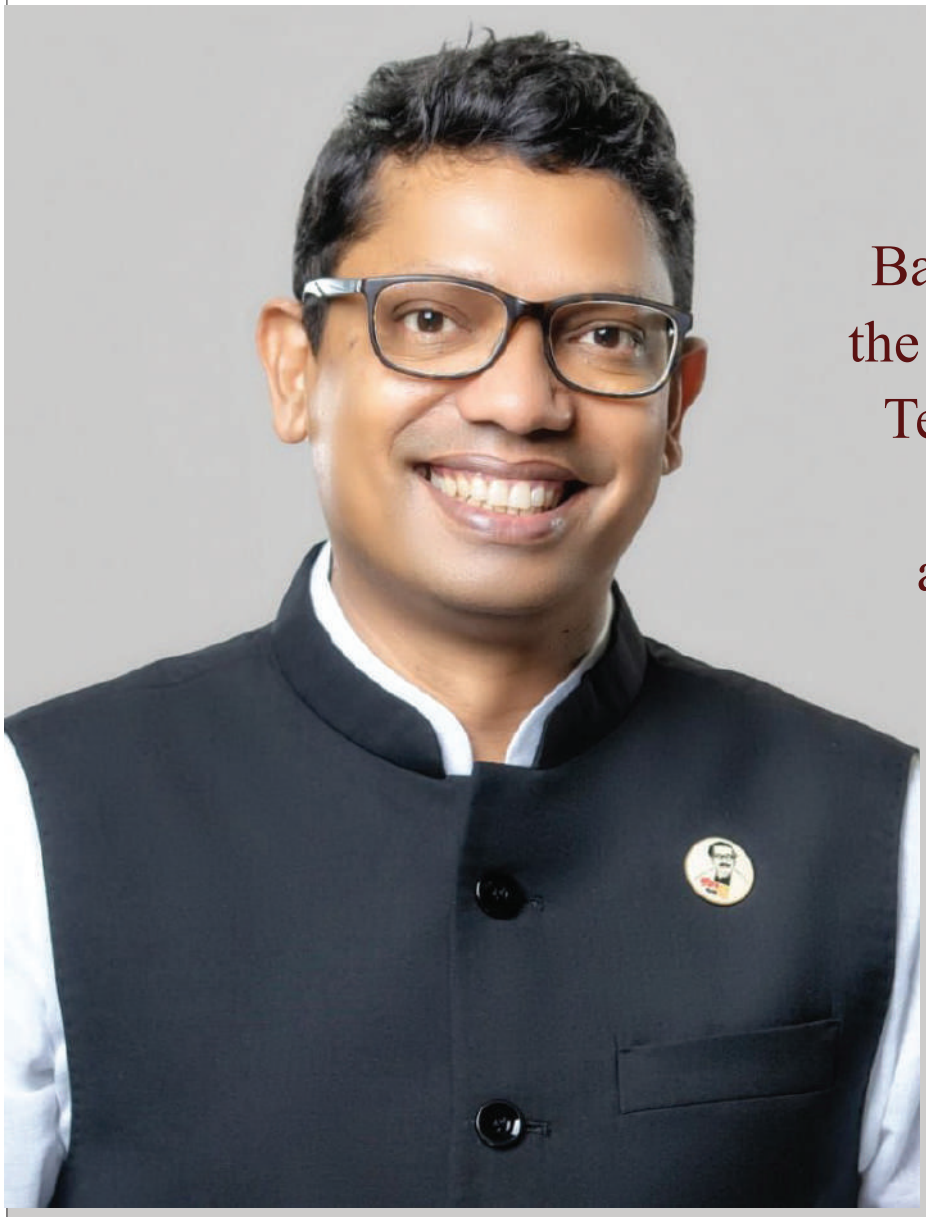
"In Smart Bangladesh every citizen would be a leader,"- Speaker

TECH INSIGHT

An EDGE Publication

1st issue, published in August 2023



Bangladesh is on the Course to be a Tech Hub on the path to a Smart Nation

-Zunaid Ahmed Palak

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Article

Bangladesh is on the Course to be a Tech Hub on the path to a Smart Nation

Zunaid Ahmed Palak

In the past decade, Bangladesh has exemplified how remarkable progress can be achieved by embracing the vision of Digital Bangladesh, as envisioned by our esteemed leader, Prime Minister Sheikh Hasina. Having successfully embarked on this journey, the nation now aims to build a Smart Bangladesh, propelling itself to become an intelligent and innovative nation by 2041. In this journey also we want to turn Bangladesh into next technological hub in Asia and beyond.

One might question whether such an ambitious feat could be accomplished. The answer lies in the successful implementation of the Digital Bangladesh initiative. Prime Minister Sheikh Hasina, the visionary leader behind the concept of Digital Bangladesh, has demonstrated that the complete execution of any programme, no matter how challenging, is achievable with the presence of political will, sincerity and efficiency. Almost the entire area of Bangladesh is now covered by mobile networks, ensuring widespread connectivity. With over 180 million mobile connections and a staggering 130 million internet users, the country has witnessed a significant in digital access. Moreover, the government has taken proactive measures to provide citizens access to over 2000 public services. Furthermore, the ICT has been expanded to rural areas that has played a crucial role in bridging the digital divide across the country. But, the situation of the ICT sector in 2009, when the government under the leadership of Prime Minister Sheikh Hasina began its journey towards Digital Bangladesh was starkly different. At that time, an ICT ecosystem was virtually non-existent, and government services could not be delivered electronically. Merely, 2.5% (40 lacs) of the population had access to the internet, reflecting limited connectivity. The number of IT professionals in the country was merely around 50,000, including a scarcity of skilled workforce. Furthermore, export revenue from the ICT-based industry was only 26 million USD. Despite these challenges, Bangladesh embarked on a transformative journey to overcome these limitations and pave the way for a digital revolution.

Just a decade ago, Bangladesh had to import smartphones to meet the demands of the country's growing smartphone users. Now, Samsung, one of the world's biggest producers of smartphones, manufactures its latest high-end devices in Bangladesh.

Since 2021, Samsung has started manufacturing its Galaxy S21 Ultra 5G phones in Bangladeshi plants. In the United States, this phone costs USD 1199.99 and if imported its cost would be more than BDT 1,66,000. Thanks to local assembling plants, Bangladeshi customers can now purchase this phone for only BDT 1,19,000.

It is not just Samsung, various companies such as Nokia, Walton, Vivo and Oppo are also producing high-end smartphones in Bangladesh. In 2022, locally manufactured and assembled phones met more than 52% demand for smart phones.

The secret behind such an astounding transformation in the last few years is the current government's special focus on expanding ICT and heavy industries. The government's priority in this

sector has been impeccably highlighted in its Smart Bangladesh vision.

Smart Bangladesh Vision 2041, as announced by Prime Minister Sheikh Hasina, is expected to bring down poverty rate to 0% and achieve 100% high-speed internet accessibility, 100% more than 5G smartphone penetration, a 100% inclusive, circular and cashless economy and expansion of ICT-based green industries by 2041.

All government services will be delivered electronically, government offices will be completely paperless and citizens will live in an absolutely inclusive, empowered and self-sufficient society.

But the fact of the matter is: under the prudent and dynamic leadership of Prime Minister Sheikh Hasina, the government has radically transformed the ICT ecosystem and built Digital Bangladesh over the last decade. The government has digitised 2000 services to enable access. Out of 170 million people, 130 million people have a stable internet connection. Bangladesh currently earns over 1.5 billion USD annually by exporting ICT-related services.

The Bangladesh government has implemented this massive transformation by establishing a safe and friendly investment ecosystem for investors and entrepreneurs. The government has been providing attractive incentives for investors to expand the emerging ICT industry of the country.

For instance, IT companies can enjoy 10 years of corporate tax exemption and if they invest in one of the Hi-tech parks established by the government, the duration of corporate tax exemption can be 12 years. Expatriate professionals working in Bangladesh's ICT industry are exempted from income tax. Import duties for investors or entrepreneurs for importing capital machinery and other assets are exempted.

Besides these, the investors also enjoy exemption from VAT, double taxation, stamp duty, registration fee (if they want to purchase land) and a 100% profit repatriation facility. If investors or entrepreneurs invest in Hi-tech parks, they will also enjoy bonded warehouse facilities.

Such lucrative incentives have already created an unprecedented acceleration in Bangladesh's emerging ICT market. In the last five years, more than 2,500 startups have been established in the country and around 200 ICT startups are entering the market every year.

In the near future, Bangladesh is going to be a big player in the global semiconductor industry. Honourable Prime Minister's ICT Affairs Adviser to the Prime Minister Mr. Sajeeb Wazed Joy has instructed the ICT Division to work vigorously on four technologies. These are microprocessor design, artificial intelligence (AI), robotics and cybersecurity. Accordingly, the government has been working on these four technologies.

There are currently more than 400 companies in Bangladesh who achieved funding from renowned international investors such as SoftBank Group, Bill and Melinda Gates Foundation, Adventure Capital and many others. Bangladesh received about USD 1b investment in the startup sector so far. Thanks to these investments, more than two million jobs have been created in Bangladesh's ICT industry in the last decade.

In fact, Bangladesh has reached a global milestone in expanding its e-commerce and digital financing. At present, Bangladesh boasts 181 million users of mobile phones making it the ninth largest mobile market in the world.

There are more than 188 million subscribers of mobile financial services (MFS) who are doing 14 million transactions every day. Bangladesh's MFS' such as BKASH and Nagad have earned many national and global recognitions for their innovative and committed customer services. Since 2011, MFS' are growing in Bangladesh at an astounding 500% growth rate.

Like MFS, Bangladesh's e-commerce market is also a hidden treasure for potential investors. Global players like Alibaba, Daraz and various national-level startups have already created a three billion USD e-commerce market in the last five

years. However, this is only 35% of the total market size and within the next two years, the market can be expanded to address the demands of 80% of its consumers.

Bangladesh has also achieved a major breakthrough in expanding its digital device market. Even in the last decade, Bangladesh had to import almost all of its electronic products. However, nowadays Bangladesh has become an emerging exporter of electronic products manufactured in Bangladesh.

The country has created a 2.4 billion USD market of electronic devices and the annual growth of the market is 29.3%. Walton, a Bangladeshi brand has been exporting home appliance electronics and heavy machinery for almost a decade. Products of globally renowned brands like Samsung and Sony are now being assembled in Bangladesh.

In the near future, Bangladesh is going to be a big player in the global semiconductor industry. Honourable Prime Minister's ICT Affairs Adviser to the Prime Minister Mr. Sajeeb Wazed Joy has instructed the ICT Division to work vigorously on four technologies. These are microprocessor design, artificial intelligence (AI), robotics and cybersecurity. Accordingly, the government has been working on these four technologies.

Bangladeshi researchers, in collaboration with their American counterparts, have developed semiconductors which have the highest operational temperature of 300 degrees Celsius, more than double that of conventional semiconductors. The Enhancing Digital Government and Economy (EDGE) Project of ICT Division has been creating skilled human resources on microchip design through BUET.

Bangladesh government has allocated 10 million USD to establish Nano Lab to conduct fundamental research on semiconductors in Bangladesh. Besides, four Bangladeshi companies are already producing electronic chips and exporting them to different countries as well. More than 1000 trained Bangladeshi engineers are working in these companies.

The government is now giving a 10% export incentive for electronic chip exporting companies. If the current rate of growth continues, it is expected that Bangladesh will create a 20 billion-dollar semiconductor industry by 2041.

Such outstanding progress in the ICT industry has been possible due to the Bangladesh government's remarkable attention to creating skilled manpower in the ICT sector.

The ICT division has been providing a wide range of ICT training to millions of youths, particularly women all over the country to become freelancers and skilled IT professionals. Many of these trained youths have later become successful entrepreneurs, freelancers and IT professionals.

Bangladeshi freelancers earn 400 million USD annually through their skilled and cost-effective services. According to Oxford Internet Institute (OII) and World Bank reports Bangladesh's position in the online labour force is second. From 2010-2018, the income growth of IT professionals was around 10%, however, from 2019 to now, the growth rate has increased up to 40%.

Our next goal is to develop a smart economy where we shall be able to establish a 100% cashless, circular economy.

Our next goal is to develop a smart economy where we shall be able to establish a 100% cashless, circular economy. To achieve this goal, we would provide support to develop at least 5 unicorn startup companies (USD 1 billion company each) by 2025. We have also planned to develop 50 unicorn startup companies by 2041. Our government will do everything possible to attract investors and entrepreneurs to invest in this sector and they will be the key players in realising our dream of Smart Bangladesh.

Bangladesh is enjoying demographic dividend, with a remarkable 65 percent of its population being under the age of 35. Additionally, the country possesses a vast pool of highly skilled and talented youths. The government has diligently built the necessary infrastructure, fostering startup and innovation ecosystem and an environment conducive to the growth of young entrepreneurs and attracting substantial investments on a large scale. The government's initiatives align with the vision of Smart Bangladesh, leaving no doubt that it will emerge as an intelligent and innovative nation by 2041 and the next technological hub in Asia and beyond.

Zunaid Ahmed Palak is the State Minister for ICT.
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Report

Smart Leadership Academy Sculpting Tomorrow's Leaders

"In Smart Bangladesh every citizen would be a leader,"- Speaker

In line with its Smart Bangladesh vision, the government has set up a state-of-the-art Smart Leadership Academy (SLA) at Youth Tower, Mirpur aimed at developing technologically skilled smart leadership.

The Smart Leadership Academy (SLA), first of its kind, since the announcement of building `Smart Bangladesh 2041' by honourable Prime Minister Sheikh Hasina on 12 December 2022 commenced its activities on June 8, 2023 with a workshop for members of parliament (MPs) in the capital.

Jatiya Sangsad Speaker Dr Shirin Sharmin Chaudhury inaugurated the Smart Leadership Academy workshop organized by World Bank funded Enhancing Digital Government and Economy (EDGE) Project of the Bangladesh Computer Council, under the ICT Division at Bangabandhu International Conference Center (BICC) with the theme "Smart Leadership for Smart Bangladesh".

"In Smart Bangladesh every citizen would be a leader," said Dr. Shirin Sharmin.

She said if we can cultivate smart leadership at all levels of society, starting from the grassroots, it would be achievable to build Smart Bangladesh before 2041.

The key requirement for building Smart Bangladesh is to develop smart leadership while simultaneously ensuring digital literacy for the people, said the speaker.

Urging the members of parliament to come up with initiatives, the speaker observed that as representatives of the people, they can play a vital role in motivating individuals to become digitally literate and fostering smart leadership across all sections of society.

"MPs are directly connected with the people, they have the potential to change the traditional mindset of the local population and encourage them to embrace technology as well as help build smart leadership from various sections of society," the speaker said.

The emergence of the Fourth Industrial Revolution (4IR), various sectors including agriculture, education, and health will operate more

The Smart Leadership Academy (SLA) commenced its operations on June 8, 2023 by conducting a workshop for the Members of Parliament (MPs) at Bangabandhu International Conference Center (BICC). State Minister for ICT Zunaid Ahmed Palak, presented a crest to the honourable Speaker of Jatiya Sangsad Dr Shirin Sharmin Chaudhury

Dr Shirin Sharmin Chaudhury, the Speaker of Jatiya Sangsad inaugurated the Smart Leadership Academy (SLA) during a workshop organized by the EDGE Project of BCC, under the ICT Division at the BICC. The workshop centered around the theme `Smart Leadership for Smart Bangladesh'

efficiently through the utilization of frontier technologies like AI, IoT, robotics, 3D printing, and drones. "If we fail to cope up with these advancements, we will lag behind" Dr. Shirin Sharmin said.

Deputy Speaker Advocate Md. Shamsul Haque Tuku called upon the MPs to raise awareness among the local population about embracing technology for building a Smart Bangladesh, as most tasks will be performed using technology. The MPs can play a pioneering role in helping local population acquire digital literacy.

The function was addressed, among others by, Chief Whip of parliament Noor-e- Alam Chowdhury, State Minister for ICT Zunaid Ahmed Palak, Senior Secretary of Parliament Secretariat K. M. Abdus Salam and ICT Secretary Md. Samsul Arefin.

In the working session, three power-point presentations were delivered by experts in their respective fields. The topics covered were `Digital Bangladesh to Smart Bangladesh Journey', `Fourth Industrial Revolution: The Challenges and Opportunities' and 'Social Media for Development and Democracy.'

While presenting power-point on the `Digital Bangladesh to Smart Bangladesh Journey' Zunaid Ahmed Palak highlighted that the Father of the Nation, Bangabandhu Sheikh Mujibur Rahman, placed great emphasis on developing leadership in all segments of society during his political movement and running the affairs of state.

The ICT state minister stated that the annoucement made by Prime Minister Sheikh Hasina instilled new hope and confidence among the people to build a Smart Bangladesh. Because they (people) are the beneficiary for implementation of Digital Bangladesh within stipulated timeframe, he said.

ACMP 4.0

Bangladesh to be introduced as smart nation by 2041

State Minister for ICT Zunaid Ahmed Palak today said that the government has set its goal to introduce Bangladesh as smart nation through implementing Smart Bangladesh by 2041.

Connecting virtually to the inauguration function jointly organized by World Bank financed Enhancing Digital Government and Economy (EDGE) Project of BCC under ICT Division and Institute of Business Administration of Dhaka University on 28 July 2023 he said after successful implementation of Bigital Bangladesh the government has announced the programme of Smart Bangladesh.

"Government is giving importance to take programmes in line with smart citizen, smart economy, smart government and smart society- the four pillars of Smart Bangladesh to introduce Bangladesh as intelligent and innovative nation by 2041," Palak said.

He said the government has already set up Smart Leadership Academy (SLA) to build smart citizens and is currently in the process of setting up Center for Fourth Industrial Revolution.

Palak said the Chief Executive Officers (CEO) and the middle managers of IT companies played a pivotal role to increase business growth of their companies. The specialized training of middle managers under Advanced Certificate for Management Professionals (ACMP 4.0) will help to increase their efficiency to expand business and investment, he added.

Chaired by professor of IBA Mohammad A Momen, the function was addressed, among others by, Pro-vice Chancellor of Dhaka University Professor A S M Maksud Kamal, Executive Director of Bangladesh Computer Council (BCC) Ranajit Kumar, Professor of IBA Shakila Yasmin, Operation Manager of World Bank Bangladesh Ms. Gayle Martin, EDGE Project Director Nahid Sultana Mallik.

306 middle managers of IT companies are taking part in the training under ACMP 4.0 course. Earlier, a total of 855 mid-level managers including CEOs were provided training in the same course. Two of them Ruman Ishtiaq and Samina Mustareen shared their experience of the training under ACMP 4.0 course.

Hire and Train Model

Hire and Train, an Exceptional Model to Provide Jobs

State Minister for ICT Zunaid Ahmed Palak inaugurated a training programme at the Crystal Ballroom of hotel Intercontinental on 13 March 2023. This programme was launched under Hire and Train Model introduced by the EDGE Project

Government has launched an exceptional training programme to provide jobs to the 20,000 graduates by 2026.

The programme titled `Hire and Train' was inaugurated by State Minister for ICT Zunaid Ahmed Palak at the crystal ballroom of hotel Intercontinental on 13 March 2023.

Hire and Train Program has been designed by the three stakeholders-- public, private and academia to ensure quality of the training and make it an effective programme. The main characteristic of this model is: the IT companies will first recruit the IT graduates as per their demands and then provide them training.

"After first, second and third the fourth industrial revolution (4IR) is coming with quick pace bringing a revolutionary change of almost everything around us," said the ICT state minister.

He said Bangladesh has taken preparation to cope up with this change. Considering the consequence of 4IR the ICT Affairs Adviser to the Prime Minister Sajeeb Wazed Joy has instructed to work in four areas of technology —microprocessor design, artificial intelligence, robotics and cyber security and the government has already started to work on it.

Palak said that the hire and train model has become an ideal example to reduce gap between public, private and academia as it has built an excellent partnership of these three stakeholders. There will be no gap between public, private and academia in future, he said.

The ICT state Minister said the success of building a Smart Bangladesh is depending to a great extent on innovation, research and skills on advanced technologies. Taking this reality into cognizance the government, in one hand, has been setting up specialised labs, incubation centers and research and innovation centers in educational institutions and on the other, developing skilled human resources on advanced technologies who would play vital role to build Smart Bangladesh, he said.

Palak said Prime Minister Sheikh Hasina has again offered her dream of transforming Bangladesh into a sustainable, intelligent and knowledge based and innovative Smart Bangladesh by 2041. `We are

EDGE officials visited the train session on frontier technologies, which was being conducted under the Hire and Train Model on 24 June 2023 at the lab of Sheikh Hasina Software Technology Park, Jashore

hopeful about materializing of her dream combinedly before the stipulated time,' he said.

Chaired by Executive Director of BCC Ranajit Kumar the function was addressed, among others, by Vice Chancellor of Bangladesh University Engineering and Technology (BUET) Dr Satya Prasad Majumder, Secretary of ICT Division Samsul Arefin, Senior Transport Specialist and Program Leader of World Bank Rajesh Rohatgi, Deputy Project Director Mohammad Saiful Islam Khan. Component Team Leader EDGE Project Dr Mahfuzul Islam Shamim and Chief Executive Officers (CEOs) of more than 100 IT companies were also present.

World Bank financed EDGE project making a partnership with Center for Project Management and Information Systems (PMIS) and Institute of Information Technology (IIT) of Dhaka University and RISE of Bangladesh University of Engineering and Technology (BUET) has been organizing to provide training to 20,000 IT graduates by 2026 on advanced technologies like artificial intelligence (AI), internet of things (IoT), robotics, blockchain through the country's IT companies.

Earlier, EDGE Project Director Dr. Muhammed Mehedi Hassan, PMIS director Prof Akram Hossain, Director RISE of BUET Dr Mohammad Anisuzzaman Talukder, Director of IIT Dr Mohammad Shafiul Alam Khan, BASIS President Russel T Ahmed, BACCO President Wahid Sharif and Digital Development Specialist of World Bank Suparna Roy took part in the panel discussion on `Skills for Smart Bangladesh' which was conducted by Managing Director of Startup Bangladesh Sami Ahmed.

Cybersecurity Training

Empowering Officials with Cybersecurity Skills

As the cybersecurity is a big concern for Bangladesh, the government has taken initiative to develop skills of its officials to deal with the fast-growing cyber attacks.

As part of an initiative, the World Bank financed Enhancing Digital Government and Economy (EDGE) Project of Bangladesh Computer Council (BCC) of ICT Division has launched training in June 2023 at the Smart Leadership Academy (SLA) at the Youth Tower, Mirpur. The objective of this training is to enhance the cybersecurity skills of 5,000 government officials in phases.

The five-day training, commenced on 11 June 2023, specially catering to the programmers from Department of ICT (DoICT), was inaugurated by Director General of Department of ICT (DoICT) Md. Mostafa Kamal. Country's cybersecurity experts conducted the training of the first batch of 40 programmers.

Organised by EDGE Project the function was addressed, among others by, EDGE Project Director Nahid Sultana Mallik, Deputy Director (Planning and Development) Nilufar Yasmin, Component Team Leader of EDGE project Dr. Mahfuzul Islam Shamim.

The training was given on ethical hacking, operating system architecture, network and its security, hacking wireless networks, enumeration, vulnerability analysis, foot-printing and reconnaissance, malware threats, social engineering, denial of device, evading IDS, firewalls and honeypots, session hijacking, cloud computing, cryptography, vulnerability assessment and penetration testing, scanning networks, SQL Injection, hacking web services, system hacking, IoT Hacking, sniffing, Introduction to Computer Forensics, Computer Forensics investigation process, understanding hard disks and file systems, data acquisition and duplication, defeating anti-forensics techniques, operating system forensics, network forensics, investigating web

Ranajit Kumar, Executive Director (Grade-1) of BCC handed over certificate to the government officials who successfully completed a 5-day training course on cybersecurity

attacks, dark web forensics, hacking mobile platforms, cloud forensics, malware forensics, investigating email crimes, mobile forensics, IoT forensics.

When asked about the benefits of the training Assistant Programmer Nahid Masuma Akhter who hails from Ramu of Cox's Bazar said I have gained practical experience regarding cyber attacks and threats, which are increasing alarmingly. "I am glad to have learned many things related to cyber security issues, and this learning will help me apply in the field level," she said.

Abdur Rahman Ansari, Assistant Programmer in Baraigram, Natore expressed that he acquired valuable knowledge from the comprehensive five-day training. Among the various topics covered, the one that stood out as particularly significant to him was Social Engineering. He emphasized that in today's digital age, a considerable number of individuals are falling victim to fraud on social media platforms such as Facebook, Twitter, WhatsApp. With the insights gained from the training, he feels better equipped to educate people at the grassroots level about detecting and preventing fraud through social engineering techniques.

The government officials, who successfully completed their 5-day cybersecurity training held recently at the Smart Leadership Academy at Rokeya Sarani Youth Tower posed for photographs with the officials of EDGE Project and the Department of ICT (DoICT)

Feature

Ashikur Rahman's Odyssey: Unleashing Empowerment from Bhola and Beyond

In this image, Ashikur Rahman (sitting at the far right in the front row), an Assistant Network Engineer and proficient programmer at the Department of ICT (DoICT), is actively participating in a cybersecurity training session.

In the tranquil embrace of Bhola, an island district nestled amidst the salty water, a young mind was quietly preparing to take on a formidable modern challenge- cyber attacks. Ashikur Rahman, an ambitious resident of this picturesque region, embarked on a transformative journey that led him to an unfound sense of confidence and empowerment.

The dates 11th -15th June 2023 etched a significant mark in Ashikur's life, as he found himself emersed in a 5-day training programme that promised to arm him against the virtual threats that loom large in today's in today's interconnected world. The state-of-the-Art Smart Leadership Academy (SLA) at Rokeya Sarani's Youth Tower served as the crucible where Ashikur's determination would be forged into resilient shield against cyber intrusions. This training programme is specifically designed to enhance the cybersecurity skills of 5,000 government officials. The World Bank-funded EDGE Project of BCC under ICT Division has been providing financial assistance to facilitate the execution of training programme.

No country is out of the looming threat to its cyber assets even as the entire world goes gaga over digital transformation. The cyber world is expanding and so are cybercrimes. Cyber attacks do not use conventional weapons but that has not stopped experts from terming computer bug and malware as non-nuclear weapon or digital continental ballistic missile. "These terms are widely recognized by those engaged in countering cyber threats and safeguarding computer systems," said Ashikur Rahman, Assistant Network Engineer and a programmer of Department of ICT (DoICT) of ICT Division. He emphasized that a deficiency in cybersecurity skills can lead to significant losses, considering that cybercriminals and hackers consistently evolve their techniques to breach security of websites and computer system. "There is no alternative but to enhance cybersecurity skills in order to tackle the fast-growing cyber threats," he said.

Bangladesh, like any other developing countries, has embraced the information technology revolution, incorporating it into almost every aspects of national life. However, it also extremely concerned over cyber crimes and security. To address these challenges, the government has undertaken numerous initiatives aimed at enhancing cybersecurity skills of its officials and combating cyber attacks and cybercrimes effectively. One such initiative is providing cybersecurity training to government officials, which has proven beneficial in developing their cybersecurity expertise.

"I have a moderate level of familiarity with the various types of cyber attacks and cybercrimes that occur on websites and computer systems," stated Ashikur Rahman. He further emphasized that the main issue lies in hackers consistently altering their hacking methods and deploying malware or ransomeware.

Reflecting on his training experience, Ashikur shared that he had previously worked at a software firm for three years, where he gained some knowledge about hacking techniques. He had also encountered client issues such as SQL, Injection, and Phishing. However, the training he received at the SLA proved highly beneficial in expanding his understanding of hacking methods, particularly in terms of basic-level hacking and vulnerability assessment. The newfound knowledge acquired during the training has been instrumental in enhancing his skills in these areas.

The statistics given out by the Computer Incident Response Team (CIRT) of Bangladesh Computer Council (BCC) brings out the nature of cyber attack threat the country faces. There were 4,900 instances of cyber attacks on Bangladesh between 2015 and 2022 in which the CIRT had to step in for help. Most of the cyber attacks have taken place from outside the country's borders.

Ashikur emphasized that cyber attacks are not only prevalent at higher levels but also occur in field-level due to lack of awareness. Furthermore, there is scarcity of experts available at the field level to effectively handle these attacks. Therefore, it is crucial to provide such training opportunities to cultivate expertise at the field-level, enabling individuals to effectively confront the challenges posed by cyber attacks and cybercrimes.

Semiconductor Industry

Govt initiates Strategic Entry into the Lucratic Semiconductor Market

Government has taken an initiative to flourish semiconductor industry as the global market of the sector is booming with the acceleration of digital lives and businesses, officials of ICT Division have said.

They said as part of the initiative the government has been making a semiconductor industry-friendly policy and providing training to develop skilled human resources for the sector under the World Bank financed Enhancing Digital Government and Economy (EDGE) Project of Bangladesh Computer Council (BCC) under ICT Division to flourish the semiconductor industry.

Initially, training will be provided to 500 graduates on semiconductor design under Hire and Train Programme of Enhancing Digital Government and Economy (EDGE) Project of Bangladesh Computer Council (BCC) under ICT Division.

As part of the initiative, three-month training of the first batch of 30 graduates hired by the two companies- Neural Semiconductor Ltd. and Think Bangladesh Ltd as per their skills need has already been completed.

To address the skills demand of the semiconductor industry, the training programme covers several topics pertaining to the physical design and design for test segment of microchips design are being covered in the training. These topics include: 1. acquiring proficiency in Linux, TCL scripting, Process Flow, and standard cell libraries; 2. Developing the ability to write synthesizable RTL codes, performing synthesis using the target standard library, identifying and preparing libraries, conducting floor planning, placing IO pins, creating power meshes, placeing

A group of participants, having successfully completed an intensive training course focused on the physical design and design-for-test segments of microchips design, gathered for a commemorative photograph. The three-month training recently held at Research and Innovation Center for Science and Engineering (RISE) of BUET. This snapshot encapsulates the collaborative efforts dedicated to advancing knowledge in microchip design

standard cells, understanding the role of timing constraints in synthesis, and implementing optimization techniques and buffer insertion. These practical aspects are covered in the VLSI lab of BUET. By incorporating these subjects into the training, participants gain the necessary skills to effectively contribute to the semiconductor industry's requirements in microchips design, specifically in the areas of physical design and design for test.

"Semiconductor sector is a new, but highly promising area for where we are actively developing skills human resources to foster the growth of the semiconductor industry," said State Minister for ICT Zunaid Ahmed Palak.

Palak said that the ICT Affairs Adviser to the honourable Prime Minister, Sajeeb Wazed Joy, who monitors emerging technology trends, has instructed us to focus our efforts on four key technologies: semiconductor design, artificial intelligence, robotics and cybersecurity. In response to this directive, the government has already initiated work on it, he added.

The ICT state minister said at a time when the global semiconductor industry is poised for a decade of growth and is projected to become a trillion-dollar industry by 2030, Bangladesh cannot sit idle.

The state minister said the ICT policy 2018 which is being amended getting priority to flourish semiconductor industry, about 70 percent growth of which is being predicted to be driven by just three industries: automotive, data storage and wireless.

The government has made a partnership with academia and industry to provide training on the microchips design, he said.

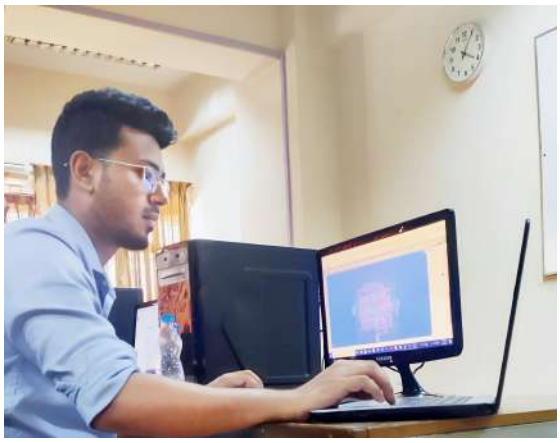
Earlier, the EDGE project made a partnership with Center for Project Management and Information Systems (PMIS) and Institute of Information Technology (IIT) of Dhaka University and Research and Innovation Center for Science and Engineering (RISE) of Bangladesh University of Engineering and Technology (BUET) to provide training to 20,000 IT graduates by 2026 on advanced technologies like artificial intelligence (AI), internet of things (IoT), robotics, blockchain through the country's IT companies.

The semiconductor industry will continue experiencing growth reaching $1 trilling by 2030 from the current size of $600 billion.

"We cannot lag behind at a time when some particular countries like Taiwan, China are occupying chips market," Palak said adding Bangladesh will be able to take its due share from the chips market soon.

Feature

Robin's Drive for Mastery: Paving the Way to Become a Proficient Engineer in the Semiconductor Field



Mohidul Islam Khan (Robin)

In the realm of aspiring professionals, dreams of building a successful career after completing their studies are commonplace. Among these bright-eyed dreamers is Mohidul Islam Khan, also known as Robin, a tenacious and driven young individual hailing from Uttara, a residential area in the capital city of Dhaka.

Robin's journey began when he graduated in Electrical and Electronic Engineering (EEE) from Ahsanullah University of Science and Technology in December, 2022. His academic excellence and passion for technology opened doors to numerous opportunities, but set his sights on joining Neural Semiconductor Limited, a reputed company at the forefront of semiconductor innovation.

Eager to prove his mettle in the field of semiconductor design, Robin applied at Neural Semiconductor Limited for a position that aligned perfectly with his aspirations. Recognizing his potential, the company offered him a valuable opportunity to further develop his skills through a three-month internship under the innovative `Hire and Train'' (HAT) programme. This programme was introduced by World Bank financed government's Enhancing Digital Government and Economy (EDGE) Project in collaboration with the esteemed Research and Innovation Center for Science and Engineering (RISE) of BUET aimed at creating skilled human resources for the semiconductor industry.

During his three-month internship, Robin delved deep into various areas of semiconductor design, with a particular focus on Designing RTL, RTL Synthesis, Physical Design (GUI based), Physical Design (CLI based), and DFT. Exploring these topics provided him with invaluable insights into the holistic functioning of the industry and a foundational understanding of the overall process it entails. "Among all the subjects covered, it was Physical Designing that truly captivated my interest," Robin said observing that this stage involved lot of challenges that require an enormous amount of skill and precise calculation. However, it is during this crucial phase that the entire concept begins to take on the shape of its manufacturing.

"The knowledge and skills I gained during training on semiconductor design has undeniably heightened my confidence, empowering me to navigate my future endeavors with a newfound sense of control," Robin said recognizing the immense potential of the semiconductor industry in Bangladesh. "I have set my sights on becoming a proficient engineer in the dynamic semiconductor field," he added.

With an unwavering determination, Robin strongly believed that youths should have access to these kinds of industry-specific training programs in order to guide them about the realities of the industry and provide them with the necessary knowledge to advance as individuals and contribute to the development of the country as a whole.

Opinion

Bangladesh Joins NASA's Artemis Challenge, Sending LunaSat to Lunar Landscape

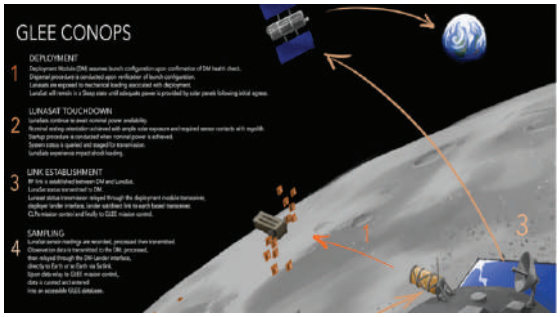
- Nahid Sultana Mallik

In a historic stride, Bangladesh has seized a remarkable opportunity by participating in NASA's Artemis Challenge. This prestigious endeavor will enable Bangladesh to contribute its very own Lunar Satellite (LunaSat) to grace the lunar landscape. Among the select group of 22 nations chosen for this mission, Bangladesh stands tall as a participant in this momentous journey.

Guided by the seasoned experts of the Great Lunar Expedition for Everyone (GLEE) Program, which is embarking on a remarkable journey to the Moon, these teams will traverse the intricate stages of design, development, programming, testing, launch, and data collection. The visionary mission will see the deployment of numerous Lunar Satellites (LunaSats) onto the lunar surface, conducting an array of local and distributed scientific ventures. With its hands-on activities and a worldwide network of citizen scientists, GLEE heralds a new era of inclusive lunar exploration that promises to captivate and involve the entire planet.

GLEE's Noble Objectives: Pioneering a Transformed Future

GLEE's mission is underpinned by four key objectives that promise to shape the future of space exploration: Pioneering Future Generations, Frontier Technology at its Finest, A Mindset of Progress and Igniting Global Inspiration.



The genesis of this remarkable journey traces back to a robotics program, where Mr. Zahid Hasan Shovon and his NASA Human Exploration Rover Challenge rover team crossed paths with me during my tenure as the Joint Project Director at the Aspire to Innovate (a2i) Programme. This meeting would set the wheels in motion for a series of events that would culminate in a momentous lunar expedition.

In an unforeseen turn of events, NASA unveiled a captivating competition that promised a transformative opportunity: the chance to contribute to a satellite project destined for lunar deployment as part of NASA's mission. With unwavering enthusiasm, we embarked on the meticulous task of preparing an application that comprehensively outlined our project blueprint. With due diligence, we dispatched this proposal to NASA, hopeful that our aspirations would find resonance in the celestial corridors.

A pivotal moment arose when Mr. Zahid Hasan Shovon expressed a request that bore profound significance. He sought my involvement as the Official Team Mentor for this endeavor. Guided by a commitment to national progress and a desire to serve our country, I embraced this responsibility wholeheartedly.

As the cogs of fate turned, our collective efforts found fruition in an announcement from NASA. We stood among the chosen few, named as awardees of the GLEE Mission—an achievement that would reverberate through the corridors of innovation and exploration.

Presently, under my direction, Mr. Shovon helms a team comprising nearly 60 adept individuals drawn from diverse educational institutions spanning the nation. This assembly of talents, bound by a shared vision, is primed to chart a course through uncharted celestial territories.

ICT Secretary Md. Shamsul Arefin has been clutching the NSAS's Femto Satellite Package at a2i Lab during his visit, joined by a2i Project Director Dr. Dewan Muhammad Humayun Kabir, Joint Project Director and Team Mentor Nahid Sultana Mallik, Team Leader Zahid Hasan Shovon, and the dedicated team members

From its inception during a robotics program to its current status as a pioneering lunar mission, this tale encapsulates the essence of determination, collaboration, and the pursuit of astronomical frontiers. The voyage unfolds with promise, beckoning us to traverse the cosmos and inscribe our story across the tapestry of the stars.

In a testament to innovation's far-reaching grasp, a seminal chapter unfolds with NASA's dispatch of a satellite package through the esteemed conduit of FedEx. This endeavor, propelled by the collaborative efforts of stalwart entities, navigated from shipment to revelation, resonating with the echoes of national achievement.

As the narrative progressed, the parcel found its way from the Customs House at the Airport to a focal point of eminence. Here, it was unveiled before a confluence of eminent senior-level government officials, comprising luminaries such as Mohammad Mezbah Uddin Chowdhury, Senior Secretary of the Ministry of Public Administration, and Dr. Dewan Muhammad Humayun Kabir, the erstwhile Project Director (Joint Secretary) of the Aspire to Innovate (a2i) Program.

The unfolding of this epochal saga took a significant stride on November 11th, as Mr. Zunaid Ahmed Palak, the Hon'ble State Minister of the ICT Division, presided over the momentous unwrapping of the satellite package at a press conference. In attendance stood Senior Secretary of the ICT Division, N M Zeaul Alam PPA, among other luminaries, imparting invaluable support and sagacious guidance, nurturing the initiative's onward trajectory.

The crescendo of this journey materialized with the establishment of a satellite lab within the precincts of the a2i Innovation Lab, nestled within the hallowed halls of the National Museum of Science & Technology (NMST) at Agargaon. A solemn inauguration, graced by the presence of Dr. Dewan Muhammad Humayun Kabir, the then Project Director (Joint Secretary) of the Aspire to Innovate (a2i) Program, became a pivotal juncture. Presiding over this august occasion was a distinct honor I held in reverence.

The pursuit of exceptional talent was a pivotal facet, culminating in a rigorous talent hunt program that identified and recruited 38 volunteers from across prestigious educational institutions in Bangladesh. In tandem, 15 scholars from the distinguished Bangabandhu Sheikh Mujibur Rahman Aviation and Aerospace University (BSMRAAU) lent their expertise. Together, this synergy coalesced into a formidable team of 60 individuals steering the helm of this grand endeavor.

In consonance with the visionary Smart Bangladesh Vision, the nation envisions self-reliance in the realm of space by the year 2041. To usher this vision, the "AKASH" project, orchestrated under the aegis of the ICT Division, stands as a harbinger of transformation. The reservoir of knowledge, skills, and experiences accrued from NASA's Artemis Mission assumes an instrumental role in shaping the course of Bangladesh's ascendance into the realm of space exploration.

(The writer is Project Director, Enhancing Digital Government and Economy (EDGE) Project)

Opinion

Unleashing Skills to Defeat Cyber Attacks

Eng. Mohammad Saiful Alam Khan

The threats of cyberattacks are alarmingly increasing at a time when the world is on the verge of the fourth industrial revolution. No country is out of the looming threat to its cyberspace and assets even as the entire world embraces the digital transformation. As the cyber worlds expands, so do the incidences of cybercrimes, posing a challenge tackle it.

The statistics given out by the Computer Incident Response Team (CIRT) of Bangladesh Computer Council (BCC) brings out the nature of cyberattack threat the country faces. There were 4,900 instances of cyberattacks on Bangladesh between 2015 and 2022 in which the CIRT had to step in for help. Upon investigation, the CIRT team has pinpointed the vulnerabilities present in the websites of some organisations, and it appears that these weaknesses can be attributed to the implementation of a strong firewall during the development phases. Furthermore, it has been observed that a significant portion of the cyberattacks directed at these websites originated from foreign sources, beyond the confines of the country's border. This underscores the importance of bolstering our cybersecurity measures to safeguard our digital assets from external threats. Against this backdrop what could be the effective way to face the fast-growing cyber attacks and threats?

In response everyone will agree with me that the most effective approach to confront the fast-growing cyber attacks and threats lies in recognising the undeniable truth: acquiring knowledge and skills is paramount to combat these vexing problems. Priority should be given to providing cybersecurity education and training to individuals or persons responsible for safeguarding their digital assets and privacy effectively. Enhancing cybersecurity awareness and expertise will forge a robust defense against cyber adversaries, ensuring a safer and more secure digital landscape for everyone. In this article I would like to put emphasis on enhancing cyber skills through providing training.

We have no option but to go for creating skilled human resources on cybersecurity as the government has set its eyes on building Smart Bangladesh by 2041. There is no doubt it that ICT based automation and innovation will play a vital role to achieve the goal. Hence, the Smart Bangladesh programme's emphasis on building up skilled human resources on cybersecurity to ensure security and safety of its digital assets.

The government has already undertaken numerous initiatives through various projects to enhance the cybersecurity skills of the persons involved in safeguarding their digital space and assets while also creating awareness among the people. One such project is the `Enhancing Digital Government and Economy (EDGE), which is the flagship Project of Bangladesh Computer Council (BCC) under the ICT Division. As part of this initiative, a programme has been launched with the goal of providing cybersecurity training to 5,000 government officials in phases.

The training is being provided on many issues including ethical hacking, operating system architecture, network and its security, hacking wireless networks, enumeration, vulnerability analysis, foot-printing and reconnaissance, malware threats, social engineering, denial of device, evading IDS, firewalls and honeypots, session hijacking, cloud computing, cryptography, vulnerability assessment and penetration testing, scanning networks, SQL Injection, hacking web services, system hacking, IoT Hacking, sniffing, Introduction to Computer Forensics, Computer Forensics investigation process, understanding hard disks and file systems, data acquisition and duplication, defeating anti-forensics techniques, operating system forensics, network forensics,

investigating web attacks, dark web forensics, hacking mobile platforms, cloud forensics, malware forensics, investigating email crimes, mobile forensics, IoT forensics.

Finally, the world is being shaped by the fourth industrial revolution's offshoots AI, 3D printing, robotics, big data, IoT and other futuristic technologies which are ensuring the transition from human labour to human intelligence. Bangladesh cannot lag behind by not embracing these cutting-edge technologies at a time when it started journey toward Smart Bangladesh. Our dependency on cyberspace will enhance day by day. Number of cyber attacks and threats can also be increased as the hackers are very active in the cyber world. So, the cybersecurity skills of the individuals responsible for securing their cyberspace and assets is a must to address cyber attacks. The proactive approach taken by the government towards creating cybersecurity human resources and its keeness to consistently updating policies and guidelines to align with the ever-evolving digital landscape are truly commendable. Such endeavours are vital in creating a resilient cybersecurity workforce and fostering a secure environment for our digital infrastructure.

The writer is project director, BGD e-Gov CIRT and Deputy Project Director of Enhancing Digital Government and Economy (EDGE) Project.

Interview

Bangladesh can explore global semiconductor market through research, infrastructure and collaborations

- Nadim Chowdhury

Nadim Chowdhury is an assistant professor with the department of Electrical and Electronic Engineering (EEE), Bangladesh University of Engineering and Technology (BUET). He received his PhD in Electrical Engineering and Computer Science from Massachusetts Institute of Technology (MIT), Cambridge, MA, USA in March 2022. Prior to that, he received Master of Science in Electrical Engineering and Computer Science from the same in September 2018. He received his B.Sc. and M.Sc. degrees in Electrical and Electronic Engineering from Bangladesh University of Engineering and Technology (BUET) in 2012 and 2014, respectively. While a graduate student, he worked as a wide band-gap semiconductor device consultant for Mitsubishi Electric Research Laboratories (MERL) and Cambridge Electronics Inc (now Finwave Inc). His research interest lies at the intersection of design, simulation, fabrication, and characterization of wide band gap semiconductor devices for RF, power electronics, and digital applications. Dr. Chowdhury shared his experience about the prospect of semiconductor industry while giving an interview with the Tech Insight. Below are some enlightening excerpts from the interview.

Question: As you may be aware, Sajeeb Wazed Joy, the ICT Affairs Adviser to the Prime Minister, has urged the relevant authorities to prioritize their efforts in four key technologies: semiconductor design, artificial intelligence, robotics, and cybersecurity. What is your opinion on this initiative? Do you believe Bangladesh is in the right direction for these advancements, considering the government's commitment to establishing a Smart Bangladesh by 2041?

Answer: The prioritization of semiconductor design, artificial intelligence, robotics, and cybersecurity by Sajeeb Wazed Joy, the ICT Affairs Adviser to the Prime Minister, aligns with global trends in technology and innovation. These areas have seen significant advancements and are expected to play a crucial role in shaping the future of various industries worldwide.

Regarding the semiconductor industry, from my MIT experience, I find that it is a highly competitive and rapidly evolving field. As the demand for semiconductor chips continues to rise, driven by various sectors such as consumer electronics, automotive, and telecommunications, there is an opportunity for countries, like India, China etc., to establish themselves as key players in this market.

Bangladesh has been making strides in the technology sector, with a growing IT industry and a skilled workforce. If the government commits to investing in semiconductor design capabilities, it could attract multinational semiconductor companies or encourage the growth of local semiconductor startups. By fostering research and development, providing necessary infrastructure, and promoting collaborations between academia and industry, Bangladesh could potentially tap into the global semiconductor market.

However, it's important to note that establishing a strong presence in the semiconductor industry requires substantial investments, access to cutting-edge technologies, and a robust ecosystem of talent, research, and development. While Bangladesh has made progress in technology and has a growing pool of talented professionals, it may face challenges in terms of infrastructure, funding, and attracting experienced semiconductor experts.

Furthermore, in addition to the semiconductor industry, the other areas mentioned (artificial intelligence, robotics, and cybersecurity) also hold immense potential for economic growth and innovation. These fields are closely interconnected, and advancements in one can often complement progress in the others.

Ultimately, the success of these initiatives will depend on various factors, including the government's commitment to supporting research and development, creating a favorable business environment, and providing adequate resources and infrastructure. Additionally, collaborations with international partners, investment in education and skill development, and continuous adaptation to evolving technology trends will be crucial for Bangladesh to make significant strides in these fields and move closer to its vision of a Smart Bangladesh by 2041.

Question: The new entrants are aggressive in findings an entry route in the billion dollar semiconductor market. Do you believe Bangladesh will be able to secure a position in this thriving industry given its current laws, policies, and infrastructure?

Answer: Entering the semiconductor market requires a comprehensive ecosystem, including favorable laws, policies, and infrastructure. It's important to note that the semiconductor industry is highly competitive and technologically advanced, with established players dominating the market. Therefore, securing a position in this industry requires significant efforts and strategic planning.

In terms of laws and policies, a supportive regulatory framework is crucial to foster the growth of the semiconductor industry. This includes policies that encourage research and development, incentivize investment, and protect intellectual property rights. Additionally, policies promoting collaborations between academia, industry, and the government can accelerate the development of semiconductor capabilities.

Infrastructure plays a vital role in the semiconductor industry. Establishing semiconductor manufacturing facilities, known as fabs, requires substantial investments in advanced equipment, clean rooms, and specialized infrastructure. Access to reliable power supply, efficient transportation networks, and robust telecommunications infrastructure are also important factors.

To secure a position in the semiconductor industry, Bangladesh could consider several strategies. These include attracting multinational semiconductor companies to establish research and development centers, collaborating with international partners for technology transfer, and investing in semiconductor education and skill development programs. These efforts would help build a talent pool of semiconductor experts and researchers. It's also worth mentioning that participating in global semiconductor supply chains and leveraging the country's existing strengths, such as a skilled workforce, competitive labor costs, and a growing IT industry, can create opportunities for Bangladesh to carve out a niche in specific segments of the semiconductor market.

Question: Bangladesh possesses a vast pool of talented youth. How can these young individuals be effectively utilized to contribute to the semiconductor market?

Answer: Effectively utilizing the pool of talented youth in Bangladesh for the semiconductor market requires a multi-faceted approach. Here are a few strategies that can be considered:

a. Education and Skill Development, b. Research and Development: Encouraging research initiatives in collaboration with academia and industry can drive innovation in semiconductor technologies, c. Entrepreneurship and Startups, and d. Industry Training and Internship Programs.

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