ISBN 978-984-35-4452-0

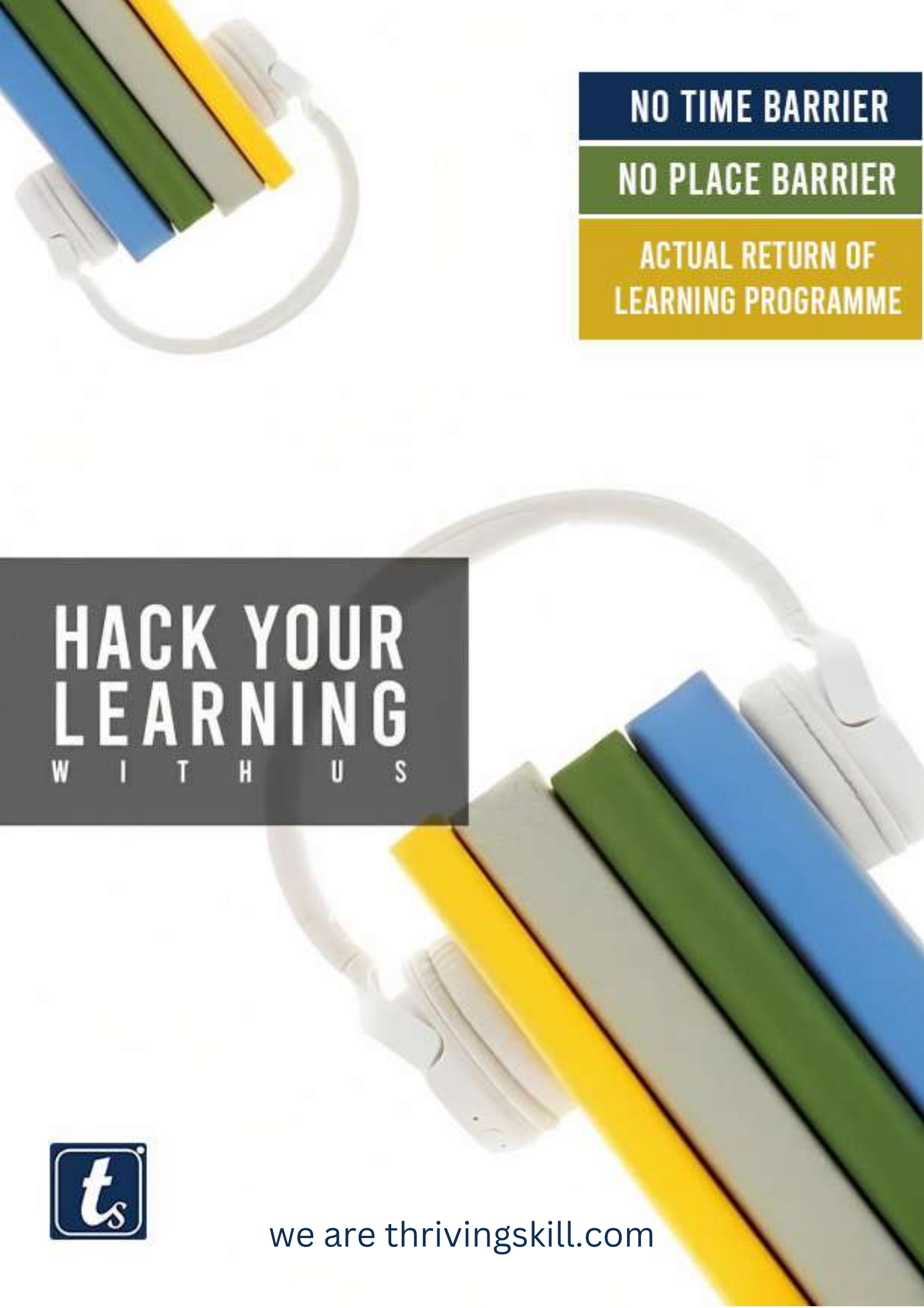
4IR Skills Summit

4th Industrial Revolution Skills Summit

March 15 & 16, 2023
North South University

Organized by

Strategic Partner


NO TIME BARRIER
NO PLACE BARRIER
ACTUAL RETURN OF LEARNING PROGRAMME
HACK YOUR LEARNING
WITH US
we are thrivingskill.com

Buy Everything On Daraz

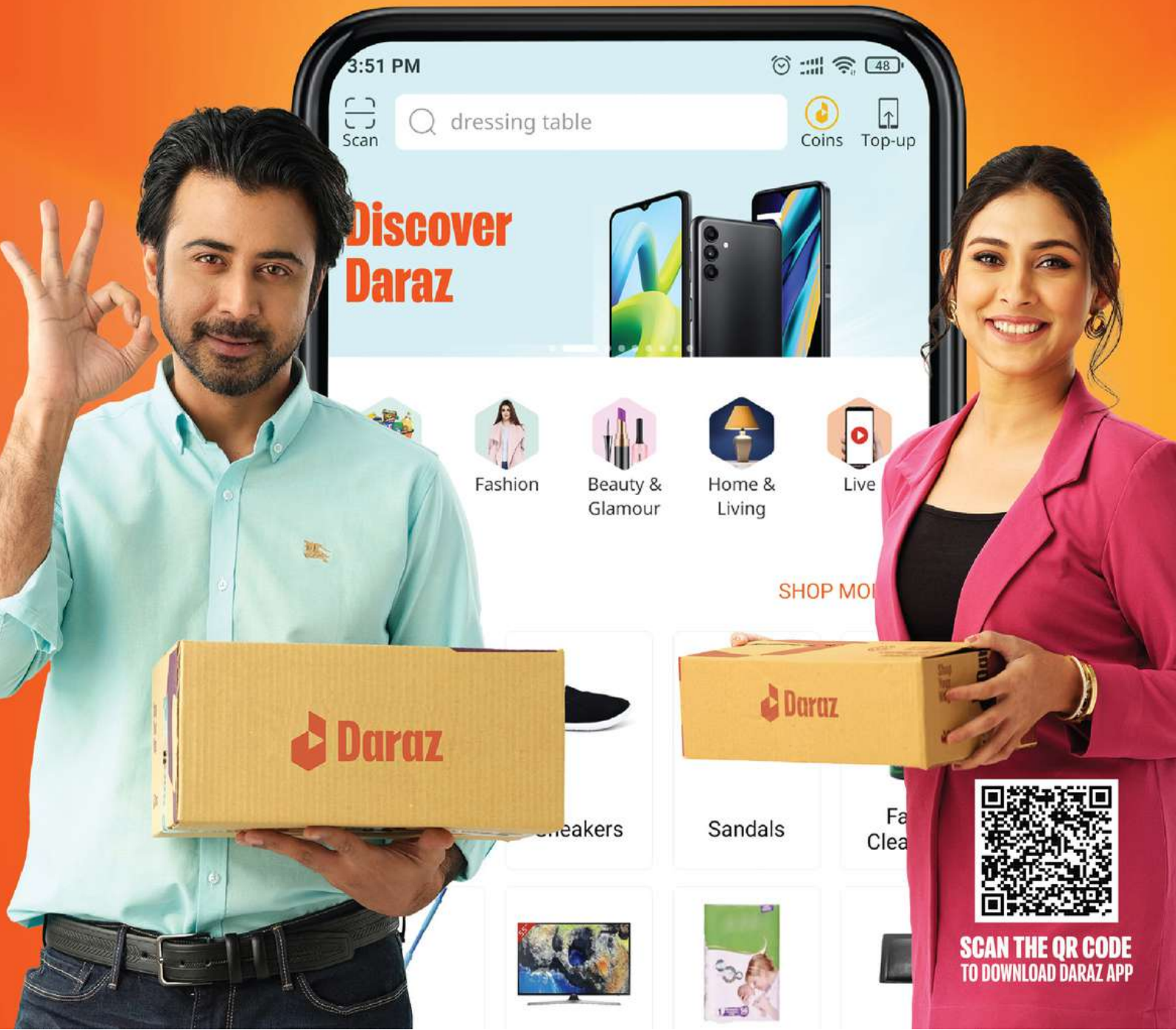


Table of Contents

Messages **7**

1. Message from **H.E. Sheikh Hasina**, *Honorable Prime Minister, Government of the People's Republic of Bangladesh* 8
2. Message from **Mr. Anisul Huq**, *Honorable Minister, Ministry of Law, Justice & Parliamentary Affairs* 10
3. Message from **Mr. Zunaid Ahmed Palak MP**, *Honorable State Minister, Information & Communication Technology Division, Ministry of Posts, Telecommunications & IT* 11
4. Message from **Professor Atiqul Islam**, *Vice-Chancellor, North South University* 13
5. Message from **Professor Dr. M. Ismail Hossain**, *Pro-Vice-Chancellor, North South University* 14
6. Message from **Mr. Syed Nuruddin Ahmed**, *Founding Chairman, Thriving Skills Ltd.* 15
7. Message from **Professor Mohammad Khashro Miah Ph.D.**, *Director, Career and Placement Center, North South University* 16
8. Message from **Professor Helal Ahammad, Ph.D. (ANU)**, Dean, School of Business and Economics (SBE), *North South University* 17
9. Message from **Professor Javed Bari Ph.D. (USA), FIEB, P.E. (USA)**, *Dean, School of Engineering & Physical Sciences (SEPS), North South University* 18
10. Message from **Professor Abdur Rob Khan, Ph.D.**, Professor & Dean, School of Humanities & Social Sciences (SHSS), North South University 19
11. Message from **Professor Hasan Mahmud Reza Ph.D.**, *Dean, School of Health & Life Sciences (SHLS), North South University* 20
12. Message from **Dr. Dewan Muhammad Humayun Kabir**, *Project Director (Joint Secretary), Aspire to Innovate – a2i* 21
13. Message from **H. M Asad Uz Zaman**, Strategy & Innovation Specialist and Lead, *Future of Work Aspire to Innovate – a2i* 22
14. Message from **Professor Yukinobu MIYAMOTO, Ph.D.**, *School of Business Administration, Kobe Gakuin University, Japan* 23
15. Message from **Mr. Md. Abdullah Al Mahmud**, *Founder & CEO, Thriving Skills Ltd.* 24

NSU at a Glance **25**

Meet Our Speakers **28**

Panel Discussions **35**

Masterclasses **39**

Program Details **41**

Articles **49**

1. The Fourth Industrial Revolution and The Current Job Market: The Role of The Career and Placement Center
   Professor Mohammad Khasro Miah, Ph.D. 51
2. Industrial Revolution: As it owes to Bengal Finance
   Dr. M. Emdadul Haq 53
3. The 4IR-Driven Automation and Massive Inter-Industry Migrations: Needs for Expanding VET Capabilities in Bangladesh
   Professor Helal Ahammad Ph.D. 55

4. Vertical Development for Thriving and Flourishing in the Era of 4IR
Professor Michiko IZUMITANI 57

5. Fourth Industrial Revolution: Perspective on Textile Industry and Environment
Md. Morshedul Haque 60

6. Conceiving Internet of Things (IoT) for Smart Bangladesh
Dr. Rashed Mustafa 62

7. The Impact of AI on the Job Market: Opportunities and Challenges
Professor Shamim Ahmad Ph.D 64

8. Blended Teaching-Learning Approach in the Context of Bangladesh
Professor Rajesh Palit, Ph.D. 66

9. Fourth Industrial Revolution (4IR) - Artificial Intelligence (AI) Adoption and Challenges in Industries
Professor K. M. A. Salam 69

10. Environmental Education and the Challenges of the Fourth Industrial Revolution
Professor Shafi Mohammad Tareq Ph.D 72

11. Addressing the Skill Needs of Fourth Industrial Revolution in Bangladesh: Future Directions
Professor Tamgid Ahmed Chowdhury, Ph. D. 74

12. An Investigation of the Unethical Practices in Online Classes
Dr. Asad Karim Khan Priyo, Dr. Ummaha Hazra 76

13. Data Security in Public and Private Sectors: Challenges and Opportunities
Professor Mohammad Abu Yousuf, Ph.D. 79

14. Web 4.0 in Bangladesh: Readiness of the State
Mohammad Shariful Islam, Dr. A. K. M. Moniruzzaman 81

15. Considering the Traditionally Disconnected Community for the 4th Industrial Revolution
Nova Ahmed, Md. Sabbir Ahmed, Rahat Jahangir Rony, Anik Saha, Anik Sinha, Syeda Shabnam Khan, Ifti Azad Abir, Tanvir Fuad, Gazi Fakhrul Islam, Shajnush Amir 85

16. Re-skilling and Upskilling: Creating a Future-Ready Workforce in Bangladesh
Hamida Musharraf 89

17. The world will not change too much but we will! The challenges and opportunities of 4IR in job market
Professor Dr. Md. Abul Kalam Azad 93

18. Transition from the Fourth Industrial Revolution to Civilization one and our AI technology for the current and future jobs
Dr. Md Ismil Hossain 95

19. 4IR to 5IR: Skilled People - Smart Bangladesh
Dr. M. Mesbahuddin Sarker 97

20. Fourth Industrial Revolution and our Knowledge and Skill Required
Dr. Md. Shariful Alam Khandakar 100

21. Artificial Intelligence: A Drive Towards Initializing Alternative Skill Sets
MD Shiyan Sadik 102

22. Navigating the Fourth Industrial Revolution (Industry 4.0): Implication in the context of Business Graduates
Dr. Muhammad Sabbir Rahman, Miss Gazi Sadia Afrin 104

23. Artificial Intelligence: Practical Implications for Shaping the Future of Human Capital
Dr. Mehree Iqbal, Ms. Shahneela Naheed, Ms. Sherina Idrish 106

24. Transition to Industry 4.0: Human Resource Perspectives from Bangladeshi Family Businesses
Zarjina Tarana Khalil, Farzana Nahid 110

25. The Role of education and Training in Preparing Individuals for the Fourth Industrial Revolution: Challenges of Bangladesh
Nazneen Imam 114

26. Selling Fourth Industrial Revolution Solutions to Garment Factories
Dr. Khandker Md Nahin Mamun 116

27. CULTIVATING THE CULTURE OF CONNECTIVITY: Extending the concept beyond the technology
Dr. Lamia Iftekhar 119

28. Fourth Industrial Revolution in China
Dr. Saleh Shahriar 123

29. Industrialized Revolution From the lens of Liberal Arts: To What Extent Students from Arts and Humanities Background Can Enhance their Growth in the Current Job Market?
Nasrin Pervin 127

30. The prospects of 4th industrial revolution and the path forward for Bangladesh
Zulkarin Jahangir, Tanjim-Ul-Islam, Sadab Rahman Chowdhury, Suravita Basak 130

31. Digitalizing Sea Ports in Bangladesh: Harnessing Fourth Industrial Revolution to Facilitate Smart Port Management
Mahnaz Aftabi Atique 135

32. Navigating the Next Industrial Revolution
Mir Mokaddesh Ali 139

33. Towards making Bangladesh a 'SMART' Country and Lessons from Singapore
Dr. S.M. Rezwan Ul Alam 142

34. Keys for Successful Job Search in the Era of 4th Industrial Revolution
Professor Gour Gobinda Goswami 144

35. Future-oriented Upskilling of the Youth in Bangladesh: The Role of Universities, Ed-tech platforms, and the Government
Quazi Tafsirul Islam 146

36. Emerging Technologies in the Labour Market: Future Impacts of the Fourth Industrial Revolution in Developing Countries
Tasnim Tarannum 149

37. The Impact of 4IR on Business Education in the Undergraduate level
Mirza M. Ferdous & Taskin Sakib 151

38. The impact of automation and artificial intelligence on the job market
Salman Monzur Chowdhury 152

39. Reinvestigating skills through AI at the time of Industry 4.0
Dr. Mohammad Thoufiqul Islam 154

40. Mathematics in 4th Industrial Revolution
Dr. Mohammad Monir Uddin 156

History of Career and Placement Center (CPC) **158**

A Glimpse of the 4IR Skills Summit **162**

Executive Committee **179**

Editorial Team **180**

MESSAGES

PRIME MINISTER
Government of the
People's Republic of Bangladesh

02 Falgun 1429
15 February 2023

Message

I am happy to know that the Career and Placement Center of North South University is organizing the Fourth Industrial Revolution Skills Summit-2023 in Dhaka on 15th and 16th March 2023. I extend my warm greetings to the organizers of the summit. Bangladesh has profoundly changed with a vision of "Digital Bangladesh". We have a vision for a "SMART Bangladesh" where our citizens have access to the latest technology and are equipped with the necessary digital skills to succeed in the digital age. To achieve this vision, we must ensure that our citizens have access to the latest technology and that they have the skills and knowledge to use it effectively. We must encourage businesses to embrace digital technologies and invest in innovation. Moreover, we must work together to build a digital infrastructure that connects our citizens and businesses and enable the seamless flow of information and services. The government is committed to working with the private sector, civil society, and international partners to build a "Smart Bangladesh", where everyone has equal access to opportunities and benefits of the Fourth Industrial Revolution. I am proud that Bangladesh is at the forefront of this revolution, with a thriving IT industry, a rapidly growing manufacturing sector, and a young and talented workforce. We have the potential to be a leader in the digital age, but we must invest in our people and ensure that they have the skills and knowledge they need to succeed. Bangladesh has a large pool of young, educated IT professionals and is becoming a hub for IT services. They need to be equipped with the skills and knowledge to succeed in the Fourth Industrial Revolution. I wish you success in all your endeavors.

Joi Bangla, Joi Bangabandhu
May Bangladesh Live Forever.

Sheikh Hasina

Anisul Huq
Minister
Ministry of Law, Justice & Parliamentary Affairs
Government of the People's Republic of Bangladesh

Message

It gives me immense pleasure to know that the Career and Placement Center of North South University in association with a2i (Aspire to Innovation) and Thriving Skills Limited is going to organize Fourth Industrial Revolution Skills Summit.

The Fourth Industrial Revolution offers us an exceptional prospect to influence the future and unveil fresh economic and social advantages. Nonetheless, accomplishing this objective mandates us to guarantee that our labor force is adequately equipped with the necessary skills to excel in this new era.

4IR skills summit is solely focused on investigating methods to augment skill development and bridge the proficiency deficit within the digital economy. The Fourth Industrial Revolution is marked by swift technological advancements, and it is imperative that we equip our people with the necessary tools and knowledge to adapt and thrive in this dynamic environment.

As a representative of the government, I would like to encourage all attendees to assume an active role in shaping the future of skills development and training programs in their respective fields. It is essential that we collaborate and create an ecosystem that nurtures innovation, creativity, and cooperation. We must guarantee that our education system is in sync with the industry's needs and that businesses have access to the essential infrastructure and resources to assimilate new technologies. I believe that working together in this manner will help us to achieve our common goals and objectives.

I express my gratitude to the organizers of this summit for convening a diverse consortium of stakeholders from academia, government, and industry. I believe that by collaborating, we can forge a future that is sustainable, inclusive, and economically prosperous for our nation.

I extend my sincere appreciation to all attendees for their attentive presence. May this gathering be fruitful and productive, as we work towards building a better future for our country.

Anisul Huq
12/03/2023

Zunaid Ahmed Palak, MP
State Minister
Information & Communication Technology Division
Ministry of Posts, Telecommunications & IT
Government of the People's Republic of Bangladesh

Message

I am delighted to know that the Career and Placement Center (CPC), of North South University and Thriving Skills Limited are organizing the Fourth Industrial Revolution Skills Summit in Association with a2i – Aspire to Innovate. I congratulate the organizers for arranging this timely and massive summit on 4IR.

The dream of Digital Bangladesh as envisioned by our Honorable Prime Minister, Sheikh Hasina, is that "Bangladesh will not lag behind in embracing 4IR, rather Bangladesh will be one of the leading countries with remarkable success stories to tell the world". In 1973, our journey started with the acceptance of membership of the International Telecommunication Union by Bangabandhu Sheikh Mujibur Rahman with the installation of a geo-satellite at Beth Bunia in 1975. Amidst an ever-evolving technological landscape, the Honorable Prime Minister, Sheikh Hasina seized the opportunity to present her visionary plan in 2008, which was to create a "Digital Bangladesh". This ambitious and forward-thinking goal sparked a wave of excitement and anticipation for a future that would harness the power of technology to transform the country. We have already established "Digital Bangladesh" based on four main pillars with the direct guidance of our Honorable ICT Advisor to the Prime Minister, the architect of Digital Bangladesh, Mr. Sajib Wazed Joy.

The Honorable Prime Minister, Sheikh Hasina has announced her vision of Smart Bangladesh by 2041 which would be based on a "Smart Society, Smart Citizens, Smart Economy, and Smart Government". Technology is one of the key drivers to implementing this vision of building a "Smart Bangladesh". To achieve this, we need to focus on developing the skills of our youth in technology-based professions. The government has taken a number of coordinated actions to meet the challenges of the Fourth Industrial Revolution.

The ICT department has taken the initiative to develop skilled youth in frontier occupations. We have already started the construction of 92 Hi-Tech Parks,

Message

13000 Sheikh Russel digital labs & 300 Sheikh Russel schools in the educational institutions of 300 parliamentary constituencies with state-of-the-art technology. Sheikh Kalam IT Training and Incubation Centers are being set up at the district level in 64 districts, and research and innovation centers (RIC) are being set up in 57 universities of the country to make youth entrepreneurs and innovators for the future. We have taken the initiative to establish the Institute of Sheikh Hasina Frontier Technology.

For the first time in Bangladesh, 40 4IR curricula have been developed by the Bangladesh Technical Education Board (BTEB) with the support of a2i. Twenty-three Government departments are now implementing more than one hundred 4IR-based pilot initiatives with guidance and advisory support from a2i.

I strongly believe that we will be able to play an active role in shaping the future and frontier technology-based skills development in our country. Together, we can build a stronger, more resilient workforce that is ready to embrace the opportunities of the Fourth Industrial Revolution to build a “Smart Bangladesh”.

Be Smart and innovative
Joi Bangla, Joi Bangabandhu.

Zunaid Ahmed Palak, MP

Professor Atiqul Islam
Vice-Chancellor
North South University

Message

I am thrilled that North South University's Career and Placement Center, (CPC). is organizing the Fourth Industrial Revolution Skills Summit along with a2i and Thriving Skills Limited. The theme of the summit, "Accelerating 4IR Skills by Bridging Industry, Government and Academia", is very relevant and timely, given that we are on the path towards a 'Smart Bangladesh'.

We are on the cusp of a new era in technology, industry, and the Fourth Industrial Revolution (4IR) which is characterized by the convergence of digital, physical, and biological systems as it promises to bring about unprecedented changes in our lives.

To thrive in this rapidly evolving environment, it is necessary to develop skills and knowledge. The Fourth Industrial Revolution Skills Summit is an opportunity for us to come together and learn from one another, sharing our expertise and insights on the latest developments in technology and industry. We must work together to bridge the gap between the skills in demand in the workplace and those taught in our educational institutions. Our universities need to adopt a forward-looking curriculum, incorporating practical and advanced topics on subjects such as robotics, virtual reality, blockchain, nanotechnology, 3D printing, big data, and cloud computing.

I warmly welcome all the guests and stakeholders from Bangladesh and abroad at this Summit. The Fourth Industrial Revolution Skills Summit is crucial in preparing ourselves and future generations for future technological advancements. By connecting students and professionals with the latest 4IR technologies, bridging the gap between industry, academia, and government, prevailing 4IR technological infrastructure in the business environment, and enhancing employment opportunities in the 4IR technology field, we can pave the way for a better and brighter future.

Professor Atiqul Islam

Professor Dr. M. Ismail Hossain
Pro-Vice-Chancellor
North South University

Message

I am honored to be a part of the Fourth Industrial Revolution Skills Summit and to have the opportunity to share my thoughts on enhancing employment opportunities in the 4IR technological field.

As we all know, the Fourth Industrial Revolution is rapidly changing how we live and work. With the advent of new technologies such as artificial intelligence, the Internet of Things, and robotics, the demand for skilled professionals in these fields is rapidly increasing. However, we also know that only some have access to the education and training needed to acquire these skills.

In this context, it is essential that we work together to create opportunities for all individuals to acquire the skills they need to succeed in this new technological landscape. We must ensure that education and training programs are accessible to all, regardless of their background or financial situation. We must also work to create partnerships between industry and academia to ensure that the skills being taught align with the job market.

Furthermore, we must also work to create a culture of lifelong learning, where individuals are encouraged and supported to acquire new skills throughout their careers continuously. This will not only help them to stay relevant in the job market, but it will also help create a more dynamic and adaptable workforce.

Therefore, let us collaborate to create opportunities for all individuals to acquire the skills they need to succeed in the 4IR technological field. Let us develop partnerships between industry and academia, create a culture of lifelong learning, and work to ensure that everyone has equal access to education and training. Together, we can create a more inclusive and equitable future for all.

Professor Dr. M. Ismail Hossain

Syed Nuruddin Ahmed
Founding Chairman
Thriving Skills Limited

Message

It is an honor to be invited as a special guest of the Fourth Industrial Revolution Skills Summit organized by North South University and Thriving Skills Limited where a2i - Aspire to Innovate is also the strategic partner of the summit. As we discuss the challenges and opportunities of the Fourth Industrial Revolution, I am reminded of the transformative power of innovation and the impact it can have on our society.

The Fourth Industrial Revolution presents us with an unprecedented opportunity to shape the future and unlock new economic and social benefits. However, to do so, we must ensure that our workforce is equipped with the skills needed to thrive in this new era.

I am pleased to see that this summit is dedicated to exploring new ways to enhance skills development and bridge the skills gap in the digital economy. The Fourth Industrial Revolution is characterized by rapid technological change, and it is crucial that we provide our people with the tools and knowledge they need to adapt and succeed in this fast-paced environment.

As a special guest, I encourage everyone to take an active role in shaping the future of skills development and training programs in their respective fields. We need to work together to create an ecosystem that fosters innovation, creativity, and collaboration. We must ensure that our education system is aligned with the needs of the industry and that businesses have access to the necessary infrastructure and resources to adopt new technologies.

I would like to thank the organizers of this summit for bringing together a diverse group of stakeholders from academia, government, and industry. I believe that by working together, we can create a future that is sustainable, inclusive, and prosperous for all.

Thank you for your attention, and I wish you a productive and engaging summit.

Syed Nuruddin Ahmed

Professor Mohammad Khasro Miah Ph.D.
Director, Career & Placement Center
North South University
And Convener, 4th Industrial
Revolution Skills Summit

Message

It is my great pleasure to welcome you to the Fourth Industrial Revolution Skills Summit, 2023. This is an important event as we come together to discuss and understand the impact of the Fourth Industrial Revolution on our world and the skills that would be required to thrive in this digital era.

As we gather here today to discuss the future of skills and technology, it is essential to remember the objectives of this Summit: to connect students and professionals with the latest 4IR technologies for the required skills; to bridge the gap between industry, academia, and government in incorporating 4IR skills in the curriculum; to prevail 4IR technological infrastructure in the business environment and to boost employment opportunities in the 4IR technology field.

The Fourth Industrial Revolution is upon us, bringing many new technologies and innovations that are altering how we live, work, and interact. Therefore, we must stay ahead of the curve and equip ourselves with the skills necessary to adapt to these changes.

This Summit will provide a landscape for experts, industry leaders, and policymakers to share their knowledge and insights on the latest trends, challenges, and opportunities in industrial revolution skills. In addition, it is an opportunity for us to learn from one another and work together to create a more inclusive and sustainable future.

Let's engage in meaningful dialogue with resilience and refreshing thoughts and work unitedly for a brighter future. I believe the Fourth Industrial Revolution Skills Summit will establish a bridge between academia and industry while opening avenues for our youth to groom themselves for the future advanced world.

Thank you.

Professor Mohammad Khasro Miah Ph.D.

Professor Helal Ahammad, PhD (ANU)
Dean, School of Business and Economics
North South University

Message

I am delighted that I will be able to join you and take part in discussing the critical importance of the Fourth Industrial Revolution (4IR), particularly in defining the tech infrastructure for the business ecosystem. The 4IR Summit is likely to bring about unprecedented technological advancements that can potentially revolutionize how we conduct our businesses. However, to fully harness the potential of these advanced technologies, we must have the enabling infrastructure in place and on time.

As I understand, one of the key objectives of this Summit is to discuss and explore how we can build and maintain a robust 4IR tech infrastructure that will enable businesses to thrive in the post-digital age. This infrastructure should be designed to support the uptake and integration of cutting-edge and emerging technologies such as artificial intelligence and machine learning, the 'Internet of Things (IoT)', and blockchain, to ensure that businesses are well-positioned to take full advantage of these technologies.

In an increasingly globalized and competitive world, a substantial 4IR tech infrastructure is critical for businesses and society to succeed. By embracing these technologies, we can create more efficient and sustainable systems that will help improve people's lives and livelihoods worldwide.

I am looking forward to engaging myself in thought-provoking discussions and sharing ideas on how to work together to create a thriving 4IR tech infrastructure that is accessible, affordable, reliable, and beneficial for all.

I thank the organizers of the event and wish you all a rewarding time at the Summit.

Professor Helal Ahammad, PhD (ANU)

Professor Javed Bari Ph.D. (USA), FIEB, P.E. (USA)
Dean, School of Engineering & Physical Sciences (SEPS)
North South University

Message

It gives me immense pleasure to know that the "Fourth Industrial Revolution Skills Summit" is being held at North South University (NSU). This Summit is a wonderful platform to exchange views about the recent technological advancements that are highly relevant to the Fourth Industrial Revolution (4IR). The computational groundwork of the 4IR is vital for any business, including startups, to thrive in this digital era.

The Fourth Industrial Revolution Skills Summit will create a platform where engaging or nurturing technologies make it convenient to build innovative narratives, frameworks, and initiatives. Integrating the 4IR skills into the academic curriculum will alleviate the vacuum between the skills required in the global job market and lessons that are being taught at the university level. Of course, the knowledge of inclusive technology governance in the digital market is a non-negotiable requirement.

I highly appreciate the initiative for conducting the Fourth Industrial Revolution Skills Summit at NSU which aims at building a convenient and innovative technological framework, which is easily adaptable. I convey my warm regards to the Career and Placement Center, (CPC) of NSU and the Thriving Skills Limited for collaborating in conducting the Summit.

Professor Javed Bari Ph.D. (USA), FIEB, P.E. (USA)

Abdur Rob Khan, Ph.D.
Professor & Dean
School of Humanities & Social Sciences
North South University

Message

I am immensely delighted to learn that the Career and Placement Center, (CPC) of North South University will organize a summit on The Fourth Industrial Revolution Skills. This initiative will educate the academicians about the significance of digitization and automation of technology in a resilient society.

Integrating 4IR skills bridges the gap between the physical and digital worlds. It aims to facilitate industries and businesses to be more technologically interdependent and conduct work more smoothly. The idea of 4IR incorporates the latest growth of artificial intelligence (AI), robotics, the Internet of Things (IoT), 3D printing, genetic engineering, quantum computing, and many other technologies. This digital revolution of information technology will bring unprecedented shifts in this constantly evolving society.

The Fourth Industrial Revolution is aligned with the digital world to cultivate more critical thinkers with well-developed technological skills. In addition, the aim is to inform students about the scope of advancement in science and technology.

I eagerly look forward to attending the delightfully intriguing discussion and working together to build a platform that truncates the gap between academia and industry and incorporates 4IR skills in the curriculum, enhancing employment opportunities in this constantly shifting digital world.

Abdur Rob Khan, Ph.D.

Prof. Hasan Mahmud Reza Ph.D.
Dean, School of Health & Life Sciences
North South University

Message

Fourth Industrial Revolution Skill Summit is undoubtedly a timely initiative at North South University. We are in the midst of a technological shift where the gap between the physical and digital worlds is lessening. This technological transformation integrates the idea of hyperconnectivity, automation, and digitization. We can make any industry or business more convenient, sustainable, inclusive, and economically friendly by ensuring technological progress.

In order to build such a digital unconventional innovative infrastructure, 4IR will shape the technology for the best outcome in a human-centered workforce. Many industries face difficulties while adapting to new technologies. I think the best computational practices will alleviate the physical, human labor in the workforce.

I am really excited to hear and learn more from The Fourth Industrial Revolution Skill Summit. This will establish a network between industry and academia, create a culture of lifelong learning and work to ensure that everyone has equal access to education and technological training.

I wish grand success of this summit.

Prof. Hasan Mahmud Reza Ph.D.

Dr. Dewan Muhammad Humayun Kabir
Project Director (Joint Secretary)
Aspire to Innovate - a2i
Information & Commutation Technology Division
Ministry of Posts, Telecommunications & IT
Government of the People's Republic of Bangladesh

Message

The much-awaited Fourth Industrial Revolution, popularly known as 4IR is here, knocking on our doorsteps. As a country poised to graduate from LDC status, the intervention and impact of 4IR are of crucial significance to us. The 4IR brings endless possibilities and opportunities along with certain challenges. By 2041, approximately 5.5 million jobs will be redundant while 10 million new jobs will be created. The Government of Bangladesh has been proactive to respond to the call for 4IR. A whole-of-government approach has been administered by the Cabinet Division and ICT Division which includes Government and non-government sectors, academia, and experts. Partnerships with countries successfully strategizing for the intervention of 4IR, requires sensitizing all relevant ministries, enabling collaboration with private sectors on the impact of 4IR, and developing a roadmap to address the 4IR have been going on in full swing, where a2i Programme has been playing a key driving role.

Embracing the 4IR in the right way is very important for Bangladesh. With a number of Government Ministries and private sector bodies taking pilot projects to implement 4IR and curriculum development on 4IR, we are connecting all the dots to ensure that all participants of the society and economy are equipped with 4IR-based skills.

Over the past decade, we have built a digital Bangladesh leveraging technology. It is now our opportunity to embrace the frontier technologies and make their best use to build a Smart Bangladesh.

Dr. Dewan Muhammad Humayun Kabir

H. M Asad Uz Zaman
Strategy & Innovation Specialist and Lead, Future of Work
Aspire to Innovate – a2i &
Co-convener of the 4th Industrial Revolution Skills Summit

Message

The advent of industrial revolutions has been a significant driving force behind this rapidly changing world, with each one marking a fundamental shift in the way we live and work. The Fourth Industrial Revolution is no exception, and it is poised to usher in a new era of innovation and disruption. From the steam engine to the introduction of electricity to the revolution of the internet, the first, second, and third industrial revolutions massively changed the way citizens around the world work and communicate. The Fourth Industrial Revolution (4IR) is the latest revolution, and it is expected to disrupt almost every industry by automating millions of jobs worldwide. The 4IR's impact on the workforce means acquiring new skills which are crucial to stay in the game and contribute to economic growth. Bangladesh is making strides in digitizing its economy and embracing new technologies to keep up with the ongoing digital transformation. As such, 4IR skills are a game-changer for the labor force in the global market.

Responding to the rapidly changing reality of the world, the Government of Bangladesh has also prepared to embrace it. Our Honorable Prime Minister has emphasized that Government agencies and private sectors focus on the tremendous opportunities presented by 4IR. Under the close guidance of the Cabinet Division and ICT Division, a2i has been playing a key role to onboard different Government agencies and private sector industries to take advantage of the incredible prospects offered by 4IR.

A future skills requirement study by a2i in 2019 revealed that by 2041 around 5.5 million jobs will not be relevant while around 10 million new jobs will be created requiring 4IR-based skills. As an aftermath of such findings, Bangladesh focused on forging partnerships and knowledge sharing with countries around the world. Singapore has been a great example of leveraging the beauty of 4IR. With knowledge support from Singapore Polytechnic and Temasek Foundation a2i has been able to pilot 50 projects across 23 relevant Government Ministries and private sector industries. Currently, each of the Ministries related to skills, employment, and entrepreneurship has at least one project on 4IR. Simultaneously, for the first time in Bangladesh, the 40 4IR curriculum has been developed by the Bangladesh Technical Education Board (BTEB) under the Ministry of Education with the support of a2i. The National Intelligence for Skills, Education, Employment and Entrepreneurship (NISE), is a skills and employment platform which is designed to generate real-time data on market demand for 4IR-based skills so that we can all work together to develop a future-ready workforce.

4IR is the next big thing in the global industry. With automation and AI ruling over industries around the world, threatening millions of jobs; the coin has another side to it as well! The other side of the coin holds limitless possibilities for Bangladesh to build a Smart Bangladesh leveraging the perks of 4IR as it is poised to graduate from LDC.

H. M Asad Uz Zaman

Yukinobu MIYAMOTO, PhD
Professor, School of Business Administration
Kobe Gakuin University, Japan

KOBE GAKUIN UNIVERSITY

Message

I would like to congratulate you on the Fourth Industrial Revolution (4IR) Technology Summit. I hope that this summit will be an opportunity for Bangladesh to enhance the skills of its human resources in industry, government, and academia, as well as a point of contact with the rest of the world. We, too, support the success of this summit from across the sea.

It has been a long time since the age of Artificial Intelligence (AI) was referred to solely as the era of AI, and many services have already been introduced to revolutionize the world. There is a wide variety of services -- some of which include highly accurate automatic translation services such as DeepL, image generation services such as Stable Diffusion, and question-based document generation services such as ChatGPT, which have entered the realm of practical applications. These services are relatively easy for anyone to use and are threatening the jobs of traditional professionals. At the same time, it is also true that the people who develop these services are in high demand. If existing jobs are replaced by 4IR services such as AI, there will be new possibilities in the market for people who develop such services. This is precisely the role that Bangladesh will play on the world stage.

I have worked in Bangladesh before. I was involved in the project of introducing the ITEE (Information Technology Engineers Examination), a national examination originated from Japan to the CSE (Computer Science and Engineering) department of a university as an official government initiative to improve ICT skills. As a result, many university students and young engineers have passed this ITEE, and the number of successful candidates continues to be the highest in Bangladesh's history. I have also visited North South University many times to promote this national examination. In this process, I strongly felt the potential of many university students in the CSE department and young engineers in Bangladesh, and am convinced that they will be the ones to support and develop their own country in the future. It will not be long before we, the people of Japan, will be able to collaborate with Bangladeshis in all fields. I am certain that Bangladeshis will catch up with and even surpass Japan in the near future.

The philosophy of our project, which is to develop human resources for this new advanced technology and to create jobs by building bridges between industry, government, and academia, is exactly in line with the mission of this summit. We hope that this summit will provide an opportunity for young Bangladeshi engineers who will lead the country into an emerging era, to gain valuable knowledge and experience. I have high expectations for the further development of Bangladesh in the future.

Yukinobu MIYAMOTO, PhD

Md. Abdullah Al Mahmud
Founder & CEO
Thriving Skills Ltd.
Member Secretary, 4IR Skills Summit

Message

I am honored to welcome you all to the Fourth Industrial Revolution Skills Summit, which focuses on one of the most crucial aspects of the Fourth Industrial Revolution: skills development. As the Member Secretary, I believe that this summit provides us with a unique opportunity to discuss and share insights on how we can better equip our workforce with the necessary skills to succeed in the digital age.

One of the key objectives of this summit is to connect students and professionals with the latest 4IR technologies for skills learning. We recognize that to be successful in the digital economy, it is critical to continuously learn and upskill. Therefore, we must provide access to training programs, apprenticeships, and internships that allow students and professionals to learn about new technologies and acquire the skills needed to succeed in the 4IR.

Another important objective of this summit is to bridge the gap between industry, academia, and government to incorporate 4IR skills into the curriculum. By working together, we can identify the skills that are in demand and ensure that the education system is aligned with the needs of the industry. This will help us produce a skilled workforce that is equipped to meet the demands of the digital economy.

We also recognize the importance of prevailing 4IR technological infrastructure in the business environment. We need to invest in infrastructure that will enable businesses to adopt new technologies and remain competitive in the global marketplace. This includes providing access to high-speed internet, data centers, and other essential infrastructure.

We aim to enhance employment opportunities in the 4IR technology field. We recognize that as we embrace new technologies, it may lead to the displacement of certain jobs. Therefore, it is our responsibility to ensure that we create new job opportunities in the 4IR technology field, which requires new skills and expertise.

I hope that through this summit, we can develop actionable strategies that will help us prepare for the Fourth Industrial Revolution and drive sustainable economic growth.

Thank you all and I wish you a productive and engaging summit.

Md. Abdullah Al Mahmud

NSU AT A GLANCE

North South University (NSU), which stands as the first private university in Bangladesh, was established by the NSU Foundation through the collective initiative of a group of philanthropists, industrialists, bureaucrats, and academics. The University operates under the oversight of a number of statutory bodies, as prescribed by the provisions of the Private University Act 1992. At the pinnacle lies the Board of Trustees of the NSU Foundation which provides the university budget. The BOT is led by the Chairman elected by its members. The Porichalona Porshod (Governing Council/Syndicate) is the second highest body after the Board of Trustees of the NSU Foundation. It navigates the University within the policy guidelines provided by BOT. The Porichalona Porshod is comprised of BOT members, the Vice-Chancellor, the Pro Vice-Chancellor, the Treasurer, Deans, and representatives of the faculty and university administration. The Vice-Chancellor, as the chief executive, runs the university with the help of the following statutory bodies: Academic Council, Finance Committee, Curriculum Committee, Planning and Development Committee, Disciplinary Committee, Dean's Committee, Library Committee, Faculty Search Committee, Degree Review Committee, and Faculty Selection Committee as defined in the PUA 1992. All statutory bodies operate under the provision of the statutes prepared within the framework of PUA 1992. The Registrar maintains the university records and keeps liaison with the University Grants Commission (UGC), the Ministry of Education, and other relevant authorities. The university follows a North American system, including semesters; credit hours, etc., and parallels the academic calendar of North America. Its curricula have been reviewed by relevant departments of the University of Illinois, Urbana-Champaign, and the University of California at Berkeley in the USA and duly approved by UGC. North South University offers a total of 17 distinct degree programs, which are housed within 4 separate schools. The School of Business and Economics offers the following degrees: Bachelor of Business Administration (BBA), Master of Business Administration (MBA), and Executive Master of Business Administration (EMBA) under the departments of Accounting & Finance, Economics, Management, and Marketing & International Business. The School

of Engineering and Physical Sciences offers degrees under the departments of Architecture, Civil and Environmental Engineering, Electrical, Computer Engineering Mathematics & Physics. The School of Health and Life Sciences offers degrees in Public Health, Pharmaceutical Sciences, Environmental Science and Management, and Biochemistry & Microbiology. The School of Humanities and Social Sciences offers degrees under the Department of English and Modern Languages, Political Science and Sociology, Law, and History and Philosophy. The mission of NSU is to excel in providing higher education in Bangladesh while fostering academic excellence, innovation, and community engagement keeping in view the challenges of the twenty-first century. Its overarching vision is to emerge as a preeminent institution of higher education in the South Asian region, distinguished by its cutting-edge academic programs, groundbreaking research endeavors, and unparalleled commitment to advancing knowledge and serving the broader community. As a center of excellence, it aims to attract students from all countries of the region. This mission is achieved by imparting world-class education and training, and by research and public service so that individuals can achieve their intellectual, social, and personal potential. NSU is committed to fostering human capital by enhancing individuals' creative thinking skills through a dynamic and intellectually stimulating learning environment.

To fulfill its overarching mission, NSU applies five fundamental strategies: offers socially relevant academic programs/curricula which meet the needs of the students coming from different backgrounds and seeking different career goals, it hires highly qualified and internationally experienced academics to teach those courses relevant to a changing environment, NSU, through a rigorous selection process, admits only those students who demonstrate the potential to pursue and complete the programs of study they select, it provides the necessary infrastructural facilities and logistic support and an environment conducive to teaching and learning and it practices the principles of good governance that encourage academic freedom and faculty-governance.

NSU has the authority, under its charter to provide instruction and confer undergraduate and graduate degrees in all branches of arts and sciences, including engineering, agriculture, law, and medicine. It also has the authority to grant diplomas, certificates, and other academic distinctions. Currently, NSU offers Bachelors's and Masters's Degrees in a number of disciplines. New programmers are under preparation in consultation with collaborating universities and NSU's International Advisory Board.

North South University is accredited by the University Grants Commission of Bangladesh (UGC), the accreditation authority of the Ministry of Education, Government of the People's Republic of Bangladesh. The degrees/credits obtained at NSU are acceptable in most of the reputed universities of U.S.A, Canada, U.K, Australia, and other nations. NSU students are often accepted in various graduate programs of prestigious universities with full scholarships. Besides, visiting faculty members of highly reputed universities from all over the world teach at NSU. NSU also attracts foreign students from different countries, thus creating a diverse student body. NSU maintains academic collaboration with foreign universities. Notable among those universities are: Saint Xavier University, Chicago, USA; Indiana University of Pennsylvania, USA; Luton University, UK; University of Delaware, USA; University of Maryland, USA; Quest University, Canada; Yunnan University, China; Multimedia University, Malaysia; Wayne State University, USA; University of South Australia, Australia, and Kyung Hee University, South Korea; University of Manitoba, Canada; University of Bergen, Norway; Coventry University, UK; Bloomberg University, USA, and Solbridge Business School, Korea. NSU has also research collaborations with world-class research institutes, like International Center for Diarrhoeal Diseases Research (icddr,b), Dhaka in its various academic programs in Biotechnology, Microbiology and Public Health.

MEET OUR SPEAKERS

SEVEN RINGS CEMENT

with **GERMAN** technology
and **3 FACTORIES**
SEVEN RINGS CEMENT
is **STRONGER** now

SEVEN RINGS CEMENT

sevenringscement.com 16737

SPEAKERS


4th Industrial Revolution
Skills Summit
Chief Guest
Inaugural Session
15 MARCH 2023
VENUE: NORTH SOUTH UNIVERSITY
Mr. Anisul Huq, MP
Hon'ble Minister
Ministry of Law, Justice and Parliamentary Affairs
Government of the People's Republic of Bangladesh


4th Industrial Revolution
Skills Summit
Chief Guest
Closing Ceremony
15-16 MARCH 2023
VENUE: NORTH-SOUTH UNIVERSITY
Mr. Zunaid Ahmed Palak
Hon'ble State Minister,
ICT Division
Government of the People's Republic of Bangladesh


4th Industrial Revolution
Skills Summit
Keynote Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH-SOUTH UNIVERSITY
Jonathan Reichental, PhD
Founder, Human Future
Author, LinkedIn


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH-SOUTH UNIVERSITY
Jonah Berger, PhD
Professor, Wharton
University of Pennsylvania


4th Industrial Revolution
Skills Summit
Chairperson
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH-SOUTH UNIVERSITY
Professor Atiqul Islam
Vice-Chancellor
North South University


4th Industrial Revolution
Skills Summit
Special Guest
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH SOUTH UNIVERSITY
Dr. M. Ismail Hossain
Pro Vice-Chancellor & Treasurer
North South University


4th Industrial Revolution
Skills Summit
Special Guest
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH-SOUTH UNIVERSITY
Syed Nuruddin Ahmed
Founding Chairman,
Thriving Skills Ltd.


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH SOUTH UNIVERSITY
Speaker
Prof. Dr. Anwar Hossain
Vice-Chancellor
Northern University Bangladesh


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH-SOUTH UNIVERSITY
Speaker
Nasreen Afroz
Executive Chairman (Secretary)
National Skills Development Authority
Prime Minister's Office
Information and Communication Technology Division
Government of the People's Republic of Bangladesh

SPEAKERS


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH SOUTH UNIVERSITY
Speaker
Professor Dr. Mohammad Mahfuzul Islam
Vice-Chancellor
Bangabandhu Sheikh Mujibur Rahman Digital University, Bangladesh


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH SOUTH UNIVERSITY
Speaker
Professor Dr. Abdur Rab
Vice-Chancellor
International University of Business Agriculture and Technology (IUBAT)


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH SOUTH UNIVERSITY
Speaker
Professor Dr. Moniruzzaman
Vice-Chancellor
Stamford University Bangladesh


4th Industrial Revolution
Skills Summit
Convener
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH-SOUTH UNIVERSITY
Professor Mohammad Khasro Miah, PhD
Professor Dept. of Management
School of Business & Economics &
Director,
Career & Placement Center (CPC)
North South University


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH-SOUTH UNIVERSITY
Prof. Dr. Nazrul Islam
Pro-VC,
Northern University Bangladesh


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH-SOUTH UNIVERSITY
Speaker
Momin Islam
Chief Executive Officer,
IPDC Finance Limited


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH SOUTH UNIVERSITY
Speaker
Ahsan Khan Chowdhury
Chairman & CEO
PRAN-RFL Group


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH SOUTH UNIVERSITY
Speaker
Asif Ibrahim
Chairman
Chittagong Stock Exchange


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH SOUTH UNIVERSITY
Dr. M. Emdadul Haq
Professor & Chair
Department of History & Philosophy
North South University

SPEAKERS


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH-SOUTH UNIVERSITY
Prof. Dr. Javed Bari
Dean,
School of Engineering &
Physical Sciences
North South University


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH-SOUTH UNIVERSITY
Prof. Dr Helal Ahammad
Dean,
School of Business & Economics
North South University


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH-SOUTH UNIVERSITY
Prof. Dr. Abdur Rob Khan
Dean,
School of Humanities &
Social Sciences
North South University


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH-SOUTH UNIVERSITY
Speaker
Monwar Hossain
Managing Director
A.D. Sons Marine Tech


4th Industrial Revolution
Skills Summit
Panel Discussion:
Leading the Way:
Navigating the Fourth Industrial Revolution as a CEO
16 MARCH 2023, 4:15 PM
VENUE: NORTH-SOUTH UNIVERSITY
Speaker
Eshita Sharmin
CEO, Bikroy


4th Industrial Revolution
Skills Summit
Member Secretary
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH-SOUTH UNIVERSITY
Md. Abdullah Al Mahmud
Founder & CEO,
Thriving Skills Ltd.


4th Industrial Revolution
Skills Summit
Panel Discussion:
Leveraging 4IR Skills to
Drive Business Growth
15 MARCH 2023, 4:30 PM
VENUE: NORTH-SOUTH UNIVERSITY
Speaker
Sajjad Hasib
Chief Marketing Officer
Grameenphone Ltd


4th Industrial Revolution
Skills Summit
Panel Discussion:
Leveraging 4IR Skills to
Drive Business Growth
15 MARCH 2023, 4:30 PM
VENUE: NORTH-SOUTH UNIVERSITY
Speaker
Shaikh Ehsan Reza
CHRO Sector A
Bashundhara Group


4th Industrial Revolution
Skills Summit
Panel Discussion:
Leveraging 4IR Skills to
Drive Business Growth
15 MARCH 2023, 4:30 PM
VENUE: NORTH-SOUTH UNIVERSITY
Speaker
Dr. Rajesh Palit
Professor & Chair
Department of Electrical &
Computer Engineering
North South University

SPEAKERS


4th Industrial Revolution
Skills Summit
Panel Discussion:
Leveraging 4IR Skills to Drive Business Growth
15 MARCH 2023, 4:30 PM
VENUE: NORTH SOUTH UNIVERSITY
Tarique Amin Bhuiyan
CIO, Epyllion Group
Ex MD of the Dhaka Stock Exchange Limited (DSE) &
Ex TCS, Accenture & Infosys
Principal Consultant


4th Industrial Revolution
Skills Summit
Panel Discussion:
Leveraging 4IR Skills to Drive Business Growth
15 MARCH 2023, 4:30 PM
VENUE: NORTH SOUTH UNIVERSITY
Mohammad Riyad Hossain
Chief HR Officer
Daraz


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH SOUTH UNIVERSITY
Speaker
A H M Hasinul Quddus (Rusho)
Chief Corporate Affairs Officer
Daraz


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH SOUTH UNIVERSITY
Speaker
Md. Ali Akbar Khan
Chairman
Bangladesh Technical Education Board


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH SOUTH UNIVERSITY
Speaker
Prof. Md. Farhadul Islam
Chairman
National Curriculum and Textbook Board (NCTB)


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH SOUTH UNIVERSITY
Speaker
Nahid Sultana Mallik
Joint Project Director (Joint Secretary)
Aspire to Innovate – a2i
ICT Division
Government of the People's Republic of Bangladesh


4th Industrial Revolution
Skills Summit
Keynote Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH-SOUTH UNIVERSITY
Speaker
Anir Chowdhury
Policy Advisor
Aspire to Innovate – a2i


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH-SOUTH UNIVERSITY
Speaker
Asad-Uz- Zaman
Strategy & Innovation Specialist
Aspire to Innovate – a2i


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH SOUTH UNIVERSITY
Speaker
Professor Dr. Mahbubur Rahman
Department of Political Science & Sociology -SHSS
North South University

SPEAKERS


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH SOUTH UNIVERSITY
Speaker
Mohammad Al Kashem
Managing Director
Coats Bangladesh &
J&P Coats Pakistan Ltd


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH SOUTH UNIVERSITY
Speaker
Maruf Md. Jahirul Islam
Chairman & Managing Director
Ocean Maritime Academy


4th Industrial Revolution
Skills Summit
How 4IR is Transforming & Creating New Opportunities for Innovation & Entrepreneurship
15 MARCH 2023, 2:45 PM
VENUE: NORTH SOUTH UNIVERSITY
Hussain M Elius
Founder/CEO, Wind.app
Ex-CEO, Pathao


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH SOUTH UNIVERSITY
Speaker
Sayeed Nasir
Executive Vice President &
Head of Department, OD &
Employee Relations at bKash Limited


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH-SOUTH UNIVERSITY
Rafid Imran
CEO,
Thrive EdTech


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH-SOUTH UNIVERSITY
Reyasat Chowdhury
Co-founder & CEO,
Shuttle


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH SOUTH UNIVERSITY
Speaker
Rudmeela Nawsheen
Founder & CEO
ConfigVR & ConfigRbot


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH SOUTH UNIVERSITY
Speaker
Abdullah Jayed
Founder and CEO
Jayed Corp.


4th Industrial Revolution
Skills Summit
Speaker
4IR Skills Summit
15-16 MARCH 2023
VENUE: NORTH SOUTH UNIVERSITY
Speaker
Md. Sameer Sattar
President, DCCI

PANEL DISCUSSIONS

PANEL DISCUSSIONS

PANEL DISCUSSIONS

PANEL DISCUSSIONS

JURY BOARD

MASTER CLASSES

MASTER CLASSES

PROGRAM DETAILS

PROGRAM DETAILS

DAY-1 (MARCH 15, 2023)

Inaugural Session Venue: NSU Auditorium Date: 15th March | Time: 10:00 AM		
Time	**Program**	**Guests**
10:00 AM – 10:05 AM	**Recitation from the Holy Quran**	
10:05 AM – 10:10 AM	**National Anthem**	
10:10 AM – 10:15 AM	**Welcome Speech**	***Prof. M. Ismail Hossain Ph.D.*** Pro Vice-Chancellor North South University
10:15 AM – 10:35 AM	**Keynote Presentation:** Global Perspective	***Prof. Jonathan Reichental Ph.D.*** Founder, Human Future & Author, LinkedIn Learning
10:35 AM - 10:55 AM	**Keynote Presentation:** Bangladesh Perspective	***Mr. Anir Chowdhury*** Policy Advisor Aspire to Innovate – a2i
10:55 AM - 11:00 AM	**Speech by Special Guest**	***Mr. Syed Nuruddin Ahmed*** Founding Chairman Thriving Skills Limited
11:00 AM – 11:05 AM	**Inauguration of the Summit by Chief Guest**	***Mr. Anisul Huq, MP*** Minister for Law, Justice and Parliamentary Affairs Government of the People's Republic of Bangladesh Member of Parliament
11:05 AM – 11:20 AM	**Speech by Session Chair**	***Prof. Atiqul Islam Ph.D.*** Vice-Chancellor North South University
11:20 AM – 11:25 AM	**Vote of Thanks**	***Prof. Mohammad Khasro Miah Ph.D.*** Department of Management, School of Business & Economics Director, Career & Placement Center & Convener, 4th Industrial Revolution Skills Summit North South University

PROGRAM DETAILS

Policy Dialogue on Industry-Government-Academia: "Are we prepared for the Fourth Industrial Revolution?" (Discussion on Developing a Comprehensive Strategy for Bridging the Skills Gap in the Fourth Industrial Revolution; Roles and Responsibilities of Industry, Government, and Academia) Venue: Syndicate Hall Date: 15th March | Time: 12:00 PM		
Program Moderator	***Prof. Mohammad Khasro Miah Ph.D.*** Department of Management, School of Business & Economics Director, Career & Placement Center & Convener, 4th Industrial Revolution Skills Summit North South University	
Time	**Program**	**Guests**
12:00 PM – 12:05 PM	**Keynote Speech**	***Prof. Dr. Mohammad Mahfuzul Islam*** Vice-Chancellor Bangabandhu Sheikh Mujibur Rahman Digital University, Bangladesh
12:05 PM – 1:35 PM	**Panel Discussion**	***Mr. Mominul Islam*** Managing Director, IPDC Finance Limited
		Mr. Syed Nuruddin Ahmed Founding Chairman, Thriving Skills Limited
		Mr. Asif Ibrahim Chairman, Chittagong Stock Exchange
		Mr. Ahsan Khan Chowdhury Chairman & CEO PRAN-RFL Group
		Mr. Md. Ali Akbar Khan Chairman Bangladesh Technical Education Board (BTEB)
		Prof. Dr. Anwar Hossain Vice-Chancellor, Northern University Bangladesh
		Prof. Dr. Abdur Rab Vice-Chancellor International University of Business Agriculture and Technology (IUBAT)
		Prof. Moniruzzaman Ph.D. Vice-Chancellor, Stamford University Bangladesh
1:35 PM – 1:40 PM	**Speech by Chief Guest**	***Ms. Nasreen Afroz*** Executive Chairman (Secretary) National Skills Development Authority Prime Minister's Office Information and Communication Technology Division Government of the People's Republic of Bangladesh
1:40 PM – 1:45 PM	**Closing Remarks by Session Chair**	***Prof. M. Ismail Hossain Ph.D.*** Pro Vice-Chancellor North South University
	Lunch Venue: Faculty Lounge	

PROGRAM DETAILS

Masterclass Venue: SAC-202, SAC-203, SAC-312, AUDI-801 Date: 15th March | Time: 03:00 PM			
Time	**Program**	**Guest Speaker**	**Venue**
3:00 PM – 4:00 PM	**Master Class 1:** Machine Learning & Artificial Intelligence	***Mr. Ahmed Yahyea Khaled*** Project Manager, Robi	AUDI 801
	Master Class 2: Communication & Interpersonal Influence	***Mr. Mezba Ul Gaffar*** Director, Customer Engagement, Novo Nordisk	SAC 203
	Master Class 3: Digital Marketing	***Dr. Rafiuddin Ahmed*** Associate Professor, University of Dhaka	SAC 312
	Master Class 4: Digital Transformation	***Mr. Kazi Nurus Sofa*** EVP & Head of Department, App & Essential Services bKash Limited	SAC 202

CXO Panel: Panel Discussion on "Leveraging Fourth Industrial Revolution Skills" Venue: Syndicate Hall Date: 15th March | Time: 04:00 PM		
Time	**Program**	**Guests**
4:00 PM – 4:05 PM	**Opening Remarks by Session Chair**	***Prof. Dr. Javed Bari, PE (USA)*** Dean, School of Engineering & Physical Sciences
4:05 PM – 4:55 PM	**Panel Discussion**	***Mr. Sajjad Hasib*** Chief Marketing Officer at Grameenphone Ltd
		Mr. Tarique Amin Bhuiyan CIO, Epyllion Group Ex MD of the Dhaka Stock Exchange Limited (DSE) Ex TCS, Accenture & Infosys Principal Consultant
		Mr. Mohammad Riyad Hossain CHRO, Daraz Bangladesh
		Mr. Shaikh Ehsan Reza CHRO, Sector A, Bashundhara Group
		Prof. Mahbubur Rahman Ph.D. Department of Political Science & Sociology School of Humanities & Social Sciences
		Md. Mokhlesur Rahman, Ph.D. CEO & Lead Consultant, Center for Research and Development
4:55 PM - 5:00 PM	**Closing Remarks by Session Chair**	***Prof. Dr. Javed Bari, PE (USA)*** Dean, School of Engineering & Physical Sciences

PROGRAM DETAILS

DAY-2 (MARCH 16, 2023)

Masterclass Venue: NAC-1079, SAC-203, SAC-209, AUDI-801 Date: 16th March | Time: 10:30 AM			
Time	**Program**	**Guest Speaker**	**Venue**
10:30 AM – 11:30 AM	**Master Class 5:** Internet of Things (IoT)	***Dr. Mohammad Monirujjaman Khan*** Associate Professor, Department of Electrical & Computer Engineering School of Engineering & Physical Sciences	NAC 1079
	Master Class 6: HR Analytics	***Prof. Mohammad Khasro Miah Ph.D.*** Department of Management, School of Business & Economics Director, Career & Placement Center Convener, 4IR Skills Summit 2023 North South University	AUDI 801
	Master Class 7: Blockchain Technology	***Prof. Mamun Habib Ph.D.*** Independent University of Bangladesh	SAC 209
	Master Class 8: Big Data and Application	***Dr. Mohammad Ashrafuzzaman Khan*** Assistant Professor, Department of Electrical & Computer Engineering School of Engineering & Physical Sciences	SAC 203

Seminar on "Preparing the Workforce for the Fourth Industrial Revolution: Strategies and Best Practices" Venue: AUDI 801 Date: 16th March | Time: 12:00 PM		
Program Moderator	***Dr. Lamia Iftekhar*** Associate Professor, Department of Electrical & Computer Engineering School of Engineering & Physical Sciences	
Time	**Program**	**Guests**
12:00 PM – 12:05 PM	**Opening Remarks by Moderator**	***Dr. Lamia Iftekhar*** Associate Professor, Department of Electrical & Computer Engineering School of Engineering & Physical Sciences
12:05 PM – 12:10 PM	**Welcome Speech by Chief Guest**	***Mr. Md. Azharul Islam Khan*** Director General (Grade-1) Department of Youth Development Government of the People's Republic of Bangladesh
12:10 PM – 12:20 PM	**Keynote Presentation on 4IR Skills Development: Where are we?**	***Mr. H. M Asad-Uz-Zaman*** Strategy & Innovation Specialist Aspire to Innovate – a2i & Co-Convener, 4th Industrial Revolution Skills Summit
12:20 PM – 1:15 PM	**Panel Discussion**	***Mr. Monwar Hossain*** Managing Director A.D. Sons Marine Tech

PROGRAM DETAILS

		Mr. Sayeed Nasir Executive Vice President & Head of Department, OD & Employee Relations at bkash Ltd.
		Mr. A H M Hasinul Quddus (Rusho) Chief Corporate Affairs Officer Daraz Bangladesh
		Mr. A K M A Hamid President, Institution of Diploma Engineers (IDEB)
		Mr. Md. Sameer Sattar President, Dhaka Chamber of Commerce & Industry (DCCI)
		Dr. Md. Jalal Uddin, PEng. Director Bangladesh Industrial Technical Assistance Centre (BITAC)
1:15 PM – 1:20 PM	**Closing Remarks by Session Chair**	***Prof. Nazrul Islam Ph.D.*** Pro Vice-Chancellor, Northern University of Bangladesh

4IR Talk with Young Entrepreneurs on "How the Fourth Industrial Revolution is Transforming Traditional Industries and Creating New Opportunities for Innovation and Entrepreneurship" **Venue: Syndicate Hall** **Date: 16th March | Time: 2:45 PM**		
Program Moderator	***Prof. Shazzad Hosain Ph.D.*** Department of Electrical and Computer Engineering School of Engineering & Physical Sciences Director, NSU Startups Next	
Time	**Program**	**Guests**
2:45 PM – 2:50 PM	**Opening Remarks by Moderator**	***Prof. Shazzad Hosain Ph.D.*** Department of Electrical and Computer Engineering School of Engineering & Physical Sciences Director, NSU Startups Next
2:50 PM – 3:30 PM	**Panel Discussion**	***Mr. Hussain Elius*** Wind.app (Founder/CEO) Pathao (Founder/Ex-CEO)
		Mr. Reyasat Chowdhury Co-founder & CEO, Shuttle
		Mr. Rafid Imran CEO, Thrive EdTech
		Mr. Abdullah Jayed Founder and CEO at NEXT Ventures
		Prof. M. Emdadul Haq Ph.D. Chair, Department of History and Philosophy School of Humanities & Social Sciences
3:30 PM – 3:35 PM	**Closing Remarks by Session Chair**	***Mr. Sami Ahmed*** Managing Director Startup Bangladesh Limited

PROGRAM DETAILS

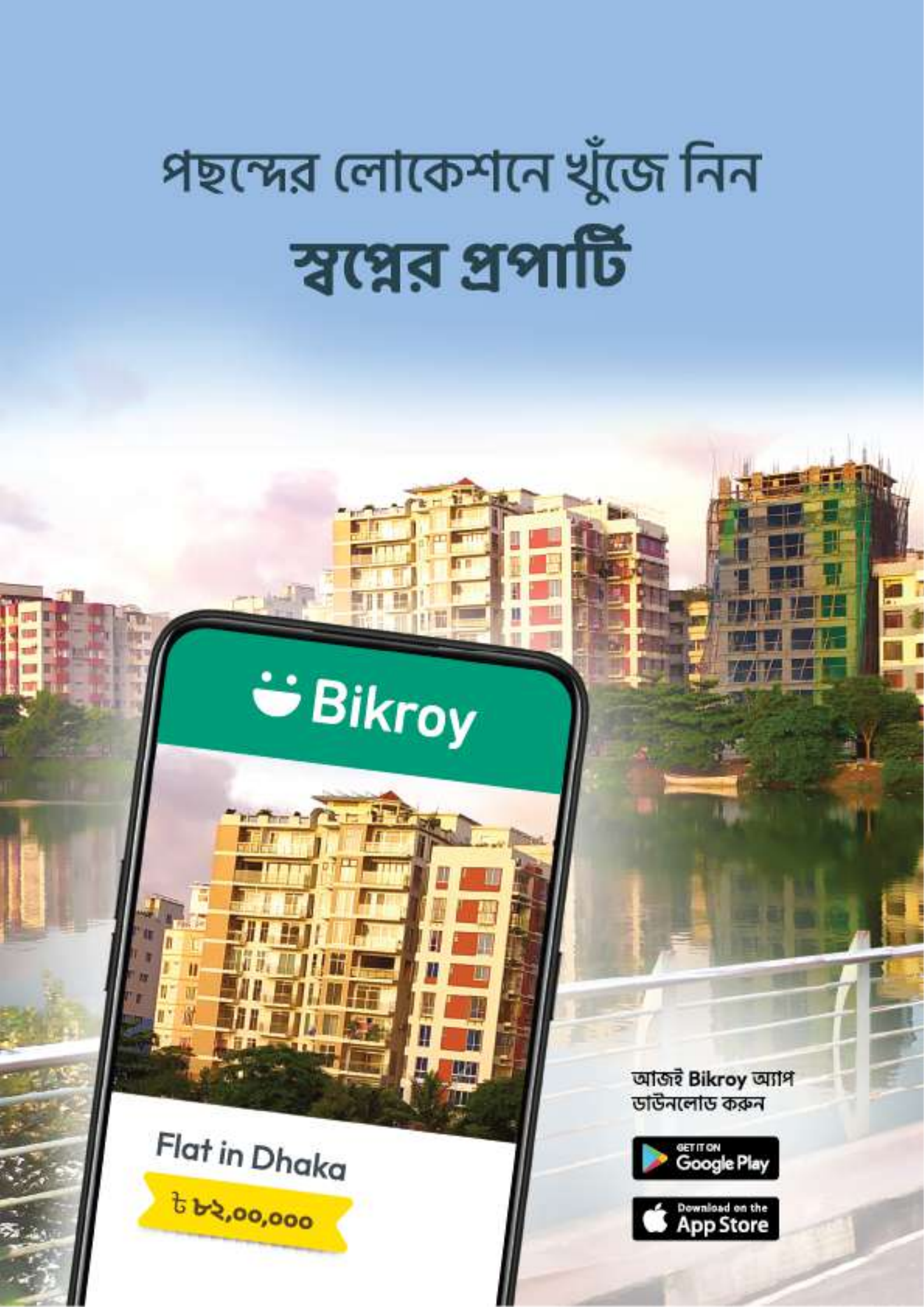
4IR Talk with Industry and Academic Leaders on "Leading the Way: Navigating the Fourth Industrial Revolution as a CEO" Venue: Syndicate Hall Date: 16th March | Time: 4:15 PM		
Program Moderator	***Prof. Rajesh Palit Ph.D.*** Chair, Department of Electrical & Computer Engineering School of Engineering & Physical Sciences	
Time	**Program**	**Guests**
4:15 PM – 4:20 PM	**Opening Remarks by Moderator**	***Prof. Rajesh Palit Ph.D.*** Chair, Department of Electrical & Computer Engineering School of Engineering & Physical Sciences
4:20 PM – 5:20 PM	**Panel Discussion**	***Mr. Mominul Islam*** Chief Executive Officer, IPDC Finance Limited
		Ms. Rudmeela Nawsheen Founder & CEO, ConfigVR and ConfigRbot
		Mr. Md. Abdullah Al Mahmud Founder and CEO, Thriving Skills Limited
		Mr. Mohammad Al Kashem Managing Director, Coats Bangladesh & J&P Coats Pakistan Ltd.
		Ms. Eshita Sharmin CEO, Bikroy.com
		Prof. M. Mesbahuddin Sarker Ph.D. Institute of Information Technology (IIT) Jahangirnagar University
		Prof. Rashed Mustafa Ph.D. Dean, Faculty of Engineering Professor, Computer Science and Engineering University of Chittagong
		Maruf Md. Jahirul Islam Chairman & Managing Director Ocean Maritime Academy
5:20 PM – 5:25 PM	**Closing Remarks by Session Chair**	***Prof. Helal Ahammad Ph.D.*** Dean, School of Business & Economics School of Business & Economics Director, Economics Research Platform

PROGRAM DETAILS

Award Ceremony, followed by Dinner Venue: AUDI 801 Date: 16th March | Time: 6:30 PM		
Time	**Program**	**Guests**
6:30 PM – 6:35 PM	**Welcome Speech**	***Prof. Dr. Javed Bari, PE (USA)*** Dean, School of Engineering & Physical Sciences
6:35 PM – 6:50 PM	**Talk on "Future Outlook"**	***Jonah Berger*** Professor, Wharton School of Business University of Pennsylvania, USA
6:50 PM – 6:55 PM	**Remarks by Special Guest**	***Ms. Nahid Sultana Mallik*** Joint Project Director (Joint Secretary) Aspire to Innovate – a2i Information and Communication Technology Division Government of the People's Republic of Bangladesh
6:55 PM – 7:00 PM	**Remarks by Chief Guest**	***Mr. Zunaid Ahmed Palak MP*** Hon'ble State Minister ICT Division, Government of the People's Republic of Bangladesh
7:00 PM – 7:05 PM	**Closing Remarks by Session Chair**	***Prof. M. Ismail Hossain Ph.D.*** Pro Vice-Chancellor North South University
7:05 PM – 7:10 PM	**Vote of Thanks**	***Prof. Mohammad Khasro Miah Ph.D.*** Department of Management, School of Business & Economics Director, Career & Placement Center & Convener, 4th Industrial Revolution Skills Summit North South University
7:10 PM – 7:50 PM	**Award Ceremony**	
	Dinner Venue: Faculty Lounge	

ARTICLES

পছন্দের লোকেশনে খুঁজে নিন
স্বপ্নের প্রপার্টি



আজই **Bikroy** অ্যাপ
ডাউনলোড করুন

GET IT ON Google Play

Download on the App Store

The Fourth Industrial Revolution and The Current Job Market: The Role of The Career and Placement Centre

Professor Mohammad Khasro Miah, Ph.D.
Convener, 4th Industrial Revolution Skills Summit
Director, Career and Placement Centre

The Fourth Industrial Revolution Industry, also known as "Industry 4.0," is a term used to describe the widespread fusion of the digital and physical worlds brought on by developments in areas such as data analytics, human-machine interaction, artificial intelligence, and other similar platforms. It is the fundamental shift towards a more technology-dependent means of global production and supply, one that is expected to improve the quality of life of the average man through consistent, efficient, and effective growth, increased production of goods at lower prices, improved income, and the ease of trade barriers. Therefore, it is safe to say that from manual production methods to machines in the first industrial revolution, to the installations of railroads and telegraph networks in the second revolution, followed by semiconductors, mainframe computers, and the internet in the Digital Revolution, we have surely come a long way with advancements in sectors of artificial intelligence and highly interactive supercomputers, which are presently shaping Industry 4.0 as we know it.

In today's world, industries strive to cope with the growing demand and the environmental crisis, which has reached a critical point unless we act upon it immediately. The primary purpose of Industry 4.0 is not simply restricted to the implementation of a technology-driven change, but rather to govern such advancements in order to create a more inclusive and humane future. It is a depiction of the future, in which we can advance in terms of efficiency and ease while working to eradicate the effects of global warming. If we wish to continue paving the way for mankind to reach maximum efficiency and technological advancements, we must do so by lessening the burden in order to face the adverse effects on mother nature.

The 4th Industrial Revolution promises to bring about significant advancements in technology and communication, leading to improvements in various aspects of society, including but not limited to increased productivity and efficiency in various industries. By improving the quality of life through personalized products and services, better decision-making through the use of data and artificial intelligence, the creation of new and innovative products and services, enhanced safety in various industries, and increased global competitiveness, we hope to bring about remarkable advancements in different spheres of life. Therefore, indubitably, the 4th Industrial Revolution is vaulting towards becoming a highly influential instrument of success in the global job market today, posing many facets of benefits and opportunities for our current graduates. These benefits include building essential technical skills, leading to improved productivity, efficiency, overall quality of work, creativity, critical thinking, adaptability, flexibility, and emotional intelligence.

Equipped with the knowledge of modern-day technology, students are likely to be able to face critical issues with greater ease due to their adaptation of a creative problem-solving approach, one that is driven by a higher degree of utilization of technology. In addition to that, through Industry, 4.0 students will reap the benefits of improved access to education through technology, such as online learning platforms, personalized learning experiences through the use of data and artificial intelligence, and enhanced critical thinking and problem-solving skills. Such benefits are likely to open great opportunities for our graduates, as they will be able to assess their individual potential, thus resulting in an edge in terms of competitive advantage while building their careers in today's global job market.

As the Director of the Career Placement Centre, (CPC) at North South University, the leading private university in Bangladesh, I am greatly aware of the growing trend and demands for skills that are complementary to the Fourth Industrial Revolution. These trends and demands are made more prominent through my interactions with significant MNCs operating in Bangladesh. It is a common scenario that many of the job opportunities that are presented within CPC come with requirements that go hand-in-hand with those that are implemented within industries and companies that are known for their utilization of the principles governing Industry 4.0.

CPC responds to these urgent demands by offering structured services that are specifically tailored to meet these requirements. CPC offers a team of committed experts whose duty is to discuss the future with their pupils. Activities such as self-evaluations, fairs, events, and workshops, will aid students in determining their direction and following the right trajectory. Excel Boot Camp, Japanese Language Proficiency Course, B-JET and B-MEET program, Corporate Seminars with various industry leaders and policymakers, Networking and Workshop Presentations, and finally, Skill Development and Corporate Grooming Sessions all play an important role in providing students with the tools they need to survive and thrive in today's competitive job market.

Students at North South University have benefited greatly from the novel methods used to provide them with the skills they need to deal with such challenges after graduation. Incorporating advanced technologies into the curriculum through online and blended learning platforms for enhanced access to education, fostering a culture of innovation and entrepreneurship through initiatives and incubation centers, partnering with industries to provide students with real-world experience and hands-on training, and upgrading their infrastructure and facilities to be tech-enabled have encouraged the institute to pursue interdisciplinary collaboration to address the complex challenges of the Industry 4.0. Furthermore, in terms of the academic infrastructure, the inclusion of mathematical and statistical knowledge, improvements in STEM education, and the execution of international academic quality standards, coupled with numerous national and international projects and initiatives taken jointly by CPC and North South University, have proven to fasten the process of securing desired jobs for countless students from North South University.

To recapitulate, it is reasonable to state that the Fourth Industrial Revolution is causing a transformation in the way teaching and research are conducted at our university. When it comes to implementing and adapting new technologies into our curriculum and research programs, North South University, is at the forefront of the movement to better educate students for the future. In addition, CPC has played a significant role in developing the ethical and social aspects of Industry 4.0 by conducting research and raising awareness of the possible ramifications. North South University can guarantee that it will continue to be at the forefront of education and research by seizing the possibilities given by the 4th Industrial Revolution.

Industrial Revolution: As it owes to Bengal Finance

Dr. M. Emdadul Haq

Today's world is undergoing the Fourth Industrial Revolution, which initially started its journey with the First Industrial Revolution (FIR) in England in 1760 with the money raised from Bengal. England emerged as the leader of the Industrial Revolution immediately after seizing the Kingdom of Bengal through the Battle of Palashi in 1757. While the FIR brought capitalist advancement, progress & development to the Western economy, it caused socio-economic & political degradation in the colonies in the global South, especially in Bengal.

The colonialist writers & their cohorts generally portray a rosy picture of the British Raj in Bengal / India from 1757 to 1947, claiming that they linked local markets to the global economy, facilitating a new horizon of life in the colonies. They hardly refer to the dark sides of the British colonial rule & their plundering of Bengal resources that received closer attention in the present writeup.

Some legendary historians admitted that Bengal was the wealthiest region in the contemporary world by maintaining its 'proto-industrialization & the early signs of Industrial Revolution'. Evidence suggests that Bengal resources earned by plundering contributed to the Industrial Revolution in England during 1760-1840. The American historian Brooks Adams in his book **The Laws of Civilization** and Decay (1896), noted:

Very soon after Plassey [Polashi], the Bengal plunder began to arrive in London, and the effect appears to have been instantaneous, for all the authorities agree that the Industrial Revolution, the event which has divided the nineteenth-century from all antecedent time, began with the year 1760. Plassey was fought in 1757, and probably nothing has ever equaled the rapidity of the change which followed between 1760 and 1815; the growth was very rapid and prodigious.

As a result of the influx of Bengal finances, their strategic investment in the manufacturing factories and industries and the dividends earned in the UK were fabulous. Unfolding the financial records, the Latin American writer Andre Gunder Frank (1969), in his book The Third World Crisis, observed:

'Bengal once provided the lifeblood of mercantile and industrial capitalist development in the metropolis.'

Some Western economists argued that no investment had produced so much profit from the money and resources from Bengal plundering since the dawn of human civilization. During the initial 50 years of the Industrial Revolution, the UK remained steadfast without facing any effective competitors or encounters from other European countries in the overseas market. A Bangladeshi author Anupam Sen (1982), in his book The State, Industrialization & Class Formations in India, provided an analysis of the questionable impact of the colonial state in steering under-development in the sub-continent, specifically in Bengal.

To create and expand its external market, the BEIC destroyed the local industries, including the world-famous Muslin and textile products in today's Bangladesh territory. In their typical exploitation, the colonial rulers ruined the local industries to feed their industrial products in the overseas market, not to be completed by Bengal products. The expatriate authority 'systematically destroyed the textile and Muslin industries through various and innumerable methods of oppression to the poor weavers such as by fines, imprisonments, floggings, forcing bonds from them'. Consequently, the world-famous Bengal Muslin products virtually disappeared due to British coercive de-industrialization policies.

Under the Mughals, for its finest quality, Bengal Muslin was in high order among the European aristocrats and nobility. Under the Nawabi rule, Bengal textiles amounted to more than 50% of British and Dutch textile exports from Asia. A vast amount of Bengal raw silk, cloths, etc., were exported to the West and as far as Gujrat, Lahore, & even Ispahan in Persia. Before the colonial takeover, Asian merchants exported raw silk from Bengal, amounting to Rs.48 lacs per annum on average during the mid-eighteenth century.

Contemporary foreign travelers and European trading companies recorded that the quality of Bengal textile products surpassed all other parts of Asia. In a sharp observation, the Indian historian Romesh C. Dutt (1893), in his book Economic History of India, noted:
The people of Bengal had never lived under oppression so far-reaching in its effects, extending to every village market and every manufacturer's loom. They had been used to arbitrary acts from men in power but had never suffered from a system that touched their trades, occupations, and lives so closely. The springs of their industry were stopped; the sources of their wealth dried up.

The rapid de-industrialization of the region brought tremendous hardship for the uprooted local artisans, pushing most of them with no other occupation to fall back on agriculture, which created massive rural unemployment for the first time in Bengal's history. As a result, the proportion of the unskilled rural population dependent on farming for their livelihood increased almost a hundred percent within the first one hundred years of colonization.

Moreover, to meet the growing demands of Indigo for their textile products, after its supply chain was cut off from America in 1776, the colonial authority ensured the supply from Bengal, compelling farmers to produce indigo in various districts of West Bengal and Jessore in Bangladesh. The European planters forced the Bengali peasants to grow indigo for its use as a blue dye in their textile industries in the UK, and the practice continued since 1777. To boost revenue earnings, they also established monopoly businesses by forcing farmers to grow opium poppies and marijuana. As a result of prolonged colonial exploitation, the Bengal peasantry, particularly the Bengali Muslim community, suffered the most.

Looking back at lessons learned from the colonial past, Bangladesh must look forward to investing in human capital to enable the next generation to impart in a world of volatility, uncertainty, complexity, and ambiguity (VUCA). They must be increasingly adaptive to the shifting paradigm of production and manufacturing systems of robotics, the Internet of Things (IOT), as big data analytics have empowered manufacturing intelligence. The Digital Revolution is changing the world faster compared to how people worked under the earlier Industrial Revolutions. The younger generation in Bangladesh needs to be equipped and tuned to the emerging needs of the time and environment of the twenty-first century.

Professor M. Emdadul Haq is the Chair of the Department of History & Philosophy at North South University.[Courtesy: Dhaka Tribune; March 03, 2023]

The 4IR-Driven Automation and Massive Inter-Industry Migrations:

Needs for Expanding VET Capabilities in Bangladesh

Helal Ahammad
Director & Professor, Economics Research Platform,
Dean, School of Business & Economics, North South University
Dhaka, Bangladesh 1229
Email: mailto:Helal.Ahammad@northsouth.edu

Thanks to its relatively high economic growth over the past decade or so, Bangladesh is set to graduate out of its long-held Least Developed Country (LDC) status by 2026. Bangladesh's LDC graduation has its own set of challenges including the likely loss of duty-free-quota-free access of its exports to the European markets. The government's Vision 2041 seeks to transform Bangladesh into a high-income country by 2041 (Alam, 2019). However, the next wave of economic growth in Bangladesh is to endure and accommodate some large-scale automation induced by the Fourth Industrial Revolution (4IR). Unless such automation is well orchestrated by carefully crafted public policies around upskilling and promoting vocational education and training (VET), the massive inter-industry workforce migrations can easily tarnish the 2021-Vision into development chaos.

The Past Performance and the Future Imperatives

It is fair to suggest that the tale of the socio-economic transformation in Bangladesh in the past is, in the main, a story of the triumph of 'human ingenuity'. In particular, the commendable socio-economic development over the years has resulted from the economic empowerment of its female workforce largely mobilized by the buoyancy of the female-workers-dominated ready-made garments (RMG) sector; the success of the female-focused microcredit enterprises; and the overwhelming engagement of female workers and female participants in the delivery of numerous health, education and other social programs led by various NGOs (Ahammad 2022).

4IR is inducing, among other things, considerable automation across a range of industries. Of particular concern in the case of Bangladesh, is the real possibility of worker-displacing automation in the RMG industry—the leading employer of female workers and the one that faces steep competition from other global suppliers.

The RMG industry in Bangladesh employs about four million workers comprising about 80 percent of women, mostly poor migrants from rural Bangladesh. According to some estimates, robots are likely to displace around 60 percent of garment workers in Bangladesh by 2040. Robots capable of sewing called Sewbots can change the cost competitiveness of apparel production. In 2015, SoftWear Automation Inc. launched Lowry, a robot built with machine vision and computing technologies that automate fabric handling. Working in parallel with Lowry, SoftWear Automation Inc. introduced an automated sewing machine in 2016 that can run on a continuous basis without a human operator. Innovative technology at the sewing stage is pushing apparel production to what seemed impossible in the past. Sewing robots are automating the more difficult and labor-intensive tasks in garment making. As such, there are about fourteen steps involved in transforming fabric into ready-made garments—automation has been introduced at almost all stages of apparel making which has, in turn, reduced the dependency on labor. New factories operate using advanced technology in the entire apparel-making process. Before automation, pattern design needed 10-12 workers to complete a task; but with automation, with computers and 3D printers, the same task now requires only 1-2 workers, according to some studies.

The use of advanced technology assists in cutting down production costs significantly (by about 30 to 40 percent, according to some estimates); and has spill-over benefits in terms of higher productivity and reduced lead times. While automating an apparel factory can undeniably be expensive, based on some surveys, it takes only 1-2 years to break even the associated automation costs. Factories that invested in high-tech manufacturing were found to be able to secure new orders to fill up the extra capacity.

The vulnerabilities of the Bangladeshi RMG workers

Garment workers in Bangladesh are less productive than their counterparts in other leading garment exporting countries. For example, Bangladesh uses some 140 workers to make readymade garments worth about US$1 million. By comparison, China and Vietnam use only 48 workers while India and Cambodia use 75 workers. So, going forward, the adoption of automation and advanced technology on a considerable scale seems inevitable in Bangladesh in order to remain internationally competitive. A significant portion of the workers employed in the RMG sector in Bangladesh are semi-skilled; with automation, it is these semi-skilled workers who will lose their jobs first. As such, low-paid workers disproportionately bear the brunt of automation's impact as they lack the basic knowledge to operate advanced machinery and also are not often chosen for training to operate such machines. They are also susceptible to remaining long-term unemployed or underemployed unless provided with opportunities for upskilling themselves.

Indeed, small and medium enterprises (SMEs) and services sectors are often considered to be able to absorb much of the displaced RMG workers. New jobs can also be created in cottage and micro enterprises. The government often claims the credits for introducing industry-friendly laws, policies, and tax regimes, which resulted in an ongoing rise in the industrial sector's contribution to the economy. Nonetheless, there is a serious need for expanding and promoting vocational education and training for developing and expanding labor market skills to ensure job retention and assist potentially terminated workers to find alternative occupations to make a living.

Furthermore, Bangladesh is aspiring to harvest the so-called demographic dividends, where too, investment in VET capabilities is critical. Restructuring the education system and reducing the gap between educational outcomes and labor market needs have long been identified as one the frontline public policy challenges.

Moving forward, what Bangladesh needs are millions of new jobs for its ever-increasing working-age population. It has to expand and promote its VET capabilities even faster to deal with the potential 4IR-driven massive inter-industry migrations. While Bangladesh needs accelerated investment and economic growth to realize its national aspirations and commitments, the relative claims in the political arena are presenting the Bangladesh Government with a unique opportunity for evidence-based pro-growth policy making. Wherever possible, the Bangladesh government must steer economic activities and businesses to market disciplines; and must also deal with impending global challenges such as disruptive automation arising from the Fourth Industrial Revolution!

References

Ahammad, H. (2022). "Economic Growth and Governance: A Proposal for Institutional Innovations." In S. U. Ahmed (ed.) 50 Years of Bangladesh: A Tale of a Miracle. North South University and Prothoma Prakashan. (ISBN 978 984 96750 1 3)

Alam, S. (2019). Bangladesh: Vision 2041: Alignment with Other Macro Plans: Commentary, South Asian Journal, 7 April. http://southasiajournal.net/bangladesh-vision-2041-alignment-with-other-macro-plans/.

Vertical Development for Thriving and Flourishing in the Era of 4IR

Professor Michiko IZUMITANI
SOKA University, Japan

I am a psychologist who teaches leadership at a Japanese university. My biggest concern today is that Japan lags far behind in the 4th Industrial Revolution (4IR), especially regarding the globalization of organizations and people's mindsets. This paper describes Japan's challenges in globalization and the soft/human skills required for 4IR.

4IRs have brought about significant changes in how people work, as characterized by the rise of remote work. In particular, the COVID-19 pandemic has accelerated the trend for companies to place work orders online and across borders as cross-border traffic is restricted. For example, the number of members of Freelancer, the world's largest platform for connecting people for the purpose of ordering and receiving online work, based in Australia, has reached 58.47 million in 2022, an increase of 16.57 million compared to the end of 2019. This trend is only expected to continue. International economist Richard Baldwin has noted that "telemigration," a new way of working in which talented, low-cost workers take jobs in high-wage countries while remaining overseas, will spread in the future. He even predicts that remote work will become the main form of labor.

By contrast, Japan has yet to be able to ride the wave of this new form of globalization. The number of Japanese cross-border remote workers who receive work orders from overseas companies is only 0.1% of those who receive work orders through intermediaries worldwide (NIKKEI ASIA, 2021). Economist Yukio Noguchi states that Japan is 20 years behind other developed nations in using online foreign talent and work orders (NHK, 2021). This could be one of the primary reasons behind the poor digital transformation of Japanese companies and suggests that jobs in Japan may be taken away by foreign talents.

Richard Baldwin's first advice to Japanese corporates to address this issue is to improve the English language skills of the Japanese people. According to the results of a 2022 survey released by EF (Education First), an international language education organization headquartered in Switzerland, Japanese people's English proficiency has dropped further from 78th place to 80th place among 112 non-native English-speaking countries and regions. This is the lowest level in Asia. There are several explanations for Japan's low English proficiency. However, the main reasons are that they are a homogeneous nation and have little motivation to learn English due to limited exposure. Another primary reason may be the size of the Japanese market, which is the third largest in the world. Japan's exports account for 18.2% of its GDP (OECD, 2023), which is extremely low even by global standards. Japan is dependent on domestic demand and has not been pressured by the need to utilize English in international businesses. However, as the birthrate declines and the aging of society accelerates, the shrinkage of domestic demand is unavoidable, and the country is facing an economic crisis; expansion of global business would be the primary key to surviving the hard times.

On the other hand, the abilities required for business in the 4IR era are broader than language and technical skills. According to Forbes (2022), 78% of jobs posted on LinkedIn aimed at global hiring mention soft skills and more than 61% of professionals said that soft skills are just as critical as hard skills in the workplace.

One reason for the emphasis on soft skills in 4IR is the need for adaptability in an organization and the industry that can change rapidly, drastically, and unexpectedly. Another factor may be the increasing opportunities for members with diverse cultural backgrounds to work on problem-solving in virtual spaces. In such settings, reading social cues and responding appropriately is essential, as nonverbal communication may be limited. Richard Baldwin, who was mentioned earlier, explains the importance of acquiring abilities that artificial intelligence does not possess (so far), which are to innovate, motivate others, and act ethically, and states that "the future of work will require human skills rather than skills that can easily be offshored or automated. (N IKKEI, 2021). How can human skills be cultivated?

Adult development studies by psychologists provide helpful guides. Robert Kegan (2001, 2009) and Susanne Cook-Greuter (2013) both of whom have presented developmental frameworks for adult cognition and mindset, argue that people can continue to grow throughout their adult lives and describe horizontal and vertical development.

Horizontal growth is the increase in knowledge, skills, and functional or technical competencies. The competencies of horizontal growth include communication, problem-solving techniques, customer service, and project management skills, all of which have been covered in traditional corporate training programs. Vertical development refers to the growth of mindset, and mental models, and works to identify ways that govern how we make sense of things and think. It increases adaptability, self-awareness, cooperation, and emotional intelligence, enabling people to think and act beyond their previous values and beliefs. This vertical development contributes to the cultivation of human/soft skills. Without vertical growth, acquiring knowledge and skills would have only superficial, short-term effects and could not respond to changes that were not anticipated.

Kegan describes horizontal and vertical growth with an analogy of pouring water into a cup; the goal of training focused on horizontal development is to fill the cup, which is the mindset of the training participant, with new information, knowledge, and models. In contrast, vertical development aims not to fill the cup with water but to expand the cup itself. Of course, both forms of development are essential, and the knowledge, skills, and mindset are significantly enhanced by them and tend to influence each other. However, focusing more on vertical growth is vital in today's VUCA world (for volatility, uncertainty, complexity, and ambiguity).

While it is beyond the scope of this paper to go into detail on how to promote vertical growth, the Center for Creative Leadership has identified conditions that catalyze vertical development, that is, “heat experiences,” “colliding perspectives,” and elevated sense-making. “Heat experiences” are complex situations that disrupt one's habitual thinking. “Colliding perspectives” are conflicts with others who hold different worldviews, opinions, and background experiences. Lastly “Elevated sense-making” is the processing and understanding of these perspectives and experiences. It is necessary to incorporate these into university education and corporate training intentionally.

To develop human resources who can play an active role in the 4IR era, Japanese educational institutions and workplaces focus on IT skill development and English language education. However, providing learning opportunities that contribute to vertical growth would be the key to cultivating people who can thrive and flourish in the age of VUCA. This is critical not only in Japan but in human resource development efforts worldwide, and when this is widely practiced, people, society, and the world will be more sustainable.

Resources:

Center for Creative Leadership Developing Talent? You're Probably Missing Vertical Development, Retrieved on March 6th, 2023

Cook-Greuter, S (2013) Nine Levels Of Increasing Embrace In Ego Development: A Full-Spectrum Theory Of Vertical Growth And Meaning Making. Retreived online: http://cook-greuter.com/

EF(2022) EF English Proficiency Index
https://www.ef.com/wwen/epi/regions/asia/japan/

Forbes(2022) Why Soft Skills Are More In Demand Than Ever
https://www.forbes.com/sites/carolinecastrillon/2022/09/18/why-soft-skills-are-more-in-demand-than-ever/?sh=48473bf45c6f&fbclid=IwAR3H2E15BYKiHwYvDfFBadWCq1LfqiwrVLpSNn0r85HgVIdL2KPW2XI-C0E

ILO(2020) Policy Brief: Working from Home: Estimating the worldwide potential
https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---travail/documents/briefingnote/wcms_743447.pdf

Kegan, R. and Laskow Lahey, L. (2001) How the Way We Talk Can Change the Way We Work: Seven Languages for Transformation. Jossey-Bass, San Francisco

Kegan R. and Laskow Lahey, L. (2009) Immunity to Change: How to Overcome It and Unlock the Potential in Yourself and Your Organization Harvard Business School Publishing: Boston

NHK(2021) Never Give Up on Your Career: "Cross-border Telework" Working Style
https://www3.nhk.or.jp/news/html/20210629/k10013109291000.html

NIKKEI ASIA(2021) Cross-border online work increases 30% amid COVID-19 pandemic
https://asia.nikkei.com/Spotlight/Datawatch/Cross-border-online-work-increases-30-amid-COVID-19-pandemic

OECD Data（2023）Retrieved on March 6th, 2023https://data.oecd.org/japan.htm

Fourth Industrial Revolution: Perspective on Textile Industry and Environment

Md. Morshedul Haque
Department of Environmental Science & Engineering
Bangladesh University of Textiles (BUTEX)

The First industrial revolution was accounted in 1784 by the intervention of water and steam power to mechanize production. The Second remarkable IR (1870) introduced electric power that resulted from mass production and lasted till the middle of the 20th century. The Third IR (1969) intervened in electronics and information technology to automate production. Massive progress in the ICT sector changed people's lifestyles, transforming rural civilizations into urbanized communities. The Fourth IR describes the blurring of boundaries between the physical, digital, and biological worlds. The world is already witnessing the fourth IR through artificial intelligence (AI), robotics, the Internet of Things (IoT), autonomous vehicles, 3-D printing, nanotechnology, biotechnology, materials science, energy storage, and quantum computing. The rapid technological transformation represents the arrival of a fourth rather prolongation of the third IR. However, almost every industry (manufacturing, healthcare, and finance) in every country is perceptible.

Although the fourth IR is a blessing to us, there have challenges to coping with those advanced technologies. Firstly, it could create a new shape of productivity, job market, healthcare, environmental sustainability, economic growth, quality of life, etc. Secondly, it might account for manifesting challenges like cybersecurity risks, social isolation, income inequality, the concentration of wealth and power, job displacement, and a significant gap in technical skills. To overcome these challenges, proper initiatives such as upskilling and reskilling, digital literacy, cybersecurity measures, a collaborative approach, and balancing economic and social goals must be implemented. The fourth IR is also a collaborative transformation and hence, it needs an integrative approach to keep harmony with society.

The textile sector has been a promising sector of Bangladesh's economy over the past few decades along with being the second largest exporter of clothing after China. In the previous fiscal years (2021-2022), knitwear and other garments accounted for about $52 billion in export value. The growth in this sector undoubtedly has a positive effect on national economic development but it has been challenging to sustain in a competitive market without adopting new technologies. Although very few numbers in the industry are trying to adopt the fourth IR transformation, the effort is not sufficient to hold the current economic position in the long run. None of the automation technologies such as artificial intelligence, 3D printing, virtual reality, and augmented reality has been largely implemented in garment factories of the country. This is not ideal to stay competitive in the global market, because a garment industry running with the use of these technologies will yield much higher productivity and produce close to zero wastage. To compete with the global market, one needs to adopt the fourth IR, which will improve important facts like reduced order delivery time, increased quality, increased productivity, reduced operational costs, increased customer satisfaction, and other relevant factors. However, introducing automation in the garment industry of Bangladesh means job loss for many garment workers, which is a big concern that needs to be acknowledged. According to an a2i study, about 60% of garment workers may lose

their jobs by 2030. In order to overcome these limitations, it is necessary to invest in the training of unskilled labor forces and turn them into semi or fully-skilled workforce alongside the introduction of automation to the manufacturing system. This will not only increase productivity but also develop a more valuable workforce.

Among the economic and manpower development its crucial to think about environmental sustainability that also a burning issue. The Fourth IR has the potential to greatly improve environmental sustainability in the textile industry. The textile industry is known to have a significant impact on the environment, from the production of raw materials to the disposal of finished products. However, 4IR technologies such as artificial intelligence, the Internet of Things (IoT), and blockchain can be utilized to minimize this impact and improve sustainability. One area where 4IR technologies can be applied is in the production of raw materials. AI can be used to optimize the use of resources such as water, energy, and chemicals during the production process. The IoT can be used to monitor the use of resources in real-time and provide insights into how to reduce waste and improve efficiency.

Another area where fourth IR technologies can be applied is in the design process. AI can be utilized to develop designs that are more sustainable by considering factors such as the environmental impact of materials and the end-of-life disposal of products. Blockchain can be used to create a transparent supply chain, allowing consumers to track the journey of their products and verify their sustainability credentials. Finally, the fourth IR technology can be used to improve the recycling and disposal of textile products. AI and the IoT can be used to identify and sort materials for recycling, while blockchain can be used to create a closed-loop system that encourages the recycling and reuse of materials.

The application of fourth IR technologies in the textile industry has the potential to greatly improve environmental sustainability by reducing waste, improving efficiency, and promoting the use of sustainable materials.

Conceiving Internet of Things (IoT) for Smart Bangladesh

Dr. Rashed Mustafa
Professor, Computer Science and Engineering & Dean, Faculty of Engineering,
University of Chittagong

Internet of Things (IoT) refers to the collective network of connected devices and state-of-the-art technologies that facilitates communication between devices and the cloud, as well as between the devices themselves. The Internet of Things integrates daily "things" with the Internet. Bangladesh becomes "Digital Bangladesh". The term "Digital Bangladesh" was initiated in 2008, on December 12. A brief description of the four pillars of Digital Bangladesh is as follows: 1. Connectivity and Infrastructure. 2. Human Resource 3. ICT Industry and 4. E-Governance. Currently, we are moving towards a smarter Bangladesh by adopting the fourth industrial revolution (4IR). Here, IoT, Machine Learning (ML), Computer Vision (CV), Activity Recognition (AR), virtual and augmented reality (VAR), etc. play with huge data sets every day. They produce intelligent information with the help of smart computing artifacts.

Working principle of IoT: A typical IoT system works through the real-time collection and exchange of data. It has three components such as: i) Smart devices ii) IoT applications and iii) A graphical user interface. The devices like TV sets, security cameras, or exercise equipment that has been given computing capabilities. IoT applications are a collection of services and software that integrates data received from various IoT devices. The IoT device can be managed through a graphical user interface.

How does IoT help Bangladesh to become smart? The Internet of Things may help Bangladesh to become smart by adopting the following state-of-the-art technologies. In the present days, IoT-based solutions are very cheap because of the invention of tiny, lightweight, portable computing devices such as the Raspberry Pi, and Arduino Uno (microcontroller).

- **Connected cars:** Cars can be connected to the internet. They collect data from the accelerator, brakes, speedometer, wheels, and fuel tanks to monitor both driver performance and vehicle health.

- **Connected homes:** This mainly concentrates on the safety and security of the homes. If different components of the homes are connected through IoT devices, they can monitor electricity usage such as smart thermostats providing better temperature control, smoke detection, automatic door locks, monitor security cameras and water leaks and send alerts to the homeowners.

- **Smart cities:** More efficiently manage urban planning and infrastructure maintenance. IoT applications in a city can be used for measuring air quality, and radiation levels, reducing energy bills, and detecting maintenance needs for critical infrastructure such as streets, bridges, and pipelines.

- **Smart buildings:** Buildings such as educational institutes' campuses and commercial buildings may use IoT solutions to achieve greater operational efficiencies. It may reduce energy consumption, utilizing workspaces more efficiently,

- **Smart Industries:** IoT applications can be used in manufacturing, automobile, logistics and transport, and retail industries. Predictive maintenance can be used to reduce unplanned downtime and wearable technology to improve worker safety. IoT applications can predict machine failure by monitoring workers' potential hazards by using Computer Vision based smart surveillance cameras.

- **Smart farming:** At the moment, animal husbandry is an increasingly popular business where dairy cows are nurtured for milk and other products. IoT can be used in dairy farms. It can help to increase cattle's milk productivity and automatically monitor the health conditions of dairy Cows.

- **Smart agriculture:** Smart agriculture is a management concept focused on providing the agricultural industry with the infrastructure to leverage advanced technology including big data, the cloud, and IoT for tracking, monitoring, automating, and analyzing operations.

- **Smart forecaster:** The geographers may use different sensors and collect geospatial information from remotely sensed devices. This can be visualized for weather predictions, forecasting, and sending alert messages to the users.

- **Smart water qualifier:** Monitoring water quality is an important part of controlling the climate. Water quality is a major environmental concern due to its essential source of drinking and household water, agriculture, and aquatic life including fish and fisheries. We need to calculate water parameters such as PH, turbidity, conductivity; temperature, etc. to reduce water-related diseases and prevent water pollution.

- **Smart car parking:** IoT-based smart car parking is a new technology to allocate car parking automatically. It sends alert messages to car owners about whether there is a free space in the parking lot for them to use. The owners of the car can then book the place in advance. This system is also designed to suggest the shortest route to the allotted space.

Through the adoption of the mentioned technologies and integration with the present digitalized infrastructure, we may get various smart services easily. Therefore, we can be able to fulfill the dream of becoming a 'smart' Bangladesh by the year 2041.

The Impact of AI on the Job Market: Opportunities and Challenges

Professor Shamim Ahmad Ph.D.
Dept. of Computer Science and Engineering
University of Rajshahi, Bangladesh

About a year ago, I was surprised to learn that Google's AI program, "AlphaCode," solved 1300-rated programming problems on the world's largest online computer programming platform, "Codeforces." In Bangladesh, the number of 1300-rated (or more) programmers is 684 out of 4804 active programmers. This made me wonder if the need for humans to solve complex coding problems was ending. Is it? This is a million-dollar question! AI will potentially replace human experts in certain fields, and programming is just one example. However, the exciting thing is that "AlphaCode" does not have the ability to explain the rationale behind its decision-making process. On the other hand, humans can provide valuable insights and explanations behind their solutions that can help improve the overall system. Therefore, in the future, human programmers can focus on more complex tasks that require human creativity and problem-solving skills not supported by AI.

One may wonder what the next-generation business models will be if AI really replaces human experts in some areas in the future world. It is difficult to predict precisely how AI will impact different industries in the future. However, all companies must inevitably rethink their business models so that they can incorporate AI in such a way that enhances human capabilities. For example, an AI system assisting doctors in diagnosing illnesses would dramatically improve healthcare. In addition, an AI-powered language translation service should be used to overcome language barriers and establish communication facilities among people from different cultures.

It is now obvious that every day the impact of AI is becoming more significant in all industries, including finance, healthcare, transportation, and more. AI helps us to automate routine tasks in any company, such as data entry, basic calculations, and other repetitive tasks. This means that skills in routine task management may become less important in the Fourth Industrial Revolution. Thus, it presents challenges to update humans' skills to a different dimension to be capable of going with AI machines. AI can now analyze data and make precautions once exclusively reserved for humans. Therefore, the job market landscape is changing rapidly. Jobs that were once considered manual now get automated, and new technologies require new sets of human skills. As a result, some older skills may become less relevant or even obsolete. Hence, it requires humans to explore their intelligence to survive against AI machines.

Consequently, the "reskilling" of existing employees is becoming very important. As published in McKinsey on August 17, 2022, technologies transform job requirements, and the balance between "hiring" and "reskilling" should be equal. Moreover, in the Fourth Industrial Revolution, unfortunately, in some sectors, robots may truly replace the need for manual labor. As a result, jobs such as factory workers, construction workers, and other physically demanding jobs will be less required.

The Fourth Industrial Revolution, driven by the integration of AI into all corners of our lives, provides both opportunities and challenges in the job market. It also disrupts traditional industries. The recent launch of ChatGPT, a chatbot created by OpenAI for public use, creates an opportunity to use the capabilities of AI very easily. It makes automating interactions and specific tasks easier, faster, and more accessible. However, this chatbot will only partially replace human jobs. Instead, it may make jobs easier for humans. But, again, there are some limitations to making chatbots work in business. These include gaps in understanding user intent, privacy, security issues, and understanding the emotions and sentiments of users. These limitations become a big factor. As a result, to come up to fill in those gaps, "upskilling" and "reskilling" again should be significant considerations to hold the human job. For example, basic computer literacy, word processing, spreadsheets, and PowerPoint were considered valuable skills in the job market. In the Fourth Industrial Revolution, however, these skills will have less value. Instead, it may demand skills in programming, mathematical modeling, data processing, data analysis, data security, etc. Companies may look for individuals with an adaptive capacity to new roles and responsibilities with new technology and a broad range of skills. However, in this context, the role of policymakers and employers is also equally important. They should ensure a supportive environment and arrange regular training programs to help workers develop new skills. They should also protect workers' rights and provide healthcare and retirement savings.

An AI program like "AlphaCode" seems very impressive in solving complex coding problems, but it does not possess any intuition, emotion, or empathy like humans. Our society exists because of our feelings, compassion, and love. Our world exists because of our emotions, empathy, and love. The AI machine will only get control over humans if this sentimentality lives. AI could be used only to replace hunger and disease with productivity and comfort, not to replace human jobs as long as love, empathy, and emotion exist in human society. Therefore, for their existence, the challenge for humans is to stop war worldwide and turn it into a world of emotion, love, and empathy.

Blended Teaching-Learning Approach in the Context of Bangladesh

Rajesh Palit, Ph.D.
Professor & Chair
Electrical and Computer Engineering
North South University, Dhaka, Bangladesh

Introduction

Blended learning refers to the integration of conventional classroom instruction with online learning, enabling learners to access a diverse array of learning modes and methods to enhance their skills and knowledge[1]. This approach thoughtfully combines face-to-face and digital learning experiences, with research indicating that it promotes collaborative learning, creative thinking, independent study, and personalized learning[2]. Nonetheless, to realize these advantages consistently, educators must move beyond superficial digital enhancements and instead strive to create transformative blends through intentional teaching and learning redesign processes.

The COVID-19 pandemic caused an unprecedented crisis in all aspects of our lives. In the realm of education, this emergency led to the widespread closure of in-person educational activities worldwide to contain the spread of the virus and reduce its impact. During the initial phase of the pandemic, the education sector responded by implementing online learning methods as an emergency measure. This sudden obligation to integrate information and communication technology into teaching, learning, and assessment significantly impacted the education sector. Consequently, there is now an increasing recognition that a blended learning approach can offer the necessary flexibility and opportunities for the future of education. Prior to the COVID-19 pandemic, blended learning was a choice, but now it has become imperative.

Initially, blended learning was introduced to link conventional classroom instruction with e-learning activities. However, nowadays, a blended learning program can incorporate a variety of onsite and online interactions with instructors, self-directed and collaborative study, structured and unstructured learning environments, off-the-shelf and customized content, and learning facilitated by practice and performance support tools[3]. In each pair of blended components, the successful implementation of the second component relies heavily on information and communication technology (ICT). Therefore, proficiency in utilizing the internet and ICT tools is a fundamental prerequisite for the success of blended learning.

[1] Martha Cleveland-Innes and Dan Wilton. Guide to Blended Learning. 2017
[2] D. R. Garrison and N. D. Vaughan. Blended Learning in Higher Education: Framework, Principles, and Guidelines. 2008
[3] Hurvey Singh. Building Effective Blended Learning Programs, 2003

Bangladesh Context

Blended learning has the potential to transform education in Bangladesh by providing students with more personalized and engaging learning experiences, regardless of their location. However, challenges still need to be addressed, such as ensuring access to technology and internet connectivity, providing training for teachers, and ensuring the quality of digital content[1].

Bangladesh has witnessed significant transformations in all sectors due to the widespread use of information and communication technology (ICT), particularly during the pandemic period. This has resulted in a rapid digital transformation at both the business and consumer levels in Bangladesh and globally. The rapidly evolving ICT landscape has brought new opportunities to access health and education services, necessitating a need for the education sector to adopt new methods of teaching and learning that are in harmony with these developments. To this end, it is imperative to integrate ICT-based pedagogy into the creation of e-learning materials and online teaching-learning environments.

To introduce blended learning in the education ecosystem, certain facilities are essential for institutions, teachers, and students. For example, institutions will need high-speed internet connectivity, a computer network covering all the teachers' rooms and classrooms, a learning management system (LMS), a facility for content development, a digital smartboard, or at least PC-based multimedia in classrooms. Teachers need devices with good internet speed to prepare the class materials, upload content in the LMS, and access the e-learning platform. Students also need devices (which might be shared) with good internet speed to access LMS and e-learning platform.

The institutions need to have sufficient infrastructure, budget, and workforce to develop the educational ecosystem and incorporate onsite and offsite learning on a sustainable basis. Technologies such as learning management systems (LMS), servers, the internet, and devices (PC, mobile tablet, smartphone) should be in place to support blended learning[2]. The government will need to support effective blended learning practices across the country, and it will need to ensure that through the introduction of blended learning, all students are equally benefitted and no one is discriminated against for their financial status, gender, or their location. New rules and regulations will be required to adopt mixing online and offline classes or to accept online student assessments. Thus, the government must understand what extent of blended learning is appropriate in Bangladesh's context given the socio-economic condition, available resources, and skill set of the teachers and what roadmap will be followed to include blended learning, in the long run, to fructify most benefit it.

A small-scale implementation of a blended learning framework in a limited number of general, technical, and madrasa education institutions will enable the government to have a case study and policy guidelines to incorporate blended learning in the existing teaching-learning eco-system at the public institutions as well as for the non-government institutions. A roadmap for integrating blended learning in all segments of education institutions and the required investment and preparedness in a staged manner will be necessary for the government. Some legislative changes may also be required to incorporate blended learning into the existing system. It will help the government build the capacity to assess, monitor, and regulate all institutions through a knowledge-based and field-tested decision-making process that results in a uniform blended learning system for all without any discrepancy.

Conclusions

Blended learning is a promising approach to education in Bangladesh. It can improve access to education, enhance learning outcomes, and provide students with more engaging and personalized learning experiences. As the use of technology continues to grow in Bangladesh, it is likely that blended learning will become more widespread in the country, and it will be important to address the challenges to ensure its success. To build a knowledge-based future in Bangladesh, we invest in education, which is proven and the best form of investment. It is very much required to meet the challenge of the fourth industrial era and the quality education goals of sustainable development.

[1] Bashir, S., & Rahman, M. S. (2020). Blended learning in Bangladesh: Challenges and opportunities. International Journal of Emerging Technologies in Learning (iJET), 2020.
[2] Policy on Blended Learning for Bangladesh. University Grant Commission of Bangladesh, July 2021

Fourth Industrial Revolution (4IR) - Artificial Intelligence (AI) Adoption and Challenges in Industries

K. M. A. Salam
Professor, Department of Electrical and Computer Engineering, Director, Office of Admissions, North South University

The Fourth Industrial Revolution (4IR), a period of rapid change driven by advances in science and technology, includes an exciting new frontier. We are currently in the initial stages of the 4IR. It is merging digital, physical, and biological systems through connected automated machines, workpieces, smart networks, sensors, and other digital technologies that communicate and interact remotely and in real-time with one another and with humans. Without a doubt, it will improve our standard of living. The invention of the steam engine propelled the first Industrial Revolution. Electricity enabled mass production during the second and third industrial revolutions, while computers and communication technologies ushered in the digital age. Now, the driving forces of the Fourth Industrial Revolution are Artificial Intelligence (AI), big data, and the Internet of Things (IoT), which are robust technologies that frequently generate controversy and fear. We must take the initiative and shape the revolution to create the kind of society in which we wish to live.

The decreasing cost of computing power and connected devices, the easiness of utilizing sophisticated algorithms, machine learning, and other forms of artificial intelligence, and the ease with which they can be applied, are key factors in the Fourth Industrial Revolution that are driving the incredible changes we are experiencing. Artificial Intelligence is a technology that is gaining increasing significance in developed economies. From 2018 to 2030, the global market revenue for artificial intelligence is anticipated to increase significantly, although different studies predict varying levels of growth. IDC (International Data Corporation) forecasts that by 2024, the global market for artificial intelligence will be worth more than $500 billion. The market is expected to exceed $1.5 trillion by 2030, according to research based on past trends. According to the most recent public data from the Census Bureau's Annual Business Survey (ABS), information, professional services, management, and finance companies in the United States are the most likely to adopt AI technology. Nevertheless, workers must be exposed to AI. The overall trends of AI adoption in Japan and the European Union appear comparable. Utilizing AI presents numerous opportunities to positively transform the economy. In the past decade, incredible advancements in natural language processing and computer vision have enabled the application of artificial intelligence to tasks that were once thought to be exclusively human. Globally, businesses are rapidly adopting AI due to its ability to scale and reduce costs, absorb and process enormous amounts of data, and assist in making better decisions, often with human assistance. And this transition process will likely create jobs that never existed before AI.

AI also presents a number of challenges. AI can now address non-routine tasks, including tasks in high-skill jobs that were previously unaffected by automation. As a result, AI is likely to affect vast portions of the workforce. The primary threat posed by artificial intelligence to the workforce is the general disruption it is likely to cause, whether workers discover that their jobs have been newly automated or the job design has fundamentally changed. The additional risk posed by artificial intelligence is that it may cause firms to violate existing laws regarding bias, fraud, or antitrust, exposing them to legal or financial risk and causing economic harm to workers and consumers. Due to the opaque nature of these systems, detecting and resolving these violations is a challenging endeavor. Understanding the full impact of AI and other automation technologies on labor prospects may necessitate the consideration of multiple factors.

First, the productivity effect's role in partially offsetting the displacement effect caused by automation. However, this countervailing effect functions by increasing product demand. The increase in real incomes generated by automation ends up in the hands of a narrow segment of the population with a much lower marginal propensity to consume than those losing incomes and jobs. These countervailing forces would be weakened and may operate much more slowly. This imbalance in the distribution of automation's benefits may also hinder the creation of new tasks.

Second, the detrimental effects of a skills gap on the realization of productivity gains from automation and inequality. In practice, the issue may stem from workers acquiring the incorrect types of skills, as opposed to a general lack of skills. For instance, if AI and other new automation technologies require a different combination of numeracy, communication, and problem-solving skills than those emphasized in current curricula, this would have similar repercussions as a skills shortage. However, it cannot be resolved by increasing educational expenditures as long as current educational practices remain unchanged. A crucial consideration in this regard is the need for more concrete information regarding the types of skills that new technologies will complement, highlighting the significance of additional empirical research in this area.

Thirdly, government policies and labor market institutions may influence not only the rate of automation (and thus the likelihood of excessive automation) but also the types of technologies that will receive greater investment. Understanding the impact of various policies, such as support for academic and applied research and social factors, is crucial to the development of artificial intelligence to the extent that some applications of AI may complement labor more or generate opportunities for more rapid creation of new tasks.

Last but not least, it is not a given that developing and adopting technologies that reinstate labor will occur. Assume that we are unable to generate shared prosperity from the productivity gains generated by new technologies. In this case, the political response to these technologies may slow or halt their development and adoption. This highlights the significance of studying the distributional implications of artificial intelligence, the political economy responses to it, and the design of new and improved institutions for creating more broadly shared benefits from these new technologies.

EBL SKY BANKING

GET IT ON Google Play | Download on the App Store

skybanking.ebl-bd.com

100+ services on Skybanking

Add Money
(from any bank's Visa and Mastercard Debit, Credit and Prepaid cards)

Fund Transfer
(NPSB,BEFTN RTGS & BINIMOY)

Other Bank's Credit Card Bill Payment
(Any Local Visa Credit Card Bill Payment)

Passport Endorsement Status
(Endorsement Amount, Spending Amount, Expiry Date etc.)

QR payment
(Using Visa QR & Bangla QR)

Government Bills
(BTCL, DPDC, DESCO and Wasa)

Augmented Reality
(for finding nearest Branches, ATMs and Benefit Partner's list)

Instant Card's Foreign Part
Enable/Disable and Limit Conversion
(BDT-USD/USD-BDT)

& many more!

EBL 24X7 CONTACT CENTER 16230 or 09612316230

ebl.com.bd

myebl

Eastern Bank Ltd.

Environmental Education and the Challenges of the Fourth Industrial Revolution

Professor Shafi Mohammad Tareq Ph.D.
Department of Environmental Sciences
Jahangirnagar University

The Fourth Industrial Revolution (4IR) is characterized by the integration of advanced technologies such as artificial intelligence, robotics, and the Internet of Things (IoT). These technologies are transforming the way we live, work, and interact with each other, and they are also changing the nature of education. The way of education needs to be revised and rethought with appropriate methods. Although the current education practices have many limitations in coping with 4IR, it needs to transform technologically, creating a sustainable and abiding impact on society. The 4IR is a subject of interest that affects the operations of various sectors in different countries worldwide. It seems to be dominating the discourse in almost all spheres of life, resulting in many nations preparing themselves for 4IR.

Environmental education is important for creating a sustainable future by promoting environmental awareness, fostering environmental stewardship, encouraging sustainable behavior, supporting biodiversity, and addressing environmental challenges. It is essential for individuals to be educated about environmental issues and to take actions that support the health of the planet. Environmental Science is a field that is closely linked to the 4IR. Advanced technologies are being used in environmental science to collect and analyze data, monitor environmental conditions, and develop solutions for environmental challenges. It is not so easy to collect environmental data or samples due to extensive fieldwork, chemical or physical experiment, and inappropriate natural condition for a researcher. Technological knowledge such as remote sensing technologies and environmental modeling can overcome these limitations. On the other hand, the 4IR is also facilitating the development of sustainable technologies that can be used in environmental science to reduce environmental impacts and promote sustainability like renewable energy technologies, sustainable transportation systems, and green infrastructure solutions.

Nowadays climate change is a burning issue among environmental topics. The 4IR presents exciting opportunities to address climate change mitigation. Innovative technologies such as renewable energy, energy efficiency, circular economy, carbon capture and storage, climate modeling and forecasting, and sustainable agriculture can help reduce greenhouse gas emissions and adapt to the changing climate. The use of IoT sensors, big data, AI algorithms, and machine learning can optimize energy consumption, improve climate modeling and forecasting, and enhance the sustainability of agricultural practices. However, to maximize the potential of 4IR technologies for climate change mitigation, it is crucial to adopt sustainable practices and policies that prioritize the long-term health of the planet. By working together, policymakers, businesses, and individuals can leverage the power of 4IR to create a more sustainable future for all.

The 4IR is presenting new environmental challenges that require a shift in mindset and approach. The first is to foster innovation by providing the knowledge and skills necessary to develop and implement sustainable solutions for the challenges posed by the fourth industrial revolution. The second is to promote sustainable practices by providing them with the knowledge and skills necessary to make informed decisions about resource use, waste management, and energy efficiency. The third is to encourage responsible consumption by promoting a culture of sustainability and encouraging individuals to make informed choices about the products they buy and the impact they have on the environment. Forth is environmental risks identified and mitigated by emerging technologies such as nanotechnology and biotechnology. The final one is a foster collaboration among individuals, organizations, and communities to work towards common goals of sustainable development and environmental protection.

Moreover, 4IR technologies have the potential to revolutionize the education sector by enhancing the learning experience for students and providing new opportunities for teachers. Personalized learning is one of the most significant benefits of 4IR. AI algorithms can analyze student data and provide personalized feedback and recommendations, allowing each student to learn at their own pace and achieve better learning outcomes. Additionally, 4IR technologies can increase access to education for students in remote or underserved areas by providing online learning platforms and digital tools. Collaborative learning is another advantage of 4IR, as virtual classrooms and online forums enable students to work together on projects and assignments, developing teamwork and communication skills. Digital literacy is also an important benefit of 4IR, as students learn how to use digital tools and platforms, preparing them for the digital workforce. 4IR technologies can also provide teacher support by automating administrative tasks, providing data-driven insights, and enabling personalized learning experiences for each student. This allows teachers to focus on teaching and supporting student learning, rather than administrative tasks. In conclusion, 4IR technologies have the potential to transform the education sector, enhancing the learning experience for students and providing new opportunities for teachers to improve their teaching methods.

Addressing the Skill Needs of Fourth Industrial Revolution in Bangladesh: Future Directions

Professor Tamgid Ahmed Chowdhury, Ph. D.
Director, MBA and EMBA Programs
North South University

As of 2022, the national unemployment rate, in Bangladesh, is 5.40% whereas youth and graduate unemployment rates are reportedly approximately 10.60% and 35% respectively. These numbers are alarming and particularly not in line with the main goal of the fourth industrial revolution (4IR) – an inclusive and human-centered future. As long as we are unable to include all our graduates in the production process, it will be difficult to get the best out of 4IR. Graduates are becoming more desperate to find themselves jobs and are therefore enrolling themselves in different skill development programs (such as certificate and diploma courses) in addition to their undergraduate and post-graduate degrees. Despite acquiring several skills through those development programs, there is no notable improvement in the graduate employment situation in Bangladesh. The key reason, argued by the employers, behind such a high rate of graduate unemployment is skill mismatch. To explore true skill needs, I offered a generic list of 33 skill items that are required to acquire jobs in different fields in Bangladesh in one of my studies conducted earlier. Later on, I tried to offer a more customized skill list for areas such as general marketing, marketing in the apparel sector, and human resource management. I can understand that many of those suggested talents are becoming obsolete due to the evolutions in the way of corporate operations which are heavily influenced by the technology-centered features of and 3rd and 4th industrial revolutions. It is important at this stage to be informed, 4IR is supposed to be a combination of artificial intelligence, internet things, robotics, genetic engineering, and the heavy use of information technologies. Considering the key features of 4IR, the question at this point is; how can we prepare our graduates to cope with the skill requirements of the upcoming industrial revolution?

A simple, however, ambitious answer to the above-mentioned question is significantly revamping the existing curriculum as per the skill needs of 4IR. This revision of the curriculum not only means incorporating the use of new technologies/software and information systems in the existing courses but also means adding new modules (such as analytics courses) that can build the required skills among the graduates. If required, universities may allow students to complete their degrees by taking courses that are offered by other schools. For instance, a Business school student may take courses (such as artificial intelligence and robotics) from Engineering school as long as those can help him/her acquire a particular skill. This university-wide and cross-disciplinary open credit system should be encouraged in the Bangladeshi higher education system. I strongly recommend an active and continuous industry-academia collaboration while revising the existing curriculum at the university level. However, before we revise the curriculum to build certain skills among the students, faculty members need to conduct extensive research to explore the customized skill requirements of the employers to cope up with

the needs of 4IR. I am always in favor of specifying the skill needs of each specific discipline (because one size does not fit all!) and revising the curriculum accordingly. For instance, understanding a particular software can be value-adding to one job area (such as HRM) and may not be at all useful to another discipline (such as Economics). A roadmap should, thereby, be developed for each course, which will clearly state the skills (both technical and non-technical; hard and soft) students can acquire through this course and instruct how the contents of the module are aligned to build those skills. Even though the curriculum can be tailored to suit the needs of 4IR, we also need to ask ourselves: how ready are the universities (faculty and course resource-wise) to adapt to those updated 4IR-related curricula? If faculty members are not ready to teach many of those updated contents, they should be trained intensively for that. In addition, the university should ensure that enough course materials (books, journal articles, and so on) are available for the students to study the contents of the module.

Assuming that the universities have revised their curricula as per the needs of 4IR and trained their faculty members accordingly, two other issues, however, need to be addressed. First, we need to ensure that students have learned enough and are prepared for their careers in their specialization areas through competency assessment tests which will be conducted in addition to the usual examination process (sometimes called Assurance of Learning). Secondly, at the Bangladeshi universities, I always felt the need for a 'graduate survey' which can record the opinions of the graduates regarding the performance of the school/department in building their skills. The outcome of this survey can help the departments in further updating their course contents.

On a final note, it can be said that although 4IR is planned to enhance the well-being of the citizens with better quality products and advanced service delivery, there is a good possibility that people may lose their jobs due to the inclusion of robots and artificial intelligence in the whole process. This is an important issue which government needs to address well ahead in their strategic plans. One possible suggestion to this concern can be to encourage graduates for job/career diversification – preparing graduates for those fields, which are less technology-oriented and have a shortage of graduate supply.

An Investigation of the Unethical Practices in Online Classes

Dr. Asad Karim Khan Priyo
Associate Professor & Chair
Department of Economics
North South University

Dr. Ummaha Hazra
Associate Professor
Department of Management
North South University

A conversation between two students in a café that we overheard during the COVID-19 pandemic triggered our interest in the research work based on which this article is written. The students were boasting about how easily they were able to use somebody else to sit for an online exam on their behalf. One of the major technological phenomena that education sectors all around the world have experienced in the era of the Fourth Industrial Revolution is the widespread introduction of online classes using platforms such as Google Classroom and Google Meet/ ZOOM during the recent COVID-19 pandemic as physical classes were shut down. Although the online classes provided at least a partial solution to the problem due to the closure of the educational institutions by keeping students connected to the education loop, they also gave rise to several ethical concerns. Many universities across the globe now have reverted back to on-campus classes. However, it seems highly likely that digital tools and learning management systems will remain part of the future education infrastructure. It is, therefore, crucial for the sustainable future use of online class platforms that we understand the ethical problems that can arise from the use of these technologies. On the basis of narratives written by 40 university students (23 males and 17 females) and three Focus Group Discussions, we investigated the unethical practices that result from the technology-user interaction taking place during online classes.

Affordances are action potentials and as a result, create possibilities for goal accomplishments by technology users. Our research identified three deleterious affordances of online education – non-monitorability, “disguiseability”, and “intrudability” – that lead to the unethical outcomes of academic dishonesty, cyber-truancy, and harassment, respectively. Academic dishonesty is more prevalent in online classes than in-person classes because it is extremely difficult to effectively monitor student activities during online exams or assignments. The students reported how simple it is to take exams for others and collaborate on individual assessments. Despite the instructors' best

efforts, cheating cannot be entirely eliminated in online exams, and the situation worsens when proctoring software is unavailable. The students distinguished between two types of cheating: non-tech based and tech-based. Non-tech-based cheating involves students strategically placing posters with large fonts behind their laptops, which are visible to them but not to the instructors, even with the camera on. Some instructors often ask students to rotate their cameras 360 degrees, but this is uncommon when many students are present. Tech-based cheating entails students forming groups on instant messaging apps like Messenger and WhatsApp and sharing answers during exams without the instructor's knowledge. The students asserted that it is not realistic to expect instructors to serve as moral authorities in online classes and that it is not a task for which teachers are trained.

Disguiseability afforded by an online class setting results in cyber-truancy. Many students indicated that they take unscheduled breaks during online classes because instructors have limited control over the class environment. Despite attendance and participation policies, instructors cannot continuously monitor what students are doing discreetly. Additionally, enforcing policies related to cameras and monitoring is difficult in most cases. It is also challenging to distinguish between students with genuine hardware or network problems and those taking advantage of the loopholes in the digital environment. Students claimed that it is easier for them to lose focus and bypass mandatory learning in online classes. In-person classes, on the other hand, require physical presence, attention, and hands-on work in lab classes, allowing teachers to gauge students' understanding through facial expressions and body language. However, these elements are missing in online class settings, and digital platforms cannot create the same in-person class environment. Furthermore, students reported that it is easier to leave class after attendance has been taken because teachers lack control, and there are usually no significant consequences for leaving due to the confusion surrounding the reason for the student's departure.

Harassment results from intruding ability afforded by an online class environment. Female students reported experiencing unwarranted invasions of privacy in online classes. A significant issue is a requirement to keep the camera on for the entire duration of the class, with many female students expressing discomfort with doing so and providing examples of unwanted incidents. Students noted that it is possible to use different digital tools in a synergistic way to harass others. In classes where instructors made keeping the camera on mandatory, many female students had to deal with unpleasant experiences, such as some male classmates secretly taking pictures of them and either posting them in public groups or sending them inappropriate private messages. Most female students were informed that the number of unwanted text messages they received had increased drastically during the pandemic, possibly due to the numerous groups they had to join to support online classes.

Our research uncovers a deeper fundamental problem with the prevailing educational approach of the universities in Bangladesh. Apart from a few exceptions, closed book time-bound exams are still the most widely used assessment method. Ensuring a fair exam environment requires effective proctoring/invigilation, but our findings suggest that this is not possible in an online setting due to the limited technological capabilities of developing country universities like those in Bangladesh. Online classes have aggravated the existing problem with the current teaching approach and made them

more visible. To overcome these challenges, universities must adopt a more contemporary and effective approach that prioritizes student engagement and interactive learning. One solution is to divide students into smaller groups and assign them specific tasks that promote involvement, interdependence, and a fair division of responsibilities, thereby stimulating learning.

This research has several significant practical implications. The deleterious affordances and the associated unethical outcomes highlight a profound lack of understanding among students about the ethical concerns associated with their behaviors. Cyber-harassment is not just an ethical issue, but also a broader concern that should prompt educational institutions and regulators to re-examine their online class policies. Specific training for both instructors and students can be developed to address these issues and develop inclusive solutions. Students should be informed about the possibility of harassment on social media and made aware of institutional and legal remedies available in case of cyber-harassment. Technology solutions, such as screenshot blocking and notification features, can be integrated with ethics training. Combining technological and non-technological solutions such as plagiarism-checking software, screenshot monitoring, positive social media engagement, changing assessment tools, the timing of exams, and continuous class engagement can address the issues. The mindset that technology has solved all problems related to taking classes during the pandemic should be abandoned. Policymakers must recognize the social and technical nature of technologies such as online class platforms and messaging apps that are used in unique contexts and understand how new and unforeseen problems may arise. Many of the problems identified in this research can be attributed to the traditional educational approach followed in universities in Bangladesh. Therefore, educators and university authorities must adopt more modern and effective teaching tools that promote student engagement and collaborative learning.

* This article is written based on research conducted by the authors, which got published in the Journal of Information, Communication & Ethics in Society (vol:20, iss: 4, pp: 546-567) under the title "Unethical practices in online classes during COVID-19 pandemic: an analysis of affordances using routine activity theory" in October 2022.

Data Security in Public and Private Sectors: Challenges and Opportunities

Professor Mohammad Abu Yousuf, Ph.D.
Institute of Information Technology
Jahangirnagar University

The Fourth Industrial Revolution (4IR), or Industry 4.0, includes rapid developments in computers and artificial intelligence (AI), robotics, blockchain, and the Internet of Things (IoT). 4IR has huge potential to change the productivity of our country: the socioeconomic environment, particularly. The main purpose of 4IR is to integrate various advanced technologies such as AI, IoT, big data analytics, robotics, and blockchain into various industries. 4IR is an ongoing process that is continuously transforming the way of our living and as well as our working process. As Bangladesh continues to develop, it is very important to align with the 4th industrial revolution by incorporating advanced technologies like AI, robotics, IoT, and blockchain in our industries or businesses. Our industries have already adopted these advanced technologies to some extent, placing Bangladesh in a good position for development.

Data is the main food of these technologies and is the greatest asset of an organization -- which helps us build an effective model and in turn, helps us take better decisions and carry out strategic initiatives. Without proper and effective use of the data, our industries cannot get the full essence of these technologies. Software industries need varieties of data (structured, semi-structured, unstructured data) to develop models, conduct experiments, and thorough analysis. In today's digital world, almost all systems need to interact with each other to exchange data for appropriate utilization. Hence, we need to develop AI-based models to secure our data. Before using the data, we also need a proper guideline or policy to secure it. This policy should be aligned with the organization's policy. The main purpose of the security policy is to elaborate the three generic security objectives: confidentiality, integrity, and availability, in the context of a particular system. It defines the guidelines to achieve the three security objectives.

Data security violations and attacks are significantly increasing day by day. Data security is a set of established procedures, standards, policies, and tools that are used to protect data from theft, misuse, and unwanted intrusion, activities, and attacks. Data security refers to the way or process by which data can be protected from unauthorized access and improper modification. The main responsibility of a database administrator is to enforce security policies which include the implementation of different modules. An example would be encrypting the stored data on the server side and replacing the sensitive portion of the data using the data masking pack. There may be many security gaps in almost all the information systems of organizations. To protect data, we should concentrate to mitigate all kinds of security gaps, which in turn cause data breaches and system breaches. Moreover, we should pay attention to all security access points where data security must be protected and applied. We should make sure that security breaches cannot occur in our information systems under any circumstances. The system examines every action and

checks with the security policy before allowing it to occur. Data protection has become an unavoidable issue with the continued rise of 4IR technologies. To keep data properly protected, we can use various technologies such as blockchain, authentication and authorization, data encryption, hardware-based security, data backup and resilience, data erasure, and so on.

In all sectors like health care, financial industries, academia, and agriculture, we need secured and protected data. The sensitive portion of the data of any organization should be encrypted always on the server side. The data which are related to the health condition of a person is known as Electronic Medical Records or EMR. EMR is the organized collection of patients' health data in a digital format. EMR data are stored on cloud servers and unlike paper records, it doesn't need a physical space for storage purposes. EMRs are very sensitive data, hence, data privacy and integrity are more important than most of the other data. To protect patient health data from unauthorized access (data confidentiality) or improper modification (data integrity), blockchain technology can be used. It is very difficult to temper data present in blockchain as it requires validation from different nodes in the blockchain. Blockchain includes cryptographic hashing of records. Once data is stored in a block, it cannot be changed without affecting all following blocks. As a decentralized ledger program, blockchain enables individual entities to work within the same platform to ensure that the information is transparent and time-stamped to increase transaction speed.

Apart from the healthcare sector, different public and private organizations need to share data files for accessibility across different levels of networks. Blockchain technology can also be included in these kinds of industries for secure transactions between different parties. This application can be applied to other businesses like documents or content security for small to large organizations. In those types of organizations, some confidential documents as well as general documents are shared among the employees. Document redundancy and version control are also key concerns of organizations where multifarious copies of the same document are accumulated in different locations. Blockchain technology and InterPlanetary File Systems (IPFS) are applied there together to secure document sharing, and version control and to reduce document redundancy.

Another implausible use of blockchain technology is in the agricultural sector, which in turn increases productivity throughout the industry. For the agriculture sector blockchain can contribute significantly. Blockchain technology in the agricultural sector can improve the operating process and get profitable results. With the help of blockchain technology, we can track and secure all types of data about plant diseases, seed quality, soil types, crop growth, and so on. Farmers can directly be benefited to get secure or protected data by using blockchain technology. To ensure the security of agricultural data, distributed ledger technology (DLT), which is capable to increase efficiency, transparency, and trust throughout agricultural supply chains, can be used.

In conclusion, the use of 4IR technologies with secured data can help us transform from manual processes to digital processes in our industries. We should leave no stone unturned to protect our valuable data from unauthorized acts.

Web 4.0 in Bangladesh: Readiness of the State

Mohammad Shariful Islam
Assistant Professor of Business Administration, Bangladesh Army International University of Science and Technology, Cumilla
Email: shariful.islam@baiust.edu.bd

Dr. A. K. M. Moniruzzaman
Professor of Management, Jagannath University, Bangladesh
Email: moniruzzaman64@gmail.com

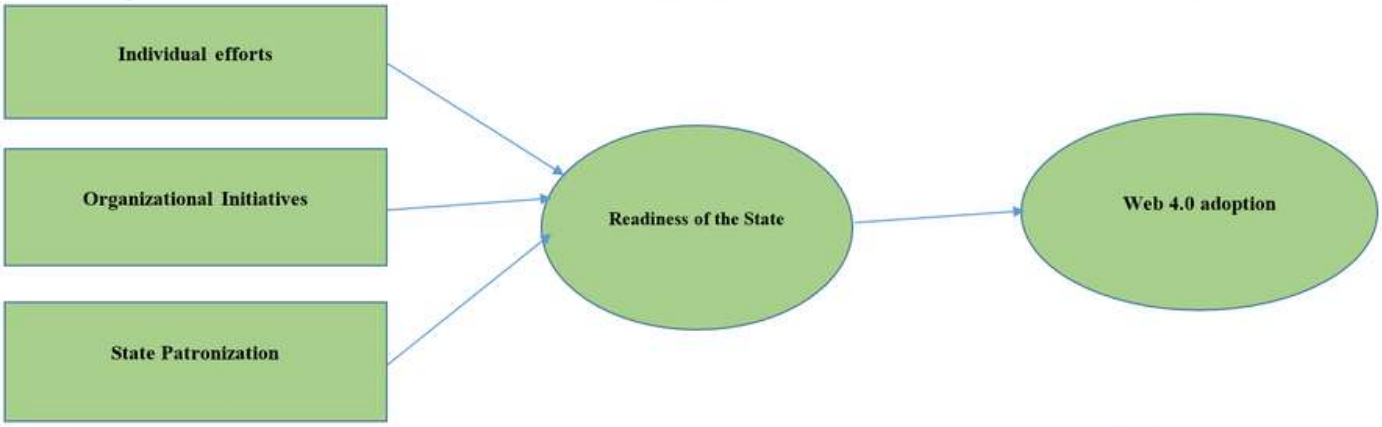
Bangladesh has already witnessed the Fourth Industrial Revolution (web 4.0). Unlike other revolutions, the web 4.0 carried a package of robust digitalization like artificial intelligence (AI), genomics, the internet of things, virtual reality, blockchain, nanotechnology, cloud computing, 3D printing, etc. Bangladesh is at the first stage of employing web 4.0 and is aspiring to a massive technological transformation in the days ahead. During this transformation, the country is also combating the challenges of post-COVID-19 that have caused the economic progress of the country to slow down. The outcome of the paper will shed light on the recent readiness to adopt web 4.0 and recommend future directions.

The state is the topmost stakeholder in facilitating business and industries. That is why the readiness of the state for web 4.0 is one of the biggest agendas. State-owned enterprises are the nucleus of state performance. In the last few centuries, state-owned enterprises remarkably emerged in the service and manufacturing sectors. The government has made some significant improvements in recent years namely the growth of GDP (7.25%); per capita GDP (USD 2723); the per capita national income (USD 2824); investment growth in the public sector (7.62%); the revenue generated 3,33,000 crore (8.30%), export growth of 35.14% and foreign exchange reserve, which is at USD 46 billion(Ministry of Finance., 2022). There are 150491.3 million employees of 38 ministries in Bangladesh and one of the prime focus is to prepare them to become skilled and capable with web 4.0 (Ministry, 2022; Statistics and Research Cell, 2021).

Bangladesh has decided on the mandate of digital transformation in line with the slogan "Charter for Change" in the field of democracy, human rights, transparency and accountability, justice, and delivery of government services through technology (Hossain et al., 2022); Rahman et al., 2020). To fulfill the objectives the state is in a relentless drive to plan and finish new projects and ventures. As a part of that, the government has decided to cover broadband internet across the country in the next five years (Sarker, 2021); the established tier 4 and tier 3 data centers have expanded their capacity; with a total of 39 high-tech parks built (Sarker, 2021); state-owned mobile company Teletalk adopted to 5G connectivity; the country's mobile market is the 8th largest and has widened the scope of employment, entrepreneurship, and services to the people's doorsteps (Rahman, 2015); financial transactions like online money transfer, utility bills, e-transfer, e-cards, and many more. Bangladesh linked with the second submarine cable network will be satisfying 60% of the demand for internet with 2060 gigabytes per second. More than 2000 e-commerce sites and 50,000 e-commerce pages on social media (BTRC, 2021); a separate ICT ministry has been formed and the national ICT policy has been enacted (Hossain et al., 2022, p. 2); there are community e-centers/telecenters all across the country (Hoque et al., 2014) with more than 6000 union digital centers that have been established at the union level (Rahman et al., 2020); the Bangabandhu Satellite-1 was launched in the year of 2018; approximately 4,501 union parishads across the country are captured under digital network (Rahman, 2015) and every office of the states are using the website and e-filling system (Rahman et al., 2020). Relevantly, the extent of progress shall stimulate the future adoption of web 4.0 across Bangladesh. However, we still require holistic efforts i.e. individual-organizational-state patronization. A few directions are stated below:

a) Establish more infrastructure of digitalization across the country i.e. at the district, union, and municipal levels to reduce the digital divide across the country.
b) Prioritize the full or incremental use of the latest technology such as AI, robotics, and virtual technology skill like re-skilling/upskilling through creativity and critical thinking.
c) Formulate a comprehensive national strategy and reframe the training and learning module in the composition of the Internet of Things (IoT), clouds, and machine-based as well as techno-friendly work design and process.
d) Promote research and development to explore the scope of applying artificial intelligence, robotics, the IoTs, and digital literacy skill gaps.
e) Form partnerships and strengthen public-private collaborations to accelerate digital innovations, ICT resources, tools, devices, facilities, and potential usage in the public sector.
f) Introduce a supportive regulatory service like tax, duties, and protection of intellectual rights which can leverage big data analytics to gain insights on decision-making, steering service delivery, and optimize operations.
g) Apply alternative work engagement like work from home, offshore work, techno-friendly housing, external training, and knowledge-sharing sessions.
h) Create techno-friendly leadership, real-time follow-up ICT resources, setup, and troubleshooting.
i) Strengthen ICT everywhere/across the country and create awareness programs at the government division and departments.
j) Industry-based policies related to web 4.0 like connected economies, data protection, trans-border online trade, virtual currency, digital economy, ethical use of AI, IP Protection, digital currency, virtual products, start-up ecosystem, digital financing, trans-border cybercrimes, etc.

k) The supply of skilled resources will provide guidelines to reduce the demand-supply issues and bring industry academia and businesses closer.
l)Being more broadband focus instead of being reliant on mobile phone data only.
m) Last but not least is to engage citizens in the adoption of web 4.0 so that they may communicate the benefits of adopting these technologies and seek feedback from citizens to ensure that their needs are met.



Model: The elements of readiness

Conclusion

The readiness of a state to adopt new technologies depends on a range of factors, including digital infrastructure, technological literacy, openness to innovation, budgetary resources, and the regulatory environment. A state that is ready for new technologies can more easily introduce and integrate them into its operations, delivering more efficient and effective services to its citizens. In line with the attempt, Bangladesh has moved from the primary steps of digitalization so far and now significantly aims to explore the second stage. Recent statistics from OECD reported that the government of the USA, Canada, Korea, India, France, and Thailand have adapted to the fourth industrial revolution on different scales (OECD, 2019). However, the implementation is still required on a holistic level to make it more impactful. Indeed, sound strategy, projects, and human resources may make it more worthwhile and outcome-based. Therefore, it is not the state itself but rather every segment of the nation. Society should come forward with SMART (specific, measurable, achievable, and timeliness) approaches to capitalize on the essence of web 4.0. For the next few years, the attainment of such goals may be challenging but will definitely be achievable.

References

BTRC. (2021). Mobile Phone Subscribers in Bangladesh. http://www.btrc.gov.bd/content/mobile-phone-subscribers-bangladesh-september-2021
Hoque, M. R., Mazmum, M. F. A., & Bao, Y. (2014). e-Health in Bangladesh: Current Status, Challenges, and Future Direction. The International Technology Management Review, 4(2), 87–96. https://doi.org/10.2991/itmr.2014.4.2.3
Hossain, Md. N., Mohammad, R., Alam, K., & Musaddique, M. (2022). Digital Bangladesh, a transformation for sustainable development.
Islam, M. S., & Miah, M. K. (2021, August 31). Workplace technology and alternative work arrangement during and post-Covid-19. The Financial Express.

https://thefinancialexpress.com.bd/views/workplace-technology-and-alternative-work-arrangement-during-and-post-covid-19-1630339220
Masum, A., Mamun, A. M. A., Islam, M. S., & Beh, L.-S. (2020). The Impact of eHRM Practice on Organizational Performance: Investigating the Effect of Job Satisfaction of HRM Professionals. Journal of Computer Science, 16(7), Article 7. https://doi.org/10.3844/jcssp.2020.983.1000
Ministry. (2022, September). Cabinet Division. http://www.cabinet.gov.bd/site/page/55bcf4d6-dd85-45c1-94b6-bcb06e4b1b12/45/http%3A%2F%2Fwww.cabinet.gov.bd%2Fsite%2Fpage%2F55bcf4d6-dd85-45c1-94b6-bcb06e4b1b12%2F45%2F%25E0%25A6%25AE%25E0%25A6%25A8%25E0%25A7%258D%25E0%25A6%25A4%25E0%25A7%258D%25E0%25A6%25B0%25E0%25A6%25A3%25E0%25A6%25BE%25E0%25A6%25B2%25E0%25A6%25AF%25E0%25A6%25BC-%25E0%25A6%2593-%25E0%25A6%25AC%25E0%25A6%25BF%25E0%25A6%25AD%25E0%25A6%25BE%25E0%25A6%2597%25E0%25A6%25B8%25E0%25A6%25AE%25E0%25A7%2582%25E0%25A6%25B9
Ministry of Finance. (2022). Bangladesh Economic Review, 2022. Finance Division, Ministry of Finance. https://mof.portal.gov.bd/sites/default/files/files/mof.portal.gov.bd/page/f2d8fabb_29c1_423a_9d37_cdb500260002/http%3A%2F%2Fmof.portal.gov.bd%2Fsites%2Fdefault%2Ffiles%2Ffiles%2Fmof.portal.gov.bd%2Fpage%2Ff2d8fabb_29c1_423a_9d37_cdb500260002%2F21_BER_22_En_Chap12.pdf
OECD. (2019). Artificial Intelligence in Society. Organisation for Economic Co-operation and Development. https://www.oecd-ilibrary.org/science-and-technology/artificial-intelligence-in-society_eedfee77-en
Rahman, L. (2015, March 10). Digital Bangladesh: Dreams and reality. The Daily Star. https://www.thedailystar.net/supplements/24th-anniversary-the-daily-star-part-1/digital-bangladesh-dreams-and-reality-73118
Rahman, M., Islam, M. S., & Ali, M. (2020). Exploring the Role of Union Digital Center to Managing Information Services in Rural Development of Bangladesh. Bangladesh Journal of Public Administration. https://doi.org/10.36609/bjpa.v28i2.107
Sarker, J., A. (2021, November). The Fourth Industrial Revolution: Is Bangladesh ready? https://albd.org/articles/news/37915/The-Fourth-Industrial-Revolution:-Is-Bangladesh-ready%3F
Statistics and Research Cell. (2021). Statistics of Civil Officer and Staffs, 2020. Ministry of Public Administration Bangladesh. https://mopa.gov.bd/sites/default/files/files/mopa.gov.bd/mopa_report_publication/633461e4_a5b4_4e20_a21a_7cab35fe7570/statistics%20of%20civil%20officers%20and%20staffs%202020.pdf

Considering the Traditionally Disconnected Community for the 4th Industrial Revolution

Nova Ahmed, Md. Sabbir Ahmed, Rahat Jahangir Rony, Anik Saha, Anik Sinha, Syeda Shabnam Khan, Ifti Azad Abir, Tanvir Fuad, Gazi Fakhrul Islam, Shajnush Amir.
North South University

Introduction

The 4th Industrial Revolution known as 4IR opens up great opportunities for developing countries who have missed the prior major industry-based revolutions that required heavy infrastructural investment. This one, however, requires minimal infrastructural support with a major emphasis on qualified and capable people to engage in upcoming opportunities taking care of existing and future challenges. Bangladesh, having great growth in mobile phone usage, and internet usage that has a majority youth population, shows promise to engage in 4IR. The challenge remains in the large population who are marginalized socially, and economically along with their low literacy levels in Bangladesh which is the focus of this write-up.

The research took place during the Covid-19 pandemic when marginal communities faced various difficulties (Ahmed et al., 2020). The study showed how marginalized communities benefitted from technology literacy, adaptation, and usage. They also were part of closely connected communities that faced the Covid-19 related challenges together as a community, which worked as evidence for possible future practices to leapfrog the technology gap that exists. This work presents the results of an 18-month-long study focusing on indigenous, transgender, and physically challenged communities and how participants collectively addressed challenges. These learnings are used to define future pathways toward future technology proliferation to engage marginal communities in 4IR.

Methodology

This research work considered a total of N = 313 participants (female = 203, male = 108, and transgender = 2) from eight divisions. The study took place between December 2020 to January 2022 covering urban, rural, and semi-urban regions. The research work considered qualitative methods using Focus Group Discussions (FGD Figure 1 illustrates the area-wise distribution of participants.

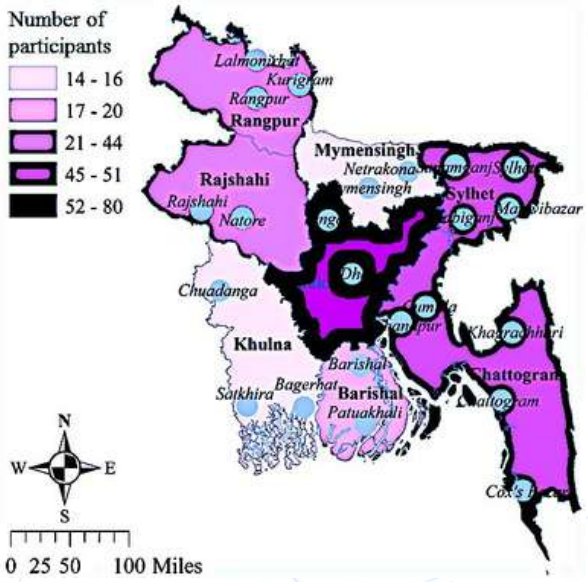


Figure 1. Map of Bangladesh presenting participants' living divisions (in bold) and districts (in italics).

The research participants were approached mainly through purposive sampling (Guarte et al., 2006). It had focus group discussion (FGD) of at most five participants. Study diversity is shown in Figure 2 (a), 2(b) and 2 (c) referring to the variation of region, age range and income level, respectively.

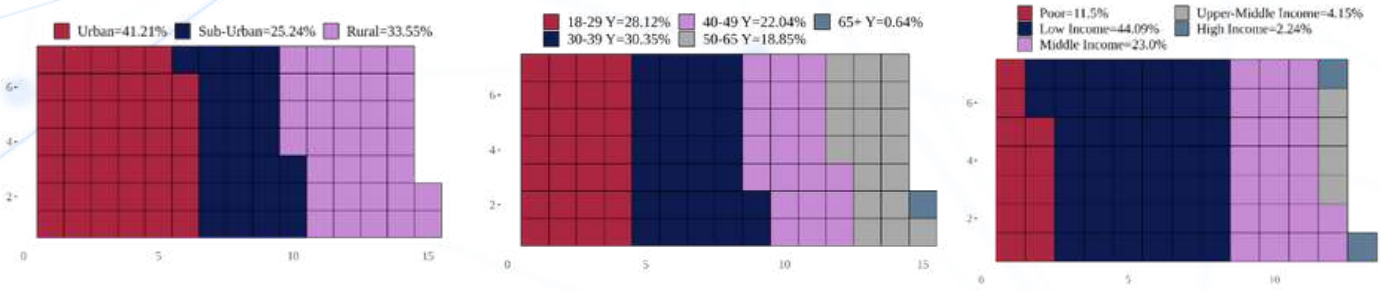


Figure 2. (Left) Variation of region (Middle) Variation of age range (Right) Variationof income level

The interviews were transcribed and translated into English for coding analysis using Atlas.Ti (atlas.ti, 2022) for thematic content to provide a context-based knowledge (Glaser, 2017). To uncover significant themes from participant conversations, the inductive content analysis approach was used (Elo, 2008). The Institutional Review Board (IRB) authorized this study.

Findings

The research study illustrates two important factors – one of which is about the positive role of technology on the communities of interest followed by challenges and opportunities for learning.

The marginalized communities have benefited greatly from technology literacy and usage during the Covid-19 pandemic when social distancing was enforced. Basic mobile phone usage literacy allowed connectivity and mobile-based operations, particularly, financial operations allowed financial support during the difficult time when many had limited, partial, or no income at all.

The physically challenged participants shared how financial technology eased mobility-related challenges. Similar incidents were shared by the transgender participants. Indigenous community members shared how they moved their businesses to online platforms when Covid-19 related lockdowns and shutdowns took place. The benefits of technological literacy and proficiency were evident while many participants shared their experiences about the challenges they faced to learn about technology. The disabled participants shared how they initially struggled to connect to various support groups using online digital platforms such as Zoom, and Google Meet. However, once they were familiar with the platforms, it enabled them to various online training opportunities that were helpful for them. They particularly mentioned mobile wallet-based services. The indigenous community members learned together about various online resources – used YouTube and other educational video materials to learn about cattle diseases, and new dress design ideas. based on their professional requirements. The

access to knowledge placed them in a secure place during the difficult period as the participants shared. The transgender communities faced resource challenges and faced social prejudice where learning about technology was challenging. They focused on learning on a needs basis.

Community-oriented learning and engagement in technology were not available for many marginal communities, particularly, the ones who have migrated from other regions. The slum area residents in major cities like Dhaka suffered during the pandemic-time lockdown and shutdowns. Participants shared their struggles of living every day while being disconnected. These disconnected participants requiring financial support and aid remained entirely disconnected from systematic support from authorities when social distancing was strictly enforced.

This shows how community-based support can be an enabler in technology exposure and access.

Way Forward

As participants of various marginalized communities, they had very strong connections among their own respective communities. The strong bonding and support can be used in other marginalized communities to collaboratively handle technology-learning challenges, allowing the scope to support each other in innovative ways. The close community structure can enable community-engaged learning and co-learning possibilities where communities can gather together to share and learn about technology together. Technology learning should involve the discussion of the positive aspects as well as the negative outcomes to ensure the best outcomes.

References

Ahmed, N., Rony, R. J., & Zaman, K. T. (2020). Social distancing challenges for marginal communities during COVID-19 pandemic in Bangladesh. Journal of Biomedical Analytics, 3(2), 5-14.

atlas.ti. (2022). https://atlasti.com/, accessed on May, 2022

Elo S. & Kyngas H. (2008) The qualitative content analysis process. Journal of Advanced Nursing 62(1), 107–115 doi: 10.1111/j.1365-2648.2007.04569.x

Glaser , Barney G and Strauss , Anselm L. 2017. Discovery of grounded theory: Strategies for qualitative research. Routledge.

Guarte, J. M., & Barrios, E. B. (2006). Estimation under purposive sampling. Communications in Statistics-Simulation and Computation, 35(2), 277-284.

Ocean
Maritime Academy

We offer various levels of training for all our students to find a suitable job in the maritime industry and be employable for a lifetime.

Our academic marine engineering courses are conducted under the strict supervision of professional and certified teachers, and we also provide practical training and hands-on experience.

WE CONDUCT ALL MARITIME RELATED COURSE AND TRAINING

Our Courses

- Pre-sea Rating Training Course
- Preparatory Courses
- Ancillary Courses
- Refresher Courses
- Practical Courses
- ID to CDC Courses

Our Sister Concern

- Golden Career Ship Management (GCSM)
- Ocean Marine Services (OMS)
- Ocean Maritime Training Institute (OMTI)
- Pacific Construction & Engineering
- Ocean Park & Sea Side Restaurant
- Pacific Composite Agro Farm Ltd.
- Sami Shipping & Advance Dredging Co.
- Tahmida Fisheries & Seafood Co.
- Abu Taher Master Foundation

Why Choose Us

- IMO & STCW Standard Education & Training
- Full Placed Air Conditioned Class Room
- Own Govt. Approved Practical Training Center
- Own Govt. Approved Ship Manning Agency
- Fully Online Based Own Database software
- Automated SMS alert for classes, fees & admission

SCAN TO VISIT OUR WEBSITE

- Online Admission
- Certificate Verification
- Course Fee Payment

www.omabd.com

Chattogram Office: Tulatoli Road, Fauzdarhat, Chattogram
Dhaka Office: House No. - 10 (3rd Floor), Road No. - 31
Sector - 7, Uttara, Dhaka 1230

+880 1610 910 910
+880 1610 662 266

omaofficebd@gmail.com

Re-skilling and Upskilling: Creating a Future-Ready Workforce in Bangladesh

Hamida Musharraf, Lecturer
Department of Management, SBE

This current era of Industry 4.0 marks a time of great change and revolution for the entire world. The dramatic advancement of avant-garde technologies like artificial intelligence and machine learning, quantum computing, 6G, the internet of things (IoT), industrial internet of things (IIOT), big data and business intelligence, information security, and renewable energy can be directly attributed to the dramatic increase in industrialization and automation. This has resulted in a significant shift in the competency requirements of the Bangladeshi logistics and industrial sector, and the goal of advanced manufacturing will be accomplished by a workforce that is future-ready. According to a number of studies, the growth of intelligent software systems, AI, and machine learning will not result in significant layoffs; instead, today's students and workforce will require extensive training, retraining, reskilling, and upskilling to meet the expectations of industry 4.0. There are two main concerns about the rapid pace of technological change: the inability of individuals to find work because they lack the necessary abilities, and the fear that low-skilled professions may be automated away. Skill gaps will widen inexorably unless the employees of today, who are most in danger of losing their jobs, master new technologies and make the most of the chance to gain the skills necessary for future employment.

The economic growth of Bangladesh during the last two decades has been remarkable. An essential factor in this achievement has been the commercialization of low-skilled labor. Involving less-skilled workers in productive work has enhanced the bottom of the pyramid's access to money and hence boosted economic development. Consequently, there was a significant improvement in many measures of social and economic well-being, including levels of poverty. In addition, developments in ICT infrastructure, the widespread use of phone and internet services, and the evolution of service in the digital realm all serve as powerful catalysts for expansion. By developing an export-oriented ready-made garment (RMG) sector at home and sending Bangladeshi workers overseas, the country was able to integrate its low-skilled labor force into the global value chain after the conclusion of the Third Industrial Revolution.

At this pivotal juncture in the fourth wave of the industrial revolution, Bangladesh's time-honored competitive advantage is beginning to lose its edge. Technology that requires less work to operate is lowering the proportion of labor used in manufacturing. In order to make up for it, the economy is not increasing proportionally. Thus, net employment loss has begun in Bangladesh, especially in the RMG industry. According to A2i's projections, 5.5 million jobs would be lost in Bangladesh by 2041. In spite of the fact that industry 4.0 poses a risk to increase the contribution of labor-based value addition to economic production, the technological stack that underpins it presents an opportunity

for the development of novel concepts. Analytical and creative thinking, active learning, critical thinking, the ability to tackle challenging situations, and self-management skills are some of the qualities that will propel one to the top. Workers that are future-ready will continually acquire and hone new skills as they advance in their chosen professions and solidify their employment. Almost every work will be affected by the new digital revolution in the next few years, and it remains to be seen which industries will need the most retraining and education. The labor market has become more stratified, with higher-skilled workers enjoying more economic success than their lower-skilled counterparts as a result of skill-biased technical advancements. One needs the requisite knowledge and experience in demand by various sectors of the economy in order to find a gainful job. In response to the growing need for multitalented and highly-skilled individuals, more institutions have invested in innovative techniques emphasizing the integration of skill-set training. Industry 4.0's intelligent systems highlight the need of shifting from an automation-centric focus to one that also places a premium on the intelligent collaboration of humans and machines.

A strategy for reskilling and upskilling via the integration of technology, people, and organization is the impetus for the creation of the creative skill-update program. It is certain that in the twenty-first century, all individuals must have access to high-quality early childhood, primary, and secondary education. On-the-job training provided by employers, seminars, self-study, and certifications from technology companies like Microsoft are all viable options. The vision for new education and learning programs that can effectively educate, skill, reskill, and upskill a workforce that is prepared for the future is directly attributable to Industry 4.0, which is steering society through a digital transformation. Leaders in business, education, and government need to work together to proactively build the infrastructure and introduce the policies that will enable the public to reap the benefits of people learning new skills, discovering novel knowledge, and developing more sophisticated ideas. Many people who are interested in increasing their abilities and credentials will find that programs leading to a college degree are generally beneficial for them to pursue. Since the COVID-19 pandemic accelerated the pace of automation, companies have been forced to rethink their strategies in light of the new standard. Educators, retailers, and financiers, among others, are emerging from the crisis into a world of geographically remote workplaces where customers' expectations and routines have shifted.

A company's response to a skills gap may take several forms, including the promotion of in-house training and education, the retention of existing staff, and the recruitment of qualified new hires. For the last several years, universities have been pushing forward with novel programs to meet the digitalization needs of Industry 4.0. In order to provide students with a more practical and industry-relevant education, universities and colleges have created student-centered initiatives that include experiential learning in degree programs. To assess the learning outcome, however, new methods and measurements for evaluating student learning will need to be developed. Higher education institutions no longer place an exclusive emphasis on the completion of degree programs, and as a result, they have begun to include non-degree options in their curricula. Business schools in several countries have taken the initiative to provide learning opportunities for a wide variety of people at different stages of their professional lives. China has a long history of educating middle school or high school graduates in vocational and technical schools or three-year colleges that concentrate on a certain profession or set of abilities,

but Germany has altered the framework of secondary vocational education to educate students advanced skills for a specific career. To realize its knowledge production, innovation, and community-building goals, higher education must reinvent itself within the campus, business community, and future-ready workforce management systems, as well as engage with universities in other countries, industrial clusters, and organizations from the public and private sectors.

A strong foundation in vocational education is essential for equipping students with the skills valued by the labor market. The Government of Bangladesh, with the support of the International Labor Organization and the financial backing of the European Union, has launched a project to reform technical and vocational education and training (TVET). By boosting the quality of vocational education and training, Bangladesh hopes to increase its global competitiveness and reduce poverty. As a requirement for entry into many specialized professions, professional organizations recognize the need for training and educating their members and the general public to acquire new information and skills. In general, Bangladesh lags considerably behind the rest of the world when it comes to the implementation of the practices of Industry 4.0. There are a number of important obstacles, such as inadequate infrastructure, the availability of less costly labor, the high cost of installing the technology, and a lack of understanding. Therefore, it is very difficult for the nation to reap the massive advantages of Industry 4.0 yet.

To improve the condition, an organization's offer to its workers should be front and center throughout the planning phase of a program for the future of work. Companies need clear and compelling value propositions to communicate the benefits of learning new skills and mastering new technology to their workforce. One of the most well-known employee-supported upskilling projects, Quality Circle encourages staff engagement in organizational decision-making and shifts the culture toward one that values input from all members. As we enter the age of Industry 4.0, digital connections have replaced physical ones, and companies are more reliant on sophisticated data networks to run their daily operations. Oracle and Microsoft Office are two examples of industry-standard software used by enterprises to enhance their internal communications. It is beneficial to work with external education providers to give in-house IT training. To facilitate reskilling and upskilling, self-study programs have been made available online.

The government of Bangladesh started moving on the right path when it adopted the "Digital Bangladesh" idea and began to put it into practice. To equip Bangladesh to enjoy the advantages of more than a decade's worth of digitization efforts, the government must be adaptable, forward-thinking, inclusive, and proactive in light of the fast evolution of technology. In addition, employers should provide their employees with educational opportunities, free Internet access and information, and financial aid such as tuition support. Urgent action is recommended for curriculum alignment with Industry 4.0 skills, and curriculum design should emphasize demand-driven skills and provide broad assessment criteria. Since public funds have not been allocated adequately to support reskilling and upskilling, the public sector will need to collaborate with business organizations to invest in a future-ready workforce and jobs of the future, as well as to implement overdue improvements to education and training systems. In this article, we've identified the most in-demand capabilities in the industry and offered a roadmap for gaining new skills and knowledge.

Islam, M. A., Jantan, A. H., Hashim, H., Chong, C. W., Abdullah M. M., & Hamid, A. B. A. (2019). Fourth Industrial Revolution in Developing Countries: A Case on Bangladesh. Journal of Management Information and Decision Sciences (JMIDS), 21 (1). Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3417813#:~:text=Overall%2C%20this%20study%20presents%20that,supports%20and%20lack%20of%20knowledge

Nile, M. A.-U.-R. (2015). Preparing Bangladesh for the Fourth Industrial Revolution (4IR). The Daily Star. Retrieved from https://www.thedailystar.net/recovering-covid-reinventing-our-future/fourth-industrial-revolution-and-digital-transformation/news/preparing-bangladesh-the-fourth-industrial

Textile Focus. (2022). 4th Industrial Revolution: Is the Textile Industry of Bangladesh Ready?. Retrieved from https://textilefocus.com/4th-industrial-revolution-is-the-textile-industry-of-bangladesh-ready/

United Nations Development Programme. (2020). Future of Work and SDG Attainment in the Age of Fourth Industrial Revolution – Bangladesh Perspective. Retrieved from https://www.undp.org/bangladesh/stories/future-work-and-sdg-attainment-age-fourth-industrial-revolution%E2%80%94bangladesh-perspective?utm_source=EN&utm_medium=GSR&utm_content=US_UNDP_PaidSearch_Brand_English&utm_campaign=CENTRAL&c_src=CENTRAL&c_src2=GSR&gclid=Cj0KCQiA54KfBhCKARIsAJzSrdqPpwBYb5BQs-6Fpy5olN-9eqKYjteH-k2HT1tPddTpt06ub1DJzuIaAvXnEALw_wcB

The world will not change too much but we will! The challenges and opportunities of 4IR in job market

Prof. Dr. Md. Abul Kalam Azad
Head, Department of Business and Technology Management (BTM)
Islamic University of Technology (IUT)
Organization of Islamic Cooperation (OIC)

The Fourth Industrial Revolution (4IR) was first termed by the World Economic Forum in 2016 which is expected to heavily shift the paradigm of human understanding of biological, digital, and physical integrations. The contribution of 4IR is not only expected to bodily shift the scope of economic progress but also affect the current skyline of socioeconomic interactions, business models, employment opportunities, and most importantly human life itself. One very good way of expressing the 4IR as the 'new chapter in human development'.

So far, the industrial revolutions have had a profound impact on entrepreneurship. The rise of new technologies and the increasing demand for digital products and services has created numerous opportunities for tech entrepreneurs. The increase in funding opportunities for tech startups through venture capital, angel investing, and crowdfunding has also made it easier for entrepreneurs to secure the resources they need to grow their businesses.

In particular, the Fourth Industrial Revolution (4IR) has had a significant impact on tech entrepreneurship. The unpredicted convergence of sophisticated technologies in recent days, such as artificial intelligence, the Internet of Things, 5G, and cloud computing is leading to new and innovative products and services that are transforming businesses and industries. This is providing numerous opportunities for tech entrepreneurs to create and bring to market cutting-edge solutions that address emerging needs and challenges.

In addition, the 4IR is also changing the way businesses operate and compete. The rise of digital transformation and Industry 4.0 is leading to a shift towards data-driven, automation-focused, and customer-centric approaches. This is providing opportunities for tech entrepreneurs to develop innovative solutions that can help organizations improve their processes and increase their competitiveness. The 4IR is also driving the growth of new economic sectors, such as smart cities and smart manufacturing, that are creating new opportunities for tech entrepreneurship. With the continued evolution of technology, the potential for tech entrepreneurship in the 4IR is immense and likely to grow in the coming years.

The 4IR is expected to create a range of new job opportunities. Some examples of these new roles include:

-**Data Analysts and Scientists:** With the increasing amount of data being generated, there will be a growing demand for individuals who can analyze and make sense of this data to drive business decisions.

-**Artificial Intelligence and Machine Learning Specialists:** AI and ML are becoming increasingly important in a wide range of industries, creating a need for professionals with expertise in these areas.

-**Cybersecurity Experts:** As more industries adopt new technologies and become increasingly digital, there will be a growing demand for individuals with expertise in protecting digital systems and data from cyber threats.

-**Robotics and Automation Specialists:** The rise of Industry 4.0 and the increasing use of robots and automation in manufacturing and other industries will create opportunities for individuals with expertise in these areas.

-**Internet of Things (IoT) Specialists:** The continued growth of the IoT will create opportunities for professionals who can design, develop, and maintain connected devices and systems.

-**Digital Transformation Specialists:** Organizations will need individuals who can help them navigate the complex process of digital transformation and adopt new technologies to stay competitive.

-**Smart City Specialists:** The growth of smart cities will create opportunities for professionals who can design and implement sustainable and efficient urban systems.

These are just a few examples of the new job opportunities that are expected to be created by the 4IR. The rapid progression of technological change means that new opportunities will continue to emerge, creating exciting career prospects for those with the right skills and expertise. However, the 4IR presents some challenges too. Some of the main challenges include:

-**Skills Gap:** One of the biggest challenges is the mismatch between the skills required for new jobs and the skills of the current workforce. Many workers may not have the digital skills and knowledge needed to take advantage of the new job opportunities created by the 4IR.

-**Job Displacement:** The increasing use of automation and robotics in many industries is expected to result in job displacement, particularly for workers in low-skilled and repetitive tasks.

-**Job Creation:** While new job opportunities are expected to be created by the 4IR, there is uncertainty about the rate at which these jobs will be created and the locations in which they will be located.

-**Income Inequality:** The 4IR has the potential to exacerbate existing income inequalities as those with the required skills and knowledge will benefit, while those without will struggle to find employment.

-**Labor Market Polarization:** The 4IR is expected to lead to a polarizing of the labor market, with a growing demand for high-skilled jobs and a declining demand for low-skilled jobs.

-**Ethical and Social Concerns:** The increasing use of AI and other technologies in the workplace raises ethical and social concerns about the impact on workers and society as a whole.

To address the changes in the labor market and improve the career crisis, it is expected for individuals, organizations, and governments to invest in reskilling and upskilling programs to ensure that workers have the skills needed to take advantage of the new job opportunities created by the 4IR. Additionally, policies will need to be put in place to address job displacement and support those who are most vulnerable to its effects.

Transition from the Fourth Industrial Revolution to Civilization one and our AI technology for the current and future jobs

Dr. Md Ismil Hossain
Lecturer of Business and Management in Mechanical Engineering
University of Bolton in the UK

The ultimate purpose of education should be to prepare students to meet the demands of current and future markets in a rapidly changing world. We are now in the Fourth Industrial Revolution (4IR), and Artificial Intelligence (AI) is one of many tools and technologies that will shape the future and our labour market. By embracing new technologies and adapting our education systems to meet changing needs, we can help ensure that future generations are equipped with the knowledge and skills they need to thrive for the civilisation one.

In addition, Bard AI and Chat GPT are the initial versions of civilization one technology, which is facilitating us to closely transition from 4IR to civilisation one. What is civilization one? Let me briefly define it considering the reference of the Russian astronomer Nikolai Kardashev. He believes that in this period, humans will be able to use all existing resources, has control over the earth – be able to use ocean water, clouds, and wind in a sustainable manner, and have control over nuclear energy, earthquakes, and natural disasters by using technology.

Let us begin by talking about the future communication of the internet and the expansion of our knowledge. In this regard, we can gain valuable insight from "Michio Kaku," a well-known physicist. He mentioned the "Brain Net" of the future, but this brain net is not far away. If Elon Musk's Neuralink project makes additional progress in the development of brain-machine interfaces, the future collaborative application of Bard AI, Metaverse, and Neuralink may offer the effective capabilities of Brain Net. This will allow us to exchange knowledge, skills, and information between AI and humans, transforming a human into a superhuman.

Let us discuss, then, the past and present knowledge and skills; even from our knowledge perspectives, it was extremely difficult for the poor and tribal societies to obtain and gain access to knowledge. In the past, those from wealthier families in third-world countries and citizens of the developed world had more access to formal institutions. In the early nineteenth century, Asia had a literacy rate of less than 10%, whereas England, as the developed world, had a literacy rate of around 60% in 1811. Although there were very discriminatory or class-based societies in our world, knowledge and intellectuality were unequally distributed, and this has continued to this day. According to a report by the UK government in 2019, the literacy rate in England was estimated to be around 99%, while this figure is only 77.3% of the whole of Asia in 2019. The gap has narrowed, and now we are more fortunate to gain knowledge from Google, YouTube, and Chat GPT via the Internet. We can see the distinction between Google and Bard AI or chat GPT in terms of information delivery efficiency and brevity. Future collaborative AI, including Nuralink technology, will most likely elevate us to superhuman status, while our knowledge and intellectual level will be at a different level. Imagine that your brain is implanted with Google, Bard AI, and Chat GPT; if you possess the same information and knowledge as

they do, you will be an exceptionally intelligent person. Considering that, in our civilization, you will have more knowledge and intelligence than Google and Chat GPT do today.

Human Resource Management (HRM) appears to play a key role in managing and maintaining jobs for people in the foreseeable future. Either they need to equip humans in competitive ways to make them more competitive against AI, or they need to discover a balance between humans and AI so that they can be merged to become superhumans. This can propel our civilization to the next level of achievement. Without the aforementioned competence and required knowledge and skills, it will be extremely difficult to continue and maintain productivity against AI; alternatively, accepting the condition of a superhuman being will be unavoidable.

It is also anticipated that the selection system of the HRM will be significantly altered in the next dimension, as the management will be able to telepathically (with the aid of Brain Net) select the right person for the right position in a fraction of a second, as opposed to spending time and money on a lengthy recruitment and selection process. Currently, it is not uncommon for candidates to present themselves in a way that they think will appeal to the organization during an interview. However, this does not always reflect their true attributes and may not be sustainable in the long run. The good news for our new eras is that there will be very little misselection, and discrimination will be monitored across many spectrums. This is due to the fact that whatever discriminatory and unethical thoughts process will come into mind regarding employment perspectives in the organisation, it will be taken off from human limbic process through the mind cloud, from which unwanted thoughts and actions will be monitored and controlled for the sake of the entire organisational wellbeing. It is true that institutional imbalances can occur when there is an uneven distribution of power and resources. This can manifest in various ways, such as when the interests of powerful investors and governments are prioritized over the needs and rights of ordinary people and third-world nations. In essence, underprivileged people will accept the ongoing competition to become superhuman, or they will face numerous difficulties and exploitation. Therefore, while class society may never be entirely eradicated, either on this planet or on other planets where colonisation will occur, direct discrimination within corporations will be considerably reduced as a result of civilisation one.

Training and development will take a different form; in this regard, management will primarily consider uploading the relevant software through Brain Net, taking into account the specific job function. Even if we take this preliminary understanding of how Microsoft software, including the required apps, has been uploaded and updated the desktop or laptop and including smart mobile phones, it could be applied in a similar fashion to the implanted Brain Net. It will enable them to be more productive, efficient, and innovative professionals.

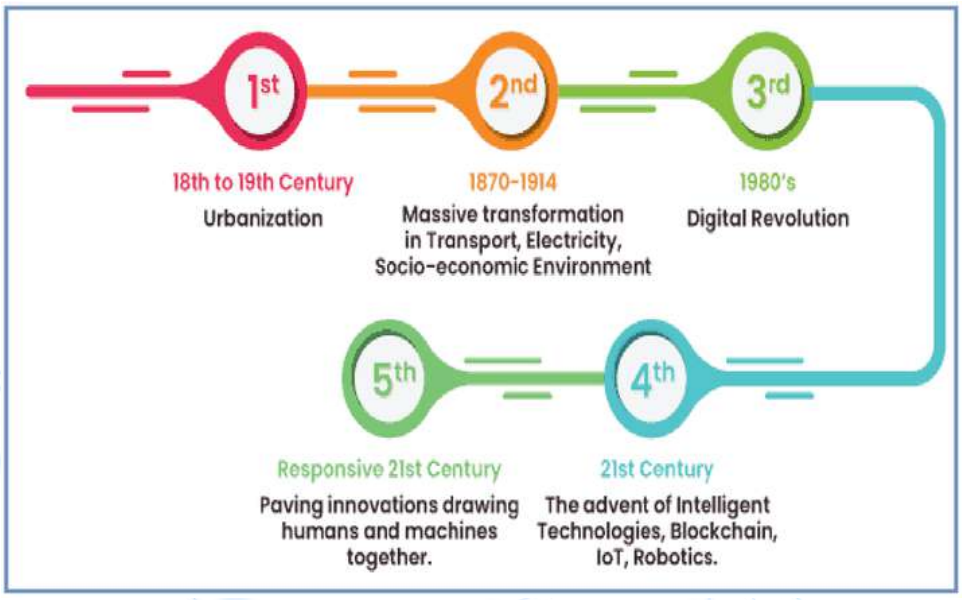
When intrinsic and extrinsic motivations will be highly valued on an individual, team, and collective level, compensation and rewards will rise to a new level. However, their ultimate expectation may be beyond our current comprehension; it could include not only food, currency code, and living standards, but also psychological and physical demands in extended ways. Such as visiting physical bodies or avatars in a more realistic and conscious way on other celestial planets where heavenly desires will be served in accordance with human desires.

As a result of the growing demand in the job market to transition from the current 4IR to the future civilization one, the education curriculum may adapt to include more AI-related skills while also considering other required problem-solving areas. Additionally, balancing space exploration with urgent global challenges such as climate change, poverty, and inequality is important while maintaining a global competitive edge and creating a visionary plan for utilising the existing resources of Bangladesh, for future endeavours on distant planets that are not very far away.

4IR to 5IR: Skilled People - Smart Bangladesh

Dr. M. Mesbahuddin Sarker
Professor, Institute of Information Technology
Jahangirnagar University

Vision 2041 is a national strategic plan to strengthen the socio-economic position of the country, given by the Prime Minister of Bangladesh, Sheikh Hasina, and formulated by the National Economic Council. As a part of the Strategic Five-Year Plan from 2022 to 2044, Bangladesh aims to achieve high-income country status through industrialization within these 22 years. The main objectives of Vision 2041 are to increase exports from Bangladesh, increase production capacity through human resource development and encourage the expansion of investment. Categorically other specific objectives are 1. Per capita income of $12,500 (over $16,000 in 2041 values), 2. Poverty alleviation, 3. Maintaining 9% GDP growth, 4. The investment/GDP ratio increased to 46.9 percent, 5. Raising revenue tax to 15% of GDP, 6. Achieving export diversification, 7. Increase in export income by 300 billion dollars, 8. Average life expectancy increased to 80 years, 9. Providing universal health care to 75% of the total population, 10. Increase adult literacy rate to 100% by 2041, 11. Reducing population growth below 1%, 12. Tax and Expenditure Policy Effective and 13. Decentralization of economic and administrative power. If the objectives are successful, the people of the country will take another step forward in improving their fortunes. The unemployed youth of the country have already proved their capabilities by freelancing and outsourcing as a result of the digital Bangladesh transformation. Today, many people are earning foreign currency at home without going abroad like USA or Canada to make an important contribution to the country's economy. Therefore, the prime minister advised the educated unemployed youth to become entrepreneurs instead of wasting time looking for jobs.



Implementation of Vision 2041 should ensure the use of ICT in government and private institutions. In the progress of development, a model SDG state should be formed to achieve the sustainable goal of Digital Bangladesh by 2030. Therefore, with the aim of building a Smart Bangladesh by 2041, the district administration in collaboration with the a2i program organized a Nationwide Digital Innovation Fair and Innovation Olympiad on November 20 and 21, 2022 for school-going students. At the fair, school students created a model of Smart Bangladesh suitable for 2041 and impressed the audience. In order to achieve the overall goal, all the ministries of the government are working together to implement the declared 'Vision 2041' through public-private initiatives, local and international market expansion, industry branding, policy support, and creating a business-friendly environment. Information and Communication Technology Department, Telecommunication Department, and Bangladesh Association of Software and Information Services (BASIS) are providing technical support and digital platform for information exchange. In this way, digital Bangladesh will be formed as Smart Bangladesh by 2041. For that purpose, the Prime Minister has announced four more specific bases, they are 1. Smart Citizen, 2. Smart Economy, 3. Smart government and 4. Smart Society.

It should be noted that on December 12, 2008, Prime Minister Sheikh Hasina announced the creation of Digital Bangladesh as the main basis of 'Vision-2021'. Over the past 14 years, Digital Bangladesh's network has expanded from urban to rural union parishads. Online birth registration, money transactions, admission and employment form filling, land registration, and utility bill payment. can be done effortlessly. In this way, the present generation will make Bangladesh a Smart Bangladesh by the hands of the fourth industrial revolution. Because the biggest and most powerful tool to reap the benefits of the 4th Industrial Revolution is this young manpower. Skilled human resources will be more valuable than natural resources in this knowledge-based industrial revolution.

As a result of the 4th Industrial Revolution, a large number of people will lose their jobs, but on the contrary, new types of knowledge and skill-based workplaces will be created. Therefore, in order to utilize the opportunities of the 4th industrial revolution, our main goal should be the creation of skilled human resources suitable for the 4th industrial revolution. And this will require a radical change in the education system. The transformed education system has to be connected instead of the traditional education system. Keeping that thought in mind, a modern information and technology-friendly, practical, and non-sectarian education curriculum has been prepared in the spirit of the liberation war, which is being implemented from 2023 onwards. Students will learn through play, fun, and hands-on learning instead of memorization. And as a result of this education, this generation will become patriotic world-class humanitarian smart citizens before 2041.

Three things should be given great importance as the foundation of the fourth industrial revolution to achieve the ultimate goal. These are 1. Development of industry through innovation of advanced technology, 2. Creation of trained workforce and 3. Environmental protection. However, the fourth industrial revolution is so mechanized that it may even be dangerous for humans. Along with the displacement of people, the reach of technology may expand to such an extent that the progress of human civilization may come to a halt. Just as the electrified Metrorail is a breakthrough for us today, in 2041, it may be completely driverless under the influence of the fourth industrial revolution, which has been going on for a long time in countries like Japan and Australia.

Yet we need to embrace the good side of digital transformation and avoid the scary side and move forward in parallel with the developed world. Because, after that, we have to welcome the 5th Industrial Revolution, which will be free from the horrors of the 4th Industrial Revolution, and much more humane. The main spirit of the 5th Industrial Revolution is the direct interaction of technology with people, which leads not only to the growth of technology but also to social and human development. In this humanitarian revolution, SDG targets such as- 1. A world without poverty, 2. A world without hunger, 3. Good health, 4. Advanced education, 5. Gender equality, 6. Drinking water, sanitation, 7. Affordable clean energy, 8. Welfare and economic growth, 9. Industry, Innovation and Infrastructure, 10. Reduced inequality, 11. Sustainable cities and candidate communities, 12. Responsible consumption and production, 13. Climate Action, 14. Aquatic life, 15. Animals living on land, 16. Peace, justice, and strong institutions, 17. Assurance of mutual assistance etc. in achieving the goal. Hence, the 5th industrial revolution will make people use technology instead of replacing people with technology. Vision-2041 will win by removing all obstacles by utilizing the right use of technology, talent, and imagination of the young generation. Smart Bangladesh would win.

Fourth Industrial Revolution and our Knowledge and Skill Required

Dr. Md. Shariful Alam Khandakar
Professor, University of Dhaka

The 4th Industrial Revolution (4IR), characterized by the integration of advanced technology (namely artificial intelligence, robotics, the internet of things, blockchain, and others) and the digitalization of industries, is having a significant impact on the skills and jobs pattern of the workplace. As a result, workers are needed updated skills and reskill to remain competitive position in the job market. This paper is going to explain in greater depth and detail the impact of the 4th Industrial Revolution on jobs and industries in a competitive world more specifically in Bangladesh.

With the increasing use of automation and artificial intelligence, many traditional jobs are being replaced with more technologically advanced roles. This has led to concerns about job displacement and unemployment. However, it is important to recognize that the 4th Industrial Revolution is creating new job opportunities in areas such as cyber security, data science, and robotics. While these roles require a different set of skills and qualifications than traditional jobs, they are also more dynamic, challenging, and rewarding. Due to 4IR, the following changes are taking place.

First of all, the 4th Industrial Revolution is changing the nature of work itself. For example, remote work is becoming more prevalent, which means that workers need to be able to collaborate effectively with colleagues and clients from different locations. Furthermore, the big economy is growing, which means that workers need to be able to adapt to different work environments and manage their own time effectively.

Secondly, to remain competitive in the job market, workers need to upskill and reskill to adapt to the changing demands of the industry. This means that employees need to develop new skills, such as data analysis and programming, in order to remain relevant. Moreover, soft skills such as communication, creativity, and problem-solving are becoming increasingly important in the workplace. Fortunately, there are many resources available for workers to upskill and reskill. For example, online courses, workshops, and boot camps are readily available for those who wish to learn new skills. In addition, many companies are investing in their own training programs to help employees develop the skills they need to succeed in the new economy.

Thirdly, education plays a critical role in preparing workers for the 4th Industrial Revolution. This means that educational institutions need to adapt to the changing needs of the industry and provide students with the skills and knowledge they need to succeed in the new economy. For example, universities and colleges are offering courses in areas such as data science, cyber security, and robotics to meet the growing demand for these skills. Moreover, there is a need for education and training programs to help

workers transition into new roles. For example, apprenticeships and on-the-job training programs can help workers develop the skills they need to succeed in new roles. In addition, lifelong learning programs can help workers stay up-to-date with the latest technological developments and remain competitive in the job market.

Fourthly, the 4th Industrial Revolution is characterized by collaboration and cooperation. This means that workers need to be able to collaborate effectively with colleagues and clients from different locations and backgrounds. Furthermore, companies need to be able to work together to develop new technologies and innovations.

To enable effective collaboration, companies need to invest in communication technologies and collaboration tools. For example, video conferencing software and project management tools can help workers collaborate effectively and stay on top of their work. In addition, companies need to create a culture of collaboration and teamwork to foster innovation and creativity.

To sum up, the 4th Industrial Revolution is causing disruption in our industry, but it is also creating new opportunities for those who are willing to adapt and learn new skills. To remain competitive in the job market, workers need to upskill and reskill to adapt to the changing demands of the industry. Moreover, education plays a critical role in preparing workers for the new economy, and companies need to invest in their own training programs to help employees develop the skills they need to succeed.
Collaboration is also key to success in the new economy. Workers need to be able to collaborate effectively with colleagues and clients from different locations and backgrounds, and companies need to work together to develop new technologies and innovations. By working together and investing in the right resources, we can ensure that the 4th Industrial Revolution brings about positive change and progress in our industry.

Artificial Intelligence: A Drive Towards Initializing Alternative Skill Sets

MD Shiyan Sadik
Lecturer
Department of Environmental Science & Management
North South University

Typing on a typewriter was one of the highest-paying jobs in the previous age, but it finally went out of style as a result of computers' adoption of modern technology. People chose to adapt their typewriting abilities to Microsoft Office programs and began to make a living off of that. Not all were able to adapt so quickly though; some because they firmly believed that such technologies would never become obsolete, and others because they were unable to get over the obstacles posed by technology. This eventually led to structural unemployment or the lack of employment in the market due to a mismatch in skill sets. The present era of artificial intelligence is fully replacing the jobs focused on content generation or copywriting, much like the transition from typewriters to computers did. Software like Chatgpt is capable of quickly completing any academic or everyday assignment. The fourth industrial revolution story is about entering a new phase of structural unemployment that could have a different effect than before.

It is expected that AI will reduce employment for college-educated individuals within the next five years. The ability of technology to accomplish activities that were previously thought to need a high level of education and competence will increase as it develops. As businesses look for ways to save costs by automating processes, this could result in the displacement of labor in some industries. Although it is challenging to foresee the precise scope of this trend, it is obvious that AI will have a big impact on the labor market for employees with college degrees. Technology experts have been predicting for years that flexible, inventive AI could threaten white-collar professions as robots replace talented office workers whose positions were formerly thought to be immune to automation. In recent memory, no single technology has resulted in widespread job loss among highly educated workers. Can artificial intelligence like ChatGpt do that? Given how recent technology is and how slowly employment can shift in reaction to technological progress, no one can provide an answer.

Important ethical questions are raised by the emergence of AI and chatbots, particularly in light of the effects on workers and their way of life. There is a chance for widespread job displacement and unemployment as these technologies can automate more tasks. This might have serious repercussions for the impacted employees and their families, who may experience financial instability and a lack of career opportunities. The usage of AI and chatbots more generally raises ethical questions in addition to the effect on labor. For instance, questions regarding bias and fairness arise when AI is used in decision-making procedures such as employment or loan approval.

Upskilling and reskilling are two ways to get ready for the job market of the future. Certain skills will become more and more valuable as AI develops. The following are just a few examples of the talents that will be in great demand: data analysis, programming, and digital literacy. Employers may assist ensure that workers have the skills they need to succeed in the future job market by investing in education and training programs. Better profit margins would result from the increased productivity of AI-based businesses. By growing the company and starting many capacity development projects for the workers whose employers are no longer needed due to automation, the profit may be reinvested to create jobs in alternative sectors. In the longer run, there is a greater chance of employment signaling and this may function as compensation in the short term.

Governments and businesses can collaborate to offer affected workers help, including financial aid and services for finding new jobs. Making sure AI and chatbots are used ethically and responsibly is a further crucial step. To prevent abuses and maintain justice, this may entail establishing awareness campaigns, regulating how these technologies are used, and encouraging openness and responsibility in their creation and use. To prevent widespread job displacement, it might be necessary to restrict the usage of AI and chatbots. This could entail taking steps like asking businesses to show that the adoption of these technologies won't lead to a large loss of jobs or placing restrictions on the use of AI and chatbots in particular sectors or for particular jobs. By doing this, we can ensure that the use of AI and chatbots is balanced with the safeguarding of human labor and their means of subsistence.

As mentioned, the rise of AI and chatbots has numerous potential advantages for businesses, including increased productivity and cost reductions. It also prompts worries about the possibility of widespread unemployment as a result of the automation of work currently carried out by humans. We must carefully analyze how AI and chatbots may affect employment and take action to lessen any unfavorable effects. To prevent widespread job displacement, this may entail regulating the use of new technologies, ensuring the ethical and responsible use of them, and offering retraining and education programs for affected people for moving towards alternative skill sets.

Navigating the Fourth Industrial Revolution (Industry 4.0): Implication in the context of Business Graduates.

Dr. Muhammad Sabbir Rahman
Associate Professor, Department of Marketing and International Business, North South University

Miss Gazi Sadia Afrin
Research Assistant
Department of Marketing and International Business
North South University

"The Fourth Industrial Revolution is still in its nascent state. But with the swift pace of change and disruption to business and society, the time to join in is now." Gary Coleman, Global Industry and Senior Client Advisor, Deloitte Consulting

The Fourth Industrial Revolution (Industry 4.0) is a new age in manufacturing and service processes that was marked by the incorporation of cutting-edge technologies, including automation, the Internet of Things (IoT), and artificial intelligence (Chiarvesio and Romanello, 2018; Maria and Devi, 2023; Elnadi and Abdallah, 2023). By integrating advanced technologies and cloud computing, Industry 4.0 changes the industrial sector's overall business function. To implement Industry 4.0, both manufacturing and service sectors are expected to undergo a revolution that will ultimately improve their efficiency, customization, and innovation of products and services design and prepare them to be competent and adapted for the global economy (Ahmadi et al., 2023; Calabrese et al., 2023). Apart from that, the manufacturing industry in Bangladesh is one of the most significant contributors to the nation's GDP. Consequently, the industry leaders of Bangladesh are becoming more interested in implementing Industry 4.0 technology-driven processes to boost their firm's competitiveness and add value to economic growth (Kagermann, 2015; Suha et al., 2022). In this situation, business graduates are essential to the nation's Industry 4.0 implementation in their respective firms. They must be well-trained and knowledgeable about the digital technologies that fuel them to implement Industry 4.0 (Cotteleer and Sniderman, 2017). Therefore, business graduates must have a solid understanding of data analytics and the capability to apply data-driven technology to make them competent for the firm's needs. Globally, Industry 4.0 is having a positive effect that has the potential impact on Bangladesh's economy, generating new employment possibilities, boosting productivity, and spurring economic expansion.

The demand for business graduates with technology-driven programs in Bangladesh is growing in accordance with the changes in Industry 4.0. Business graduates must be thoroughly aware of the most recent business analytics trends, technology, and strategies (Orlando, 2018). They are required to have the ability to assess and understand data, carry out business research, and create business plans that are specific to regional and international markets.

Business graduates must be proactive and versatile to fulfill the needs of Industry 4.0 (Gregolinska et al., 2022). They must be able to collaborate in multidisciplinary teams and be open to learning new technologies and approaches (Cotteleer and Sniderman, 2017). Knowledge of digital business platforms and technologies is also essential since they are utilized increasingly by local and international manufacturing and service domain firms.

Apart from that, business graduates must also have soft skills such as good interpersonal, leadership, and communication abilities and technical proficiency (Maisiri et al., 2019). These are crucial in the fast-changing corporate environment, mediated by Industry 4.0, where cooperation and teamwork are vital for a successful project (Bhuiyan et al., 2020).
Finally, ethical issues are becoming another more critical aspect of Industry 4.0 regarding data protection and privacy. Therefore, Bangladeshi graduates must also comprehend the value of safeguarding customer data and be able to create and execute privacy and security policies that adhere to national and international laws (Joshi et al., 2022; Zhou et al., 2023).

In conclusion, business graduates have exciting new prospects in their careers due to Industry 4.0. They may play a significant part in changing the nation's economy and support companies thriving in the digital era by being proactive, adaptive, and having a wide variety of talents.

References:

Ahmadi, M., Pahlavani, M., Karimi, A., Moradi, M., & Lawrence, J. (2023). The Impact of the Fourth Industrial Revolution on the Transitory Stage of the Automotive Industry. In Sustainable Manufacturing in Industry 4.0: Pathways and Practices (pp. 79-96). Singapore: Springer Nature Singapore.

Bhuiyan, A. B., Ali, M. J., Muthu, M., & Zulkifli, N. (2020, October). (PDF) industry 4.0: Challenges, opportunities, and ... - researchgate. Research Gate. Retrieved from https://www.researchgate.net/publication/346339716_INDUSTRY_40_CHALLENGES_OPPORTUNITIES_AND_STRATEGIC_SOLUTIONS_FOR_BANGLADESH

Calabrese, A., Costa, R., Tiburzi, L., & Brem, A. (2023). Merging two revolutions: A human-artificial intelligence method to study how sustainability and Industry 4.0 are intertwined. Technological Forecasting and Social Change, 188, 122265.

Chiarvesio, M., & Romanello, R. (2018). Industry 4.0 technologies and internationalization: Insights from Italian companies. In International Business in the Information and Digital Age. Emerald Publishing Limited.

Chiarvesio, M., & Romanello, R. (2018). Industry 4.0 technologies and internationalization: Insights from Italian companies. In International Business in the Information and Digital Age. Emerald Publishing Limited.

Cotteleer, M., & Sniderman, B. (2017, December 18). Forces of Change: Industry 4.0. Deloitte Insights. Retrieved from https://www2.deloitte.com/us/en/insights/focus/industry-4-0/overview.html

Elnadi, M., & Abdallah, Y. O. (2023). Industry 4.0: critical investigations and synthesis of key findings. Management Review Quarterly, 1-34.

Elnadi, M., & Abdallah, Y. O. (2023). Industry 4.0: critical investigations and synthesis of key findings. Management Review Quarterly, 1-34.

Gregolinska, E., Khanam, R., Lefort, F., & Parthasarathy, P. (2022, December 9). Capturing the true value of industry 4.0. McKinsey & Company. Retrieved from https://www.mckinsey.com/capabilities/operations/our-insights/capturing-the-true-value-of-industry-four-point-zero

Joshi, S., Pise, A. A., Shrivastava, M., Revathy, C., Kumar, H., Alsetoohy, O., & Akwafo, R. (2022). Adoption of Blockchain Technology for Privacy and Security in the Context of Industry 4.0. Wireless Communications and Mobile Computing, 2022.

Kagermann, H. (2015). Change through digitization—Value creation in the age of Industry 4.0. Management of permanent change, 23-45.

Maisiri, W., Darwish, H., & Dyk, L. V. (2019, November). An investigation of industry 4.0 skills requirements - researchgate. Research Gate. Retrieved from https://www.researchgate.net/publication/337327291_An_Investigation_of_Industry_40_Skills_Requirements

Maria, I. J., & Devi, T. (2023). Industry 4.0 for Service 4.0 through Research 4.0: A Framework for Higher Education Institutions. In Industry 4.0 Technologies for Education (pp. 293-302). Auerbach Publications.

Maria, I. J., & Devi, T. (2023). Industry 4.0 for Service 4.0 through Research 4.0: A Framework for Higher Education Institutions. In Industry 4.0 Technologies for Education (pp. 293-302). Auerbach Publications.

Orlando, F. (2018, October 15). Top 10 strategic technology trends for 2019. Gartner. Retrieved from https://www.gartner.com/en/newsroom/press-releases/2018-10-15-gartner-identifies-the-top-10-strategic-technology-trends-for-2019

Suha, S. A., Sanam, T. F., & Jahan, M. I. (2022, June). National Policies & their Significance in Bangladesh for the Adoption of Industry 4.0. In 2022 IEEE World Conference on Applied Intelligence and Computing (AIC) (pp. 676-681). IEEE.

Zhou, J., Yu, H., Chen, Z., & Wang, Y. (2023). Special Section on Next-Generation Networks for Industry 4.0: Using Cutting-Edge Technologies to Connect, Communicate, and Compute. IEEE Systems, Man, and Cybernetics Magazine, 9(1), 3-72.

Artificial Intelligence: Practical Implications for Shaping the Future of Human Capital

Dr. Mehree Iqbal
Assistant Professor, Marketing and International Business Department,
North South University

Ms. Shahneela Naheed
Senior Lecturer, Marketing and International Business Department
North South University

Ms. Sherina Idrish
Senior Lecturer
Marketing and International Business Department
North South University

Being on the verge of technological revolution - we are experiencing fundamental changes in the way we live, work, and relate to one another. The transformation is expected to be unlike anything human beings have faced before in its scope and complexity. It is still a mystery how it will unfold but the response to it must be well-integrated and inclusive, engaging the stakeholders of the global community, from the public and private sectors to academia and civil society. In recent times, a fourth industrial revolution i.e., the digital revolution, is prevalent which is characterized by a combination of technologies that are altering the boundaries between the physical, digital, and genetic realms. Some of the required skills for industry 4.0 are analytical skills, data literacy, management of digital media, and understanding of automation and artificial intelligence. This article highlights the current trends and skills students and graduates must have to be at the top of their game.

Artificial Intelligence is intelligence demonstrated by machines in the form of performing, synthesizing, and inferring as opposed to humans and animals. It leverages computers and machines to mimic the problem-solving and decision-making capabilities of human beings. AI can process large amounts of data and process them in the way humans recognize, justify, and imply. Artificial Intelligence has the potential to increase productivity, create new jobs, and raise living standards. Among several AI-based software, Behavior signals' technology leverages emotional AI and natural language processing to analyze behavioral signals from consumers' voices, reactions, word choice, and engagement in conversation. AI-mediated conversation (AI-MC) is an automated call routing solution that uses emotional AI and voice data to match its customers to the best-suited agent to handle specific calls at call centers. For example, the European Commercial Bank deployed the AI-enabled agent-customer technology in March 2020 to route customer calls based on their previous calls recorded in their CRM profile. Eventually, the call success ratio improved when customers were matched with the right agent. It improved the banks' debt restructuring applications by 20.1%, reduced call volumes by 7.5%, and increased customer satisfaction three times more than before. This technology can similarly be integrated across industries like retail, healthcare, telecommunication, food and beverage, education, and so on. Correspondingly, students should learn about the software and skills needed to utilize such technology.

Open AI is an AI research company promoting artificial intelligence in a way that is safe and beneficial for humanity. It has developed several AI programs, such as Playground AI, DALL-E, and Chat GPT, with potential applications in human capital development. Playground AI is an educational platform that allows users to learn about AI programming in a fun and interactive way. It provides tutorials and resources for people of all skill levels, such as content creation and copywriting, making it an ideal tool for students and aspiring AI developers. Playground AI can help individuals to develop new skills and knowledge, making them more valuable in the job market. DALL-E is a customer service robot that uses natural language processing to interact with customers in creating images and artwork in a more personalized way. It can improve customer service experiences, leading to greater customer satisfaction and retention. Moreover, Chat GPT is a command-based AI language model that can generate human-like text and is currently being used in customer service, content creation, and even creative writing. It can generate content and writing, freeing up time for individuals to focus more on strategic tasks. These AI programs have practical implications for shaping the future of human capital.

Global companies like Coca-Cola, for instance, have already started collaborating with Chat GPT and DALL-E to develop personalized ad copy, images, and messaging to highlight the growing interest and potential applications of these AI programs in the business world. Even the ICT Division of Bangladesh has taken a project to create an Ai based spell checker, "SHOTHIK", for both online and offline Bangla writing on different platforms which can be implemented in content writing. As AI technology continues to advance, it will likely play an increasingly important role in shaping the future of human capital. In summary, future workplaces will require employees with AI skills to navigate these platforms. It is important to note that these AI programs are not designed to take over jobs or replace human workers. Rather, they are meant to complement human labor and improve efficiency when they know how to add value to these products. Proper training and knowledge are required to effectively use these programs, and they should be viewed as tools to enhance human productivity.

Some other platforms such as Cogram, Compose AI, Slides AI, Excel Formula Bot and Akkiko could also enhance the tech skill set of any individual. Cogram is a privacy-protected platform that takes automatic notes in virtual meetings along with identifying action items. Compose AI, a Chrome extension, is said to cut the writing time by 40%. PowerPoint and Excel are the two most significant programs and are considered the skeleton tools to run any process. Excel Formula Bot turns problems into formulas or helps receive explanations of certain formulas in seconds while Slides AI sets creative presentations in no time. Akkiko facilitates data-driven decisions without any data science training. Canva and Figma are trending tools to set aesthetically pleasant and innovative visuals instantly. The best part is, most of these platforms offer self and free learning. 'Resumes of potential employees with these tech skills are always preferred over others', said one of the HR Directors of a telecom giant in Bangladesh. In fact, different local Corporate Houses are now holding multiple training sessions to train their current employees with these skills to facilitate their operations more effectively.

In this era, tech is not a separate department. Every organization is now integrating different new technologies seamlessly as a part of their process to stay on par. These employers are now repellent to white collar workforce who are not relevantly tech trained. This is an unavoidable reality. Since agility is considered one of the core traits for growth, certainly potential and current workforces necessarily consider getting properly trained in all required AIs.

আপনার স্বপ্নযাত্রার সঙ্গী

UCB STOCK Brokerage Limited

INVEST *for a* BETTER FUTURE

MORE THAN **25**

Branches & Digital Booths
All Over Bangladesh

OUR SERVICES

- DSE & CSE trade
- Online BO account
- Online trade
- Online IPO
- Trading facilities for NRB's & foreign investors
- Market update

HEAD OFFICE

BULUS CENTER (17th Floor, West Side), Plot – CWS (A) 1 Road No – 34, Gulshan Avenue, Dhaka – 1212, Bangladesh

☎ +880 2 5881 0909 +880 2 5881 0910 ucbstock.com ucbstock@ucb.com.bd

TREC HOLDER DSE: 181 CSE: 015

Transition to Industry 4.0: Human Resource Perspectives from Bangladeshi Family Businesses

Zarjina Tarana Khalil, Farzana Nahid
School of Business and Economics,
North South University

"What do you want to be when you grow up?"- the quintessential question faced by every child often garners some interesting answers. While some of them respond with their dream job of being a superhero like Batman or Superman, others succumb to the pressures of tradition and respond with the safe options of doctor or engineer. However, in this age, we are living in a world where a child going to kindergarten today has absolutely no idea what the job market will be like when they graduate! This is not because they are too young to think about jobs, but because, things are changing at such a galloping pace, that by the time they are ready for the workplace, the world may look very different.

Throughout history, major paradigm shifts called "industrial revolutions" impacted businesses, and the current shift to the fourth industrial revolution (I4.0) calls for end-to-end digital integration. Adapting to these shifts requires precise knowledge, financial resources, up-gradation of skills, and flexible organizational culture. This rapid rate of technological disruptions has created a significant gap between the current skills of employees and the evolving requirements of their roles, and this forms the basis for paying more attention to effective approaches to talent development.

Although the focus is usually on the skills required by the workforce to operate in the new setting, it is also imperative to understand how ready the employers are to adopt I4.0 practices and how they can support their workforce for the same. Human Resources (HR) is particularly challenged by the imminent changes. Of the eight priority areas for action outlined in the final report of the I4.0 working group, two of them are i) to implement a socio-technical approach for work organization which offers workers the opportunity to enjoy greater responsibility and enhance personal development and ii) to adopt strategies to foster learning, enabling long-life learning and workplace-based professional development (training and continuing professional development). For companies, it is going to be crucial to develop an adequate HR management strategy as part of their corporate strategy.

The findings from a recent survey of family businesses by Price Waterhouse Coopers reveal that one of the crucial challenges for companies today is accessing the right skills and capabilities due to the lack of relevant qualified professionals. The challenge is acute because 94% of the respondents agree that attracting and retaining the best talent is key to growth (PricewaterhouseCoopers Bangladesh, 2019). Since the private sector in Bangladesh represents a major part of the economy, it contributes to wealth creation, employment generation, and foreign investment. Given the significance of the right kind of people needed to take the country forward, it is therefore critical that HR management has a vision for the required skills, appropriate training programs to hone

the needed skills, a proper career path for the people to be industry-relevant, ensuring their psychological well-being so they adapt themselves to the rapidly changing environment.

Based on the above grounds of the high speed of transition, the need for relevant skills, and the impact created by the family businesses, a study was done on the state of readiness of Bangladeshi family businesses in adopting I4.0 practices and the challenges they have in bringing about the changes. In-depth interviews with 18 such firms reveal the following:

Themes and subthemes emerging from the interviews

Theme	Description	Subthemes
1. Industry 4.0 in organizations	The factors that are enabling family businesses for transitioning into Industry 4.0	• Generation • Industry Impact • Technology Adoption
2. HR Strategies	Strategies taken by HR to enable the transition to Industry 4.0	• Recruitment & Selection • Training • Career Counselling
3. Covid 19	The impact on Covid19 on digitalization	• WFH • Hybrid • Impact on recruitment • Adoption of Technology
4. Challenges	Challenges faced by family businesses in transitioning to Industry 4.0	• Older employees • Fear of automation • General Counselling

Theme 1: Industry 4.0 in Organizations
Businesses are aware of the rapidly changing landscape due to the emergence of new technologies. However, as family businesses get older, leadership from the new generation is more instrumental in bringing out the changes. Additionally, the type of business also has a role to play. Businesses that had technology as a core product were seen to be more adept and advanced in their strategies to imbibe technology. Many businesses are already using technologies for everyday business management which range from Zoom, Skype, and Trello, to ERP software and Power BI to name a few.

Theme 2: HR Strategies
I4.0 is changing the way in which companies will be searching, selecting, recruiting and managing their human resources. Recruitment posts through social media and LinkedIn, computer-based assessments for new applicants in beginning or mid-level positions, and mandatory requirements on the knowledge of certain software or functions will become more widespread.

Training emerged as an important subtheme and organizations were already collaborating with other organizations for specialized training. Since new upgrades and versions of the technology are continuously being invented, training employees has also been made into a continuous process, so that the skill sets remain relevant.

Another key factor that should become mandatory for all organizations is career counselling. Given that graduates are living in a world of constant changes, dealing with changes also comes with its share of fear and anxiety. Although the companies mentioned they do have informal counselling sessions, it is also understood that going forward, it should become an integral part of HR policy, to help employees make better decisions in a sound state of mind.

Theme 3: The Impact of Covid-19
Although Work from Home (WFH) has been prevalent in many countries of the world even prior to the pandemic, for Bangladesh, it was a totally novel concept. All the participants agreed that they had to take specific decisions and devise strategies to manage WFH. It did come with its set of challenges but over time, companies also started to see the benefits. Now they have specific measures and many are happy with adopting the hybrid practice, blending both “from home” and “office” modes. This also calls for new skills and training for the employees. Companies also mentioned that they are clearly looking for more tech-savvy people in the future, given the pandemic has made them more dependent on technology.

Theme 4: Challenges Pertaining to I4.0
Since the effects of digitalization have a direct influence on work tasks and processes, it is expected that some work processes will change, some will become obsolete, and some new will be established. One of the key challenges with companies will have to deal with is “older employees”. Many of the family businesses in Bangladesh have employees working for generations. Although it sounds stereotypical, older people are more averse to technology and resist changes. In some instances, it became necessary to tag them with younger training and provide repeated training and one-on-one sessions. Additionally, there is an underlying fear of automation in the minds of many employees. This includes being scared of being laid off (which is a common notion regarding I4.0), being

fearful of new technology and being fearful of failure. Hence, counselling in the workplace will prove to be necessary, since it will help the employees cope better with the fast changes.

The impact of I4.0 along with Covid –19 adding the additional digital push has made companies focus on survival, recovery, and resilience. In order to attract the right kind of talent, companies also need to introspect about their requirements and practices and communicate that with the stakeholders. The government and the private sectors need to work collaboratively with educational institutions and training centers to ensure that graduates have industry-relevant skills. The government needs to open access to technology and make it inclusive to break down the traditional silos both within organizations and in the external supplier ecosystem so it helps and motivates employees, companies, and communities to continue moving forward. There is a lack of focus on career counselling as well as general counselling, both of which are important for both the companies and the employees. Career counselling is likely to better prepare the employee for the I4.0 whereas general counselling is required for their emotional well-being, which will also make them more resilient.

This paper is a summary of a recent research paper published by the authors

Khalil, Z.T. & Nahid, F. (2022). Family Businesses and their Transition to Industry 4.0: Human Resource Perspectives from Bangladesh. International Journal of Technology and Human Interaction: Special Issue Submission: The Transition from Industry 3.0 to Industry 4.0: Strategic Human Resource Management in the era of Digitalization. Vol. 18, Issue 7, Article 5, Publisher: IGI Global, USA DOI: 10.4018/IJTHI.306229

The Role of education and Training in Preparing Individuals for the Fourth Industrial Revolution: Challenges of Bangladesh

Nazneen Imam
Lecturer
Department of Economics

The Fourth Industrial Revolution, or 4IR, or "Industry 4.0," is mainly known as promoting the manufacturing sectors to the next level in digitization, in a few words, it refers to the integration of advanced technologies such as AI, IoT (the Internet of Things), etc. into humans' different activities level to improve the job performance. Referring to Mr. Klaus Schwab, founder and executive chairman of Geneva-based WEF, who coined the term "the Fourth Industrial Revolution" at the Davos meeting in 2016, these technological advancements are having a significant impact on how people, companies, and governments do their jobs, and this will lead to a societal transformation compared to the previous revolutions. In order to take advantage of these opportunities, it is important to prepare the individuals so that they can acquire the necessary knowledge and skills to achieve success in this rapidly changing tech-driven job market. In this case, the initiative should be taken to emphasise digital literacy so that they can make themselves comfortable with how to use the digital tool for effective communications through digital channels. This foundation can assist the country in actively participating in the country's digital economy, regardless of the nature of the industry.

Education and training have a significant role to play in preparing the individual for the Fourth Industrial Revolution. Aside from technological literacy, some soft skill areas are becoming increasingly important for the fourth generation revolution. Employers are also looking for people with strong communication skills, critical thinking, analytical abilities, creative thinking, problem-solving abilities, and so on. These skills are not automated; existing curricula need to integrate these contents.

On the other hand, professional development in terms of knowledge and skill is also important for employees who are already in the market. Since the fast-paced nature of industry 4.0 means that technology is changing very fast, continuous training and development are needed to stay relevant.

Bangladesh is now experiencing rapid economic growth and in order to foster this growth rate the country is now focusing on digital transformation. However, the country is facing some major challenges in this context; the labour force (both existing and new) is not well equipped to capitalise on these opportunities, and existing technological advancement needs to be accelerated to keep up with the revolution's pace.

Considering the education system of Bangladesh, the formal education curriculum is mainly focused on traditional subjects with less integration with technological, digital, and soft skills contents. This means that after completing the program, the graduates

have less technical and digital literacy. Focus and attention are needed while designing the curriculum, which will assist students in learning not only digital literacy and technical skills but also how technology helps us solve problems, think outside the box, generate new ideas, etc.

One of the emphasised goals in each education system is to increase and improve learners' thinking skills, and such takes place through the integration of relevant measurements, for example, the selection of appropriate teaching methods. Some research findings showed that an appropriate teaching method can create an effective learning environment that will strengthen the learning of the students. In the Education System of Bangladesh, this is a very critical area to address. An appropriate teaching method can create a favourable environment that will facilitate communication between student and teacher which will improve the ability to learn and think critically utilising technological knowledge and skills. Therefore, while adapting and designing the curricula in the formal education system, special consideration should be given to selecting appropriate teaching methods so that the use of technology in the classroom can enhance the learning experience by making them comfortable with the process of searching, collecting, gathering, and analysing information.

Assessing the intervention of digital technologies in our life, the researchers highlighted both opportunities and possibly long-lasting challenges that have profound ethical implications for decades to come. So education and training shouldn't only focus on teaching individuals the necessary skills for success; it must also educate individuals on the ethical and social implications of technology, such as cyber security, data privacy, and so on. Because people should know the difference between knowing how to do something in a tool-based approach and choosing to do something in a digital environment are not the same.

Without a doubt, education and training are playing an important role in preparing individuals for the fourth generation of revolutions in Bangladesh. Considering the urgent need for digital literacy, or relevant soft skill development the current education system should be revisited and promoted a continuous learning environment. In Bangladesh, a tech-based environment should be welcomed and nurtured so that individuals feel encouraged to seek opportunities to keep themselves more in touch with advanced technological knowledge and skills. Employers will take this into account when designing continuous learning and professional development programs. This will greatly benefit the overall workforce and help to ensure that Bangladesh is well-positioned for the future.

Selling Fourth Industrial Revolution Solutions to Garment Factories

Dr. Khandker Md Nahin Mamun
Assistant Professor
Department of Marketing and International Business

Sales and marketing professionals play a major role in creating the value of technological solutions that constitute the fourth industrial revolution. Appropriate training is needed for sales professionals to understand how these technologies work and add value to industrial buyers. Without skill development. Bangladeshi sales professionals can face serious challenges to explain how these technological solutions can enhance the competitiveness of Bangladeshi manufacturing companies. Explaining the value of the fourth industrial revolution can be a challenging task, particularly in the garments industry.

The ready-made garments (RMG) industry in Bangladesh boasts some of the best factories in the world. While these organizations often work with technologies that belong to the second and third industrial revolutions, the digital transformation toward embracing the 4th industrial revolution can be beneficial in the long run. The fourth industrial revolution (4IR) could help the RMG sector with big data analytics, autonomous robots, industrial internet of things (IIoT), cyber security, cloud computing, cyber-physical systems (CPS), simulation, and augmented reality (AR) services and other technologies. It is critical for any kind of manufacturer to accept and utilize new technologies in order to maintain competitiveness in the global market. Sales and marketing professionals with network relationships in the RMG sector are perfectly positioned to promote new technologies to manufacturers. The marketing mix model or 4P model can help sales professionals to sell 4IR solutions. Some of the important technologies are discussed in the following.

Big data analytics gathers reviews, and analyzes enormous volumes of data to find market trends, insights, and patterns that can assist businesses in making better decisions. When developing services of big data analytics related to real-time data processing, predictive analytics, and data visualization, solutions should be designed to meet the specific needs of the target customers like small businesses, large corporations, or government agencies.

Predictive analytics, quality analytics, supply chain analytics, operational analytics, and sales analytics can all be used by garment factories to forecast demand, identify defects, optimize inventory, and make sales decisions. Predictive Analytics can be used for demand forecasting and production planning, while quality analytics can identify defects and patterns in finished garments products. Supply chain analytics can help increase the visibility of the supply chain and optimize inventory. Operational analytics can help garments in Bangladesh monitor and optimize the performance of machines while on the other hand, sales analytics can predict sales patterns and make sales decisions based on that.

Autonomous robots are robots having unique features like autonomy, mobility, and versatility, that sets them apart from other robots in the market. The main concern is how the robot can help solve specific problems or improve operations in industries such as manufacturing, logistics, healthcare, and retail. Sales professionals need to explain the value of such robots in the production process since Bangladeshi manufacturers employ labors instead of robots.

Autonomous Robots can navigate the garment factory floor using sensors and algorithms, improving efficiency and reducing the need for human labor in materials handling, quality control, sewing, cleaning, and inventory management. Material handling robots transport raw materials, finished goods, and other items around the factory. Sewing robots can be used to perform repetitive sewing tasks, improving production speed and quality. Quality control robots can inspect finished garments for defects and inconsistencies. Inventory management robots can track inventory levels and locations, and cleaning and maintenance robots can clean and maintain the factory floor.

Industrial Internet of Things (IIoT) related services use smart sensors and actuators to enhance manufacturing and industrial processes. IIoT can help the garments to improve operational efficiency, reduce downtime, and enhance productivity at the same time it can be tailored to the specific needs of the customer's industry, such as manufacturing, logistics, or energy.

Cybersecurity services are specific security services that a company offers, such as network security, application security, cloud security, and threat intelligence. The main application of cyber security services is to keep the company's and the customer's sensitive information safe from the perpetrators. Network security can protect the factory's network from external threats by using firewalls, intrusion detection systems, and other security measures. Endpoint security can protect individual devices from cyber threats. Access management controls access to sensitive information and resources. Incident response can help the factory respond to cyber-attacks and other security incidents. Security training and awareness can help educate employees on cybersecurity best practices.

Cloud computing services such as Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS) have potential in Bangladesh. Cloud computing services can help the customer to reduce IT costs, increase scalability, and improve business agility. Cloud storage can allow garment manufacturers to store their data in a secure and accessible location, allowing them to save storage costs and improve data accessibility. Collaboration tools like video conferencing, document sharing, and project management software enable manufacturers to collaborate with designers, suppliers, and other stakeholders in real time. ERP systems can be used to manage and integrate various aspects of the garment manufacturing process, such as production planning, inventory management, and quality control. Cloud-based supply chain management can help manufacturers improve supply chain visibility, reduce costs, and improve efficiency.

Cyber-Physical Systems (CPS), can be offered as specific systems such as smart grids, autonomous vehicles, and industrial automation systems. CPS optimizes each system and improves the efficiency, safety, and performance of the customer's operations. Smart machines with embedded sensors and communication capabilities can help optimize the production process by detecting and reporting errors, predicting maintenance needs, and adjusting production parameters in real time. Automated material handling systems use robotics and automation to transport materials and products throughout the factory. Predictive maintenance uses sensors and analytics to predict when maintenance is needed on factory equipment before a breakdown occurs. Digital twins are virtual replicas of physical systems to identify potential issues and optimize performance. Real-time quality control uses CPS to monitor and analyze the quality of products as they are being produced to reduce waste and improve overall product quality.

Simulation and Augmented Reality (AR) related services like virtual training, interactive design, and visualization have opportunities in Bangladesh. Simulation and AR help the garment factory create a real-life scenario in the lab to identify problems and their solution.

Virtual prototyping allows designers to create and test 3D models of garment facilities before they are physically produced. Virtual fit testing can allow manufacturers to simulate how a garment will fit on a virtual model, reducing time and cost. Augmented reality training can be used to train workers on garment production processes. Virtual showrooms can allow manufacturers to showcase their garments to potential buyers in a virtual environment, and augmented reality product visualization allows customers to see how garments will look on themselves using their smartphone camera and AR technology.

Sales and marketing professionals need to develop skills to explain these technological solutions clearly outlining how these technologies may add value to a manufacturer. Apart from understanding the products, promotion is also an essential component of selling Fourth Industrial Revolution solutions to garment factories. One strategy for promoting these solutions can be to highlight their advantages and how they can address specific pain points. Another can be to provide case studies and success stories that demonstrate the advantages of these solutions. Finally, partnering with industry associations and trade publications can be an effective way to promote these solutions. By sponsoring events, contributing articles, and participating in industry forums, manufacturers can establish themselves as leaders in the garment manufacturing industry and build credibility with potential customers.

Bangladeshi sales professionals also need to understand the distribution aspect of the marketing mix. Direct sales involve engaging with potential customers directly, while value-added resellers (VARs) or system integrators are third-party vendors who specialize in providing solutions. E-commerce platforms can help manufacturers reach a wider audience and provide customers with easy access to their products and services, while industry associations and trade shows can generate leads and build relationships between manufacturers and potential customers.

The pricing of technological solutions for garment factories can be complex, as the costs associated with developing and implementing these technologies can vary widely. Value-based pricing, cost-plus pricing, and dynamic pricing can all be effective approaches to providing customers with fairly priced solutions and a clear return on investment. Value-based pricing involves setting prices based on the perceived value of the solution to the customer. Cost-plus pricing is based on the cost of developing and delivering the solution, while dynamic pricing involves adjusting prices based on market conditions, demand, and competition. Sales professionals need to understand the pain points in the value chain and offer the best price in a highly competitive RMG industry.

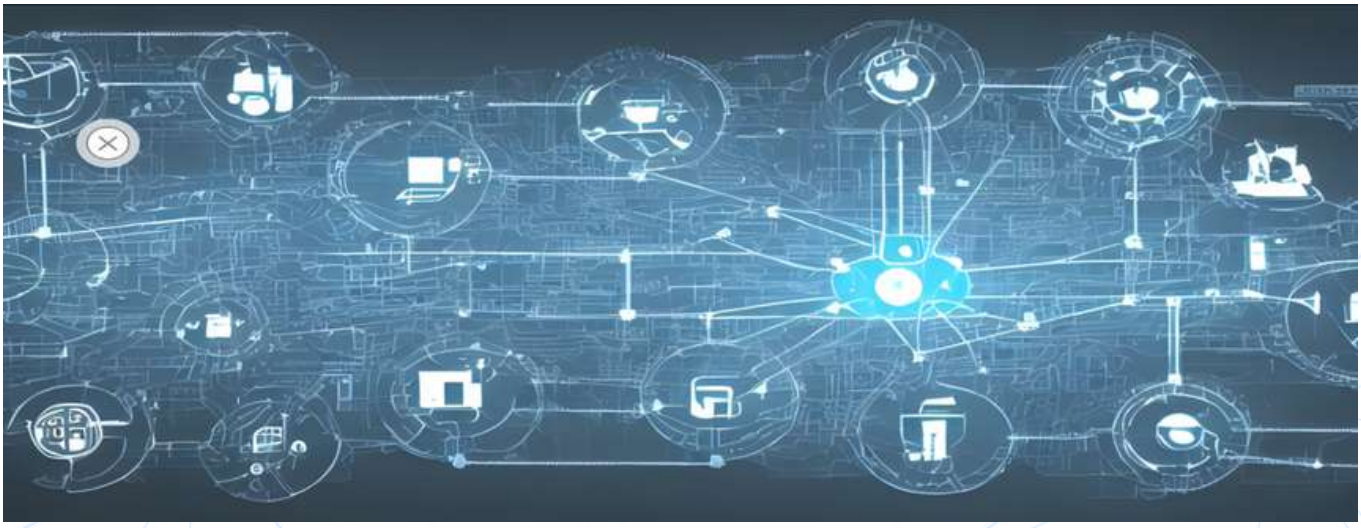
There is a tremendous need for sales and marketing professionals to understand the technologies that constitute the fourth industrial revolution and prepare themselves adequately to deliver value to Bangladeshi manufacturers when selling these technologies. Capable sales and marketing professionals can support manufacturers to adopt these advanced technologies. The role of technology sales professionals in the digital transformation of the RMG industry can be immense.

CULTIVATING THE CULTURE OF CONNECTIVITY: Extending the concept beyond the technology

Dr. Lamia Iftekhar
Associate Professor
Department of Electrical and Computer Engineering
North South University

As we progress into the Fourth Industrial Revolution (4IR), we experience an unprecedented merging of technology from diverse domains impacting our 'physical, digital, and biological [1]' universe. 4IR is characterized not only by the pervasive use of technology in all sectors of our lives ("every company may become a tech company"[2]), data-driven decision-making ("data is the new oil"[3]), and an extraordinary degree of automation and artificial intelligence ("By 2025, 85 million jobs will be displaced by automation but it will also create 97 million new roles"[4]), but also by the remarkable confluence of technology from a wide variety of knowledge areas and their seamless performance together. Internet-of-things, distributed and networked systems, cyber-physical systems, and digital ecosystems - these are but just a few terms that capture the scale and nature of connectivity within these technologies.

However, the concept of connectivity goes beyond the simple interconnection of devices and machines. It encompasses the idea of multi-agent systems, where multiple agents or entities interact with one another to achieve a collective goal, adapting and evolving as they interact with each other and their environment. This often results in a phenomenon called 'emergence' which denotes the rise of complex and novel patterns and outcomes that could have never been achieved by the individual agents. The most emerging and disruptive technology of the modern era avails the powerful phenomenon of emergence by utilizing the notion of connected systems implicitly. Moreover, different conceptual layers of connectivity are required to ensure incredible speed, as well as the level of robustness and efficiency with these technologies, are associated.



Concept of Connectivity Culture in 4IR.(This image has been generated by artificial intelligence to accompany this article as an abstract illustration. [7])

Connectivity is thus a critical component of the 4IR. But its application can extend far beyond the technology if we consider it as a philosophy in itself that can be leveraged to drive innovation, growth, and success in the 4IR. It requires us to connect ideas, concepts, and people among different sectors to truly reap the benefits of the rapid evolution of technology. In this article, we focus on three aspects to clarify the concept in the context of academia. In all these three aspects, the good practices associated with the technical paradigm of connectivity are transferrable, such as the practice of having extra communication edges or redundant channels for connections, frequent updates, and short intervals between feedback as well as characteristics to improve scalability, flexibility, and reliability.

Connectivity within Disciplines and Departments:
To flourish in the 4IR era, take an active part in the tide of innovation, or at least be among the first adopters, it is necessary to have systems and institutions that foster interdisciplinary skills. Gone are the days of isolated and single-minded specialization from the last century; rather, following the spirit of the wise philosophers and scientists from the Middle Ages and earlier, being a bit of a 'polymath' is back in fashion. Perhaps, it is more of a necessity even.

Several progressive academic institutes around the world have torn down the walls of departments to harbor collaborative environments among scholars and learners in different fields. Others have kept the departments as they are, but have updated their programs and personnel to include a wider variety of topics. For example, one of my alma maters – Dartmouth College in the USA, has only one School of Engineering but no departments within it. Instead, the institution has targeted a few programs and hired scholars for relevant strategic research areas. On the other hand, the University of Waterloo in Canada retains the distinct department structure but invests heavily in resources to bring domain knowledge out of each department's traditional streams. Consider its following three departments: the Department of Electrical and Computer Engineering, the Department of Mechanical and Mechatronics Engineering, and Applied Mathematics. Each department has its own large group or lab on Control Systems and has hired experts from that field to conduct research as well as support the other research areas of each of the departments. These institutes have identified that modern problems are often 'Complex Engineering Problems' that require interdisciplinary solutions.

It is a happy thought that many universities in Bangladesh are shifting towards complex engineering problems in their undergraduate programs as part of the implementation of Outcome-Based Education. That is just a start and is thus crucial to building a connected environment within academia or connecting a pre-existing organizational unit to ideas and topics outside its own. Departments can benefit from each other's strengths, laboratories, and resources and the less bureaucracy there is, in availing these resources among members of various departments, the higher the productivity and impact of that institution [5].

Connectivity with Community and the Youth:
In the era of 4IR, academicians cannot afford to isolate themselves in a university bubble, only teaching from textbooks published three decades ago or using notes from their own graduate school days. Not only does our research need to be well connected to the needs of the community and society we reside in, but our teaching also has to be refreshed very regularly, if not every semester. It is imperative to stay connected to the larger ecosystem surrounding our university through two-way communications such as, including outreach programs in schools, madrasas, and colleges, or, being connected to vocational training centers (which often have many complementary skill-building capacities that our four-year bachelor's students traditionally do not get). Our students, as well as ourselves, need to be aware of the socio-cultural environment we are in and shift at least some of our energy and efforts towards applying our expertise and knowledge to addressing local challenges, rather than simply delving into the hot topics of other countries just for the sake of doing research. Of course, we need to work on the hot topics and always strive to be at the forefront of innovation; however, it will be

sustainable in the long run if we do not have some of its applications connected to the context of Bangladesh. We must encourage our engineering students to develop the skills of surveying, interviewing, and consulting community stakeholders before designing or deploying their projects and devices and also taking their feedback. These skills cannot be considered inferior to their technical skills. Remaining connected to stakeholders consistently, taking feedback, and designing solutions based on it – this is a mindset that our students need to be attuned to.

In fact, we, as academics, should do the same with our students! For example, our undergraduate students of now and the immediate future (ages ranging from 15-25) are digital natives and embrace technology faster than us. They can be our resources immediately (as opposed to being potential resources, activated long after graduation) and their feedback can hasten the path to innovation and avoid giving into the trap of becoming a tech luddite as an academician who resents new technology partly out of fear and partly out of considering it as a younger generations' toy and thus beneath them. During the COVID era, including the students in the experimentation process and utilizing their feedback helped me avail the best of social media [6] as a learning platform to successfully engage and teach a larger number of my students that I could not have meaningfully impacted otherwise.

With disruptive technology such as ChatGPT and DeepMind, as well as shifting trends of easily available online resources, we must include our students in the dialogue. Our main contribution might be the act of instilling within them the base lessons of ethics and responsibility in utilizing tech but also trusting them to make wonderful uses. The old approach of presenting one-directional lessons as indisputable truths for students to internalize may not be effective in a world where information is readily available and diverse perspectives are easily accessible. We need to stay connected to our students, not to 'instruct' them, but to mentor them, guide them, and learn with them.

Connectivity between Academia, Industry, and Policymakers:
We talk about collaboration between academia and industry, but without including policy-makers in the mix – the true potential for such collaboration can never be attained. Without strong connectivity between this network of three groups of agents, any positive result would be muted or watered down due to the lack of at least the following – money, knowledge, or authority. Only a cohesive system of these three groups can make the best use of the wealth of resources each group has and truly and sustainably make us a significant player in the 4IR.

This calls for a culture beyond signing abstract MoUs and flower exchanges. Meaningful funding opportunities from the government for solving real problems incentivizing collaboration between industry and academia (both public and private sectors) can singlehandedly bring large impacts (assuming the funding opportunities are offered and conducted in a fair manner). Bringing guests lecturers over from the industry, easing the path of academicians being consultants, remaining connected with alumni and leveraging their strength to the fullest, tours and visits culminating in small shared projects – these are well incorporated in practice today in the top universities of our country, but they need to be scaled up for the impacts to be visible. There is no alternative for academia to actively take the industry's input for not only its research projects but also its teaching programs. At the end of the day, both should work towards keeping Bangladesh's SDG's in mind. Large interdisciplinary research centers (could be based on the premises of the academic partner, the industry partner, or even at the regional government partner office), go a long way in making these dreams come true. An excellent foreign example is the C2SMART Transportation Center of New York University, which has projects with the US Department of Transportation and many automotive industries. They team up to solve actual problems of the transportation sector of NYC, examples of which include developing protocols for reopening public transport after the COVID'19 closures as well as developing policies for deployments of autonomous vehicles. Not only do engineers of diverse domains work in the Center, but they also have researchers from business schools, economists, and scholars specializing in policy-making.

A tangible takeaway:
How can we build and instill a culture of connectivity, collaboration, and interdisciplinary activities in our country? From the top-down perspective, sincere and honest interest is needed among the decision-makers to genuinely stay connected with all relevant agents. This is best accompanied by building courage by each party to break unproductive status quos, keeping an open and accepting mind that emerging technology is here to stay, being cautious, and not afraid of the change, and working towards figuring out how the transition can be good and beneficial for us. It is also of ultimate importance to start the conversation early. From the bottom-up perspective, the goal should be to instill the philosophy of connectivity; communication, cooperation, and collaboration - among our students. Some of the most effective ways to establish that culture are through common courses for students from diverse programs, common activities, and common spaces. In fact, common spaces are very much needed for the exchange of ideas and discussion of solutions beyond artificial boundaries.

Students as well as their mentors need to mingle beyond their program batchmates, to sit, talk, and relax in open spaces, conducive to sounding out interesting ideas.
If I must suggest one single idea to accelerate the building of such a connected culture, - it would be the establishment of a makerspace. A great common space could be a well-maintained and accessible makerspace or machine shop which allows students and academicians to tinker, design, hack, and build; honing their creativity and critical thinking, skills that are in tremendous demand for the workforce of the 4IR era.

A makerspace or fabrication lab in a university provides space, tools, and resources for students to learn by doing, generate prototypes, socialize, and come up with design ideas and solutions. Ideally, students of the institution from any background should be able to use it provided they do some safety training. Additionally, such spaces can be sponsored or facilitated by the industry fulfilling the dimension of connectivity between industry and academia.
By partnering with industry and government agencies, makerspaces could focus on developing innovative solutions to local problems, such as improving transportation systems, developing sustainable energy sources, and enhancing healthcare. This would help create a culture of innovation and entrepreneurship, where young people are encouraged to connect with diverse peer talents, use their skills and knowledge to create new businesses, and solve pressing societal issues.

In conclusion, embracing the philosophy of connectivity is crucial to truly leverage the benefits of the fourth industrial revolution. It is a culture that extends beyond just connected systems and multi-agent networks. We need to start early and stay connected with the latest developments in technology to ensure that we can use them responsibly and ethically. As educators, it is our responsibility to equip the younger generation with the skills and competencies they need to thrive in a constantly evolving technological landscape and teach them (as we learn ourselves too) about how to use disruptive technology in a beneficial way. Let us strive to stay connected and work together to realize the full potential of the fourth industrial revolution for Bangladesh!

References:

1. Schwab, Klaus. The fourth industrial revolution. Currency, 2017.
2. J. Chambers. CNBC Discusses Tech Trade with John Chambers, former CISCO CEO. 2021https://www.cnbc.com/video/2021/05/05/every-company-will-become-a-tech-company-says-former-cisco-ceo.html
3. C. Humby, "Data is the new oil," 2006. [Online]. Available: https://www.theguardian.com/technology/2010/aug/23/data-new-oil-digital-economy. [Accessed: Mar. 4, 2023].
4. World Economic Forum. The Future of Jobs Report 2020. 2020 https://www.weforum.org/reports/the-future-of-jobs-report-2020
5. S Jaschik, What if there were no academic departments? [Opinion]. Inside Higher Ed. 2020 https://www.insidehighered.com/views/2020/08/18/what-if-there-were-no-academic-departments-opinion
6. S. Amir, M. S. Kamal, M. T. Shahria and L. Iftekhar, "Facebook's Social Learning Group for Undergraduate Engineering Courses: A Case Study of Emergency Remote Teaching Amid Large Digital Divide," 2020 IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE), Takamatsu, Japan, 2020, pp. 235-242, doi: 10.1109/TALE48869.2020.9368316.
7. AI Image Generator API of DeepAI.Org.Image prompt used: "culture of connectivity between industry and academia for fourth industrial revolution". Image generated on March 4th, 2023.

Fourth Industrial Revolution in China

Dr. Saleh Shahriar
Assistant Professor
Department of History and Philosophy (DHP)
North South University
Dhaka, Bangladesh

1. Introduction:

China's economic rise began in 1978 when the policy of market opening started to reform its existing socialist planned economy. The issue known commonly as the "Four Modernization" was a prioritization of goals and activities. The "Four Modernization" program could be identified as a well-designed visionary agenda for China's economic development. The agenda was set by the then-Chinese charismatic leader Deng Xiaoping who aimed to strengthen the fundamental fields of (i)agriculture, (ii)industry, (iii) defense; and (iv) science and technology in China. Understanding China's economy is increasingly important for enabling greater international collaborative activities as China takes its central stage in the global arena. The economic rise of China is a hotly debated issue in the world. A large number of Chinese companies pay more attention to developing technologies in 5G, artificial intelligence, big data, robotics, blockchains, automation, new communication satellites, nanotechnology, as well as new energy and batteries for global digital consumption. Digitization is, thus, one of the most important dimensions of the Chinese economy. At present, China has become a leader, rather than a follower, in the fourth industrial revolution (4IR). The term Industry 4.0 also refers to the 4IR. In fact, the 4IR that the world is currently undergoing was started with the First Industrial Revolution (1IR) in England in 1760 by means of a systematic and organized plundering of resources from the then-colonized Bengal to the United Kingdom (UK).

Against this backdrop, the objective of this article is to explain a plethora of economic reforms and sectoral developmental issues relating to the 4IR in China. The write-up is important for several reasons. First of all, it is based on my personal life experiences in China. I visited many Chinese cities and rural areas for research and work. Secondly, I have used a variety of secondary sources like books, articles, newspaper pieces, working papers, and reports. So, the article will be useful to the participants of the summit. At the same time, it will be helpful to bring about some innovative ideas to the fore. The students, researchers, and industry practitioners will also get invaluable fresh insights from this contribution.

The article is organized into three sections. A brief background is provided in the first section. It sets the context, objective, and methodology of the article. Then, several aspects of China's 4IR in connection with its digital economy are explored in the second section. This section is thematically structured into some sub-sections. Finally, the concluding remarks are made in the third section.

2. 4IR and Digital Economy in China

We are living in a time of real change and transformation. Technological innovation is the central feature of the 4IR. 'Innovation' is here a main concept that focuses on local priorities, relying on local assets and investing in local solutions. This local focus has enabled us to not only overcome the 'tyranny of experts but also to identify and engage with citizen innovators. A number of key aspects of China's 4IR are discussed in the following sub-sections.

2.1.Access to Internet

China is the most populous country in the world. It has a population of 1.5 billion, slightly ahead of India. A large number of populations allowed China to secure a massive number of internet users both in domestic and external markets. The number of broadband internet users in China surged in the late 2000s, rising from 298 million people in 2008 to 828.51 million in 2018. The percentage of young internet users in China is higher than in the US, with people aged 29 or below accounting for 54% of all users. Smartphones also play a more crucial role in China, where as many as 25% of internet users access the internet only from smartphones, compared to only 11% in the U.S.

2.2. Banking Reforms

Banking is a vital sector of China's economy. The digital revolution has brought extraordinary improvement in the banking sector. Automation and artificial intelligence, known as new digital technologies, have altered the banks' organizational structure and performance. Due to the diffusion of digital technologies, the capacity of the banking sector has strengthened. Bank financing positively and significantly affects technological innovation in China. Bank financing enables firms to decrease the risk of innovative projects and hence, positively affect technological innovation. Moreover, through increased credit supply and improved screening of borrowers, the banking sector can stimulate innovative activities in the country. China has developed a cashless payment method with software devices like WeChat and Alipay. Another important aspect is green banking. It's an environment-friendly bank management system.

2.3.E-Governance

E-government has made remarkable progress in China and played a major role in improving administrative institutions and the provision of public services. E-governance is the efficient application of information technologies (ICTs) in public-private institutions and improving service delivery systems. Technology is, no doubt, making the life of people easier, more comfortable, and enjoyable.

2.4.Tourism and Hospitality

In China, the focus is on how new technologies can shape the tourism industry and tourism experiences. The Coronavirus pandemic (COVID-19) has caused colossal damage to the worldwide tourist sector. Tourism is often regarded as a key driver of growth in emerging economies. Tourism has been incorporated in the five-year national social and economic plans since 1986. Tourism was a cornerstone of the Chinese economy in the 2011 five-year plan. As a result, Chinese outbound tourism rose from ten million in 2000 to 130 million in 2017, spending US$115.29 billion[3]. The value of China's overseas investment and construction combined has exceeded USD 1.6 trillion. To attract international tourists, China aims to build some smart cities such as Nanjing, Zhuhai, Shenzhen, Hangzhou, Chongqing, Guangzhou, Beijing, Tianjin, Shanghai, Wuhan, Xian, and Chengdu

2.5.Digital Silk Road

The Belt and Road Initiative (BRI) was launched in 2013. It is made up of two physical parts, namely, the Silk Road Economic Belt and the 21st-Century Maritime Silk Road – the strategic pairing of ports and land-based transport with complementary infrastructure that essentially connects China with Europe, Asia, and South East Asia. The BRI follows a worldwide pattern of regional integration and globalization. The China Construction Bank (CCB) is a major state-owned lender in a series of projects under the BRI. The projects involve railways, roads, water, and energy. In 2015, CCB Chairman Wang Hongzhang commented, "The Belt and Road initiatives have not only brought opportunities for the development of local economies and Chinese companies' exploration of the global market, but they also bring huge business resources for Chinese banks to internationalize their operations".

2.6 . Supply Chain Management Along the Belt and Road Initiative

The Belt and Road Initiative (BRI) identified the development potential of digital integration and the interface between oceans and rail logistics and have introduced the smart port ecosystem. The BRI aims to establish cooperation in five major areas: trade and investment facilitation; policy coordination; infrastructure development and connectivity; financial coordination and integration; and people-to-people ties and connectivity[2]. Globally, COVID-19 has led to a massive change in market demand and introduced unexpected stresses on agricultural, industrial, and food systems. China's agriculture has achieved rapid development. Chinese total grain output reached 60 million tons in 2012, twice the amount in 1978. From 2015 to 2020, the grain yield exceeded 65 million tons for six years.

2.7 . Higher Education

Higher education is more accessible, to more people, in more places, and in more ways than ever in human history. All developing countries suffer an ongoing loss of educated talent, typically referred to as a brain drain. To address this problem, China has launched the Thousand Talents Plan or Thousand Talents Program or Overseas High-Level Talent Recruitment Programs in the scientific and educational fields. Talent will, in fact, represent the critical factor of production, leading to a job market increasingly segregated into 'high-skill/high-pay' and 'low-skill/low-pay' segments, with the middle hollowed out. Implicitly, then, education and training in the 4IR-oriented future should aim to develop in learners high-level, high-value-adding skills. The future, at least the near future, is one that requires a skilled workforce. According to the World Economic Forum, the skills needed are intellectual and emotional in nature, including solving complex problems, critical thinking, and coordinating with others. Some scholars argue that the widespread implementation of a robotic economy will lead to a new economic and social landscape in which there will be winners and losers. Table 1 shows the top ten skills that are needed to cope with the present age of the 4IR.

Table 1: Top ten job skills

Rank	Skill
1	Complex problem solving
2	Critical thinking
3	Creativity
4	People management
5	Coordinating with others
6	Emotional intelligence
7	Judgement and decision making
8	Service orientation
9	Negotiation
10	Cognitive flexibility

Source: Compiled by the author

3. Conclusion

The rise of China is not a myth but a global reality. China has become a truly global leader in the areas of industrial development and scientific progress. The developing countries are, however, mostly deficient in technological skills and scientific experiments. The policymakers and leaders of the poor and developing countries including Bangladesh may, therefore, develop some innovative projects to work collaboratively with the Chinese company experts, industrialists, scholars, students, bankers, farmers, and scientists. This kind of innovative project could help facilitate the transfer of knowledge, resources, and skills. Chinese investments and technical aid are required in many poverty-ridden and conflict-prone countries in Asia and Africa for long-term research and development (R&D).

Industrialized Revolution From the lens of Liberal Arts: To What Extent Students from Arts and Humanities Background Can Enhance their Growth in the Current Job Market?

Nasrin Pervin,
Senior lecturer, Department of English and Modern languages
North South University

As industries continue to evolve in the face of automation and other technological advances, the job market is changing rapidly. It is critical for university students, including those from arts and humanities backgrounds, to stay up-to-date on these changes to effectively navigate the job market and build a successful career. Job opportunities for teachers at all levels are projected to increase in the coming years, which may be a viable option for graduates with an arts and humanities background. Additionally, it is important for students to understand job market trends and student outcomes, which can be found through resources such as career and placement centres in different universities. However, building a successful career in today's job market requires more than just finding an open position. Employers are increasingly seeking candidates with strong core competencies, including career and self-development, communication, critical thinking, equity and inclusion, leadership, professionalism, teamwork, and technology. Students from arts and humanities backgrounds can develop these competencies through internships, volunteering, or other hands-on experiences in their field of interest. Additionally, a degree in humanities offers a variety of career paths, including writing, psychology, and marketing, among others.

The job market is constantly changing, and it is important for universities to provide education and resources to help students from arts and humanities backgrounds thrive in this evolving landscape. Here are some ways that universities can nurture and build students from arts and humanities backgrounds for the potential scope of employment:

Foster cultural diversity: With the rising diversity in the classroom, it is important for universities to provide an inclusive learning environment that recognizes and values different cultures. This can help students develop skills in cross-cultural communication and collaboration, which are valuable in many industries.

Connect education to well-being: Universities can help students connect their education to components of well-being, such as purpose in life, personal growth, and positive relationships. This can help students see the relevance and meaning of their education, which can increase their motivation and engagement in learning.

Provide career resources and guidance: Universities can offer career services, such as counselling, workshops, and job fairs, to help students explore career options and prepare for the job market. They can also offer mentorship programs, where students can connect with alumni or industry professionals for guidance and advice.

Emphasize transferable skills: Arts and humanities graduates possess a wide range of transferable skills, such as communication, teamwork, research, analysis, and creativity. Universities can emphasize these skills in the curriculum, and help students articulate and market these skills to potential employers.

Encourage experiential learning: Universities can offer experiential learning opportunities, such as internships, research projects, or community service, to help students gain practical experience and apply their skills in real-world settings. This can also help students develop a professional network and gain exposure to different industries.

Moreover, with the ongoing industrial revolution, students with backgrounds in arts and humanities may wonder how they can build their careers in this changing landscape. The good news is that humanities graduates are just as employable as their counterparts in the sciences. Additionally, a degree in humanities offers a variety of career paths to choose from various subjects. Here are some ways that university students from arts and humanities backgrounds can build their careers in the industrialized revolution:

Develop transferable skills: Humanities majors can develop valuable transferable skills, such as critical thinking, problem-solving, communication, and creativity. These skills are highly sought after in the current job market and can be applied in a wide range of industries.

Explore emerging industries: While some traditional industries may be declining, new industries are emerging. Students with humanities backgrounds can explore emerging fields such as digital media, content creation, user experience design, and data analysis, which rely on skills such as research, analysis, and communication.

Pursue further education or training: In some cases, further education or training may be necessary to enter a specific field. For example, a degree in arts and humanities can be a solid foundation for a career in marketing, but additional training in digital marketing may be required to keep up with changing technologies and trends.

Leverage networking and internships: Building a professional network can be a valuable tool for finding job opportunities and advancing your career. Students can participate in internships or other experiential learning opportunities to gain hands-on experience and make connections in their field.

While the job market is changing rapidly with the rise of automation and other technological advances, university students from arts and humanities backgrounds can still build successful careers by staying informed of job market trends and student outcomes, and by developing core competencies sought by employers through internships and other hands-on experiences. Ultimately, students should focus on building a strong foundation of competencies that broadly prepare them for success in the workplace and lifelong career management. In line with the discussion, universities can nurture and build students from arts and humanities backgrounds for the potential scope of employment by fostering cultural diversity, connecting education to well-being, providing career resources and guidance, emphasizing transferable skills, and encouraging experiential learning. By offering a well-rounded education and practical resources, universities can help students from arts and humanities backgrounds thrive in the changing job market. Furthermore, university students with arts and humanities backgrounds can build their careers in the industrialized revolution by developing transferable skills, exploring emerging industries, pursuing further education or training, and leveraging networking and internships. By taking a proactive approach and staying adaptable, humanities graduates can find fulfilling and successful careers in today's job market.

G&G
Gadget & Gear

Authorised Reseller

A Premium Multi-Branded
Retail for Gadgets & Accessories

Our Products

- PHONES AND TABLETS
- ACCESSORIES
- MACBOOK/LAPTOP
- CAMERA/GIMBAL

Our Brands

Apple, SAMSUNG, vivo, oppo, spigen, mi, OnePlus, realme, dji, TUCANO, JBL, speck, HUAWEI, belkin, amazfit, Beats, UAG, amazon, SanDisk, SONY

gadgetandgear.com | GadgetnGear | gadgetandgear_bd | 09678666777

Corporate Hotline: 01318-236985

The prospects of 4th industrial revolution and the path forward for Bangladesh

Zulkarin Jahangir, Tanjim-Ul-Islam, Sadab Rahman Chowdhury, Suravita Basak

The Fourth Industrial Revolution refers to the latest phase of the technological revolution that is characterized by the integration of digital technologies, such as artificial intelligence, the Internet of Things (IoT), cloud computing, and big data, into every aspect of human life and the economy (What Is Industry 4.0 and How Does It Work? n.d.). The Fourth Industrial Revolution is transforming our way of life and work in a way that is uncertain to predict what lies ahead. So it is becoming increasingly important for individuals and organizations to stay up-to-date with the latest technologies and skills (Bühler et al., 2022).

The jobs that are predicted to be most in demand in the future days are data analysts and data scientists, artificial intelligence (AI) and machine learning (ML) specialists, digital marketing specialists, internet of things (IoT) experts, and cybersecurity specialists. To make people ready for these jobs, training programs have to be designed accordingly. Some possible future training opportunities that can help prepare individuals for the 4IR are artificial intelligence (AI) training, data science and analytics training, cybersecurity training, digital marketing training, robotics and automation training, and entrepreneurship training. There are also certain skill sets that will help to ease the wave of 4IR. Soft skills like creativity, complex problem-solving, critical thinking, communication, emotional intelligence, leadership, and people management are least likely to be replaced by robots. As new job opportunities are being created due to technology, technical or hard skills like computer programming, coding, project management, financial management, scientific tasks, and technology-based skills are essential to have. To better navigate the changing job environment, entrepreneurship skills can prove to be helpful (Halawa, 2022).

Artificial Intelligence (AI) Training: Artificial Intelligence (AI) training is designed to teach individuals the skills needed to become a machine learning engineer, including data preprocessing, deep learning, building intelligent applications and solutions, and model deployment. Some programs are designed to teach business professionals how to leverage AI in their work, including machine learning, natural language processing, and computer vision.

Data Science and Analytics Training: The fundamentals of data science, including data analysis, statistical inference, data manipulation, visualization, and regression are taught in the data science and analytics training programs. Programs are designed to teach individuals the practical skills needed to develop and deploy data-driven solutions, including machine learning, deep learning, and data visualization.

Cybersecurity Training: Cybersecurity trainings provide a comprehensive understanding of cybersecurity, including security principles, risk management, cybersecurity technologies, threat detection, incident response, and vulnerability management. Business professionals can learn how to implement cybersecurity strategies and technologies in their organizations.

D**igital Marketing Training:** Digital marketing training is designed to teach skills needed to become a digital marketer, including social media marketing, SEO, Google Ads, analytics, and mobile marketing. These programs teach individuals how to develop a digital marketing strategy that aligns with their business goals.

Robotics and Automation Training: Such programs provide a comprehensive understanding of robotics, including topics like robotic kinematics, dynamics, and control, designing and building autonomous robotic systems, including topics like robotic perception, planning, and control. These programs also teach the principles of industrial automation, including topics like programmable logic controllers (PLCs), sensors, and human-machine interfaces.

Entrepreneurship Training: 4IR is revolutionizing industries such as finance, manufacturing, supply chain management, and healthcare. Entrepreneurship training should provide knowledge on how to integrate AI into their businesses and create AI-driven products and services, how to create blockchain-based solutions and leverage the unique features of blockchain to create new business models, how to create and implement digital transformation strategies that can help businesses stay competitive in the 4IR, how to create and implement cybersecurity strategies and develop cybersecurity products and services, how to create and implement green business models and develop sustainable products and services.

All these changes in skills and education can feel daunting, but convenient training and skills development programs can improve the condition of people with at-risk jobs and help to prepare the future workforce (Halawa, 2022).

Case studies of developed country initiatives regarding Fourth Industrial Revolution (4IR) related training programs:

Singapore:
Singapore has been at the forefront of 4IR development, focusing on digital transformation, innovation, and technology adoption to boost productivity and economic growth. The government established the Smart Nation Initiative in 2014 to drive digital transformation and enhance the quality of life for citizens. (SMART, n.d.)

To develop a workforce capable of handling 4IR technologies, Singapore invested in training programs such as SkillsFuture, which provides citizens with lifelong learning opportunities and professional development courses. Additionally, the government launched the TechSkills Accelerator (TeSA) initiative, aimed at upskilling and reskilling the workforce in the areas of data analytics, cybersecurity, software development, and AI. (TechSkills Accelerator (TeSA), n.d.)

To support 4IR innovation, Singapore established several research institutes, including the Singapore-MIT Alliance for Research and Technology (SMART) and the Advanced Remanufacturing and Technology Centre (ARTC), to develop cutting-edge technologies and provide training programs for professionals. (Advanced Remanufacturing and Technology Centre (ARTC), n.d.)

China:
China has made significant progress in 4IR development, focusing on AI, robotics, and the Internet of Things (IoT) to transform its economy and enhance its global competitiveness. The government established the Made in China 2025 plan in 2015 to drive innovation and technological advancement in the manufacturing sector. (National Engineering Laboratory for Big Data Analytics and Applications, n.d.)

To develop a skilled workforce capable of handling 4IR technologies, China launched several training programs, such as the National Engineering Laboratory for Big Data Analytics and Applications, which provides training courses in big data analysis and AI. Additionally, the government established the National Demonstration Vocational College for Intelligent Manufacturing, which trains students in robotics, automation, and other 4IR-related skills. (National Demonstration Vocational College for Intelligent Manufacturing, n.d.)

To support innovation, China established several research institutions, including the Chinese Academy of Sciences and the Chinese Academy of Engineering, which focus on developing cutting-edge technologies and providing training programs for professionals. (Chinese Academy of Sciences, n.d.)

USA:
The USA has been a global leader in 4IR development, focusing on AI, robotics, and automation to transform industries and enhance economic growth. The government established the National Artificial Intelligence Research and Development Strategic Plan in 2016 to promote research and development in AI. (Evaluation of the TechHire and Strengthening Working Families Initiative (SWFI) Grant Programs, n.d.)
To develop a skilled workforce capable of handling 4IR technologies, the USA launched several training programs, such as the Department of Labor's TechHire initiative, which provides training and job placement services for workers in the tech industry. Additionally, the government established the Manufacturing USA program, which brings together industry, academia, and government to develop advanced manufacturing technologies and provide training programs for professionals. (Advanced Manufacturing Technology, n.d.)

To support innovation, the USA established several research institutions, including the National Institute of Standards and Technology (NIST) and the National Science Foundation (NSF), which focus on developing cutting-edge technologies and providing training programs for professionals. (National Institute of Standards and Technology, 2023)

South Korea:
South Korea has been a leader in 4IR development, focusing on AI, robotics, and the IoT to enhance productivity and economic growth. The government established the Fourth Industrial Revolution Strategy Committee in 2016 to drive innovation and technology adoption.

South Korea launched several training programs to develop a skilled workforce capable of handling 4IR technologies, such as the Global Industry Academy (GIA), which provides training in advanced manufacturing technologies and the Internet of Things (IoT). Additionally, the government established the National IT Industry Promotion Agency (NIPA), which provides training in areas such as cybersecurity, AI, and data analytics. (National IT Industry Promotion Agency (NIPA), n.d.)

To support innovation, South Korea established several research institutions, including the Korea Institute of Science and Technology (KIST) and the Electronics and Telecommunications Research Institute (ETRI) (Electronics and Telecommunications Research Institute (ETRI), n.d.), which focus on developing cutting-edge technologies and providing training programs for professionals. (Http, n.d.)

Germany:
Germany has been at the forefront of 4IR development, focusing on AI, automation, and the IoT to enhance productivity and economic growth. The government established the Industry 4.0 initiative in 2011 to drive innovation and technological advancement in manufacturing.

To develop a skilled workforce capable of handling 4IR technologies, Germany launched several training programs, such as the Industry 4.0 Competence Centre, which provides training in areas such as automation, machine learning, and IoT. Additionally, the government established the Digital Hub Initiative, which supports the development of digital innovation hubs across the country, providing training and networking opportunities for professionals. (Twelve Hubs, One Digital Network, n.d.)

To support innovation, Germany established several research institutions, including the Fraunhofer Institute for Industrial Engineering (IAO) and the German Research Center for Artificial Intelligence (DFKI), which focus on developing cutting-edge technologies and providing training programs for professionals. (Fraunhofer Institute for Industrial Engineering IAO - Fraunhofer IAO, n.d.) (German Research Center for Artificial Intelligence – Human-centric AI, 2023)

In conclusion, all these countries have taken significant steps towards 4IR development and have implemented various training programs to upskill and reskill their workforce. These initiatives have helped the countries to enhance their global competitiveness, increase productivity and economic growth, and create job opportunities in emerging fields.

Here are some steps Bangladesh can take to develop for 4IR and grow the necessary skills:

1. Establish a National 4IR Strategy: Bangladesh needs to develop a comprehensive strategy for 4IR development, focusing on areas such as AI, robotics, and the IoT. The strategy should include policies and initiatives to promote innovation, investment, and technology adoption in the country.

2. **Invest in Education and Training:** Bangladesh should invest in education and training programs to upskill and reskill its workforce. The government can work with universities, vocational institutions, and industry associations to develop courses and training programs that cover emerging technologies and skills such as data analysis, coding, and automation.

3. **Promote Research and Development:** Bangladesh should establish research and development centers that focus on 4IR technologies. These centers can collaborate with universities and industry partners to develop new products and solutions that can be commercialized and contribute to the growth of the country's economy.

4. **Foster Public-Private Partnerships**: Bangladesh should encourage public-private partnerships to promote 4IR development. The government can work with industry partners to establish research and development centers, innovation hubs, and training programs that focus on 4IR technologies.

5. **Promote Entrepreneurship:** Bangladesh should encourage entrepreneurship and innovation in the 4IR field. The government can provide funding and support for startups that focus on developing 4IR technologies and solutions. (Fourth Industrial Revolution, n.d.) (n.d.)

References:

Advanced Manufacturing Technology. (n.d.). Manufacturing USA. Retrieved March 11, 2023, from https://www.manufacturingusa.com/key-initatives/advanced-manufacturing-technology-leadership

Advanced Remanufacturing and Technology Centre (ARTC). (n.d.). 03. Advanced Remanufacturing and Technology Centre (ARTC). Retrieved March 11, 2023, from https://www.a-star.edu.sg/artc

Bühler, M. M., Jelinek, T., & Nübel, K. (2022). Training and Preparing Tomorrow's Workforce for the Fourth Industrial Revolution. Education Sciences, 12(11), Article 11. https://doi.org/10.3390/educsci12110782

Chinese Academy of Sciences. (n.d.). Retrieved March 11, 2023, from https://english.cas.cn/

Electronics and Telecommunications Research Institute (ETRI). (n.d.).

Evaluation of the TechHire and Strengthening Working Families Initiative (SWFI) Grant Programs. (n.d.). DOL. Retrieved March 11, 2023, from http://www.dol.gov/agencies/oasp/evaluation/currentstudies/TechHire-and-trengthening-Working-Families-Initiative

Fourth Industrial Revolution. (n.d.). World Economic Forum. Retrieved March 11, 2023, from https://www.weforum.org/focus/fourth-industrial-revolution/

Fraunhofer Institute for Industrial Engineering IAO - Fraunhofer IAO. (n.d.). Retrieved March 11, 2023, from https://www.iao.fraunhofer.de/en.html

German Research Center for Artificial Intelligence – Human-centric AI. (2023, March 7). https://www.dfki.de/en/web

Halawa, A. (2022, January 31). Preparing for the Fourth Industrial Revolution: Top Skills and Careers. Al-Fanar Media. https://www.al-fanarmedia.org/2022/01/preparing-for-the-fourth-industrial-revolution-top-skills-and-careers/

Http://eng.kist.re.kr:181/eng/index.do. (n.d.). KIST Korea Institute of Science and Technology. Retrieved March 11, 2023, from http://eng.kist.re.kr:181/eng/index.do

National Demonstration Vocational College for Intelligent Manufacturing. (n.d.).

National Engineering Laboratory for Big Data Analytics and Applications. (n.d.).

National Institute of Standards and Technology. (2023, March 10). [Text]. NIST. https://www.nist.gov/

National IT Industry Promotion Agency (NIPA). (n.d.).

SMART. (n.d.). SMART. Retrieved March 11, 2023, from https://smart.mit.edu/

TechSkills Accelerator (TeSA). (n.d.). Infocomm Media Development Authority. Retrieved March 11, 2023, from https://www.imda.gov.sg/how-we-can-help/techskills-accelerator-tesa

Twelve Hubs, one digital network. (n.d.). Retrieved March 11, 2023, from https://www.de.digital/DIGITAL/Redaktion/EN/Dossier/digital-hub-initiative.html

United Nations Development Programme. (n.d.). Harnessing Frontier Technologies for Sustainable Development.

What is Industry 4.0 and how does it work? | IBM. (n.d.). Retrieved March 11, 2023, from https://www.ibm.com/topics/industry-4-0

Digitalizing Sea Ports in Bangladesh: Harnessing Fourth Industrial Revolution to Facilitate Smart Port Management

Mahnaz Aftabi Atique
Lecturer, Department of Economics
North south University

Being a coastal state, the sea line of communication plays a vital role in Bangladesh's economy in terms of regional and international connectivity. In the fiscal year 2021-2022, approximately 92% of international exports and imports in Bangladesh were handled by its seaports as it is the most economic mode of international transportation. Interestingly, because of its geographical location, seaports in Bangladesh also have the potential to provide an international maritime gateway to its landlocked neighbors - Nepal, Bhutan, and the North Eastern Region of India. Therefore, Bangladesh can use its seaport facilities to its strategic advantage by forming an "integral hub of a multimodal network" in South Asia.

Currently, Bangladesh has two fully functional international sea ports – Chittagong and Mongla. According to Chittagong Port Authority (CPA), the port earned BDT 10.75 billion profit in the year 2022 after handling 4361 ships and processing 11,96,65,682 metric tons of open cargo. On the other hand, Mongla Port earned BDT 3.69 billion and processed 119,44,608 metric tons of open cargo. Two other seaports at Payra and Matarbari are still under construction and offer commercial services on a limited scale. Once they become fully functional, Bangladesh is expected to become a central hub of trade and business in South Asia given its geographic placement and deep-sea port capabilities.

However, despite their enormous potential and international interest, ports in Bangladesh are not able to process the ever-growing pressure of international consignments. According to Port Performance Index 2021 developed by World Bank, Bangladesh ranks the lowest in terms of container handling efficiency in Asia. Chittagong Sea port ranks 341 out of 370 ports while Mongla port did not even make the list. According to the Asian Development Bank (ADB) projection, Chittagong Port Authority is losing BDT 90 million every month in customs revenue earnings alone due to container traffic, administrative lags, and lengthy paperwork procedures. Due to institutional mismanagement, inadequate cargo terminals, labor shortage, and sluggish administrative coordination, both Chittagong and Mongla ports are losing potential business. On the other hand, the cost of business is going up due to port processing delays, thus hindering the international and domestic supply-chain network and costing Bangladesh its competitive edge in the global platform.

In this circumstance, digital transformation of the seaports can ensure efficiency and transparency of operations. Port digitalization targets 4 main aspects of the 4th Industrial Revolution that emphasize capacity building as well as enhancing the productivity of existing economic resources. The 4 main aspects are:

1. **Process Automation:** Port automation can be defined as a replacement of manual operations through automated equipment and technologies that can be used for port traffic control, trade flows, and payment procedures. Automated processes can be applied to log the entry and exit of ships and cargo, scan containers, verify documents, and collect docking and customs payments.

Automation can also mitigate manual errors and delays such as mistakes in data entry, misplacement of documents and rent-seeking tendencies, etc. Ports that have shifted to automated operation have reported up to 30% efficiency gain in ship management which means cost-saving and resource optimization. Bangladesh has partially started the payment automation process. From the year 2022 onwards, it is now mandatory to pay export-import-related duty tax and port fees and charges online via Chittagong custom house. The CPA also recently introduced electronic submission of delivery orders as part of its efforts to introduce paperless port services in subsequent phases. Process automation will be immensely helpful to eliminate institutional mismanagement and ensure transparency of port operations.

2. Decision-Making Automation: Decision-making automation enhances port management efficiency by ensuring a data-driven decision-making process. Automated data collection and data sharing via intra-port and ship-to-port correspondence as well as port-to-administration and inter-port communication ease the coordination between stakeholders in real-time. In addition, since multiple sources of data are combined for forecasting; it ensures better predictability. Decision-making automation can successfully manage inbound and outbound cargo movement, reduce waiting time and maintain time schedules for ships by coordinating all other vessels' sea voyages and the port approach timing. The automated decision-making is being widely implemented in developed countries for terminal management. It assigns and schedules vessels to avail docking and loading capacity. Stowage planning is used to automatically decide the loading and unloading sequence of container based on the arrival time of ships and the type of cargo it is carrying. If the ship is carrying perishable goods like agriculture products or medicines that need to be kept at a certain temperature, the terminal with relevant services is automatically assigned using data collected in advance. Advanced technologies such as weather monitoring satellites, drones, and submarines can analyze weather reports and provide automated signals that will ensure ship and port safety in times of natural disasters

3. **Robotics:** Introducing robotics in port management can significantly improve workplace safety and time management as it automates repetitive and physically challenging tasks. Robotic devices can be used to load and unload cargo from sea vessels and can be used to transport cargo within terminals. Robots can also be used for keeping track of port inventory significantly reducing incidences of pilferage and misplacements. Advanced robotics technology can be used to inspect and maintain port safety especially where there is the hazard of toxic chemical exposure detrimental to human health. For example, fire-fighting robots - autonomous humanoid robots designed to endure temperatures up to 500o Celsius and are capable of detecting and extinguishing fires and working side by side with human firefighters using advanced technology. Advanced robotic technology can also perform underwater surface cleaning and damage detection are hard to identify especially underwater with poor visibility.

4. Cloud Computing and Cloud Management

Cloud computing and management have a number of advantages over traditional paper-based management systems. Services over the cloud can be accessed and maintained from anywhere ensuring business continuity by seamlessly integrating the entire workforce. Cloud computing provides the perfect platform for data sharing and collaboration but at the same time ensures the privacy of protected data through inbuilt safeguards systems.

Cloud management ensures better security of data through multi-factor authentication, encryption, and accessibility control. In addition, by seeking services from Cloud service vendors, the port authority can share the workload and reallocate its resources for better capacity building. For example, if e-payment services are handled by a third-party cloud service vendor, the port authority can free up physical space and financial resources that can be better utilized for container processing services. Even though initial cloud management can be expensive for port authorities, it provides an opportunity to scale up at a minimal cost. Therefore, port management can be effectively optimized via Cloud computing as it offers rapid innovation, efficient resource management, and economies of scale.

If Bangladesh wants to keep up with the fast-paced global competition, it will have to abandon its cumbersome paper-based port management system. However, the digitization process is definitely very expensive and will require immense Government support and Foreign Direct Investment to make it commercially viable. On the other hand, the digitization process will eliminate a lot of jobs, especially the ones of low-skilled manual laborers involved in container processing, port cleaning, and maintenance services. In addition, the ports will have to be equipped for new challenges like cyber-security threats and the government must build capacity for high-speed internet facilities in coastal areas, digital network building, continuous electricity and power supply, and skilled human resources. Therefore, Bangladesh must act now, so that fully automated digital "smart" ports can be introduced in Bangladesh gradually in several subsequent phases.

Future-oriented Upskilling of the Youth in Bangladesh: The Role of Universities, Ed-tech Platforms, and the Government.

With time, we have leaped through many industrial revolutions. The Fourth Industrial Revolution witnessed massive changes in industries and how people work. Technological advancements, including Artificial Intelligence (AI), Blockchain, Internet of Things (IoT), will have a massive impact on the labor market and the skills needed to thrive at work. The widespread use of AI and automation technologies is expected to result in employment losses in certain areas while opening up new career possibilities in data analysis, software development, and cybersecurity. IoT will increase the need for device management, network security, and data analysis expertise. New career possibilities will be anticipated when 5G networks and devices are developed and deployed.

The growing usage of Blockchain technology will lead to employment openings across all industries, including software development, cryptography, and innovative contract programming. In industries like game creation, training and simulation, and virtual event production, AR and VR are expected to open up new possibilities for work. Even in the conventional employment sectors, the method of recruitment, selection, and practices will change as priorities change with time. People must regularly upgrade their skills and abilities and gain experience in developing technology to compete and flourish in the employment market.

As a result, organizations actively seek employees with a strong background and capabilities on the data analytics side. This resulted in an increased demand for professionals capable of gathering, analyzing, and understanding digital data to get insightful information and make business decisions that optimize resources and returns. Data analytics skills will be highly coveted by businesses in the upcoming days. From academia to banking, telecom, and FMCG, RMG organizations will need capable individuals who can understand and decipher data to nitpick details, tell stories, and influence decisions.

This will happen alongside the business disruption caused by big data and its use in optimizing our daily lives. As organizations gather large volumes of data from all aspects of businesses and process them to harness business potentials better than their competitors, data analytics has become the most sought-after and essential skill for recruiters. According to a Forbes 2020 report titled "The Global State of Enterprise Analytics," a vast majority of the firms in developed countries reported enhanced efficiency and productivity, better financial performance, improved customer experience, and sustained competitive advantage resulting from the usage of data analytics at work.
The growing accessibility of potent data analytics tools and technology raises the need for data analytics expertise. By giving businesses fresh perspectives on consumer behavior, market trends, and other topics, these tools and technologies facilitate the collection, storage, and analysis of data for companies and have the power to alter whole sectors completely.

Graduates need to improve their data analytics abilities and grasp the technologies and tools used to handle and analyze data to stay competitive in the employment market. This includes knowledge of programming languages like Python and R and practical expertise with platforms and tools for data administration and visualization.

As businesses try to harness the power of digital data to get insightful knowledge and make wise business decisions, the demand for data analytical talents will only increase in the upcoming years. In order to remain competitive in the job market, people must devote time and effort to learning data analytics skills, which are increasingly required for recruiting in all industries.

Universities and governments both have a significant impact on how well students are prepared for future skills. They may take the following actions to make sure students have the practical abilities required for success in a work market that is constantly changing:

1. Experiential learning: Universities and governments should promote experiential learning in curriculums and programs. Institutes must introduce partnerships among themselves and industry, startups, and agencies to bridge a true partnership between those who teach and research and those who get things done.
2. Interdisciplinary education: Interdisciplinary education can promote better learning for students and increase their knowledge, skills, and capabilities. In today's world, a diverse knowledge base is essential to survive and thrive at work.
3. Soft Skills Development: Soft skills like problem-solving, teamwork, emotional intelligence, and communication have not been emphasized enough in the conventional education system. Besides specializing in one subject, a student must develop these skills to be more adaptive and flexible at work.
4. Industry partnerships: Governments and educational institutions should encourage collaborations with businesses and other groups to provide students access to real-world applications of the technology and skills they are studying and to help them build practical abilities. These collaborations may also allow students to participate in co-ops, internships, and other experiential learning opportunities.

Governments and universities can assist students in developing the practical skills required for success in a constantly changing job market by emphasizing hands-on learning experiences, encouraging interdisciplinary education, developing soft skills, providing access to emerging technologies, and fostering partnerships with industry. It is high-time universities and ed-tech platforms that join hands in developing market-oriented courses with skills with high future demand and let the upcoming generation utilize the synergy.

Navigating the Next Industrial Revolution

Mir Mokaddesh Ali
Assistant Professor, IBA,
University of Rajshahi, Bangladesh

The Industrial Revolution was a time of significant mechanization and invention that began in Great Britain in the middle of the 18th and early 19th centuries and eventually expanded over much of the world. The First Industrial Revolution used water and steam power to mechanize production. The Second used electric power to create mass production. The Third used electronics and information technology to automate production. At present, a Fourth Industrial Revolution is building on the Third: the digital revolution that has been occurring since the middle of the last century. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres. A summary of different Industrial Revolutions is shown below.

Navigating the next industrial revolution

WORLD ECONOMIC FORUM
COMMITTED TO IMPROVING THE STATE OF THE WORLD

Revolution	Year	Information
1	1784	Steam, water, mechanical production equipment
2	1870	Division of labour, electricity, mass production
3	1969	Electronics, IT, automated production
4	?	Cyber-physical systems

When compared with earlier industrial revolutions, the 4th is evolving at an exponential pace. It is simultaneously disrupting almost every industry in every country. Similarly, the breadth and depth of these changes herald the transformation of entire systems of production, management, and governance. The possibilities of billions of people linked by electronic devices, with unprecedented processing power, storage capacity, and access to knowledge, are unlimited. These possibilities will be multiplied by emerging technology breakthroughs in fields such as artificial intelligence, robotics, the Internet of Things, autonomous vehicles, 3-D printing, nanotechnology, biotechnology, materials science, energy storage, and quantum computing.

The economists Erik Brynjolfsson and Andrew McAfee (2017) have depicted that the revolution could yield greater inequality, particularly in its potential to disrupt labor markets. The net displacement of employees by machines as a result of automation might widen the gap between returns to capital and returns to labor as labor becomes more substituted for by machines across the economy. Thus, it is also conceivable that the technological displacement of occupations will lead to a net increase in secure and satisfying employment. In the future, talent will be more important for production than cash. As an outcome, the employment market will become more divided between "low-skill/low-pay" and "high-skill/high-pay" divisions, which will in turn cause societal tensions to escalate. The biggest sociological issue raised by the 4IR is inequality, which is also a significant economic worry. It is clear from the growing income disparity between those dependent on capital and labor that those who offer intellectual and physical capital, such as inventors, stockholders, and investors, tend to reap the greatest rewards from innovation. The demand for employees with higher levels of education and skill has dropped, while the need for people with lower levels of education and competence has grown. The result is an employment market with a hollowing out of the center and significant demand at the top and low ends.

We cannot deny that businesses will be affected by the rapid pace of technological advancements. Internet of Things, artificial intelligence, and automation are transforming how businesses operate. The line between physical, digital, and biological spheres is getting increasingly blurred. Hunan Resource will play a vital role in helping businesses navigate the new technological terrain. While understanding how to apply these new technologies to improve business outcomes is essential, protecting and preparing your workforce for the future is also critical. It is common knowledge that the current skills gap, especially in high-tech industries, is massive. Lack of skills and knowledge is stifling innovation and increasing labor costs. The World Economic Forum predicts that by 2022, no less than 54% of all employees will require significant re- and up-skilling. Hence, how can organizations up-skill their workforce at this scale? The skills shortage will only get more acute as technology evolves and the war for talent intensifies. Given this reality, it is crucial for organizations and HR leaders to develop a solid understanding of the skills they already have and the skills they will need in the future.

Every industrial revolution produced an educational system and teaching approach to meet its demands. According to a recent poll, abilities like creativity, critical thinking, emotional intelligence, flexibility, and teamwork will be the most in-demand abilities in the future. The development of artificial intelligence, however, has benefitted practically every field, although the educational system has not yet considered this. Hence, in 4IR, education needs to be reinvented. Future employment will require the capacity to interact with artificial intelligence because it is becoming more and more important, thus simply knowing a topic through and out will not cut it. Future graduates must have a solid understanding of coding and cutting-edge technology like AI, robots, and sophisticated analytics. To survive and prosper in the 4IR economy, which is marked by rapid change and disruption, graduates must also develop soft skills. From the beginning of 4IR, education scholars tried to place more focus on the learning

paradigm rather than the conventional instruction paradigm. The present teacher-centric instructional paradigm mostly uses lectures to convey knowledge, and it expects students to pick it up by just listening to them. This passive approach to learning, which is unsuccessful, encourages memorizing rather than absorption of the subject matter.
New technologies and platforms will enable individuals to interact with governments, express their thoughts, coordinate their actions, and even avoid oversight from public authorities as the physical, digital, and biological worlds continue to collide. Governments will simultaneously acquire new technical capabilities to strengthen their control over populations, based on ubiquitous monitoring systems and the capacity to manage digital infrastructure. Although new sources of competition and the redistribution and decentralization of power that new technologies enable result in a less central role for governments in conducting policy, they will face pressure to adapt their existing approach to public participation and policymaking.

References:

1. World Economic Forum Reports, 2022
2. Brynjolfsson, E., & Mcafee, A. N. D. R. E. W. (2017). Artificial intelligence, for real. Harvard business review, 1, 1-31.

Towards making Bangladesh a 'SMART' Country and Lessons from Singapore

Dr. S.M Rezwan Ul Alam
Director, Public Relations Office
North South University

Introduction: The Government of Bangladesh has recently launched the 'Smart Bangladesh' initiative. Unveiling this concept in December 2022, the Prime Minister expressed her hope that society would become smart by 2041 by using technology in all economic activities.

To demystify the concept of 'Smart Bangladesh,' it is important to disseminate its core messages to the people, so that they may adapt to it, for its successful implementation.

What is 'Smart Bangladesh?' Smart Bangladesh Vision 2041 is a big project that aims to give everyone in Bangladesh a digital future that works for everyone and is a lasting reality. It has four pillars: Smart Citizens, Smart Government, Smart Economy, and Smart Society.

The project also seeks to integrate technology into everyday life and give all citizens access to digital services. It will promote digital literacy and create an enabling environment for digital innovation. In addition, it will create an efficient digital infrastructure and promote market-driven digital entrepreneurship. Finally, the project will foster a culture of innovation and a just and sustainable society.
This noble initiative aims to bridge the digital divide by providing innovative and scalable digital solutions that benefit all citizens and businesses, regardless of socioeconomic background or size. This initiative aims to build on the achievements of Digital Bangladesh and take the next step towards realizing Bangabandhu's dream of a Golden Bangladesh.

Why this initiative?: Over the next two decades, the Fourth Industrial Revolution (4IR) and other trends such as automation, artificial intelligence, and the shift to a circular economy threaten existing jobs in key industries such as apparel and textiles in Bangladesh and many other countries. Some of these obstacles can be very serious. According to recent estimates, 47 percent of jobs in five industries in Bangladesh could be at risk by 2041, including 60 percent of jobs in the textile industry, which currently accounts for 81 percent of exports.

With assistance from a2i, the Cabinet Division of the Government of Bangladesh has undertaken a strategic initiative to create a shared, living, national system for responding to turn the challenges posed by 4IR into opportunities.

How will this initiative be implemented? The government will establish the Digital Bangladesh Index to track progress toward becoming a digital economy. The index measures broadband internet access, mobile penetration, digital payments, and e-commerce. The government has established the Digital Bangladesh Taskforce, which includes representatives from various fields, and the Digital Bangladesh Fund to finance the project. The goal is to build digital infrastructure, give people access to technology,

and teach them how to use it. It will create a digitally empowered country with a strong economy and society. The government is also working on projects like connecting rural areas to the internet, making a national digital registry, and promoting digital financial services.

Lessons from Singapore: Singapore is renowned for its innovative and technologically advanced society. In recent years, the country has made considerable progress in its mission to become a "Smart Nation" where citizens' lives are improved through technology and innovation.

The government of Singapore first announced its "Smart Nation" initiative in 2014 to use technology to enhance the lives of citizens and businesses. Under this initiative, the government has invested heavily in the Internet of Things (IoT), artificial intelligence (AI), and robotics to create a more innovative environment.

Extensive government investments in technology infrastructure and services have supported the Smart Nation initiative. This includes constructing a nationwide fiber-optic network that provides high-speed internet access to citizens and businesses. The government has also invested in 5G mobile networks, cloud computing, and data analytics to advance the country's digital capabilities further.

The initiative has also seen the development of numerous smart city projects. These include developing intelligent transportation systems, smart buildings and homes, and smart energy grids. These projects have made the city more efficient and sustainable and made it easier for people to get services.

In lieu of conclusion: If Bangladesh hopes to reach the same level of success as Singapore, then the following areas need to be addressed.

Firstly, Bangladesh must encourage greater citizen engagement in the Smart Nation initiative. It can be done by giving people access to digital tools and services that let them participate in their country's development. Second, Bangladesh needs to focus on improving its education system. It includes investing in digital literacy and access to quality education.

Bangladesh additionally needs to focus on fostering a culture of knowledge-sharing. It can be achieved by creating online platforms for citizens to share their ideas and experiences.

Secondly, Bangladesh needs to focus on fostering a culture of innovation. This can be achieved by providing access to resources such as incubators and venture capital funding. The government may also create incentives for businesses to innovate by providing tax breaks or grants.

Finally, Bangladesh needs to harness a culture of tolerance, taking cues from Singapore's multi-racial society. It can be done by making the country a more welcoming place where everyone is treated equally and has the same chances. The government can also encourage people from different cultures to talk to each other and make awareness campaigns that stress how important it is to accept and understand each other.

Making Bangladesh a 'Smart Country' requires attempts to be made with respect to fostering openness in all areas that matter to the citizens. Learning lessons from Singapore and other smart countries, Bangladesh can create a more prosperous and secure future for all its citizens.

Keys for Successful Job Search in the Era of 4th Industrial Revolution

Gour Gobinda Goswami
Professor of Economics & Director of Student Affairs, NSU
Email: gour.goswami@northsouth.edu

Technology is the newest form of communication introduced by intelligent scientists. With the help of technology, we can communicate within and beyond the atmospheric zone. It has not only saved time and effort but also saved distances on the planet. Adopting the latest invention and abandoning the traditional one is always fascinating, which becomes obsolete after some time. The process is ongoing and our actions are responsible and we become accountable for it. The best example is the second world war.

Technology is innovative but not more intelligent than the human brain, relationships, and ideas. Graduates should try to develop networking in the right direction to become successful in their respective fields. The most intelligent people do not seek a job. They create Jobs for all, and in the process, they also are inducted into the market. Each graduate should try to understand their intrinsic skill sets and uphold them consistently. They should try to update their skills with the latest knowledge. They should translate our knowledge into skills effectively and deliberately.

Sincerity and integrity always have a dividend in the long run. Teamwork is always better than single-handed dealing. All jobs are equally rewarding. You can make a breakthrough if you can introduce innovation in it. Productivity is not measured by time spent on a job. It is calculated by the innovative idea you introduce to solve a problem while working. Knowledge and skills are always transferable from time to time and from place to place.

One factor which is of utmost importance is the sustainability of technological progress. Once upon a time, the manual method of communication by letter or regular mail was dominant. It lasted for many years. Due to the widespread use of electricity and internet facilities, we switched to email, which has survived to date. The reality is that we need to send an email first. Otherwise, we cannot build the network. Depending on the distance, we use different means of communication.

Networking should start at home. We must develop a sustainable network with our parents, kids, family members, friends, classmates, people from our surroundings, students, teachers, and mentors. The network's closeness, betweenness, and centrality may take a different pattern. Still, the network was necessary and will remain important until the termination of our civilization and human existence because this skill made us distinct on the planet among all living beings.

A question arises whether networking is getting redundant in the era of the Fourth Industrial Revolution. I would say no. It is the people who control technology. We should not think that ChatGPT, Metaverse, VR, or AI can dominate our idea. These things are human inventions which is why human beings are more brilliant than these devices.

The nature of networking will change, but it will not disappear. Let me give you a simple example. Before the introduction of cell phones in Bangladesh, people visited their friends or relatives without any notice. That's why the effective distance was too far. They are just a simple message away right now, and the whole process has become cost-free. But the fact remains we have to send the message anyway. That's why networking will sustain. We have to reach out to people to explore different possibilities. The most innovative people always initiate contact with others as much as possible and become engaged in dialogue. A successful job search cannot be without direct or indirect networking. The beauty of human interaction in groups or associations will always remain because this unique skill has made the human race dominant on the planet.

Future-oriented Upskilling of the Youth in Bangladesh: The Role of Universities, Ed-tech platforms, and the Government.

Quazi Tafsirul Islam
Senior Lecturer, Department of Management, School of Business and Economics
North South University

With time, we have leaped through many industrial revolutions. The Fourth Industrial Revolution witnessed massive changes in industries and how people work. Technological advancements, including Artificial Intelligence (AI), Blockchain, Internet of Things (IoT), will have a massive impact on the labor market and the skills needed to thrive at work. The widespread use of AI and automation technologies is expected to result in employment losses in certain areas while opening up new career possibilities in data analysis, software development, and cybersecurity. IoT will increase the need for device management, network security, and data analysis expertise. New career possibilities will be anticipated when 5G networks and devices are developed and deployed.
The growing usage of Blockchain technology will lead to employment openings across all industries, including software development, cryptography, and innovative contract programming. In industries like game creation, training and simulation, and virtual event production, AR and VR are expected to open up new possibilities for work. Even in the conventional employment sectors, the method of recruitment, selection, and practices will change as priorities change with time. People must regularly upgrade their skills and abilities and gain experience in developing technology to compete and flourish in the employment market.

As a result, organizations actively seek employees with a strong background and capabilities on the data analytics side. This resulted in an increased demand for professionals capable of gathering, analyzing, and understanding digital data to get insightful information and make business decisions that optimize resources and returns. Data analytics skills will be highly coveted by businesses in the upcoming days. From academia to banking, telecom, and FMCG, RMG organizations will need capable individuals who can understand and decipher data to nitpick details, tell stories, and influence decisions.

This will happen alongside the business disruption caused by big data and its use in optimizing our daily lives. As organizations gather large volumes of data from all aspects of businesses and process them to harness business potentials better than their competitors, data analytics has become the most sought-after and essential skill for recruiters. According to a Forbes 2020 report titled "The Global State of Enterprise Analytics," a vast majority of the firms in developed countries reported enhanced efficiency and productivity, better financial performance, improved customer experience, and sustained competitive advantage resulting from the usage of data analytics at work.
The growing accessibility of potent data analytics tools and technology raises the need for data analytics expertise. By giving businesses fresh perspectives on consumer behaviour, market trends, and other topics, these tools and technologies facilitate the collection, storage, and analysis of data for companies and have the power to alter whole sectors completely.

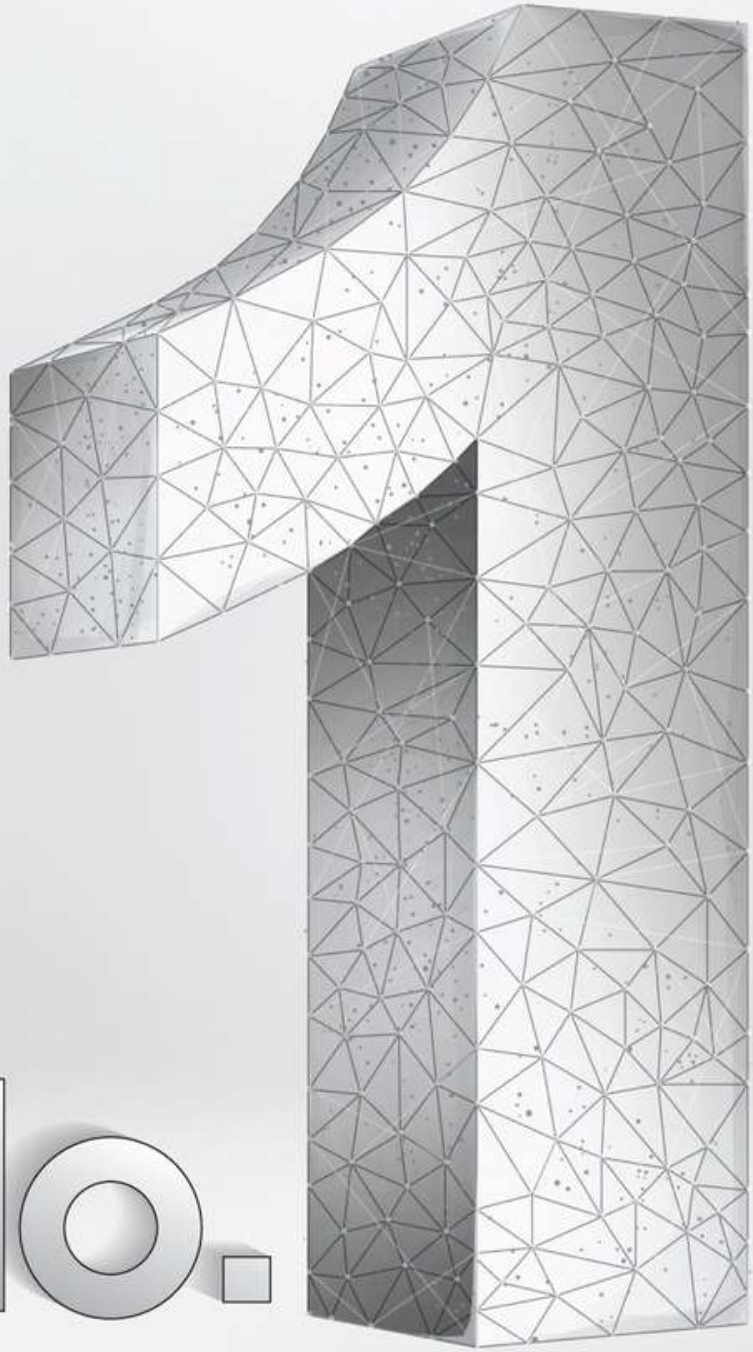
Graduates need to improve their data analytics abilities and grasp the technologies and tools used to handle and analyze data to stay competitive in the employment market. This includes knowledge of programming languages like Python and R and practical expertise with platforms and tools for data administration and visualization.

As businesses try to harness the power of digital data to get insightful knowledge and make wise business decisions, the demand for data analytical talents will only increase in the upcoming years. In order to remain competitive in the job market, people must devote time and effort to learning data analytics skills, which are increasingly required for recruiting in all industries.

Universities and governments both have a significant impact on how well students are prepared for future skills. They may take the following actions to make sure students have the practical abilities required for success in a work market that is constantly changing:

1. Experiential learning: Universities and governments should promote experiential learning in curriculums and programs. Institutes must introduce partnerships among themselves and industry, startups, and agencies to bridge a true partnership between those who teach and research and those who get things done.
2. Interdisciplinary education: Interdisciplinary education can promote better learning for students and increase their knowledge, skills, and capabilities. In today's world, a diverse knowledge base is essential to survive and thrive at work.
3. Soft Skills Development: Soft skills like problem-solving, teamwork, emotional intelligence, and communication have not been emphasized enough in the conventional education system. Besides specializing in one subject, a student must develop these skills to be more adaptive and flexible at work.
4. Industry partnerships: Governments and educational institutions should encourage collaborations with businesses and other groups to provide students access to real-world applications of the technology and skills they are studying and to help them build practical abilities. These collaborations may also allow students to participate in co-ops, internships, and other experiential learning opportunities.

Governments and universities can assist students in developing the practical skills required for success in a constantly changing job market by emphasizing hands-on learning experiences, encouraging interdisciplinary education, developing soft skills, providing access to emerging technologies, and fostering partnerships with industry. It is high-time universities and ed-tech platforms that join hands in developing market-oriented courses with skills with high future demand and let the upcoming generation utilize the synergy.



No.

EMPLOYER OF CHOICE IN BANGLADESH

3RD TIME IN A ROW

★★★

NielsenIQ

According to the Campus Track Survey B-School 2022 conducted by NielsenIQ.
They conduct this survey globally and since 2013 in Bangladesh.

bKash

Emerging Technologies in the Labour Market: Future Impacts of the Fourth Industrial Revolution in Developing Countries

Tasnim Tarannum
Lecturer
Department of Management
School of Business and Economics

In a post-COVID-19 pandemic universe, the Fourth Industrial Revolution has become a buzzword in the twenty-first century. Humans are constantly getting replaced by emerging technologies of artificial intelligence, 3D printing, big data, virtual reality, blockchain, cloud computing, speech recognition, and the Internet of Things in various sectors. However, despite the surging development of technology in diverse fields, much of its ramifications still need to be explored, especially in the job market of developing countries.

Such as Bangladesh, India, Sri Lanka, Vietnam, and Indonesia. One of the prominent impacts of 4IR would be on the labor market. New job categories with higher challenges and remuneration will be created as automated machines perform repetitive and low-skilled jobs. In addition, the demand for brand-new goods and services will also rise, for which higher qualifications, experiences, and capabilities will become necessary to perform these jobs. Nonetheless, the question remains about who will fill those positions and how the job market will adjust to such expeditious technological turbulence. According to a recent study by the World Economic Forum, technology might displace approximately 800 million unskilled people globally by 2030. Similar conclusions were drawn from research by the World Bank, which estimated that by 2036, automation would replace 57% of occupations in OECD (Organization for Economic Cooperation and Development) nations. Furthermore, according to a report published by McKinsey in 2017, 50% of the activities people are currently paid for might theoretically get automated, and approximately 400 million jobs could be lost due to automation by 2030.

Both developed and emerging nations would confront significant hurdles in adapting to the revolution. Due to sophisticated machinery and trained human resources, the industrialized world might face fewer risks. But developing countries are in danger due to a lack of highly qualified people and resources, significant investment, modern infrastructure, and unstable political culture in the global market. According to World Bank President Jim Kim, automation might eliminate two-thirds of jobs in developing countries, intensifying conflict and refugee issues. A further study by the Martin School at Oxford University and Citi indicated that the danger of automation to jobs in developing countries ranges from 55–85%. Large growing economies like China (77%) and India (69%) would be most vulnerable. Compared to the previous nations, the next generations of emerging economies' manufacturing industries are anticipated to decline significantly due to this industrialization.

Moreover, the current pace of 4IR will make it extremely difficult for low-medium skilled employees to adjust. Adapting to skill levels will also gradually become more challenging and expensive as new technologies evolve, especially for low-paid, routine jobs. Conversely, businesses will be motivated to endorse technology widely and automate their manufacturing processes as technology costs decrease, ultimately replacing labor with capital. Therefore, a high level of technical and cognitive skills will be required to perform these jobs, which can eventually result in mass-scale labor layoff, creating immense pressure on existing burdens of under-employment and unemployment that the countries are currently facing.

Such job reduction can already be noticed in RMG and textile industries, where low-skilled workers are getting replaced by modern and intricate machinery. Estimation suggests that ongoing automation in these industries may result in approximately 64% and 88% job losses in Indonesia and Cambodia. Similar research shows that by 2041, 2.7 million Bangladeshi workers, or 60% of the sector's existing workforce, can lose their jobs. Moreover, since women are the least technologically skilled in the employment market, their percentage has already decreased, demonstrating how harshly technology can affect the working population.

While studies have shown that manufacturing jobs are most susceptible to automation, other industries show identical patterns in human unemployment. For example, 73% of tasks that employees in the hospitality and food industries carry out can get automated, including preparation, cooking, and providing meals, clearing food preparation places, making beverages, and collecting dirty dishes. In manufacturing, 59% of all tasks—mainly manual working and operating aids can be digitized. As a result, product packaging, loading, welding, and maintenance can be automated. Similarly, innovative and upgraded machinery can automate many existing retail, education, and banking duties.

Besides persistent fear of job loss and unemployment, the issue of reshoring and dependence on expatriates can also be substantial threats to deal with within the next 20 years, as the production of RMG and textile items would no longer depend on cheap labor. Bangladesh will become more dependent on skilled expatriates to fill the gap in the job market. Despite the nation's high unemployment and underemployment rates, anecdotal information suggests that the sector already employs between 4,000 and 5,000 highly skilled Indian and Sri Lankan nationals who hold middle- and senior-level executive roles in various RMG divisions. Thus, expatriate employees will rise further during the next two decades, leading to social unrest and economic chaos. On top of that, discrimination and inequality arising from recent industrialization can be tremendously alarming. The world witnessed the "digital divide" during the Third Industrial Revolution, which originated from information and communications technology (ICT). Only people with access to new knowledge and technology might upgrade their capabilities and achieve tremendous earning potential than those without such privilege. 4IR can eventually aggravate inequality if technology is only available to a particular segment and its advantages are not evenly dispersed.

Although this rapid velocity of technological upgradation can help address major future catastrophes, such as poverty, climate change, and epidemics, numerous experts and researchers imply considerable reductions in future employment. It is, therefore, imperative for the government, educational institutions, and policymakers to join hands in preparing prospective job holders for a stable transition in the labour market and address the issues mentioned above to reap the utmost benefits from the new wave of the revolution.

The Impact of 4IR on Business Education in the Undergraduate level

Mirza M. Ferdous & Taskin Sakib
Department of Accounting & Finance, School of Business & Economics, North South University.

The idea of the Fourth Industrial Revolution (4IR) is easily perceptible in this current era of technological advancements characterized by the fusion of physical and technological systems. This revolution is forcing significant change in society and businesses, leading to the creation of new opportunities, but also presenting new challenges that require new skills and knowledge. As such, business education at the undergraduate level must adapt and integrate the various nuances of 4IR into its curriculum to ensure students are prepared for the changing business landscape.

The 4IR is characterized by the integration of cutting-edge technologies such as artificial intelligence (AI), the Internet of Things (IoT), and blockchain, etc. These technologies are transforming the way we live and work, leading to new forms of operation, financial management, and insight into future events. They are also leading to the creation of new business models, and the disruption of traditional ones. This means that businesses must be flexible and innovative to remain relevant in the new economic landscape.
One of the impacts of the 4IR on business education is the need for a greater emphasis on digital skills. With the increasing digitization of the economy, businesses need employees who are tech-savvy to solve complex problems, analyze large amounts of data, and communicate effectively. Business education must, therefore, focus on equipping students with digital skills such as coding, data analysis, and financial modeling, to ensure they are able to meet the demands of the job market.

Another impact of the 4IR on business education is the need for a greater focus on innovation and entrepreneurship. The 4IR is creating new opportunities for entrepreneurs, and as educators, it is imperative that we encourage our students to identify, explore and wield these opportunities to become future leaders. Business education must therefore equip students with the skills and knowledge to become radical entrepreneurs, who can create new products and services that meet the changing needs of the market. This can be achieved through coursework that emphasizes design thinking, Lean Startup methodology, and innovation management, among others.
The 4IR is also having a profound impact on the way businesses are managed and operated. It is leading to new forms of collaboration and teamwork, and businesses must be able to adapt to these changes if they are to succeed. Business education must, therefore, emphasize the development of soft skills such as emotional intelligence, communication, and collaboration. These skills are essential for employees who must work in teams and interact with a diverse range of stakeholders in an increasingly complex business environment.

The Fourth Industrial Revolution can have a profound impact on business education at the undergraduate level. Business schools must adapt to these changes by incorporating digital skills, innovation, and entrepreneurship, as well as the development of soft skills, into their curricula. This will ensure that students are equipped with the knowledge and skills they need to succeed in the changing business landscape and contribute to the growth and development of the economy. By preparing students for the future, business education can help to drive innovation, create new opportunities, and foster economic growth.

The impact of automation and artificial intelligence on the job market

Salman Monzur Chowdhury
Director, Parallaxlogic Infotech

Automation and artificial intelligence (AI) are changing the world in unprecedented ways, and one of the most significant areas of impact is the job market. While there are concerns about job losses and wage disparities, there are also many reasons to be optimistic about the impact of automation and AI in the job market.
First and foremost, automation and AI have the potential to create new job opportunities in emerging industries and areas of specialization. As companies adopt new technologies, they will require workers with specialized skills to develop, maintain, and operate these systems. In addition, new industries and job categories may emerge, such as data science, cybersecurity, and robotics.

Furthermore, automation and AI can lead to increased efficiency and productivity in the workplace, which can lead to cost savings and improved competitiveness for companies. This can have positive impacts on the job market, as companies are better able to compete and grow, potentially leading to job creation. In addition, automation and AI can lead to changes in job roles, as workers are required to adapt to new technologies and ways of working. This can be an opportunity for workers to develop new skills and take on more challenging and rewarding roles within their organizations.
It is also important to note that automation and AI are not necessarily a threat to all jobs. While some jobs may become obsolete, others may become more valuable as they require skills that cannot be easily replaced by machines or algorithms. For example, jobs that require creativity, critical thinking, and emotional intelligence are less likely to be impacted by automation and AI.

The impact of automation and AI on the job market in Bangladesh is complex and multifaceted, with both positive and negative impacts.
One of the primary concerns is that automation and AI will lead to job losses in certain industries, particularly those that rely heavily on manual labor or routine tasks. For example, the garment industry, which is a major employer in Bangladesh, may see job losses as automation technologies are adopted for tasks such as cutting and sewing.

However, there are also many reasons to be optimistic about the impact of automation and AI on the job market in Bangladesh. These technologies have the potential to create new job opportunities in emerging industries and areas of specialization. For example, as the country moves towards a knowledge-based economy, there may be increasing demand for workers with skills in areas such as data science, cybersecurity, and software development. Furthermore, automation and AI can lead to increased efficiency and productivity in the workplace, which can lead to cost savings and improved competitiveness for companies. This can have positive impacts on the job market, as companies are better able to compete and grow, potentially leading to job creation. It is also important to note that automation and AI are not necessarily a threat to all jobs. While some jobs may become obsolete, others may become more valuable as they require skills that cannot be easily replaced by machines or algorithms. For example, jobs that require creativity, critical thinking, and emotional intelligence are less likely to be impacted by automation and AI.

The impact of automation and AI on the job market in Bangladesh is complex and multifaceted. While there are concerns about job losses in certain industries, there are also many reasons to look forward to the potential for new job opportunities, increased efficiency and productivity, and opportunities for reskilling and upskilling.

As automation and AI transforms the job market, there will be a growing need for workers to reskill and upskill in order to remain competitive. This presents an opportunity for individuals to invest in their education and training, and for governments and organizations to invest in programs that support reskilling and upskilling.
In conclusion, while there are concerns about the impact of automation and AI on the job market, there are also many reasons to anticipate. Automation and AI have the potential to create new job opportunities, increase efficiency and productivity, lead to changes in job roles, and provide opportunities for reskilling and upskilling. By embracing these technologies and investing in education and training programs, we can ensure that the job market continues to evolve and adapt to the changing needs of the economy.

Reinvestigating skills through AI at the time of Industry 4.0

Dr. Mohammad Thoufiqul Islam
Professor, Department of Management
University of Dhaka
Thoufiq@du.ac.bd

One of the driving forces in the industrial revolution 4.0 (4IR) is artificial intelligence (AI). AI is playing a pivotal role in various business domains including functional areas such as marketing and human resource management (HRM) where we find some evidence (Son, Lee & Chang, 2019). HR data needs to be evaluated in various forms in terms of decisions related to people management (Dorel & Aleksandra, 2011). Technology inclusion empowers HR to enhance their performances and efficiencies (Lengnick-Hall et al., 2009). AI-based solutions can predict, recommend, and communicate based on the data to use it to be more efficient, communicate at scale, make recommendations, and predict outcomes. AI has the potential to revolutionize HR processes. HR management will increasingly rely on AI-driven technologies that will eventually aid in recruitment. Many companies now have rich data about applicants and employees, which they use to find, analyze, recruit, train, develop, and pay employees more efficiently (Bersin, 2019). With so much underutilized data, HR departments have the opportunity to drive technological change and create business value through AI-powered solutions. For artificial intelligence to work effectively, it requires large amounts of data that need to be properly stored and managed. Companies need additional employees to operate and maintain sophisticated software. The best way to apply AI to human resources management is to use AI tools to analyze data and delegate decision-making to human employees.

AI works using data but HR departments would do better if they could analyze large data sets more thoroughly. According to Gartner (2019), about a quarter of companies already piloting or using AI in the HR sector are doing so. AI will create 2.3 million new jobs, according to a Gartner estimate from a 2019 report. A recent study by Oracle and Future Workplace found that AI provides opportunities for HR professionals to learn new skills, save time, expand existing responsibilities, and become more strategic within their organizations. However, 81% of recruiters surveyed find it difficult to keep up with the pace of technological development in the workplace (Oracle and Future Workplace, 2019). Therefore, it is more significant than ever for HR leaders to understand how AI is transforming their business. According to Deloitte's 2019 Global Human Capital Trends survey, only 6% of respondents said their technology recruitment process was best in class, and 81% felt their process was standard or substandard (Deloitte, 2019). As a result, professionals have a lot of scope to change their practices and take advantage of advanced technology.

AI software can investigate key indicators of employee achievement to identify individuals for promotion, according to a recent study by the Human Resources Professional Association (2017). This can potentially reduce the cost of hiring staff while increasing employee retention. 52% of respondents said identifying the right candidate with the right skills and background is the most difficult part of the hiring process among the vast number of resumes. Some of these tedious manual screening activities can be automated using artificial intelligence.

Andrew Ng, a Chinese-American scientist who specializes in machine learning and AI, claimed, "Deep learning will revolutionize every single sector." According to McKinsey's machine learning prediction, AI will impact $13 trillion in the global economy by 2030 (Durrani, 2020). AI will also impact human resources. HR professionals recognize the need to improve the interaction between the human mind and machine learning for fluid workflows and intuitive work atmospheres. Unexpectedly, this trend has far-reaching implications for human resources. HR has many tactical tasks that AI-driven automation can take over.

There is much debate on how AI platforms can enable large-scale automation, thereby eliminating the need for parts hires. However, this is mostly limited to repetitive, process-based jobs that don't require much human interaction. In the future, HR will be able to outsource much of its process-based tasks (both manual and cognitive) and cognitive decision-making. The future of talent will not focus exclusively on the efficiency of existing processes but will focus on entirely new goals, such as choosing the right workplace technology and developing employer branding (Mallik, 2020).

"AI will not replace all of HR, but it will create substantial change and upheaval, including the loss of certain jobs," said Lazarus, CEO of Scout Exchange, an AI-powered recruiting marketplace. In general, jobs that require a high degree of social contact are less likely to be automated in the near future. HR roles are unlikely to be replaced because they require these skills. In fact, according to MSN, the HR manager will be one of the least automated jobs in the future. Jobs that require you to supervise others may not be automated in the future. HR roles, like other subjective, medical, and creative professions such as writers, lawyers, and dentists, are unlikely to be replaced by machines. HR always requires face-to-face and personal connections. HR professionals must be able to think critically and adapt to any situation they face. Every employee and applicant in a company is unique and no automated HR department can meet their needs. To fully automate the hiring process would be deadly. Employers have a bad sense of being fit for the job and overlook top talent with less attractive qualifications on paper. Payroll and benefits administration have the highest potential for automation in the future. Artificial intelligence will almost certainly have no problem distributing them efficiently, saving HR personnel time and allowing them to focus on the most important aspects of their work. No one can predict the future or how far technology will take, so many HR roles and tasks could be automated in the future. HR, on the other hand, requires complex human interaction and cannot be fully controlled by a robot. It is hard to imagine that human resources will be completely mechanized in the near future.

Mathematics in 4th Industrial Revolution

Dr. Mohammad Monir Uddin
Associate Professor
Department of Mathematics and Physics
North South University
monir.uddin@nothsouth.edu

Mathematics is a fundamental part of human thought and has been used to understand and solve problems in various fields of study. Mathematics provides a rigorous framework for analyzing and modeling complex systems, which makes it an essential tool in science, engineering, technology, and many other areas. It helps to develop logical thinking, problem-solving skills, and mental discipline, which are valuable for all walks of life for everyone. Nowadays, it is called the key of technology. A strong foundation in mathematics is essential for anyone seeking to contribute to developing new technologies or working in fields that rely on technology.

The Industrial Revolution (IR) [1] refers to a period of rapid industrialization and technological advancement that occurred primarily in Europe and North America between the late 18th and the early 20th century. There were four distinct phases of the industrial revolutions during that period; each step of the IR has significantly impacted society and has changed how people live, work, and interact with each other. All these phases of the IR have also led to essential economic and political shifts, the emergence of new industries, the diminution of older ones, and changes in global power structures.
The First IR (1760-1840) [2] was marked by the rise of mechanization, which replaced hand tools with machines and increased efficiency in production. The use of steam power and the development of the textile industry were essential drivers of this revolution. The Second one (1870-1914) [3] saw the widespread use of electricity, the development of the internal combustion engine, and the rise of the steel industry. Mass production techniques and the assembly line also emerged during this period. And the third IR (1969-2008) [4] saw the rise of electronics, telecommunications, and information technology and the development of the internet and personal computing. Mathematics played a significant role throughout the industrial revolution, paving the way to the Fourth Industrial Revolution (4IR). In the First Industrial Revolution, mathematics was employed for critical design and constructing the theoretical working principles of the various machines used in the factories and to improve manufacturing processes. Mathematics also played a crucial role in the development of the steam engine, which was a vital driver of the First Industrial Revolution. Moreover, in the Second Industrial Revolution, Various mathematical tools and techniques were extensively used in designing and developing communication and transportation systems, such as the telegraph, the railway, and the steamship. It was also used to improve processes in the production of goods, such as in the development of interchangeable parts and mass production techniques. Furthermore, mathematics was crucial in developing computing systems and automation processes in manufacturing and other industries during the Third Industrial Revolution. This involved developing and deploying mathematical algorithms and models to process and analyze data and optimize operations leading to intelligent decision-making systems.

The Fourth Industrial Revolution (4IR or Industry 4.0) (2010-present) [5,6] conceptualizes rapid change in all aspects of society, including technology, industries, societal patterns and processes, health care, communication, and transportation, because of increasing inter-connectivity and intelligent automation, and the Internet of Things (IoT). Artificial

Intelligence, Machine Learning, Robotics, Big Data, Nanotechnology, Parallel Computing, and other emerging technologies are essential drivers of this revolution. Mathematics is also crucial in the Fourth Industrial Revolution (4IR), providing the theoretical frameworks and foundations for many technological advancements driving 4IR. Here are some examples:

1. In Artificial Intelligence (AI), Machine Learning (ML), and Deep Learning (DL) [7], mathematical algorithms and models enable systems to learn from data and make predictions and offer intelligent decisions. The advancement of AI, ML, or DL technologies requires the development of complex algorithms. Through the algorithms, the system learns from data, makes predictions and reaches decisions, and creates models. All these processes require a deep understanding of mathematical concepts such as Linear Algebra, Multi-variable Calculus, Optimization, Statistics, and Probability Theory.

2. Learning from data can solve many real-life problems [8]. The availability of big data is one of the defining characteristics of the 4IR. Analyzing this data to extract insights and make predictions requires mathematical tools and techniques, such as regression analysis, data mining, and machine learning algorithms.

3. The 4IR has also led to the development of advanced optimization techniques that enable better decision-making and resource allocation. Mathematics provides the framework for these techniques, including linear and nonlinear programming, dynamic programming, and game theory.

4. With the increasing use of digital technologies, cybersecurity [9] is a significant concern in the 4IR. Cryptography is used in various applications, including secure messaging, secure online transactions, and digital signatures. It is essential to modern communication and protects sensitive information from being intercepted, modified, or stolen by unauthorized parties. Cryptography relies on mathematical concepts, such as Modular Arithmetic, Number Theory, Probability Theory, Discrete Mathematics, and Linear Algebra.

5. Recently, Mathematical Modeling and Simulation [10] have become an essential tool in many industries for various applications, including engineering, physics, biology, economics, and many others. In these sectors, one has to either implement a new idea or analyze, optimize, and make a controller design of an existing one. To perform these tasks, a physical system must convert into mathematical models. Converting a biological system into a mathematical model involves identifying the relevant variables, their interactions, and the governing equations that describe the system's behavior. The resulting mathematical models can often be vast and complex. As for the fast and frequent simulation of such complex models, apart from the development of robust algorithms, rigorous mathematical techniques such as parallel computing and Model Order Reduction (MOR) come in extremely useful.

Mathematics, in fine, is a crucial part of the Fourth Industrial Revolution, characterized by integrating technologies such as artificial intelligence, robotics, the Internet of Things, and big data analytic. These technologies rely heavily on ubiquitous mathematical concepts and techniques like calculus, linear algebra, statistics, and optimization. Mathematics provides the theoretical underpinnings and practical tools for developing and applying these technologies, enabling them to be used in various real-life applications, ranging from manufacturing and transportation to health care and finance. So, it may be posited with conviction that without resorting to mathematics, it would be difficult, if not impossible, to create and implement the advanced technologies driving the Fourth Industrial Revolution.

References:

[1] https://en.wikipedia.org/wiki/Industrial_Revolution
[2] Allen, R.C., 2017. The industrial revolution: A concise introduction (Vol. 509). Oxford University Press.
[3] Piore, M.J. and Sabel, C.F., 1984. The second industrial divide: possibilities for prosperity, Basic Books, New York.
[4] Greenwood, J., 1997. The third industrial revolution: Technology, productivity, and income inequality (No. 435). American Enterprise Institute.
[5] Kumar, K., Zindani, D. and Davim, J.P., 2019. Industry 4.0: Developments towards the fourth industrial revolution. Cham, Switzerland: Springer.
[6] https://en.wikipedia.org/wiki/Fourth_Industrial_Revolution
[7] Bengio Yoshua, Ian Goodfellow, and Aaron Courville. Deep learning. Vol. 1. Cambridge, MA, USA: MIT Press, 2017.
[8] Fan, J., Han, F. and Liu, H., 2014. Challenges of big data analysis. National science review, 1(2), pp.293-314.
[9] Ferguson, N. and Schneier, B., 2003. Practical Cryptography (Vol. 141). New York: Wiley.
[10] M. Monir Uddin, 2019. Computational Methods for Approximation of Large-Scale Dynamical Systems. CRC Press, New York,

History of Career and Placement Center (CPC)

North South University (NSU), is a pioneering private university in Bangladesh, founded in 1992. Recognizing the importance of smooth career development, NSU established the Career and Placement Centre (CPC) in 1996, the very first of its kind in the country. CPC has since been committed to guiding students in discovering and achieving a career path that would eventually lead them to a successful future.

Originally known as the Student Career Planning and Placement Center in 1996, CPC was initially led by Ms. Syeda Sharmin Absar, who served as the Coordinator for four years at the Center. Ms. Absar worked tirelessly to shape the career center and bolster the career prospects of the students of North South University.

The Student Career Planning and Placement Center evolved later as the Department of Career Services (DCS) in 1999. Afterward, with the inclusion of Professional Development Programs (PDP), it earned its former name Career and Professional Development Services (CPDS) in 2005 under the supervision of Mr. Almas Kabir Khan. Dr. Abdul Hannan Chowdhury also brought enormous changes from 2005 to 2012. He organized several successful programs such as back-to-back successful National Career Fairs in 2007, 2008, 2010, and 2011. His activities and sincere efforts brought the department to a standard structure.

The name, “Career and Professional Development Services (CPDS)” was further renamed to “Career and Placement Center (CPC)” on 25th May 2015 by the Director, Mr. Faisal Wali. Now, CPC is recognized as a comprehensive career management support platform for NSU students. It arranges internship and job placement opportunities, career counseling, job training, and professional development.

Dr. Mohammad Khasro Miah was appointed as the current Director of the Career and Placement Center (CPC) on 10th October 2018. He organized the 8th and 9th National Career Fairs in 2013 and 2019 along with the BSHRM International Conference. He has also introduced the Japanese Language Program and career development related to MOU with the Japanese University for Engineering and IT-based students. Alongside that, he also published the CPC website, online newsletter, brochure, and so on. In addition, He has introduced the NCF LOGO which is registered and approved by the government copyright office.

In 2021, Dr. Mohammad Khasro Miah initiated the "Project for Skills Development of IT Engineers Targeting Japanese Market" for NSU students in collaboration with the Bangladesh Computer Council and the University of Miyazaki. He has also signed various agreements and MoUs with esteemed domestic and multinational companies such as Unilever, Standard Chartered Bank, British American Tobacco, MGH, Banglalink, Robi, and Bashundhara Group.

SL.	Name	Designation	Duration
1	Ms. Syeda Sharmin Absar	Coordinator	1996 – 1999
2	Mr. M. A. Raquib	Assistant Director	2000 – 2001
3	Mr. Amir Yousuf Khan	Assistant Director	2001 – 2002
4	Prof. Meshquat Uddin DBA	Director	2002 – 2003
5	Prof. Golam Mohammad, Ph.D.	Director	2003 – 2005
6	Mr. Almas Kabir Khan	Director	2005
7	Prof. Abdul Hannan Chowdhury, Ph.D.	Director	2005 – 2012
8	Prof. Mohammad Khasro Miah, Ph.D.	Director	2013 – 2014
9	Mr. Taj Uddin	Director	2014
10	Mr. Faisal Wali	Director	2014 – 2017
11	Ms. Farhana Zahir	Director	2017 – 2018
12	Prof. Mohammad Khasro Miah, Ph.D.	Director	Oct 10, 2018 – Present

The Career and Placement Center plays a crucial role in developing the skills and expertise of Bangladeshi undergraduate students through two prominent programs, namely B-JET and B-MEET. These initiatives aim to foster economic connections between Japan and Bangladesh. Bangladesh-Japan ICT Engineers' Training (B-JET) is a structured and comprehensive professional training platform for computer engineers powered by the technical support of JICA in association with the Career & Placement Center of North South University and the University of Miyazaki, Japan. The B-JET training program was initiated by Bangladesh Computer Council (BCC) and BJIT as a JICA Technical Cooperation project in 2017, and continued by North South University and the University of Miyazaki through an MoU agreement signed by the Bangladesh Computer Council and the two universities on 1st October 2020.

On the other hand, the Bangladesh-Miyazaki ICT Engineers' Educational Training Project (B-MEET) is another training program of the B-JET center which is funded by JICA. This program trains students who wish to work in Japan in the Japanese language, technical IT, and business etiquette. B-JET's approach to grooming ICT engineers for successful careers in Japan placed 120 graduates in the country between 2020 and 2022.

The pioneering initiatives of B-JET and B-MEET by the Career and Placement Center will aid in alleviating the shortage of skilled workers in the Japanese IT industry and also foster stronger ties with Bangladesh, a nation that boasts a surplus of graduate engineers.


CAREER & PLACEMENT CENTER
宮崎大学


B-JET Center


JICA

GLIMPSES OF THE 4IR SKILLS SUMMIT

PHOTO GALLERY

Opening Ceremony

PHOTO GALLERY

Award Ceremony









PHOTO GALLERY

Award Ceremony









PHOTO GALLERY

CEO Panel

PHOTO GALLERY

CEO Panel









PHOTO GALLERY

CXO Panel









PHOTO GALLERY

CXO Panel






PHOTO GALLERY

Seminar









PHOTO GALLERY

Seminar

PHOTO GALLERY

Young Entrepreneurs Panel




PHOTO GALLERY

Young Entrepreneurs Panel

PHOTO GALLERY

Policy Dialogue

PHOTO GALLERY

4IR Skills Summit Moments

PHOTO GALLERY

4IR Skills Summit Moments

PHOTO GALLERY

4IR Skills Summit Moments

PHOTO GALLERY

4IR Skills Summit Moments

EXECUTIVE COMMITTEE

Convener

Professor Mohammad Khasro Miah, Ph.D.
Department of Management, School of Business & Economics &
Director, Career & Placement Center
North South University

Co-Convener

Mr. H. M Asad Uz Zaman
Strategy & Innovation Specialist
Aspire to Innovate - a2i

Member Secretary

Mr. Md. Abdullah Al Mahmud
Founder & CEO
Thriving Skills Limited

Masterclass Coordinator

Dr. Mohammad Monir Uddin, Associate Professor, Department of Mathematics & Physics, North South University
Kazi Tanvir Akter, Career & Placement Center (CPC)
Ms. Shorifa Tuz Jahan, Career & Placement Center (CPC)

Members

Md. Zillur Rahman, Aspire to Innovate - a2i
Abu Bakar Siddik, Aspire to Innovate - a2i
Md. Shahrear Bin Satter, Aspire to Innovate - a2i
Ms. Sadia Sultana Hridi, Career & Placement Center (CPC)
Ms. Rezina Akhter Jahan, Career & Placement Center (CPC)
Ms. Shorifa Tuz Jahan, Career & Placement Center (CPC)
Mr. Kazi Tanvir Akter, Career & Placement Center (CPC)
Ms. Nowshin Islam, Career & Placement Center (CPC)

Supporting Clubs

IEEE NSU Student Branch
Marketing and International Business Club
NSU MBA Club
North South University Shangskritik Shangathan
NSU Finance Club
CPC Ambassadors from BNCC

EDITORIAL TEAM

Editor-in-Chief

Professor Mohammad Khasro Miah Ph.D.
Department of Management, School of Business & Economics &
Director, Career & Placement Center
North South University

Managing Editor

Ms. Sabeeha Saleque
Senior Lecturer, Department of English & Modern Languages &
Coordinator, School of Humanities and Social Sciences
Career and Placement Center
North South University

Members of Editorial Team

Dr. Mohammad Monir Uddin
Ms. Hamida Mosharraf
Ms. Shorifa Tuz Jahan
Ms. Nowshin Islam
Mr. Kazi Tanvir Akter
Ms. Lubaba Rysa Haque
Ms. Lubaba Sadat
Ms. Snata Basu
Ms. Sababa Malik

Graphic Design

Mr. Tareq, Thriving Skills Limited
Mr. Kazi Tanvir Akter, Career & Placement Center (CPC)

Other Support

Mohammad Salim, Career & Placement Center (CPC)
Abdul Jalil Molla, Career & Placement Center (CPC)

Supporting Brands

A.D. Sons Marine Tech
Parts & Service

Daraz

SEVEN RINGS CEMENT

Bikroy

Eastern Bank Ltd.
Simple Math™

bKash

G&G
Gadget & Gear

UCB STOCK
Brokerage Limited

MAXWELL STAMP LTD

SNAD
Foundation

Ocean Maritime Academy

NORTH SOUTH UNIVERSITY

Center of Excellence in Higher Education

NSU provides merit scholarships to the *Top 100* students of the Undergraduate Admission Test

#1 University in Bangladesh
THE WORLD UNIVERSITY RANKINGS

THE WORLD UNIVERSITY RANKINGS (OVER ALL)

NSU ranked top among all universities in Bangladesh in the latest World University Rankings 2023 by Times Higher Education (THE) *(Jointly with DU)*.

THE WORLD UNIVERSITY RANKINGS (ENGINEERING)

NSU ranked for "ENGINEERING" in the range of 301-400 globally by THE.

THE WORLD UNIVERSITY RANKINGS (ELECTRICAL & ELECTRONIC ENGINEERING)

NSU ranked for EEE in the range of 301-400 globally by THE.

THE WORLD UNIVERSITY RANKINGS (CIVIL ENGINEERING)

NSU ranked for Civil Engineering in the range of 301-400 globally by THE.

THE WORLD UNIVERSITY RANKINGS (COMPUTER SCIENCE)

NSU ranked for Computer Science in the range of 501-600 globally by THE.

RANKED QS UNIVERSITY RANKINGS ASIA 2023

QS ASIA RANKINGS

Top ranked private university in Bangladesh in the prestigious QS Asia Rankings 2023.

QS GRADUATE EMPLOYABILITY RANKINGS TOP 500 2022

QS GRADUATE EMPLOYABILITY RANKINGS

The only private university in Bangladesh to be ranked within the world's top 500 universities by QS Gradute Employability Rankings 2022.

Webometrics RANKING WEB OF UNIVERSITIES

WEBOMETRICS RANKING OF WORLD UNIVERSITIES

Ranked number one among all private universities in Bangladesh by Webometrics Ranking of World Universities 2023.

DT OrQuest

ORG-QUEST & DT RANKING

Ranked number one private university in Bangladesh by Org-Quest Research Ltd. in association with the Dhaka Tribune declared in May, 2019.

School of Business & Economics

- Department of Accounting & Finance
- Department of Economics
- Department of Management
- Department of Marketing & International Business
- MBA & EMBA Programs

School of Humanities & Social Sciences

- Department of English & Modern Languages
- Department of Political Science & Sociology
  - *BSS in Media & Journalism*
  - *South Asian Institute of Policy and Governance (SIPG)*
- Department of Law
- Department of History & Philosophy
  - *M.A in History & Asian Studies*

School of Engineering & Physical Sciences

- Department of Architecture
- Department of Civil & Environmental Engineering
- Department of Electrical & Computer Engineering
- Department of Mathematics & Physics

School of Health & Life Sciences

- Department of Biochemistry & Microbiology
- Department of Environmental Science & Management
- Department of Pharmaceutical Sciences
- Department of Public Health
  - *NSU Global Health Institute (NGHI)*
  - *NSU Genome Research Institute (NGRI)*

We Are Accreditated Nationally & Globally

ACBSP ACCREDITED USA

Admission QR Code

www.northsouth.edu +88-02-55668200 registrar@northsouth.edu
facebook.com/NorthSouthUniversity Bashundhara, Dhaka-1229