 10 Centres of Excellence, in India, and 9 overseas offices in Australia, China, Egypt, Germany, Indonesia, Singapore, UAE, UK, and USA, as well as institutional partnerships with 394 counterpart organizations in 133 countries, CII serves as a reference point for Indian industry and the international business community.

Notes:

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IN OUR SPIRIT OF UNDYING ENTHUSIASM
OUR DRIVE TO ACHIEVE THE EXTRAORDINARY
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