iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 14 **Issue:** IX **Month of publication:** September 2026

DOI:

www.ijraset.com

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 14 Issue IX Sep 2026- Available at www.ijraset.com

Assessing Digital Readiness for Educational Equity in Selected Secondary Schools of Giridih District, Jharkhand: A Secondary-Data Study

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Abstract: ***Digital learning has become an important instrument for improving educational access, instructional quality and future-ready skills, but its benefits depend on the availability of devices, connectivity, digital classrooms, computer laboratories and trained users. The present study examines digital readiness for educational equity in selected secondary and senior secondary schools of Giridih district, Jharkhand. The paper was developed as a secondary-data study using the Giridih District Administration education portal, school mandatory public disclosures, official school websites and a public-sector annual report on smart-classroom investment. The uploaded reference paper was used only as a conceptual guide for the themes of access, educational quality, infrastructure barriers and digital skill development. Seven schools were purposively selected because they publicly reported usable information on digital infrastructure or technology-enabled learning. The district education webpage reports 19 educational blocks, 13 community development blocks, 120 cluster resource centres, 3,333 schools providing primary schooling facilities and 1,238 middle schools. School-level evidence shows substantial variation in the breadth of publicly reported digital facilities. Some institutions report only computer laboratories and internet access, while others report smart classrooms, artificial intelligence or robotics exposure, computer-aided learning and interactive digital resources. At the district level, Bharat Coking Coal Limited reported an initiative to install 50 smart classrooms in 50 government schools of Giridih at an approximate cost of Rs. 180 lakh, intended to benefit about 75,000 students. The study concludes that digital equity should be understood not merely as device availability but as a combined condition of connectivity, usable digital spaces, teacher readiness, content integration and sustained maintenance. The article recommends school-wise digital audits, minimum digital infrastructure standards, teacher development, blended offline-online content and targeted support for peripheral and resource-constrained schools.***

Keywords: Digital readiness, educational equity, digital learning, secondary schools, Giridih, Jharkhand, smart classrooms

I. INTRODUCTION

The expansion of digital technology has changed the meaning of educational access. Access is no longer limited to the physical presence of a school, a classroom or a textbook; it increasingly includes reliable connectivity, digital content, computer laboratories, interactive classrooms and the ability of teachers and students to use technology meaningfully. This shift is especially important for districts where schools operate across urban centres, small towns and rural or geographically dispersed settlements. In such settings, digital learning can reduce barriers created by distance and limited specialist resources, but unequal technology provision can also reproduce existing educational disparities in a new form.

The reference paper supplied for this study discusses digital learning as a mechanism for narrowing the urban-rural educational gap by improving access to learning resources, instructional quality and digital skills while also acknowledging infrastructure limitations. The present article develops a fresh and district-specific version of that broad problem by focusing on Giridih district in Jharkhand and by using publicly available school and district data rather than repeating the original paper. The concern here is therefore not whether digital learning is theoretically useful, but how far publicly reported school infrastructure indicates readiness to use it in an equitable manner. Giridih is an appropriate context for such an analysis because the district contains a large and administratively dispersed school network. The district education portal states that Giridih has 19 educational blocks against 13 community development blocks and 120 cluster resource centres. It also reports that primary schooling facilities are available through 3,333 schools and upper-primary or middle-school facilities through 1,238 schools. These figures underline the scale of the educational system and the difficulty of ensuring comparable digital opportunities across institutions.

Digital readiness in this paper is treated as a practical, observable condition rather than a single technology count. It includes evidence of computer facilities, internet connectivity, smart or audio-visual classrooms, computer-aided learning and advanced digital exposure such as coding, artificial intelligence or robotics. Publicly reported infrastructure does not by itself prove effective classroom use; however, it provides a useful first layer of evidence for understanding whether schools possess the basic conditions required for digital learning.

II. RATIONALE AND CONCEPTUAL BACKGROUND

Educational equity requires that students have a reasonable opportunity to access comparable learning resources regardless of where they study. In digital education, this principle has at least four dimensions. The first is physical access to devices and laboratories. The second is connectivity, which determines whether digital resources can be updated and accessed beyond pre-loaded content. The third is pedagogical integration, including smart classrooms, interactive resources and teacher use of technology. The fourth is capability development, which involves digital literacy, safe internet use, coding, collaboration, problem-solving and other skills needed for higher education and employment.

A school may possess computers but still have weak digital readiness if internet connectivity is unreliable, devices are not maintained, teachers lack confidence, or technology is separated from routine teaching. Conversely, a school with modest equipment may use it effectively through shared laboratories, offline digital content and well-planned teacher practices. Therefore, this article interprets infrastructure as an enabling condition, not as a direct measure of learning quality or academic achievement.

The school websites examined for Giridih illustrate different stages of this readiness continuum. Some institutions publicly describe computer laboratories and internet access; others additionally report smart classrooms, interactive libraries, artificial intelligence education, robotics laboratories or computer-aided learning. These differences make it possible to construct a district-specific evidence matrix without inventing student survey scores or unverified achievement effects.

The conceptual framework of the study therefore links digital educational equity with five practical elements: availability of digital hardware; connectivity; technology-enabled teaching spaces; digital curriculum and skill exposure; and institutional capacity for sustained use. The framework also recognises that public disclosure is incomplete in many schools. Accordingly, the term “not stated” in the tables means that the feature was not found in the cited public source, not that the school necessarily lacks it.

III. OBJECTIVES OF THE STUDY

1) To describe the educational and digital context of Giridih district using publicly available official information.
2) To identify publicly reported digital-learning facilities in selected secondary and senior secondary schools of Giridih district.
3) To compare the breadth of digital-readiness evidence across selected schools without treating non-disclosure as proof of absence.
4) To examine the significance of a district-level smart-classroom initiative for government-school digital access.
5) To propose practical strategies for strengthening digital educational equity in Giridih district.

IV. RESEARCH QUESTIONS

1) What district-level educational indicators provide the context for digital-learning expansion in Giridih?
2) What digital facilities are publicly reported by selected schools in the district?
3) How does the breadth of reported digital readiness differ across the selected schools?
4) What district-level investment is visible for extending smart-classroom access to government schools?
5) What measures can improve the equity and sustainability of digital learning in the district?

V. METHODOLOGY

The study follows a descriptive secondary-data design. No student, teacher or school was surveyed directly. Information was collected from publicly accessible sources available up to 7 September 2026. The main source categories were: (a) the Education and Schools pages of the Giridih District Administration; (b) mandatory public disclosure pages and official websites of schools located in Giridih district; (c) the 2024-25 Annual Report of Bharat Coking Coal Limited (BCCL), which reports a smart-classroom initiative for Giridih government schools; and (d) the uploaded journal paper, which was used only to guide the conceptual themes of digital access, quality, infrastructure challenges and digital skills.

Seven schools were purposively selected because their public websites contained sufficient information relevant to digital learning. They represent different parts of the district, including Giridih town, Pachamba, Motileda, Bagodar and Suriya. The selected schools are B.N. Saha DAV Public School, Delhi Public School Giridih, Divine Public School Beko, St. Mary's Public School Suriya, Holy Cross School Pachamba, Saluja Gold International School and Saraswati Shishu Vidya Mandir Barganda.

For comparison, five evidence categories were coded from the websites: computer facility, internet facility, smart/audio-visual classroom, computer-aided or interactive digital learning, and advanced digital exposure such as artificial intelligence, coding or robotics. A feature was marked "Reported" only when the cited public source explicitly mentioned it. "Not stated" indicates absence of explicit evidence in the source reviewed and must not be interpreted as non-availability in the school.

The main limitation of the method is that school websites differ in how frequently and completely they are updated. Public disclosures are stronger for infrastructure than for actual classroom use, teacher digital competency, student access at home or learning outcomes. For that reason, the study does not calculate causal effects of digital learning and does not rank schools by educational quality.

VI. GIRIDIH DISTRICT EDUCATION CONTEXT

The district education portal describes a wide and decentralised school system. The figures below are reproduced as they are stated on the current district webpage; some of them appear to be legacy administrative indicators and should therefore be interpreted as portal-reported context rather than a newly verified 2026 census. The scale remains useful for understanding why digital-equity planning requires block-level coordination and sustained infrastructure support.

Table 1. Education-system indicators reported on the Giridih District Administration website

Indicator	Portal-reported figure / statement	Relevance to digital equity
Educational blocks	19	Digital planning must operate across a large educational administrative structure.
Community Development (CD) blocks	13	School planning and local development structures do not map one-to-one with educational blocks.
Cluster Resource Centres (CRCs)	120	CRCs can support teacher training, device support and digital-content dissemination.
Schools providing primary schooling facility	3,333	The scale of basic-school access implies a substantial challenge for universal digital infrastructure.
Middle schools / upper-primary schooling facility	1,238	Transition-level schools require digital access before students reach secondary education.
Kasturba Gandhi Balika Vidyalayas (KGBVs)	12	Residential girls' schools are important targets for equitable ICT and smart-classroom provision.

Source: District Giridih, Government of Jharkhand, "Education" webpage, accessed 7 September 2026: https://giridih.nic.in/education/

The district portal also maintains a public-utilities school directory and a separate booklist page naming several schools in Giridih. These official listings are useful for establishing locality and institutional presence, but they do not provide a complete district-wide digital infrastructure database. Therefore, school-level facility evidence in the next section is taken from the schools' own websites and public disclosures.

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 14 Issue IX Sep 2026- Available at www.ijraset.com

VII. SCHOOL-LEVEL EVIDENCE OF DIGITAL READINESS

The selected schools publicly report different combinations of computer facilities, connectivity, smart classrooms and technology-oriented programmes. Table 2 summarises the strongest directly reported evidence. The purpose is not to create a league table but to identify which components of digital readiness are visible in public documentation.

Table 2. Selected schools and publicly reported digital-learning evidence

School and locality	Publicly reported digital-learning evidence	Selected source
B.N. Saha DAV Public School, Bulaki Road, Giridih	Well-equipped computer labs; computer education from primary classes; internet usage and digital safety in curriculum; coding/programming basics; AI education and exposure to emerging technologies.	School "Computer Education" page
Delhi Public School Giridih, Harsingh Raidih / Tundi Road	Computer Lab; Smart Class Rooms; Interactive Library; audio-visual learning spaces. CBSE senior secondary affiliation is also stated by the school.	Official school facilities page
Divine Public School, Beko, Bagodar	Internet facility reported as Yes; 3 laboratories; computer-lab fee listed for Classes I-X, indicating an operational computer-learning facility.	Mandatory Public Disclosure and fee structure
St. Mary's Public School, Suriya	Four laboratories including computer laboratory; internet facility reported as Yes.	Mandatory Public Disclosure
Holy Cross School, Pachamba, Giridih	Two computer laboratories are listed; internet facility reported as Yes.	Public Disclosure
Saluja Gold International School, Motileda, Giridih	Computer Lab with internet connectivity; smart classrooms; four laboratories in disclosure; robotics lab; technology-oriented teaching approach.	Mandatory Disclosure and Labs pages
Saraswati Shishu Vidya Mandir, Barganda, Giridih	18 functional computers and a computer-aided learning lab in the school profile; current school website also reports Smart Classes and a computer room.	School profile PDF and official website

Source: Official school websites/public disclosures: bnsdavpsgrd.com; dpsgiridih.in; dpsbeko.in; stmarysschoolsuriya.com; holycrossgiridih.com; salujagoldschool.com; ssvmgiridih.org / ssvmgiridih.com. Accessed 7 September 2026

The evidence demonstrates that "digital learning" is not a single facility. B.N. Saha DAV emphasises curriculum-level computer and AI education; DPS Giridih visibly highlights smart classrooms and a computer lab; Saluja Gold combines internet-enabled computer learning with smart classrooms and robotics; other schools provide foundational readiness through laboratories and connectivity. This variation supports an equity approach in which minimum facilities are ensured for all schools while advanced programmes are expanded progressively.

Table 3. Quantitative infrastructure details available from selected public disclosures

School	Classrooms reported	Laboratories / computer resources	Internet	Campus area (sq. m)
Divine Public School, Beko	35	3 laboratories; computer lab referenced in school fee structure	Yes	6,758.25
St. Mary's Public School, Suriya	36	4 laboratories including computer lab	Yes	8,660
Holy Cross School, Pachamba	Not used here*	Two computer labs plus science and mathematics laboratories	Yes	20,135
Saluja Gold International School	26	4 laboratories in disclosure; separate computer and robotics lab pages	Yes	24,435.02
Saraswati Shishu Vidya Mandir, Barganda	33	18 functional computers; computer-aided learning lab	Not stated in cited school profile	Not stated

*Source: School mandatory disclosures and official school profile pages. *The Holy Cross classroom entry is omitted because the webpage table formatting is ambiguous in the parsed public version; only clearly stated digital-facility data are used.*

Table 3 is intentionally conservative. Where the public page was ambiguous or did not explicitly state an item, the article does not infer a value. This approach protects the analysis from converting incomplete disclosure into false precision.

Table 4. Descriptive digital-readiness evidence matrix (researcher-coded from public sources)

School	Computer facility	Internet facility	Smart / AV classroom	Interactive / CAL evidence	Advanced digital exposure
B.N. Saha DAV	Reported	Curriculum use reported; infrastructure status not stated	Not stated	Hands-on computer learning	AI, coding/programming
DPS Giridih	Reported	Not stated	Reported	Interactive library / AV rooms	Not stated
Divine Public School Beko	Reported	Reported	Not stated	Not stated	Not stated
St. Mary's Public School Suriya	Reported	Reported	Not stated	Not stated	Not stated
Holy Cross School Pachamba	Reported	Reported	Not stated	Not stated	Not stated
Saluja Gold International School	Reported	Reported	Reported	Digital learning / computer interface	Robotics
SSVM Barganda	Reported	Not stated in cited profile	Reported	Computer-aided learning lab	Not stated

Source: Researcher coding from the same official school sources listed under Table 2. "Not stated" means not explicitly found in the cited source and does not mean the facility is absent.

The matrix shows three broad patterns. First, computer access is the most consistently reported digital feature. Second, internet connectivity is explicitly documented in several mandatory disclosures but not uniformly stated on all school websites. Third, higher-order technology integration—smart classrooms, AI, robotics or computer-aided learning—appears in a smaller subset of the selected schools. For equity planning, this suggests that district strategy should distinguish between foundational digital access and advanced digital enrichment.

VIII. DISTRICT-LEVEL SMART-CLASSROOM EXPANSION

School-level investment is only one part of digital equity. Government-school access requires programmes that operate at scale. BCCL's Annual Report 2024-25 describes a "Digital Vidya" initiative and states that 50 smart classrooms were being installed in 50 government schools of the aspirational district of Giridih at an approximate expenditure of Rs. 180 lakh, with about 75,000 students expected to benefit. Because the report uses the phrase "being installed," the figures should be treated as an implementation commitment reported for 2024-25 rather than as independent verification that all classrooms were fully operational by the date of this article.

Table 5. BCCL-reported smart-classroom initiative for Giridih district

Component	Reported value	Interpretation for educational equity
Government schools covered	50 schools	Targets public-sector access rather than only private-school digital capacity.
Smart classrooms	50	Creates a technology-enabled teaching space in each participating school if implementation is completed as reported.
Approximate expenditure	Rs. 180 lakh	Equivalent to roughly Rs. 3.6 lakh per planned smart classroom on a simple division basis; this is not a unit-cost audit.
Students expected to benefit	About 75,000	Indicates potential for large-scale reach if facilities are functional and regularly used.
Implementation wording in source	"being installed"	Completion and current functionality should be verified through school-wise follow-up.

Source: Bharat Coking Coal Limited, Annual Report 2024-25, section on "Digital Vidya" / supporting schools, p. 135.

IX. MAJOR FINDINGS AND DISCUSSION

A. Digital readiness is uneven but visible across the district

The selected-school evidence indicates that digital infrastructure is no longer exceptional in Giridih. Computer facilities appear in all seven selected cases, while several institutions additionally report internet, smart classrooms or specialised digital programmes. At the same time, the breadth of facilities differs. This means that the central equity question has shifted from simple presence or absence of technology to the quality, continuity and depth of digital use.

B. Connectivity remains a foundational equity condition

Mandatory public disclosures from Divine Public School Beko, St. Mary's Public School Suriya, Holy Cross School Pachamba and Saluja Gold explicitly report internet access. Other schools describe internet-related learning or digital spaces without publishing a simple infrastructure yes/no entry in the pages reviewed. District planning should therefore treat connectivity as a minimum standard and should track bandwidth reliability, not merely connection status.

C. Smart classrooms and advanced programmes represent a second layer of readiness

DPS Giridih and SSVM publicly highlight smart classes, while Saluja Gold reports smart classrooms and a robotics lab. B.N. Saha DAV describes AI education, coding and programming exposure. These features are important because they move digital learning beyond basic computer literacy toward interactive pedagogy, computational thinking and innovation. However, advanced facilities can widen opportunity gaps if they remain concentrated in a limited group of schools.

D. Public investment can reduce the private-public digital gap

The BCCL smart-classroom initiative is significant because it specifically targets 50 government schools. If installed, maintained and pedagogically integrated, such investment can help public-school students gain access to technology-enabled classrooms. The benefit will depend on teacher preparation, electricity, maintenance, content availability and monitoring of actual usage.

E. Digital equity requires teacher and content readiness

Infrastructure alone cannot ensure learning gains. A computer lab that is opened infrequently, a smart board used only for presentation, or an internet connection without suitable content may have limited educational value. The source paper's emphasis on access, quality and digital skills remains relevant here: digital equity requires teachers who can select, adapt and create digital learning experiences and students who can use technology safely and productively.

F. Public disclosure itself should become more standardised

The analysis encountered differences in how schools report facilities. Some websites provide detailed counts, sizes and internet status, while others offer narrative descriptions. A district-level standard disclosure format for digital facilities would make planning more transparent. Suggested fields include number of functional computers, student-computer ratio, internet bandwidth, smart classrooms, projector availability, teacher ICT training, frequency of digital-class use and maintenance status.

X. RECOMMENDATIONS

1) Create a district digital-infrastructure register. The District Education Office can maintain a school-wise database covering functional computers, internet, smart classrooms, projectors, power backup and laboratory status. The register should be updated annually and linked with block and cluster structures.

2) Define a minimum digital-readiness standard. Every secondary school should progressively meet a basic standard consisting of reliable electricity, at least one functional digital learning space, internet or synchronised offline content, projection/display facility and a maintenance plan.

3) Prioritise government and resource-constrained schools. Smart-classroom expansion should be accompanied by targeted device access and support for schools that cannot finance upgrades independently. Public initiatives should be monitored for completion, functionality and actual classroom use.

4) Strengthen teacher digital pedagogy. Training should move beyond operating devices and include blended lesson design, digital assessment, subject-specific simulations, responsible AI use, cyber safety and creation of low-bandwidth learning materials.

5) Use offline-first solutions where connectivity is weak. Schools should be able to use downloadable videos, e-books, local servers and synchronised content so that learning does not stop when internet service is unstable.

6) Expand advanced digital exposure equitably. Coding, AI, robotics and digital problem-solving should not remain limited to a few well-resourced institutions. Cluster-level shared labs, mobile STEM units and inter-school digital clubs can extend access.

7) Monitor learning use, not only asset purchase. Evaluation indicators should include weekly use of digital classrooms, teacher participation, student project work, device functionality and inclusion of girls and disadvantaged learners, rather than relying only on numbers of devices installed.

8) Improve school public disclosure. Schools should publish a simple annual digital-facility statement so that parents, administrators and researchers can distinguish between available, functional and regularly used resources.

XI. CONCLUSION

This secondary-data study provides a fresh, Giridih-specific view of digital learning by moving from a general urban-rural discussion to observable school and district evidence. The selected schools demonstrate that computer education and technology-enabled learning are present in several forms across the district. Yet public information also shows that digital readiness is multidimensional: computer laboratories, internet access, smart classrooms, computer-aided learning, AI and robotics do not appear uniformly across institutions.

The BCCL initiative for 50 government-school smart classrooms is especially important for equity because it extends digital investment beyond independently financed schools. Its long-term value will depend on implementation quality, maintenance, teacher capability and regular use. Therefore, the most useful policy direction for Giridih is not simply "more technology," but a minimum digital standard for every school combined with advanced opportunities that are shared across blocks and clusters.

Future research should supplement website and administrative data with school visits, teacher digital-competency measures, student access surveys and learning-outcome evidence. Such work can test whether infrastructure differences translate into differences in participation, digital literacy and academic performance. Until then, the present article offers a transparent evidence base for identifying where digital readiness is visible and where more systematic district-level data are still needed.

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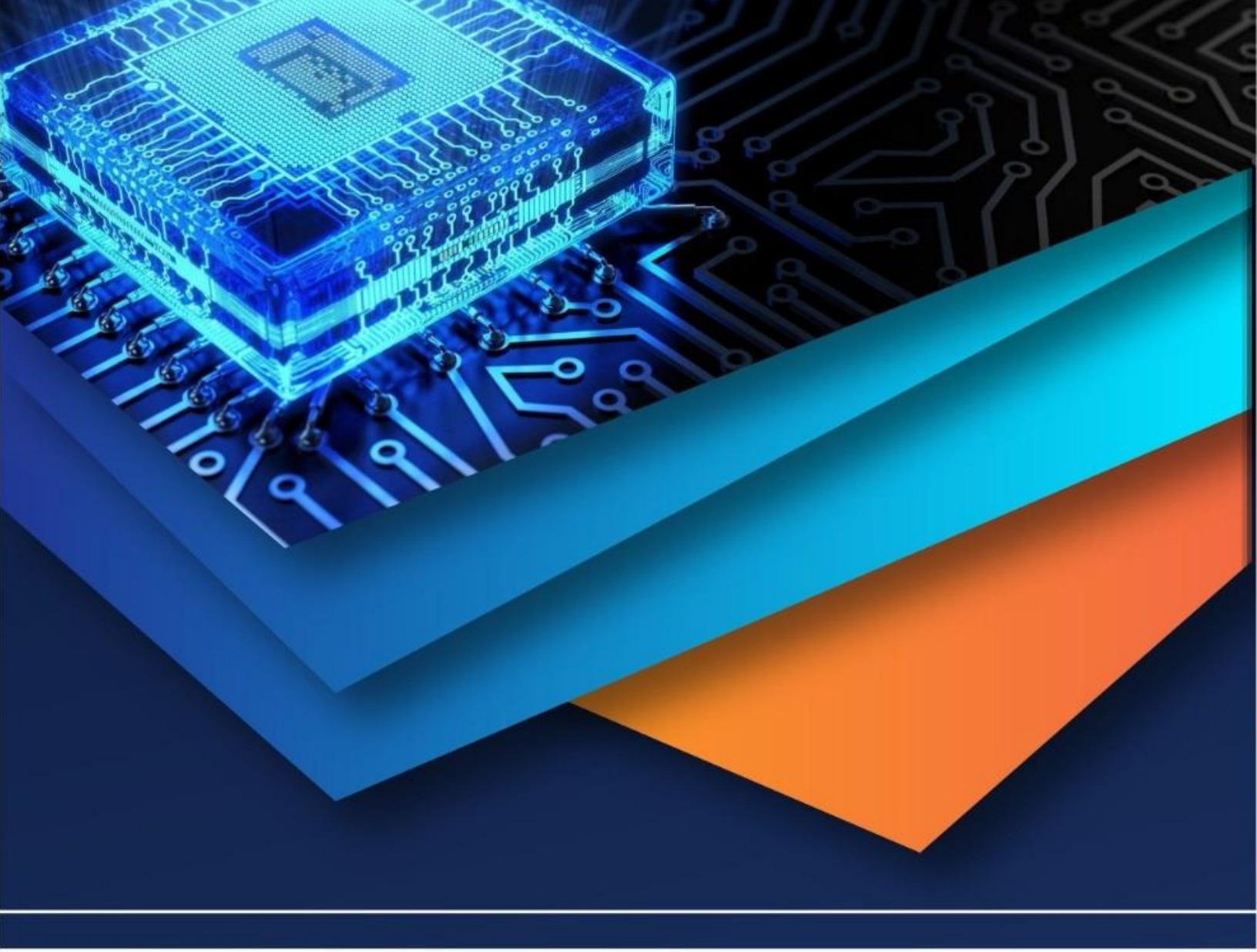

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