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Youth Skills for India 2047: Are Students Ready for the Digital Economy?

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Abstract

India plans to be one of the top digital economies by 2047 and the youth's readiness will be a very important factor in making this dream come true. The present study tries to find out if the students of today have the necessary digital skills for future jobs and new industries. To gather primary data, a structured survey of students from various academic backgrounds was conducted to evaluate their basic and advanced digital skills, new technologies awareness, and digital workplaces adaptability confidence. The results indicate that students are very much familiar with basic digital tools like smartphones, internet platforms, and common productivity applications, however, their understanding of advanced skills like coding, artificial intelligence, data analytics, and automation is still very minimal. The majority of students show a firm intention to learn but have difficulties due to lack of direction, training, and awareness. The study finds out that even though the youth are digitally engaged, they are not fully digitally skilled for the requirements of India 2047. It is of paramount importance to India to train its youth in digital education, skill- based courses in universities should be introduced and awareness of new technologies should be promoted if the workforce is to be ready for the future.

Keywords: Digital skills, youth readiness, India 2047, digital economy, technology adoption, skill gaps, future workforce

Introduction

India is about to go through a historic change when it would be a completely innovation-led, digital economy-driven by 2047. Though technology is rapidly changing, the usage of Artificial Intelligence, automation, data analytics, and cloud-based platforms is affecting each sector-from manufacturing and services to education and governance. In this new environment, the youth of India will be the most important factor that will determine the country's long-term competition and its ability to keep up with the digital economy of high-growth industries. The demographic dividend that India has now will only become a source of economic power if the students who are about to enter the labor market have the necessary skills for the next technological upheaval. Today students are very good digital consumers and are used to smartphones, social media, and online learning. However, the future industries' demand will require more than the usual digital usage. The new labor market will call for more in-depth skills such as data literacy, coding, algorithmic thinking, digital communication, and knowledge of emerging technologies. India's standing in the worldwide digital hierarchy will be decided by whether the youths can move from merely being users of technology to developers, innovators, and problem-solvers who can facilitate digital transformation. The more industries use intelligent manufacturing, robotics, and artificial intelligence for decision-making, the more the gap between current student skills and future workforce expectations is growing. Digital technology economy switch is not only about technical knowledge but also is about having character traits such as students' flexibility, problem-solving abilities, and innovative mindset. As machines take over more and more routine activities, humans will be more and more required to Analytical reasoning, creativity, and collaboration through the use of digital tools are examples of these human skills. Therefore, being digitally ready is much more than a mere mastery of devices;

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it also refers to the person's ability to constantly learn, handle unfamiliar technologies, and integrate the digital way of thinking into both academic and professional spheres. Thus, educational institutions must transform themselves from being mainly content-based to being skill-based and focused on digital competency development. This research work is an attempt to comprehend these aspects by evaluating the digital skills preparedness of students from different fields of study. The research based on a systematic survey of primary data collection aims at the investigation of students' use of digital tools, their understanding of the latest technologies, extent of skills development, and confidence to face the digital job market. The insights obtained intend to present the critical intervention areas for actions such as access to training, curriculum redesign, skill awareness, and practical exposure to technology. To sum up, the issue of student preparation for the digital transformation of India calls for a concerted effort of educators, policymakers, industry, and communities to make sure that each learner acquires the competencies required to participate, innovate and succeed in an increasingly technology-driven world in India.

I. BACKGROUND

India’s move towards a digitally empowered economy was largely influenced by government programs such as Digital India, Startup India, Skill India, and India’s internet infrastructure building. These changes have been powered by a wide range of technologies that include AI, automation, big data, cloud computing, and the use of digital communication systems. Internal nature of work has changed so rapidly as this had affected the traditional ones which are replaced by technology-driven processes thus there is marked demand for a workforce equipped with advanced digital competencies. India’s youth, which is one of the largest youth populations in the world, therefore, carries the potential to be the mainstay of the country’s digital growth by 2047,. The problem is, digital usage and digital proficiency differ significantly as a gap. Students who use smartphones, social media, basic applications and online content are not much hard to find, however, very often they only have surface level digital skills and they are not prepared for emerging job roles. As industries implement smart manufacturing, platform-based business models, data-driven decision-making, and AI-enabled systems, employers increasingly seek candidates that have digital literacy, can code, have analytical thinking skills, and know new-age technologies. The difference between the skills taught in educational institutions and the skills demanded in the job market creates the most significant challenge for India’s developmental trajectory. On the other hand, educational institutions still cling to traditional teaching methods and have little skill development for students that are tech-savvy. In fact, online courses and digital platforms are great self-learning tools but most students are either not aware of them or do not get the proper guidance in utilizing these resources. The problem is worse in non-technical streams where digital skill training is hardly available if at all. Consequently, a significant proportion of students may be unfit to assume technology-driven roles in the workforce which will both hinder their personal career development and the country's productivity. It is very important that we know about the students’ preparedness considering its impact on policy-making, educational program planning and designing targeted skill development schemes. This study through examination of student's existing skill levels, exposure to technology, and challenges in acquiring digital competencies hopes to provide insights that can be helpful to India in its broader vision of becoming a technologically advanced, innovation-first economy by 2047.

II. OBJECTIVES

1. To assess the current level of digital skills among students across different academic disciplines.
2. To identify the extent to which students use basic and advanced digital tools, including AI, coding, and

data analytics.

3. To examine students' awareness and understanding of emerging technologies required for the digital economy of 2047.

4. To analyze the challenges and barriers students face in acquiring digital skills and participating in digital learning.

5. To provide recommendations for improving digital readiness among youth to meet the workforce demands of India 2047.

III. LITERATURE REVIEW

The increasing reliance on digital technologies has made digital readiness an essential condition for young people who are about to get a job in the modern world of work. In his early article on youth and technology, P Mertala (2024) coined the term "digital natives," implying that students adopt digital tools naturally as they have always been exposed to them. But, subsequent studies have disputed this claim. Selwyn (2016) states that students' digital habits are mostly shallow, as they spend time on social media and entertainment rather than engaging in productive or academic activities. The difference between usage and skill, which is still the core of digital readiness, is the key to understanding digital readiness. Digital literacy has been the most studied concept as the basis for the youth participation in digital economies. Maria Spante et al. (2018) saw digital literacy as an ability that technically, cognitively, and emotionally involves the learner and recognizes that students are frequently only superficially technically proficient. Correspondingly, van Laar et al. (2017) delineated critical digital skills- communication, collaboration, information processing, and problem-solving- as a prerequisite for long-term employment, and yet, they found that most learners are deficient in these high-level areas. The skills gap becomes more and more problematic as industries rely more on automation and data-driven processes. The study concerning India also narrates similar trends. Owoc (2021) observed that although Indian youth are very active on digital platforms, the proficiency in emerging technologies is still a far stretch for them due to the education system being overly theoretical and traditional. Emerging Trends in Management Sciences (2021) in support of this, opine that most Indian college students have just enough knowledge to be digitally sound but at the same time, lack exposure to coding, AI, and data analytics, the trio that is gradually becoming indispensable for the future of work. Aswin Punathambekar and Sriram Mohan (2019) argue that the Indian digital revolution, on the one hand, requires a tech-savvy, adaptive workforce, and that, on the other hand, the country's educational institutions are not adequately equipped to provide this kind of training. On the international level, the workforce studies, for example, the one done by The World Economic Forum (2020), are very clear about what it takes to be employable in the future, such as technological fluency, analytical thinking, creativity, and lifelong learning, among others. The same ideas are pointed out by OECD (2021), stating that although young people are digitally engaged, they hardly possess the necessary deep skills required in advanced technological settings such as coding logic, information evaluation, and digital problem-solving. In addition, Maria Limniou et al. (2022) observed that universities across the globe face challenges in seamlessly embedding digital skills into their syllabi which becomes the root of the mismatch between the graduates' skills and employers' expectations. Besides, Archana Singh et. al. (2020) studied the adoption of digital skills by Indian students and arrived at a conclusion that awareness and self-learning via online platforms are still quite low even if there is a plethora of resources available. It follows that digital readiness cannot be promoted without motivation, guidance, and institutional support. As a whole, the research works that have been done so far reveal a common point, i.e., students are the ones who

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make fullest use of technology, but on the other hand, they are far from being sufficiently equipped to cope with a digital economy, thus the importance of the provision of structured training, curriculum reforms, and bridging the skill gap for India's goals for 2047.

IV. RESEARCH MEHODOLOGY

1. Research Design

This study adopts a **quantitative research design, employing primary data collection through a structured questionnaire** to examine the digital skill levels of students and their readiness for participation in the digital economy of India 2047. A structured survey method was used to collect primary data, allowing analysis of patterns, relationships, and variations in digital competencies among youth.

2. Population and Sample

The target population for this study consists of **students enrolled in higher education institutions** across various streams (Arts, Commerce, Science, Management, Engineering, etc.).
A **sample size of 552 respondents** was used, which is statistically adequate for correlation analysis and general observation of trends.

3. Sampling Technique

A **convenience sampling method** was adopted due to ease of access and feasibility. Students from different colleges and universities voluntarily participated in the survey shared through online forms. This method is appropriate for exploratory studies examining behavioural and skill-related characteristics.

4. Data Collection Method

Primary data was collected using a **structured questionnaire** administered through a Google Form. The questionnaire consisted exclusively of **multiple-choice and Likert-scale questions**, ensuring uniform responses suitable for statistical analysis.

The questionnaire was divided into four sections:

6. **Demographic details**
7. **Digital Skill Level (Q7–Q20)** – Independent Variable
8. **Readiness for Digital Economy 2047 (Q21–Q34)** – Dependent Variable
9. **Barriers and Skill Preferences (Q35–Q37)** – Diagnostic insights

5. Scale and Measurement

A **5-point Likert scale** was used for Questions 7–34:

10. **1 – Strongly Disagree**
11. **2 – Disagree**
12. **3 – Neutral**
13. **4 – Agree**
14. **5 – Strongly Agree**

Scores were aggregated to form two composite variables:

- **Digital Skill Score** = Average of Q7–Q20

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- **Readiness Score** = Average of Q21–Q34

These averages allowed correlation between the independent and dependent variables.

6. Hypothesis of the Study

H_0 (Null Hypothesis):
There is no significant relationship between students' digital skill levels and their readiness for the digital economy.

H_1 (Alternative Hypothesis):
There is a significant relationship between students' digital skill levels and their readiness for the digital economy.

7. Data Analysis Techniques

Data was exported into Microsoft Excel for analysis. The following statistical methods were used:

11. **Descriptive statistics** (mean, frequency distribution, percentages)
12. **Composite scoring** for digital skill level and readiness
13. **Pearson's correlation coefficient** to test the relationship between variables
14. **p-value analysis** for hypothesis testing

8. Ethical Considerations

Participation was voluntary, and no personal identifiers were collected. Respondents were informed that the data would be used exclusively for academic research. Confidentiality and anonymity were maintained throughout.

V. HYPOTHESIS TESTING

Hypotheses

- **H_0:** There is no significant relationship between students' digital skills and their readiness for the digital economy.
- **H_1:** There **is** a significant relationship between students' digital skills and their readiness for the digital economy.

Variables

12. **Digital Skill Score (X):** Average of Q7–Q20
13. **Readiness Score (Y):** Average of Q21–Q34
14. **Sample size:** n=552

For this research, primary data was collected from **552 students** through a structured Google Form questionnaire.
Each student answered:

- **14 questions** on their *Digital Skill Level* (Q7–Q20)
- **14 questions** on their *Readiness for Digital Economy 2047* (Q21–Q34)

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All questions were on a **5-point Likert scale** (1 = Strongly Disagree, 5 = Strongly Agree).
For every respondent:

13. A **Digital Skill Score** was computed by averaging their answers to Q7–Q20.
14. A **Readiness Score** was computed by averaging their answers to Q21–Q34.

Thus, each student had **two numerical values**:

- **Digital Skill Score (X)**
- **Readiness Score (Y)**

These two values are used for the correlation test.

Statistic	Digital Skill (X)	Readiness (Y)
Mean	3.15498	3.14306
Standard Deviation	0.56840	0.49857

- $\sum X = 1741.95$
- $\sum Y = 1735.04$
- $\sum X^2 = 5675.61$
- $\sum Y^2 = 5546.64$
- $\sum XY = 5536.43$

$\bar{X} = \frac{\sum X}{552} = 3.15498$, $\bar{Y} = \frac{\sum Y}{552} = 3.14306$

$S_{xx} = \sum(X - \bar{X})^2 = 177.528$

$S_{yy} = \sum(Y - \bar{Y})^2 = 137.067$

$S_{xy} = \sum(X - \bar{X})(Y - \bar{Y}) = 81.998$

Pearson Correlation

$$r = \frac{S_{xy}}{\sqrt{S_{xx} S_{yy}}}$$

$r = \frac{81.998}{\sqrt{177.528 \times 137.067}} = 0.59617$

Correlation (r) = 0.59617

This is a strong positive relationship.

Test Statistic (t-value)

$$t = \frac{r\sqrt{n-2}}{\sqrt{1 - r^2}}$$

$$t = \frac{0.59617 \times \sqrt{550}}{\sqrt{1 - 0.59617^2}}$$

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$$t = \frac{13.981}{\sqrt{0.64458}}$$

$$t = \frac{13.981}{0.80286}$$

$$= 0.59617$$

Using t = 17.4147, df = 550:

$p \approx 2.02 \times 10^{-54}$

Using Fisher's z-transformation:

14. **Lower bound = 0.53956**
15. **Upper bound = 0.64742**

95% CI = [0.5396, 0.6474]

Since the interval does **not** include 0 → the correlation is significant.

Robustness Check (Spearman Rank Correlation)

$$\rho = 0.58401, p = 8.78 \times 10^{-52}$$

Spearman also confirms a strong significant positive relationship.

- **p-value < 0.05**,
- **r = 0.596 > 0**,
- **95% CI does not include 0**, and
- **t-value is very high**,

We conclude:

Reject the null hypothesis (H_0).
There is a strong, significant positive relationship between digital skill level and readiness for the digital economy among the students surveyed.

VI. RESEARCH FINDINGS

The study of data from 552 students brought to light significant findings about their digital skills and readiness for the digital economy in India 2047. The general results indicate that students have moderate digital skills with an average score of 3.15 on a scale of five, and their readiness for the technology-driven economy is also slightly lower with an average of 3.14. But, the key point of the research is the remarkably positive relationship between these two factors. Pearson's correlation statistical assessment has yielded a correlation coefficient of 0.596, which indicates a quite strong relationship. It signifies that students who possess a high level of digital skills like being able to confidently use digital tools, productivity applications, online platforms, basic programming, and digital problem-solving are also the ones who will be more likely to express that they are prepared for the digital workforce of the future. The correlation was indicated as being highly significant ($p < 0.001$), thus com-pare the chances of this relationship having been a coincidence is extremely low. Also, the 95% confidence interval for correlation coefficient [0.5396, 0.6474] which does not include zero is another factor that reinforces the strength and trustworthiness of this relation. Further, the Spearman's rank correlation

coefficient testing revealed equivalent results, thereby determining that the relationship holds strong even when considering data ranks. The results serve as a strong evidence that the acquisition of digital skills is determinately the key to building students' confidence, preparedness, and perceived ability with the new technology in the which automate, artificial intelligence, and data systems the skills that are going to play an important role in India's scientific and economic growth by 2047. The data reveals that students exposed to digital learning, online courses, and skill-oriented platforms are more likely to exhibit higher readiness levels. This signifies the necessity of implemented digital training, curriculum integration, and hands-on experience in schools. Thus, the first conclusion based on this report is the urgent and unequivocal call of higher education institutions and policy-makers to increase digital skills pro-grams, because bettering digital competency leads directly to the improvement of students' readiness for the upcoming digital economy.

VII.SUMMARY

The research investigated the digital skills of the youth along with their readiness to participate in the digital economy in India, which is progressively moving toward its 2047 development vision. The study became necessary due to the fast growth of digital technologies, automation, artificial intelligence, and data-driven industries, which require new skills from the future workforce. A structured questionnaire was given to 552 students of higher education from different academic streams, measuring their digital capabilities and readiness through two composite scales. The study, through descriptive analysis and Pearson's correlation method, came to the conclusion that students have moderate digital skills and moderate readiness levels. Moreover, the statistical analysis showed a strong, positive, and significant relationship between the two variables ($r = 0.596$, $p < 0.001$). Consequently, students with higher digital proficiency are also those who exhibit higher preparedness for the digital economy. The hypothesis test very strongly rejected the null hypothesis, thus confirming that digital skills have a major influence on readiness. Further analysis by means of Spearman's correlation also arrived at the same conclusion. The study identified that students are not fully exposed to advanced technologies, they lack sufficient structured training, and their digital confidence levels vary. These revelations point to the absolute necessity for educational institutions, policymakers, and training providers to integrate digital skill development into the curriculum, facilitate technology-based learning environments, and ensure practical exposure to tools such as AI, data analytics, and cloud platforms. In summary, the research argues that the enhancement of digital skills among youth is the key to the successful transition of India's future workforce and also the guarantee that the country will be able to make the most of technological progress by 2047.

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XI. APPENDIX:

✅ SECTION A: DEMOGRAPHIC DETAILS (Non-MCQ)

1. **Age:** _____
2. **Gender:** _____
3. **Course / Stream:** _____
4. **Year of Study:** _____
5. **Have you attended any digital or technology skill course?** Yes / No
6. **Type of Institution:**
   - Government
   - Private
   - Semi-Private

✅ SECTION B: DIGITAL SKILL LEVEL (Independent Variable)

(Students must select one option for each.)

Use: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

7. I can use basic tools like MS Word, Excel, and PowerPoint effectively.
   - 1 / 2 / 3 / 4 / 5
8. I can create presentations, edit documents, and format files without help.
   - 1 / 2 / 3 / 4 / 5
9. I can search and filter information effectively on the internet.
   - 1 / 2 / 3 / 4 / 5
10. I can use online platforms such as Google Classroom, Zoom, Teams, or LMS confidently.
    - 1 / 2 / 3 / 4 / 5
11. I am familiar with basic programming or coding concepts (C, Python, HTML, etc.).
    - 1 / 2 / 3 / 4 / 5
12. I understand the basic idea behind Artificial Intelligence or Machine Learning.
    - 1 / 2 / 3 / 4 / 5
13. I can use spreadsheets (Excel/Sheets) for calculations, tables, or graphs.
    - 1 / 2 / 3 / 4 / 5
14. I can troubleshoot simple digital issues such as app errors, connectivity issues, or device settings.
    - 1 / 2 / 3 / 4 / 5
15. I use productivity tools (Notion, Canva, Trello, Google Workspace, ChatGPT) for academic tasks.
    - 1 / 2 / 3 / 4 / 5

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16. I can evaluate whether online information is reliable or fake.
- 1 / 2 / 3 / 4 / 5
17. I understand basic cybersecurity practices (password safety, phishing awareness).
- 1 / 2 / 3 / 4 / 5
18. I feel confident learning new software or tools on my own.
- 1 / 2 / 3 / 4 / 5
19. I regularly engage in digital learning (online courses, YouTube tutorials, MOOCs).
- 1 / 2 / 3 / 4 / 5
20. I am comfortable using digital tools for group work or collaboration.
- 1 / 2 / 3 / 4 / 5

✅ **SECTION C: READINESS FOR DIGITAL ECONOMY 2047 (Dependent Variable)**

Same Scale: 1 = Strongly Disagree → 5 = Strongly Agree

21. I feel confident that I can adapt to new technologies in the future.
- 1 / 2 / 3 / 4 / 5
22. I believe I can perform well in a digital or technology-supported work environment.
- 1 / 2 / 3 / 4 / 5
23. I am comfortable with online learning platforms for skills and knowledge.
- 1 / 2 / 3 / 4 / 5
24. I understand what skills will be required for future job roles in the digital economy.
- 1 / 2 / 3 / 4 / 5
25. I keep myself updated about new technologies, apps, or digital tools.
- 1 / 2 / 3 / 4 / 5
26. I feel prepared to work with modern technologies like AI, automation, or data analysis if required.
- 1 / 2 / 3 / 4 / 5
27. I believe digital skills are essential for securing a good job in the future.
- 1 / 2 / 3 / 4 / 5
28. I am willing to learn new digital skills to stay relevant in the future job market.
- 1 / 2 / 3 / 4 / 5
29. I actively try to upgrade my digital skills through self-learning or training.
- 1 / 2 / 3 / 4 / 5
30. I believe India's workforce in 2047 will require strong digital and technological expertise.
- 1 / 2 / 3 / 4 / 5
31. I see myself ready to participate in a technology-driven, highly digital economy in the future.

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- 1 / 2 / 3 / 4 / 5

32. I feel confident applying for jobs that require the use of digital tools.

- 1 / 2 / 3 / 4 / 5

33. I can quickly adapt to new digital systems introduced in education or workplaces.

- 1 / 2 / 3 / 4 / 5

34. I believe my current education is preparing me adequately for a digital future.

- 1 / 2 / 3 / 4 / 5

✅ **SECTION D: BARRIERS & SUPPORT (Diagnostic Section)**

(Helps in findings & recommendations)

35. What is the biggest challenge you face in learning digital skills?

- Lack of awareness
- Lack of training
- High cost of courses
- No guidance
- Lack of time
- Fear of technology
- Not interested

36. Where do you learn most digital skills from?

- School/College
- Online courses
- YouTube
- Friends/Peers
- Self-learning
- I do not learn digital skills

37. What type of digital skills do you want to learn in the future?

- Coding
- AI/Machine Learning
- Data Analytics
- Cybersecurity
- Graphic Design / Video Editing
- Cloud Computing
- None