

Report On

***Industry 4.0 and Employee Upskilling: How a
Developing Country Can Bridge the Digital Skills
Gap***

By
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An internship report submitted to the BRAC Business School in
partial fulfillment of the requirements for the degree of
Bachelor of Business Administration

BRAC Business School
BRAC University
May 2025

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Declaration

It is hereby declared that

1. The internship report submitted is my/our own original work while completing degree at BRAC University.
2. The report does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The report does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I/We have acknowledged all main sources of help.

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Letter of Transmittal

Date: 22- May- 2025

Nusrat Hafiz

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Subject: Submission of Internship Report

Dear Ma'am,

With great pleasure it is my duty to acknowledge that I have finished writing the report on “Industry 4.0 and Employee Upskilling: How a Developing Country Can Bridge the Digital Skills Gap” During the preparation of this report, I interned at Samsung Research and Development Institute Bangladesh Ltd., where I had the opportunity to work in the HR department so as to get the supervision of an honorable HR manager of the company.

I have invested a great deal trying to ensure that I collected the accurate data and present the recommended proposition as and when it is required in as concise and compact a manner as possible.

Sincerely,

Lumina Rashid

21104090

BRAC Business School

BRAC University

Date: 22- May- 2025

Non-Disclosure Agreement

This agreement is made and entered into by and between Samsung Research and Development Institute Bangladesh Ltd. and the undersigned student at BRAC University.

Lumina Rashid

ID: 21104090

Acknowledgement

The sincere appreciation goes to everyone who supported me through my internship and my report work.

I deeply appreciate **Samsung Research and Development Institute Bangladesh Ltd. (SRBD)** for granting me the chance to work at their People Part (HR) department as an intern. During my internship at People Part, I owe the most gratitude to **Mr. Arif Hasan**, who served as the Senior Manager of People Part while delivering continuous backing and teaching all through my internship experience. With his guidance I became more aware of how human resource management operates in a global technology environment.

I wish to thank **BRAC Business School** faculty alongside its administration, especially my academic supervisor, for their positive guidance that helped create this report. The academic mentors provided essential guidance through which theoretical concepts blend with practical business situations.

I am deeply thankful to all HR professionals as well as industry experts and IT professionals who granted me their time and knowledge through research interviews.

I show my gratitude toward the friends, family, and peers who continuously supported and motivated me during this entire journey.

Executive Summary

The research examines digital upskilling challenges faced by IT sector human resource operations at Samsung Research and Development Institute Bangladesh Ltd. (SRBD) through an internship perspective. The study examines systematic human resource practices at SRBD, focusing on the People Part department alongside an assessment of workforce capabilities for Bangladesh's readiness in Industry 4.0.

The human resources processes at SRBD include screening job applications and managing candidate testing and training programs for both job seekers and current staff. A systematic approach enables the completion of these activities to create an open and efficient recruitment and selection process. The direct management experience allowed me to comprehend how SRBD implements talent acquisition and employee development processes according to global standards through proper documentation.

A research project uses primary data gathered from 20 individuals together with secondary literature to reveal the substantial difference between modern IT expertise in Bangladesh and Industry 4.0 requirements. The Digital Bangladesh, LICT, and SEIP programs successfully introduce progress, while existing problems with outdated curricula, high training expenses, restricted hands-on learning, and city-specific distribution of programs prevent widespread skill development.

The report emphasizes improvements needed at SRBD alongside other HR development organizations, which include better practical education and digital system automation and stronger partnerships with academic institutions. Future-proof training strategies that are inclusive in nature represent the path forward for Bangladesh's IT industry if it wants to stay competitive in modern digital times.

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List of Acronyms

AI	Artificial Intelligence
AWS	Amazon Web Services
BBA	Bachelor of Business Administration
BASIS	Bangladesh Association of Software and Information Services
BIDA	Bangladesh Investment Development Authority
BPO	Business Process Outsourcing
CFO	Chief Financial Officer
GA	General Administration
HR	Human Resources
ICT	Information and Communication Technology
IoT	Internet of Things
LEDP	Learning and Earning Development Project
LICT	Leveraging ICT
L&D	Learning and Development
MD	Managing Director
ML	Machine Learning
R&D	Research and Development
SEIP	Skills for Employment Investment Program
SQL	Structured Query Language
SRBD	Samsung Research and Development Institute Bangladesh
SWC	Software Competency (Test)

Chapter 1: Overview of Internship

1.1 Information of the Student

Name	Lumina Rashid
ID	21104090
Program	Bachelor of Business Administration (BBA)
Major	Human Resource Management

1.2 Internship Information

1.2.1 Company Name, Department/Division, Address

Company Name	Samsung Research and Development Institute Bangladesh Ltd.
Duration	6 months (3 February -2 August)
Department	People Part
Address	Monem Business District, 111 Bir Uttam CR Dutta Rd., Dhaka 1205

1.2.2 Internship Company Supervisor's Information

Name	Arif Hasan
Designation	Senior Manager, People Part

1.2.3 Job Scope—Responsibilities

My internship work at Samsung Research and Development Institute Bangladesh (SRBD) provided me with useful human resources knowledge. The internship time brought me full engagement in all human resources operations. The work involved training planning for talent acquisition and assisting with all operations related to HR. This chapter shares how I have achieved various goals at SRBD through my internship experience.

- **HR Operational Activities**

As an intern at the People Part (HR), I assisted in supporting routine HR work carried out in the workplace. Specially managing paperwork involved my attention, as I had to make sure all the HR processes were working properly according to standardized instructions. Through assisting in organizing HR processes more efficiently, I learned more about how organizations function and why it is essential to adhere to the compliance demands.

- **Talent Acquisition Support**

The most important aspect I focused on was the process of hiring new employees. I assisted the team in such recruitment processes as screening applications, maintaining correspondence with hopefuls, and scheduling meetings between interviewees and applicants. Through this role, I interacted with prospects to know how it helps the company when one chooses the right people. My hands-on experience with applicant tracking systems assisted me in updating and maintaining the candidate database.

- **Resume Screening and Candidate Communication**

The key responsibilities in my main work duties were checking and selecting resumes in search of suitable job applicants. I had to ensure here whether each job candidate fulfilled the job description requirements through this. I kept job seekers updated on their applications and I did arrange interview meetings with them. My job responsibilities allowed me to assess professional profiles in a better way and improve my communication skills.

- **Pre-Employment Test (Advanced Level Test)**

Software engineers in SRBD must pass the Advanced Level Test as an employment requirement. The test determines eligibility for interview selection. I assisted during the technical pre-employment test, which is aimed at testing the coding, debugging, and problem-solving skills of the chosen candidates before they can join the company. This test is very important in assessing technical proficiency and allowing the candidature of candidates in technical roles. This evaluation process support helped me understand the technical expectations for software engineering jobs more.

- **Professional Level Test Support (SWC Test)**

The Samsung Software Competency Test (SWC) is a professional-level coding examination that was developed for software engineers. It measures the level of proficiency of candidates in programming, data structures, and algorithms. While I was doing my internship, I was able to help in performing this examination. My duties were helping with logistic arrangements, keeping track of the test environment, and making sure that the process was smooth and professional. That experience enabled me to gain a better insight into the technical evaluation criteria for senior engineering positions.

- **Interview Coordination**

While at my internship, one of my achievements was setting up interview appointments with the selected candidates. I scheduled interviews with the team in charge and made sure everything went smoothly during the meeting process. This experience enhanced my organizational skills and helped me better understand what recruiters are looking for in potential hires, as from time to time I observed interviews to get these insights.

- **Training and Development Coordination**

As part of my internship duties, I helped run the workplace training and employee development programs. I organized different training activities by booking facilities and monitoring program delivery. My experience with employee development showed me why businesses must keep teaching employees all the time.

- **Maintaining Candidate Database**

One of my main duties included keeping the database for job applicants up to date with their employment records. Our People Part Team (HR department) needed complete records about recent job hires plus all rejected and potential candidates to track recruitment actions. By performing this work, I gained data entry skills and learned how proper HR records need to be maintained. Through this responsibility, I was able to acquire hands-on experience in data entry and appreciate the essence of having organized and reliable HR documentation.

1.3 Internship Outcomes

I applied academic knowledge together with practical human resources management at Samsung Research and Development Institute Bangladesh (SRBD) through my work experience. Working with the People Part (HR) team provided me valuable opportunities to interact with various aspects of talent acquisition, training coordination, and database management. The role enabled me to enhance my candidate evaluation skills alongside improving my organizational competencies and communication capability. This experience showed me how crucial it is to operate human resources operations efficiently since it optimizes recruitment processes and maintains accurate employee database management systems. The work experience equipped me with problem-solving capabilities and adaptation skills, together with essential business readiness aspects, during my professional career establishment period.

1.3.1 My Contribution to SRBD

As part of my role at SRBD, I supported the HR teams for recruiting functions while maintaining precise, up-to-date records of candidate information. My support for screening resumes and interview scheduling made HR operations run faster for my team. The staff development programs ran smoothly because I was responsible for their training coordination.

In addition to my main duties, I enhanced HR practices by detecting better ways to work and making simple improvements. My good communication skills with applicants and internal colleagues made our hiring process faster and better for everyone involved. My attention to documentation helped the organization operate more effectively while its recruitment and training processes became easier to monitor.

1.3.2 Benefits of the Internship Program

Through the internship program, I gained experience with HR tasks and learned how to use my class knowledge in real work situations. Through my internship work, I learned to communicate better while handling time effectively and solving problems. My work in corporate settings taught me how to function better in professional environments and match their organizational culture.

Through my work, I learned about corporate conduct standards and learned how HR professionals make strategic choices. Experienced HR mentors taught me about modern HR methods and recruitment ways through their professional guidance. Through this experience, I developed professionally and became better prepared for my work in human resources.

The internship helped me meet professionals at work who became important connections. The connections I made showed me more HR career paths and taught me how to succeed in corporate settings.

1.3.3 Challenges

SRBD's strong privacy rules made it hard for me to find the information I needed during my internship. The institute cannot share internal information, which made it hard for me to grasp detailed business operations. I improved my learning experience by speaking directly to my supervisors about their work and joining them in their tasks for hands-on training.

At first I had problems adjusting to the rapid work pace of the organization. Many assignments and work needs required me to develop effective time management practices. I became better at managing my work by following advice from others and gaining experience in handling various projects.

The biggest problem I faced was creating effective communication with job seekers. Responding to many types of job applicants and helping them while keeping them happy needed excellent communication skills. My skills in professional communication improved as I practiced dealing with candidates, which boosted both my confidence and communication talents.

1.3.4 Recommendations

SRBD should adopt more organized and interesting activities for its interns to improve their future internship experience. The present program helps interns learn HR functions but needs updates to build better results. Enhancing the internship framework at SRBD will build a better workspace for its interns and the organization. Some key recommendations include:

- **Providing a structured orientation session:**

The start of the internship sets the foundation by introducing company practices and job requirements to help new workers join their positions more easily. Interns should learn how to use HR technology through practical training to develop new technical abilities they need to succeed. Experienced HR professionals lead knowledge-sharing events to teach interns about work industry patterns and approaches plus future career progression.

- **Developing an online application portal:**

SRBD does not possess a special website that job seekers can use to send their resumes and apply for available roles. The new online hiring platform will make the recruitment process more efficient for HR staff.

- **Shifting pre-employment tests online:**

SRBD conducts physical pre-employment tests that take too much time and money to administer. Using digital tests to assess candidates online will help HR teams and applicants save time by avoiding traditional hiring methods.

Chapter 2: Organization Part

2.1 Introduction of Samsung R&D Institute Bangladesh

SRBD stands as the leading research and development hub under Samsung Electronics, which exists as a part of Samsung Research and Development Institute Bangladesh. SRBD established its operation in 2011 as the main Samsung division for building advanced software solutions and applications that serve Samsung devices throughout the globe, including mobile phones, tablets, wearable technology, and electronic devices. SRBD operates from Dhaka, Bangladesh, as the initial research and development facility of a global technology corporation in this nation. The company develops innovative software through its Bangladesh unit to apply artificial intelligence within integrated IoT systems for providing exceptional user experiences through multiple platforms (*SR Bangladesh | Samsung Research*, n.d.).



Fig. 1: Samsung R&D Institute Bangladesh Limited

SRBD functions as Samsung's essential component in its worldwide development network to lead innovation initiatives that support business objectives. The institute delivers digital solutions through software development, data analysis, and artificial intelligence research to transform the user experience for millions of digital users. The organization works together with other Samsung R&D centers to create product development and technological advancement synergy.

SRBD demonstrates dedication to excellence through all its operations beyond their core software creation activities. The institute uses continuous investment in research about automation, cloud computing, and cybersecurity to maintain Samsung devices as industry leaders in technology. The engineers and researchers at SRBD work on multiple interrelated projects that fulfill Samsung's business requirements and boost global technological progress.

SRBD plays two main functions for local talent development by creating employment prospects for highly skilled engineers and technical experts. The company works together with universities, along with research institutions and government initiatives, to create a workforce that supports Bangladesh's advancing technology sector. SRBD maintains employee competence through established training programs and development options that help workers acquire modern industry information and technological abilities.

Samsung demonstrates a sustained commitment to technological innovation and excellence in the region through its operations in Bangladesh through SRBD. The research-oriented and talent-focused approach, together with technological innovations at SRBD, serves to advance Samsung's delivery of world-class digital solutions.

2.2 Vision of SRBD

The Samsung Research organization sets its vision as "Shape the Future with Innovation and Intelligence" to develop a valuable future through innovative intelligence solutions. It transforms into the flagship R&D facility that helps Samsung Electronics develop its technological and innovative capabilities. SRBD envisions:

- The organization aims to lead globally in software development together with technological research.
- The organization leads the development of solutions that strengthen Samsung's product system while generating meaningful user interactions.
- The organization develops top-tier employees through staff learning and professional development initiatives.
- Bangladesh will solidify its standing in worldwide technology by developing software and AI innovations (*Vision & Mission | Samsung Research, n.d.*).

2.3 Mission of SRBD

Samsung Research aims to develop new business value, which increases competitive advantages and discovers new growth opportunities simultaneously with advanced core technology development to build AI leadership positions worldwide.

- The organization supports innovative development of software solutions and technological research, which helps Samsung achieve global project goals.
- The company creates software products that precisely meet market requirements along with customer demands.
- The organization works together with Samsung R&D centers across the globe to bring innovative technology into Samsung product development.
- SRBD designs an organizational space where workers develop their skills and achieve professional advancement.
- The company should develop technological progress in Bangladesh through local talent development and research infrastructure establishment (*Vision & Mission | Samsung Research, n.d.*).

2.4 Overview of the Groups at SRBD

SRBD maintains its organizational structure under the direction of the Managing Director (MD) together with the Chief Financial Officer (CFO). The organization distributes its workforce across different teams and functional groups that advance research and development alongside corporate management activities.

2.4.1 Teams Under Managing Director (MD):

1. **Application Team:** This team develops customized software applications for Samsung devices through designing, developing, and optimizing them. Through their work, Samsung achieves mobile applications that deliver smooth operations and maintain exceptional performance levels alongside robust security capabilities.
2. **Wearable Team:** Specializing in wearable technology, this team develops software solutions for Samsung smartwatches along with fitness trackers and further wearable devices. The group works to develop software components that build better connectivity for devices and health tracking functions, along with refined user interface response capabilities.
3. **Innovative Solution Team:** This team engages in future technology research and development tasks, resulting in new product features for Samsung's product lineup. Their efforts focus on AI-based applications and smart automation solutions.

2.4.2 Team Under Chief Financial Officer (CFO):

The **Management Team** operates under the CFO, and it is divided into five key major parts:

1. **Finance:** The Finance Group exists to manage corporate financial planning while establishing budget plans and enforcing financial rules. SRBD needs this group to perform financial management and distribute resources that ensure the company's financial stability.
2. **GA & Securities:** This group controls general administrative functions and security operations to establish a safe and productive workplace setting for all employees. The

group takes responsibility for direct corporate governance functions as well as policy implementation.

3. **People Part:** The People Part manages all human resource functions, which include hiring new talent, maintaining employee relations, managing employee performance, and developing the organization through development initiatives. The team focuses on three main functions to recruit and maintain excellent professionals at SRBD by maintaining an inclusive workplace.
4. **R&D Operations:** Ensuring smooth execution of research and development projects, this group manages workflows, resource distribution, and project timelines to maintain efficiency in product development.
5. **IT Infra Part Group:** It operates as SRBD's central authority for managing both security and efficient technology frameworks needed to support research and development activities.

I did my internship in the People Part department. This is under the Management Team. My manager is Arif Hasan, and his designation is Senior Manager.

2.5 Recruitment and Selection Process

SRBD has established recruitment and selection procedures to obtain the highly qualified candidates needed for different positions. The process includes multiple stages:

1. **Requisition Approval:** The recruitment process starts when departments submit their job requirements to group heads for formal approval.
2. **Job Advertisement & Sourcing:** Job Advertisement & Sourcing first involves posting open positions both on job sites and university career portals and employee recommendation platforms.
3. **Resume Screening:** The Human Resources team screens job applications and selects candidates whose experience matches the posted requirements.
4. **Pre-Employment Test:** Technical ability (coding & debugging code) and problem-solving proficiency evaluation occur through the Pre-Employment Test, which assesses selected candidates.

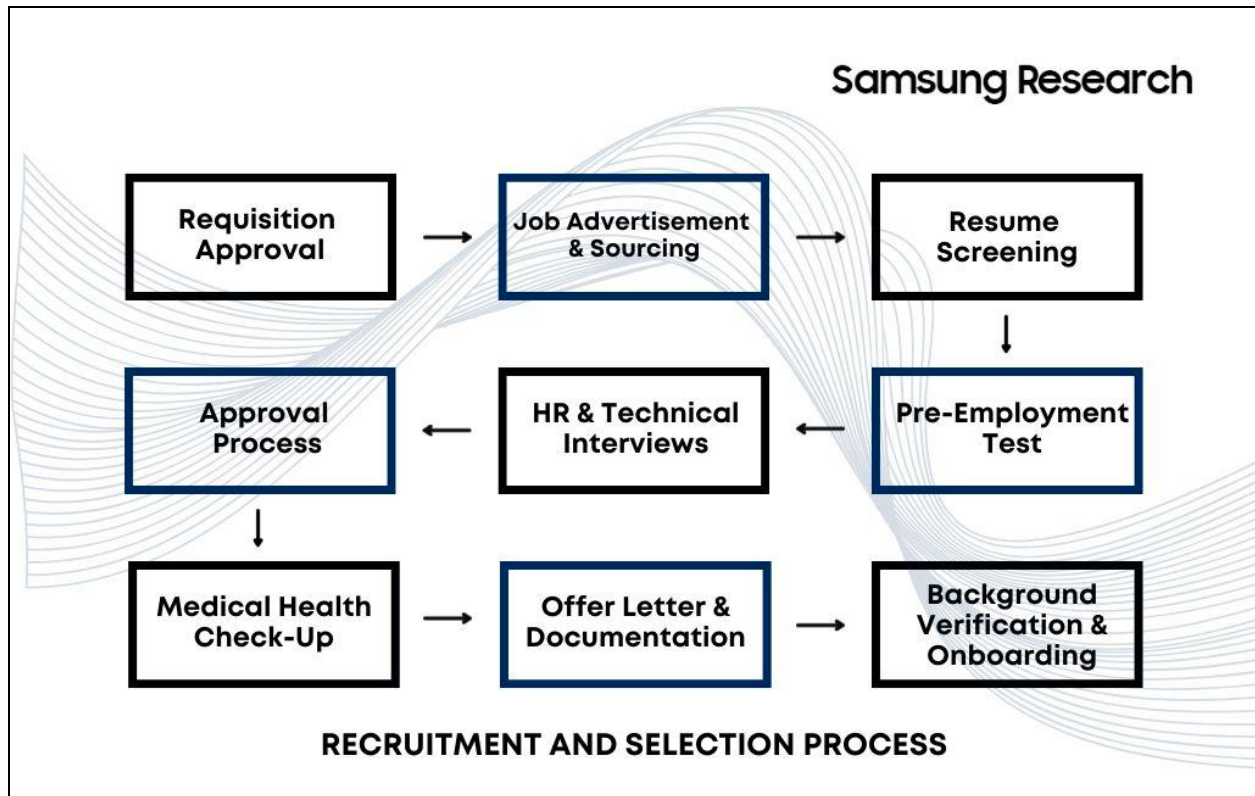


Fig. 2: Recruitment and Selection Process

5. **HR & Technical Interviews:** SRBD conducts two interviews involving both HR staff and technical evaluators to confirm the fit and necessary skills of candidates.
6. **Approval Process:** All candidates need to get ultimate acceptance from both group heads and the CFO along with the MD following their interview-based approval process.
7. **Medical Health Check-Up:** Those who succeed in passing recruitment need to undergo medical assessments to verify whether their health condition meets employment requirements.
8. **Offer Letter & Documentation:** Following successful medical testing, Samsung issues the job offer and demands the required documents from job seekers.
9. **Background Verification & Onboarding :** The HR department verifies candidate background information and initiates company entry by developing IDs, assigning IT access, and orienting new hires.

Samsung R&D Institute Bangladesh Ltd., renowned for its cutting-edge contributions to the global. The technology community values its employee selection process as its key driver for

growth and success. SRBD aims to discover top performers through its talent acquisition process. Our company seeks out, develops, and maintains exceptional staff members who create revolutionary technology breakthroughs. SRBD follows this exact method to hire employees.

2.6 Industry and Competitive Analysis

Competitive success in rapidly changing research and development demands an organized comprehension of industry patterns with market movements. The extensive evaluation of industrial conditions and competitive elements helps SRBD understand its internal position together with external perils and potential benefits to strengthen market positions. The combination of Porter's Five Forces analysis and SWOT analysis provides important intelligence about SRBD's competitive environment and its strategic framework.

2.6.1 Porter's Five Forces Analysis

Companies use Porter's Five Forces analysis as an essential strategic tool to determine industry competition forces. Organizations gain complete market perspective through this method, which brings them essential knowledge about their competitive landscape together with potential obstacles they face for growth and sustainability (Social, 2024). Using this model to examine SRBD allows us to understand the way competitive market factors affect its business strategy and industry standing. The following section explores all primary influences on SRBD's market performance.

- **Threat of New Entrants:** Entering the software R&D market proves challenging because it demands significant funding together with specialized staff and robust research facilities that new competitors must build. Advancements in electronic cloud technology, together with AI developments, have made it easier for specialized technology companies to enter the market.
- **Bargaining Power of Suppliers:** The research and development division of SRBD depends heavily on expert engineers and innovative technology, thus rendering its

suppliers with both skilled personnel and advanced technological resources are significantly important. Samsung's international brand strength combats the strength of skilled professionals as suppliers since its attractive nature pulls in highly qualified employees.

- **Bargaining Power of Buyers:** Samsung Electronics has a strong influence over SRBD's work, including the quality of services, pricing, and overall expectations. Which gives it significant control over expectations, pricing, and service quality. SRBD needs to maintain continuous operational optimization because its parent company expects cost-effective and innovative R&D solutions despite the market demand.
- **Threat of Substitutes:** Organizations now possess alternate methods of innovation through automated systems and AI-based research and outsourced laboratory services that eliminate their dependency on dedicated R&D firms like SRBD. SRBD must actively pursue technological changes and new trends to combat its substitute threats.
- **Industry Rivalry:** The software R&D industry demonstrates intense competitive conditions because Google, Apple, and Huawei, alongside other companies, dedicate significant resources to research activities. SRBD needs to maintain superior technological capabilities that will distinguish it from others by utilizing Samsung's worldwide networks for achieving critical market advantages.

2.6.2 SWOT Analysis

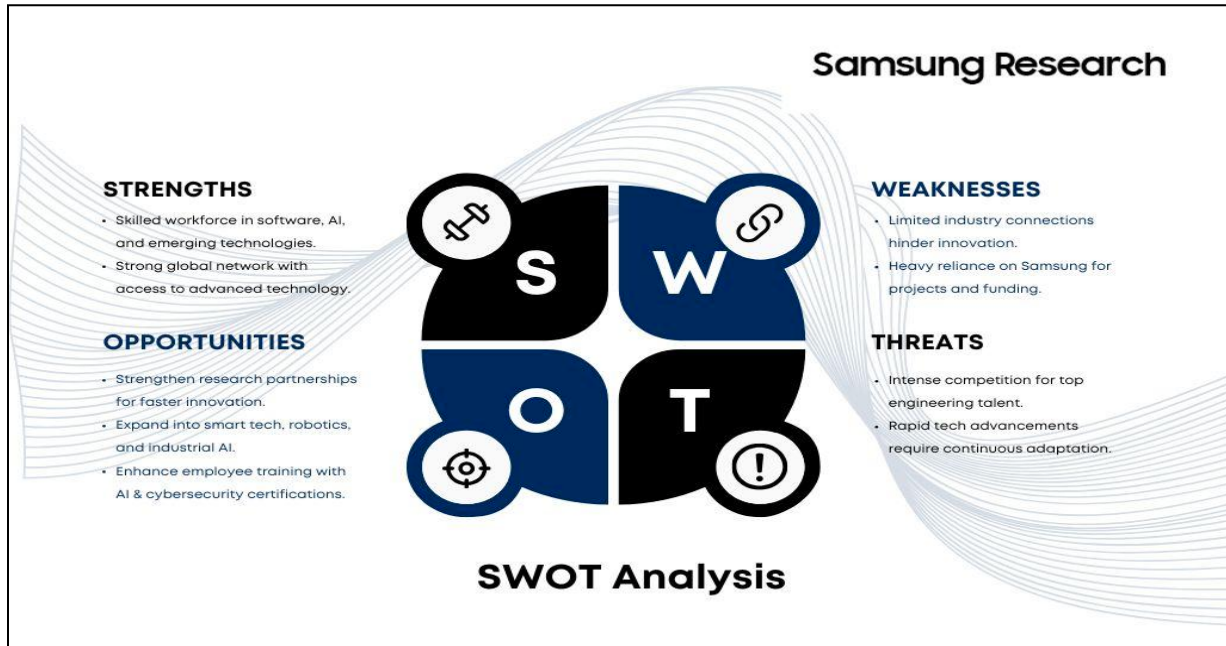


Fig. 3: SWOT Analysis

Business organizations use SWOT analysis as a strategic tool that analyzes both their internal capabilities and weaknesses and their external market opportunities and challenges. The method establishes a complete market position assessment of SRBD, which enables both growth strategies and areas for improvement identification. Subsequent data outlines in detail the competitive position of SRBD.

Strengths

- SRBD maintains a proficient workforce that specializes in creating software solutions as well as implementing AI techniques and emergent technology systems.
- SRBD benefits from its extensive international network, through which it maintains seamless connections with other Samsung Research and Development centers that have access to advanced technologies.

Weaknesses

- Industry connections that remain minimal restrict organizations from discovering outside breakthroughs and from using international high-quality approaches together with innovative technologies.
- Research initiatives prevent diversification because the organization depends heavily on Samsung Electronics for projects and funding support.

Opportunities

- The company should create enhanced research partnerships through its Samsung R&D centers and external technological organizations to increase innovation speed.
- The company should enter the market of smart technologies and robotics to advance its research projects while following worldwide industrial developments.
- The company should expand its employee training programs by adding certifications that show strong expertise in the fields of AI, cybersecurity, and cloud computing.

Threats

- R&D firms alongside tech startups face each other in a tough competition because they focus intensely on recruiting highly skilled engineering professionals.
- Rapid technological advances force the organization to keep adapting their strategies and invest in developing new research domains.

2.7 Recommendations

Samsung Research and Development Institute Bangladesh Ltd. operates within the rapidly developing technological sector under the intense market competition of the market. To sustain its position within Samsung's international research and development structure SRBD must permanently develop its strategies while recruiting top human resources and achieving superior operational standards. SRBD can sustain a powerful market position and achieve sustainable

growth by implementing recommendations that result from SWOT evaluation and Porter's Five Forces analysis.

Leveraging Strengths for Competitive Advantage

SRBD keeps its competitive position strong because Samsung Electronics offers substantial financial support and technological resources to the organization. The highest potential for SRBD can be reached when its researchers have improved access to worldwide R&D hubs operated by Samsung in order to share knowledge between different sites effectively. SRBD needs to provide educational programs for its workforce to develop employees with superior technological expertise and greater innovative capabilities. The company maintains a lasting competitive position because of its international relationships combined with its proven excellence in software development services.

Addressing Weaknesses to Improve Efficiency

Despite its strengths and its brand value, SRBD faces internal inefficiencies, particularly in recruitment and knowledge management. An exclusive online recruitment system provides both an efficient candidate selection process and greater job candidate satisfaction through direct application methods. Even with the requirement to preserve confidentiality, SRBD needs to create secure systems for knowledge sharing that support academic investigation without compromising security protocols. Proper organization of a research database enables university-academic-industry collaboration to address knowledge gaps within corporate standards.

Capitalizing on Emerging Opportunities

The technology industry shows rapid development, which creates various expansion possibilities in artificial intelligence (AI) and machine learning as well as cybersecurity fields. SRBD should extend existing research programs into evolving technological domains, which will establish the company as a frontrunner of next-generation software solutions. The company can strengthen its employer brand by presenting itself to more industry associations and universities through research and conference participation to draw talented employees.

Mitigating Threats and Industry Risks

SRBD needs to take preventive measures against the increasing global R&D competition by addressing potential workforce shortages and managing technological change at speed. The strategic alliance between SRBD and universities and technical institutions establishes a dependable pool of local talent, which minimizes their need to recruit professionals from outside their organization. SRBD can sustain its market agility through investments in automated research that uses AI-based technologies. SRBD can prevent strategic challenges through routine market studies and competitor comparisons that detect emerging threats before adapting its operational plans.

Strengthening SRBD's Market Position through Porter's Five Forces Strategy

The reduction of new market participants requires SRBD to develop patents along with proprietary AI innovations that establish entry barriers. Expanding its supplier base and establishing strategic university and research institution partnerships will enable the company to reduce supplier bargaining strength and access continuous talent streams. SRBD improves its relationship with Samsung Electronics and retains its strategic value through constant delivery of high-quality and cost-effective solutions. The threat from substitute products can be managed by SRBD through continuous innovation and the development of specialized emerging technology expertise that is difficult to duplicate. SRBD must build a learning-focused organizational culture as part of its strategy to stand out against industry competition in order to keep its essential role in Samsung's worldwide innovation efforts.

Chapter 3: Project Part

3.1 Introduction

Almost every business sector worldwide has changed from basic operations through the fast development of Industry 4.0 technology. Digital transformation relies heavily on the IT industry to drive its growth and power the global revolution. The quick development of technology produced an important digital skills problem, especially in Bangladesh and other developing nations. The gap between developing and developed nations in IT technology adoption exists because developing economies need more trained staff. Organizations must update their staff skills because it helps them succeed in business while creating job security and long-term business success. My research seeks to understand why employees find it difficult to train in IT and shows Bangladesh how to update its workforce to match Industry 4.0 globally.

3.1.1 Background and Problem Statement

- ***Global Context***

Industry 4.0 requires companies to hire many IT professionals who know how to use cloud systems, protect networks from threats, build software applications, and teach computers to learn automatically. According to World Economic Forum (2020) data, 50% of worldwide employees require workplace training before 2025 to keep working with modern technology. IT companies worldwide are increasing their training budgets to train employees for better market performance. Young nations face two major barriers to adopting digital technologies because their people do not have enough access to teachable tools and outdated teaching material. Developed and developing nations keep growing their digital gap, so we must solve skill shortages right now. According to UNICEF (2020), the young people of the world are fighting to identify and obtain skills needed in the contemporary job market, widening the global skills divide and fueling youth unemployment.

- ***Local Context: Bangladesh***

The IT sector in Bangladesh experienced remarkable growth, which led to success in software development as well as business process outsourcing (BPO) and fintech . The nation has developed itself into an upcoming IT hub through Digital Bangladesh initiatives while the government pushes forward digital transformation across the country (Bangladesh Investment Development Authority, 2019). The industrial sector suffers from an acute lack of qualified professionals who can fulfill the requirements of Industry 4.0 operations. The shortage of IT professionals who possess practical skills in modern technology remains a challenge because companies find it hard to hire people skilled in AI, data analytics, and cloud computing. Industry-academic collaboration with insufficient global-standard training and lacking structured upskilling programs is the main reason behind the skills gap. The failure to address this skill shortage will cause Bangladesh to surrender its leading position within the global IT industry.

3.1.2 Objectives

The main goal of this research involves identifying methods to address the digital skill shortage that affects the IT sector of Bangladesh during the Industry 4.0 period. Specifically, the study aims to:

1. The IT industry needs to determine which talent abilities will support successful implementation of Industry 4.0 standards.
2. Current training programs, together with government initiatives, require evaluation for their effectiveness.
3. Presents strategic guidance to both education authorities and government officials about how to boost their upskilling initiatives.
4. Identify the obstacles IT professionals encounter during their attempts to learn new technologies and adapt to emerging technological trends.
5. Analyze how private companies deliver worker training with an examination of organizational backing that advances skill growth.

3.1.3 Significance

The success of Industry 4.0 within Bangladesh's IT sector requires qualified workers who can adapt to changes. The study enables IT professionals to maintain job market relevance through identified skill gaps because it provides effective upskilling strategies, thus preserving industry growth. The study delivers useful direction to policymakers, corporate leaders, and educators through its findings, which guide them towards creating educational programs for upskilling initiatives. The effort to close the digital skills gap enables Bangladesh to secure better economic stability and enhanced global IT industry placement.

3.1.4 Scope of the Study

This research analyzes the IT industry of Bangladesh by evaluating its workforce preparation for Industry 4.0 implementation. The research covers:

1. **Target Audience:** IT professionals, employers, policymakers, and educational institutions.
2. **Key Areas:** Digital skills assessment, current training programs, industry-academia collaboration, and global best practices.

The main subject of investigation consists of Bangladesh, with supplementary evidence drawn from other developing nations to create a broader comprehension of the findings. This research investigation fails to explore non-IT industry sectors; its research results potentially apply to general digital workforce development initiatives.

The research seeks to establish valuable knowledge for developing skilled information technology workers who can succeed during the Industry 4.0 era by studying these essential areas.

3.2 Literature Review

The swift development of technology altered all industries throughout the world, which produced complex workforce development scenarios. The transition of nations into Industry 4.0 requires enhanced skills for digital workforce development because it combines automated manufacturing with data exchange technology. Developing countries need digital skill development to succeed because economic situations reduce their capability to offer advanced education through traditional means. The authors of Wahdaniah et al. (2023) stress the need for modern strategies to enhance personnel potential and underline the importance of digitalized employee growth. The history of technological progress resulted in unskilled workers becoming jobless, according to SAOUDI (n.d.), the author who recommends preventive training programs for workers. Professional digital training for employees becomes essential for successful industrial transformation because it delivers employee empowerment and competitive benefits needed to sustain economic development throughout developing regions.

Industry 4.0 presents an essential period of change that connects digital technology innovations to modern production systems. The new industrial revolution combines data exchange with IoT along with automation so businesses achieve improved operational results and fresh business models. The global economy creates substantial impact through businesses gaining advantage from their possession of innovative solutions, which enable them to create improved products and deliver quick customer response. Major obstacles to the transformation mainly affect developing countries since both inadequate infrastructure and skill gaps prevent their progress. The literature recommends that organizations must invest resources in employee development through continuous learning to minimize the digital skills deficit. The global marketplace requires skill deficiencies to be addressed because they limit Industry 4.0 advantages while preventing inclusive growth (Abidin et al., 2024).

Multiple academic research studies, along with industrial surveys, demonstrate that digital skill deficits are expanding in regions across both industrialized and developing regions. Proficient organizations from developed regions have developed formal training initiatives and academic collaborations to address the situation. Bangladesh and other developing regions face challenges regarding their upskilling initiatives because these programs fail to connect with industry

requirements effectively. According to Deloitte (2019), the failure to act immediately on the skills gap challenge will cause countries to lose their ability to complete digital transformations. South Asian country Bangladesh has progressed through its "Digital Bangladesh" initiative as well as through the Leveraging ICT (LICT) Program along with the Skills for Employment Investment Program (SEIP) and the Learning and Earning Development Project (LEDP). The initiatives delivered better digital knowledge while stimulating freelance work and basic information technology capabilities. BASIS reported that Bangladesh faces a shortage of experts with advanced technological capabilities for AI and cloud architecture alongside data science and cybersecurity sectors (Hossain, n.d.).

A paper by AHMED & AZIM (2016) points out how education fails to match industry requirements. University educational programs fall behind the current technology developments, which leaves graduates unprepared to fulfill professional job needs. The situation grows worse because institutions lack proper hands-on training and access to industry work environments as well as adequate research and development (R&D) systems.

Various studies stress the significance of ongoing learning for people dedicated to career development. Organizations that consistently pursue employee advancement stand to succeed better in maintaining their competitiveness through adapting to technological changes, according to Ekuma (2023). Organizations that do not provide investments in workforce ability growth will face higher levels of joblessness as well as underemployment among workers and reduced national production capacity.

Research indicates that resolving the digital skills gap in Industry 4.0 presents both technology-independent and institution-wide challenges, which need multiple organizations working together. This literature review establishes essential knowledge that enables evaluation of Bangladesh's digital readiness level and development of specific initiatives to support IT professionals.

3.3 Methodology

The study utilizes qualitative research methods with primary and secondary datasets to deliver broad insights about the digital skill shortage affecting Bangladesh's IT sector. The research method has been created to detect important challenges, evaluate existing upskilling programs, and develop strategic solutions that can bridge the skill gap during the evolution of Industry 4.0.

3.3.1 Research Design

An exploratory research design enables appropriate analysis of current trends and challenges within the area of IT upskilling. The research analyzes both industry professional testimonies and secondary data sources to find general trends that future applications can use in the Bangladeshi IT industry.

3.3.2 Data Collection Methods

Primary Data

The research adopts qualitative methods to study how developing nations, specifically Bangladesh, may handle their digital skills shortage within the framework of Industry 4.0. The study gathers existing viewpoints from major IT sector stakeholders. A total of 20 participants made up the primary source data collection process that included managers along with IT professionals, training experts, policymakers, and students. The research interview questions (see appendix for details) were created to assess digital skills needed most at present levels of skill and challenges in skill building, as well as how government and corporate initiatives affect these factors.

Secondary Data

The research will retrieve secondary data through academic journal articles together with industry reports and governmental publications, as well as case study material from developing nations. The collected sources present enough evidence for constructing a comprehensive

analysis of worldwide effective methods used to train IT personnel. The research will assess policy measures through the review of documents issued by the World Economic Forum, Bangladesh Association of Software and Information Services, and Digital Bangladesh government initiatives.

3.3.3 Data Analysis

The interpretation of qualitative interviews uses thematic analysis as the research methodology. Research data will be grouped into recurring major themes about skill deficiencies together with training difficulties together with best approaches for upskilling. The researchers will use content analysis to examine secondary data and extract patterns of successful approaches that Bangladesh's IT industry might utilize.

3.3.4 Limitations of the Study

Despite its goal to offer significant findings, the study needs to confirm its main objectives through an understanding of its limitations. As a result of using qualitative data, respondents might introduce their individual interpretation biases. The investigation only examines the IT sector of Bangladesh, because of which its results cannot be adopted without modification for other business fields. Time restrictions, together with limited funding, have restricted the interview process with stakeholders.

The study implements a methodologically strong approach to develop practical guidelines for IT employee development in the Bangladesh market while maintaining Industry 4.0 relevance.

3.4 Findings and Analysis

For the research objectives of this paper, I conducted interviews with 20 participants from the IT sector in Bangladesh. The research approach included interviews with 20 participants who represented HR managers, IT professionals, training experts, policymakers, and students, thus covering a wide spectrum of insights between educational institutions and professional industries. The interview questions (see appendix for details) were planned to support the study goals by assessing Industry 4.0 digital skills along with staff skill assessments and government and organization solution proposals. Responses from interviewees reveal the digital readiness

situation in Bangladesh and establish what actions need to be taken to address the digital skills deficit.

3.4.1 Demand for Key Digital Skills in the Industry 4.0 Era

The essential digital skills needed to succeed in Industry 4.0 emerged through mutual agreement among HR managers and IT professionals as well as training experts and policymakers. The interviews consistently identified AWS, Azure, and Google Cloud alongside AI, ML, SQL, and Power BI, as well as Hadoop, cybersecurity, software development with Python and JavaScript, DevOps, the Internet of Things, blockchain, and automation technologies as the essential competencies. Also, professional success depends on adaptability together with critical thinking and continual learning, according to many people who regard these soft skills as fundamental for roles involving quick changes in technology ecosystems across disciplines.

A fundamental transformation occurs within the IT sector because professionals currently need to prove their competence across multiple interconnected fields. People also explained that the full-stack and T-shaped professional model, which means extensive proficiency over various fields and deep mastery of one subject, stands as the new industry norm. The global industry direction confirms the requirement for IT professionals to increase their skillset capabilities.

3.4.2 The Current State of Digital Skills in Bangladesh

All experts who participated in the research study concluded that the majority of Bangladeshi IT specialists lack preparedness for Industry 4.0. The IT workforce of the country continues to grow, yet advanced digital skills remain deficient throughout the country. Professional experts generally possess essential skills, including web development and basic programming, but they need further mastery in advanced technologies such as AI, cloud architecture, blockchain, and advanced cybersecurity.

The current academic system was extensively criticized in participants' responses. Multiple participants emphasized that modern university learning programs do not meet the current needs of industrial professions. Theoretical educational programs offer students knowledge that does not prepare them for actual workplace applications of their acquired information. The

educational program fails to offer sufficient practical experience together with practical involvement in real-world industrial projects. Graduate engineers frequently depend on independent online education despite its commendable nature because such methods fail to deliver structured education in advanced technologies.

The study participants noted that organizations lacked a research and development (R&D) culture that hinders innovation and continuous learning. Along with this, the lack of interdisciplinary training caused professionals to operate within separate areas, which makes cross-domain work more challenging for Industry 4.0 implementations.

3.4.3 Challenges in Upskilling

One of the most informative aspects of the interviews involved understanding the problems IT professionals encounter during upskilling practices. Several recurring challenges were identified:

- 1. Financial Constraints:** The expense of AWS certification training together with cybersecurity and AI qualifications prevents many IT specialists from obtaining professional qualifications. Numerous professionals struggle to pay for training expenses because their salaries do not match the costs at both small and independent work organizations.
- 2. Time Limitations:** Student education faces hurdles because employers expect full-time presence from students, which reduces their availability for educational pursuits. The working professionals expressed frustration because their work organization failed to provide either time or financial backing for their professional growth.
- 3. Limited Access to Quality Training:** The challenges in acquiring high-quality training persist among present-day professionals since online learning fails to produce quality outcomes while trained resources are scarce within their geographical region. Employees who work in rural locations encounter two primary obstacles because of insufficient internet connections and limited mentoring options.

4. **Lack of Guidance:** Most professionals suffer in their learning journey because they lack mentors and do not have proper structured learning plans. The existing career development frameworks and clear roadmaps create barriers for professionals who need to choose optimal learning skills.
5. **Infrastructure and Language Barriers:** A significant number of people face extra obstacles due to insufficient IT infrastructure outside urban areas and the prevalence of English-centered learning materials.
6. **Logistical Issues:** A small number of respondents mentioned that they faced difficulty using free-tier platforms from AWS and Azure because they could not meet the requirements of dual-currency debit or credit cards and passport verification. The logistical problem stands in the way of numerous students who wish to work with cloud platforms even though these systems represent essential elements of Industry 4.0.

3.4.4 Company-Level Upskilling Initiatives

Different responses emerged about how companies support employee upskilling activities. Employees in various organizations operate without structured training programs, so they must independently develop their skills. Medium-sized and large IT companies grant their personnel access to international e-learning platforms, which include Coursera and LinkedIn Learning. These organizations merge e-learning programs with company-hosted seminars and expert presentations in addition to designating competitive skill development contests for employee motivation.

Such training approaches exist irregularly throughout different organizations. Small organizations, together with many firms, do not have official learning and development (L&D) strategies established. Most companies depend on staff members to discover new technologies on their own, but this practice worsens individual disparities in the industry skill base. Employees who receive support must still deal with limited time availability combined with poor motivation levels and confusing learning targets.

Professional development for the industry needs a standardized industry-wide system based on these findings. Workers need to transition from emergency-based learning toward advanced skill development, which integrates planned ongoing education into staff growth programs.

3.4.5 Government and Policy-Level Support

The participants mentioned the crucial contribution of "Digital Bangladesh" government programs, including LICT, SEIP, and LEDP, since their introduction to boost elementary ICT skills and assist freelancers. These programs have raised national digital tool awareness and accessibility, which has thus expanded the digital culture across Bangladesh. The approved initiatives receive criticism for inadequacy in preparing professionals for advanced Industry 4.0 positions. The main criticisms were

- **Urban-centric reach:** Training and development programs focus on teaching professionals in Dhaka along with other metropolitan areas, thus blocking rural professionals from accessing these programs.
- **Outdated curricula:** Numerous government-sponsored training programs maintain education curricula that fail to match the present requirements of the worldwide technology industry.
- **Lack of practical exposure:** There's a heavy focus on theoretical knowledge, with little emphasis on hands-on learning, internships, or real-world project work.

The survey participants maintained positive outlooks regarding the future effectiveness of digital workforce initiatives, provided that funding resources increase while training materials get updated and private sector entities cooperate better with educational institutions.

3.4.6 Recommendations from Industry Stakeholders

All interview participants stressed how companies, together with the government and training institutions, must collaboratively work toward eliminating the digital skills shortage. Suggestions included:

- **Companies:** Organizations should create organized training programs with mentoring components in addition to providing time-based and financial compensation for digital skill improvement and making learning activities part of performance evaluation metrics.
- **Government:** The government should update educational curricula by adding Industry 4.0 technologies while providing financial support for certification programs and investing in IT infrastructure for rural areas and establishing innovation centers and tech incubators.
- **Training Institutions:** Training institutions should adopt a system of project-based practical learning instead of conventional classroom education. Create a joint effort with businesses to validate academic content while developing adaptable learning modules that serve both academic and professional trainees.
- **Collaboration:** Encourage public-private partnerships for long-term, scalable skills development ecosystems. Hosting regular bootcamps, hackathons, and internship fairs can help bridge the gap between learning and employment.

Training resources should be accompanied by cultural changes that promote ongoing learning and innovative thinking, according to numerous participants. Employed professionals need both motivation and openness to embrace their continuous development by going beyond their current work roles.

3.5 Study Implications

The research findings deliver significant implications at three levels, which benefit people working in government positions, school educators, and business leaders, along with academic researchers. The research delivers essential knowledge about Bangladesh's digital skills gap in IT combined with recommendations for handling Industry 4.0's changing requirements.

1. Implications for Policymakers

The research identifies an immediate necessity to modify digital education and workforce development policies to satisfy current requirements. The groundwork established by Digital Bangladesh SEIP and LICT requires next-level development to include modern technological fields. Employee upskilling programs need to expand their coverage, especially to rural areas without proper support, while maintaining current and futuristic industry standards. Officials need to revise educational programs while providing free advanced training benefits and establishing programs that encourage private and public ventures.

2. Implications for the IT Industry

The study highlights to IT companies that they must invest in defined upskilling courses for their workforce. Employers should transition from random training practices toward building a permanent learning environment that provides certification programs, in-house training, and practical educational opportunities. For successful competition and innovation throughout the Industry 4.0 age, businesses should understand how employee upskilling functions beyond traditional human resources practices.

3. Implications for Educational Institutions

Academic programs deliver teaching subjects that differ from market sector necessities, which requires businesses to establish educational connectivity. Institutions that deliver higher education need to modernize their teaching curricula and integrate applied training approaches and establish relationships between academic departments and industrial organizations. Educational institutions need to bring industry experts to teach students and let students practice

practical tasks using artificial intelligence tools and cybertechnology platforms and cloud computing systems through their partnerships with professional organizations.

4. Implications for IT Professionals and Students

The research data indicates Bangladeshi IT professionals seek self-learning opportunities but struggle due to financial limitations as well as availability and time constraints. The analysis reveals organizations need their employees to take initiative for skill development alongside taking proactive action for their responsibilities. New IT professionals alongside students must actively hunt for internships through involvement in hackathon competitions along with joining open-source communities. People should establish lifelong learning as their primary habit to maintain professional relevance due to rapid technological changes.

5. Implications for Future Research

This research creates essential groundwork for following quantitative ventures about upskilling and Industry 4.0 readiness levels in developing nations. Future research should analyze training programs and governance initiatives and analyze their effectiveness and measure their long-term outcomes as well as review different industrial upskilling methods throughout diverse geographical areas. Deeper practical knowledge about effective methods and achievement results can be obtained through both quantitative surveys in combination with longitudinal research along with case study observations.

3.6 Conclusion

This research examined the methods through which Bangladesh, as well as other developing nations, can reduce their digital skill shortage while operating within Industry 4.0 frameworks, specifically in the IT sector. An extensive literature review combined with interviews from 20 industry stakeholders consisting of HR professionals, IT employees and trainers, policymakers, and students demonstrates Bangladesh has potential in its IT sector, but there exists a substantial skills mismatch.

The study showed that organizations seek professionals with skills in cloud computing as well as AI/ML applications and cybersecurity and data analytics expertise because their demand is rising significantly. Modern education programs, together with corporate teaching solutions, fail to

provide the necessary expertise in emerging digital abilities to professionals. Financial limitations combined with insufficient practical instruction, along with old educational approaches and inadequate facilities and scarce mentorship programs, block IT professionals from adopting new technological developments.

The Digital Bangladesh program focuses its efforts on basic digital skills because its reach extends only to urban areas. All relevant parties maintain a shared confidence that joint work efforts and purposeful funding will close the digital skills gap. With its abundant youth population and business potential, Bangladesh requires pivotal institutional and societal shifts to maximize the possibilities of Industry 4.0.

3.7 Recommendations

Bangladesh must adopt practical, inclusive, forward-thinking solutions to develop a future-ready IT workforce while achieving Industry 4.0 standards. Reviews of the interview findings and research data lead to the development of the following recommendations. These initiatives aim at different development areas and promote shared partnerships between the industrial sector and academic institutions as well as public agencies.

1. Modernize Education and Strengthen Industry Collaboration

Academic institutions, together with technical institutions, need to update their curricula in order to prepare students adequately for Industry 4.0 requirements. Practical subject-based learning of AI, machine learning, cloud computing, and cybersecurity must be included as part of the curriculum. Academics must develop stronger connections with IT businesses to establish co-developed curricula as well as organize industrial mentorship sessions and paid work experience programs for students. Through these measures, students will acquire meaningful industry experience before they become ready to enter the workplace.

2. Expand Access to Affordable Upskilling

Business organizations need to actively support their employees in maintaining continuous learning processes. Companies enhance workforce development through internal training programs in addition to supporting access to Coursera or Udemy and webinars and tech summits. The government boosts such programs through funding and

tax incentives primarily intended for small and medium-sized enterprises (SMEs) that prioritize employee skill development.

3. Enhance Government Training Programs

The current government initiatives LICT, along with SEIP and LEDP, has established foundational progress that needs advancement. The training programs must receive scheduled updates that align with modern technological developments. The training strategy should specifically target instruction methods for AI as well as DevOps and cloud security and blockchain principles. The programs should extend their reach from cities into rural areas and target disadvantaged social groups and minority ethnic populations.

4. Prioritize Practical and Project-Based Learning

Theoretical knowledge serves as an insufficient basis for modern technical education. Educational institutions, together with businesses, must emphasize practical educational techniques for their programs. Training facilities should be established, while simulation software should be employed together with holding regular hackathons and coding bootcamps. Learning environments structured this way generate better educational results while developing both innovation-based and real-time problem-solving methods.

5. Improve Digital Infrastructure and Learning Accessibility

Quality learning remains inaccessible to many upcoming IT professionals from rural and semi-urban areas because they lack adequate educational infrastructure. The fundamental requirements for successful digital education include better internet access together with digital device distribution and financial backing for local learning institutions. The process of accessing international learning platforms becomes more accessible when payment gateway barriers get addressed, which eliminates significant learning obstacles.

These complete measures will provide Bangladesh with a robust base to develop digitally proficient workers. A combination of modern teaching methods with inclusive training opportunities and public-private sector partnerships will make Bangladesh competitive in global IT markets under Industry 4.0.

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Appendix A

Interview Questionnaire

1. What are the most important digital skills that IT professionals need today to keep up with Industry 4.0? (Li, 2022)
2. What specific technologies (e.g., AI, cloud computing, data analytics) do you think are becoming essential for IT jobs? (Li, 2022)
3. Do you think IT professionals in Bangladesh have the right skills for Industry 4.0? Why or why not? (Hossain, 2024)
4. What are the biggest challenges IT employees face when trying to upskill or learn new technologies?
5. Does your company offer any upskilling programs for employees? If so, what kind of training is provided?
6. How effective are existing government initiatives (e.g., Digital Bangladesh) in helping IT professionals improve their skills?
7. What steps should be taken by companies, the government, or training institutions to close the digital skills gap? (Feijao et al., 2021)

<i>Respondent No.</i>	<i>Gender</i>	<i>Current Role</i>	<i>Years of Experience in Industry</i>	<i>Current Company Name</i>
R1	Male	Deputy Manager	31 Years	Duncan Brothers (Bangladesh) Limited
R2	Male	Assistant Manager-MIS	15 Years	NITOL MOTORS LTD.
R3	Male	SQA Engineer	6 Years	BluBird
R4	Male	Territory Executive	6 Years	Biocard Limited
R5	Male	Executive	5 Years	United Power Generation & Distribution Company Ltd.
R6	Female	Sr. Deputy Assistant Director	4 Years	Walton Digi-Tech Industries Limited
R7	Male	Manager, Demand Planning	4 Years	FoodPanda
R8	Male	SQA Engineer	4 Years	Pankowri Publications
R9	Male	System Analyst	2 Year	mPower Social Enterprises Ltd.
R10	Male	Human Resources Executive	2 Years	Neways International Company Limited
R11	Male	Coder - AI Training	2 Years	Outlier
R12	Male	Industrial and Production Engineer	1 Year	BHL Group
R13	Male	Junior Software Engineer	1 Year	Innovate Solution
R14	Female	Junior Project Manager	1 Year	suPPPport ltd.
R15	Male	Management Trainee	1 Year	Grameenphone Ltd
R16	Male	AI Back End Engineer	1 Year	DigitX
R17	Male	Software Engineer	1 Year	NexERP Limited
R18	Male	Web Developer	6 Months	BRAC Business School
R19	Male	Student	-	BRAC University
R20	Male	Student	-	BRAC University

Interview Responses (Coding Table) Responses

Main Theme (Code)	Supporting Details (from Responses)
Essential Digital Skills Needed	- Cloud Computing (AWS, Azure, GCP) - Cybersecurity, Data Analytics & Big Data - AI & Machine Learning - IoT, Blockchain, Automation - Programming (Python, Java, etc.) - DevOps, Edge Computing, AR/VR
Technologies Becoming Essential	- AI, ML, Cloud Computing, Data Analytics, IoT - Cybersecurity - Blockchain - DevOps, RPA, Edge Computing
Skill Gap in Bangladesh	- Outdated university curricula - Limited access to hands-on training - Lack of practical exposure - Skill gaps in AI, cloud, cybersecurity - Overreliance on academia without self-learning
Challenges in Upskilling	- High cost of training - Lack of time due to workload - Poor infrastructure and internet access - Limited mentorship and guidance - English language barriers
Company Upskilling Support	- Some companies provide online courses (Coursera, Udemy) and workshops - Many companies offer little to no structured upskilling programs
Government Initiatives Effectiveness	- Initiatives like Digital Bangladesh raised awareness - Positive impacts like increased internet access - But limited effect on advanced Industry 4.0 skills - Need for practical, up-to-date training
Recommended Steps to Bridge Skills Gap	- Companies: Regular structured training, incentives for upskilling - Government: Update education system, subsidies, partnerships with tech firms - Training Institutions: Practical learning focus, public-private partnerships, bootcamps