

Computer Operator and Programming Assistant: how employable, and how future-proof, is this trade?

The COPA trade sits at the direct intersection of automation risk and digital-economy growth. Data entry and routine computer operations are among the tasks AI tools are replacing fastest, yet India's sprawling BPO sector, government digitisation push, and persistent basic-IT skill gap continue to absorb COPA graduates. This report weighs both forces honestly, using the Lakshya CES score, live-hiring signals, and independent third-party evidence.

52.2_{/100}

COURSE EMPLOYABILITY SCORE (CES V2)

Uncertain outcomes, scored across all four CES pillars (\$02).

34%¹

Projected decline in data entry clerk roles globally by 2030 (WEF, 2025)

297²

USD billion India IT-BPM revenue FY25, sector employing 5.4 million (NASSCOM/IBEF)

52.2^P

Lakshya CES score, Uncertain outcomes band (Reduced exposure with safeguards)

50,000+³

Estimated annual government vacancies for computer operator and DEO roles across India

Subject: the "Computer Operator and Programming Assistant" CTS trade · Compiled from NSQF program spec + independent third-party research (see Sources).

Can AI or automation replace this job? The honest answer.

COPA's core tasks, structured data entry, document formatting, spreadsheet management, and basic system operation, are precisely the tasks that robotic process automation and generative AI handle most readily. The WEF Future of Jobs Report 2025 lists data entry clerks among the fastest-declining occupations globally, with a 34% projected role reduction by 2030 ¹. Yet the same report notes 170 million new roles will be created, and India's particular labour market context alters the calculus considerably.

The risk, stated plainly

Frey and Osborne's foundational 2013 study (updated and critiqued by multiple subsequent researchers) assigned data entry keyers an automation probability above 99% ⁴. The WEF 2025 report confirms data entry clerks face a 34% decline by 2030, the sharpest in the clerical category ¹. McKinsey's 2025 research finds that AI agents can already automate activities equivalent to 57% of US work hours, with data entry and financial processing among the first tasks to be largely AI-led ⁵. For COPA graduates who remain in pure data-entry roles without upskilling, the medium-term risk is real and quantifiable.

What automates vs what stays human

THE TASKS AUTOMATION IS TAKING

- Bulk structured data entry from forms or scanned documents, optical character recognition (OCR) and RPA tools handle this at scale with higher accuracy than manual keying ¹⁵
- Repetitive spreadsheet population and formatting, Excel macros and AI-assisted tools such as Microsoft Copilot automate these tasks end-to-end ⁵
- Standard document generation from templates, mail-merge and generative AI drafting eliminate most manual effort ⁵
- Basic internet searches for structured information retrieval, large-language model agents can query and summarise far faster than a human operator ⁵
- Routine file management, renaming, and archiving, scripted workflows and AI-assisted file organisation remove this task almost entirely ⁴⁵
- Tally/accounting entry for standardised transaction types, accounting software with AI plugins now auto-populates most journal entries ^P

THE WORK THAT STAYS HUMAN

- Context-dependent data quality judgement, recognising ambiguous or contradictory source documents still requires human review and escalation ^{P5}
- Client-facing IT support and troubleshooting in SME or government office settings where empathy and situational judgement matter ^P
- Configuration and monitoring of the very automation tools (RPA, scripts) that replace manual data entry, someone must set them up and fix them ⁵
- Multi-language data handling in Indian regional-language contexts where OCR accuracy remains low and human verification is essential ²
- Hardware-adjacent tasks, peripheral setup, print-room operations, scanner maintenance, which resist pure software automation ^P
- Training and basic IT support for non-technical colleagues, a persistent need in India's government and MSME sectors ³⁶

The resilient anchors

56% ⁷

India's share of global BPO/data-processing outsourcing, sustaining demand for human data handlers and quality-checkers even as AI handles volume ⁷

9.3% CAGR ⁷

India BPO market growth rate to 2030, expanding sector floor even while per-unit labour intensity falls ⁷

2million ⁸

Skilled IT professional shortage in India by 2025 (NASSCOM), basic IT competence remains undersupplied at the entry level ⁸

High automation risk for the narrow data-entry role; substantially lower risk for COPA graduates who pivot to IT support, RPA operations, or digital office management.

The risk is concentrated at one end of the COPA job spectrum: graduates who take a data-entry role and stop there face the steepest structural headwind. The WEF projects a 34% global decline in such roles by 2030, and Indian BPO clients are already deploying AI-based extraction tools to reduce headcount on high-volume keying tasks ¹⁵.

Graduates who use COPA as a foundation and layer on IT support, Tally ERP, networking basics, or RPA tool operation enter a different risk profile entirely. India's government digitisation pipeline, its 5.4-million-strong IT-BPM workforce, and its chronic shortage of job-ready basic-IT talent create real demand at the operator-plus-technician tier, demand that a motivated COPA graduate can access within one to two years of post-certification upskilling ^{P28}.

Automation exposure by task

Task in this trade	Automation risk	How this trade / program is positioned
Bulk data entry from paper or scanned forms	High	OCR + RPA tools already handle high-volume structured data extraction; demand for pure keyers falling ¹⁵
Spreadsheet data population and formatting	High	AI-assisted tools (Copilot, macros) automate routine Excel tasks; value lies in analysis, not data entry ⁵
Document templating and basic word processing	Moderate	Generative AI handles drafts; human review of context and tone still needed in government/legal settings ^P
Hardware setup and peripheral troubleshooting	Lower	Physical tasks resist remote automation; persistent demand in SME and government offices across India ^P
Basic IT support and digital onboarding for non-technical users	Lower	Human empathy and situational judgement remain essential; huge unmet need in India's MSME sector ⁸
Tally ERP data entry for standardised transactions	Moderate	High-volume standard entries are automating; exception handling, reconciliation, and client communication stay human ^P
Quality-checking AI/OCR output for accuracy	Lowest	Growing role: as automation expands, human validators who understand the data domain become more valuable ⁵

How to read these numbers. Automation probability estimates, including the widely cited Frey-Osborne figures, assess task susceptibility, not job elimination timelines. A 2021 OECD review found that even occupations with high automation probability showed slower actual displacement than models predicted, because jobs consist of bundles of tasks and organisational friction slows adoption ⁹. For Indian COPA graduates, structural demand in government, SMEs, and the BPO quality-check tier provides a near-term buffer, but this buffer is time-limited: graduates who do not upskill past basic operations within three to five years of entry are likely to face declining real wages and shrinking demand for their core skill set.

02 THE COURSE EMPLOYABILITY SCORE (CES)

How this trade scores on Lakshya's employability metric

Lakshya's Comprehensive Employability Score (CES) for the COPA trade is 52.2 out of 100, placing it in the Uncertain outcomes band, the third of four tiers, associated with the financing recommendation of Reduced exposure with safeguards. This mid-range score reflects genuine tension: strong government backing and solid NSQF training quality pull the score up, while weak live-hiring signals, a low demand sub-score, and unresolved salary realization drag it down. Scored on the evidence in this report, this role earns a **CES of 52.2 / 100, "Uncertain outcomes."**

CES Pillar (CES v2)	Weight	What it measures
Training Quality	0.30	Regulatory recognition and licensure of the qualification
Market Dynamics	0.30	Demand, salary band, sector trajectory, automation possibility and displacement risk
Placement Outcome	0.25	Whether the market actually hires this role: live employers, openings, pay and recency

CES Pillar (CES v2)	Weight	What it measures
Government Support	0.15	Migration pathways, federal frameworks and policy backing the role

Score bands: ≥80 High employability (full financing exposure) · ≥60 Moderate · ≥40 Uncertain outcomes · below that Weak job linkage. Framework: CES v2.

Market Dynamics, by sub-signal

Sub-signal	Score/100	Sub-weight	Conf
Demand	18	0.40	0.65
Salary (vs country floor)	40	0.30	0.17
Sector trajectory	80	0.15	0.88
Automation possibility	50	0.10	0.30
Displacement risk	50	0.05	0.30
Market Dynamics composite	39	n/a	0.49

The four pillars, scored

CES pillar	Score	Conf	Weight	Evidence
Training Quality	65	0.95	0.300	Score 65/100 (weight 30%), NCVT-approved 1-year NSQF Level 3 curriculum with 1,600 hours of structured practical and theory instruction; DGT-standardised across 15,000+ ITIs nationally ^P
Market Dynamics	39	0.49	0.300	Score 38.6/100 (weight 30%), weak demand sub-score (17.7) reflecting thin direct COPA job listings; partially offset by a strong sector sub-score (80) tied to India's growing IT-BPM industry ²⁷
Placement Outcome	42	0.28	0.250	Live market hiring of the role: 7 openings · 4 employers · 2 with pay · 15 recent postings
Government Support	70	0.90	0.150	Score 70/100 (weight 15%), PMKVY 4.0 (27 lakh trained by Dec 2025), Skill India Mission (500 million target), and PMGDISHA (63.9 million rural households trained) all directly support IT-literacy pathways ⁶¹⁰

Composite (applied weights, renormalised over scored pillars): $65 \times 0.30 + 39 \times 0.30 + 42 \times 0.25 + 70 \times 0.15 = 52.2$. Confidence 1.00 · evidence 15 clean / 0 rejected · 7 sources.

COURSE EMPLOYABILITY SCORE (CES V2)

52.2 / 100, "Uncertain outcomes"

The score's composition tells the story: training quality (65) and government support (70) reflect genuinely robust institutional backing, the DGT-standardised curriculum, the NSQF Level 3 credential, and multiple active government schemes. Market dynamics (38.6) and placement outcomes (42.4) are the drag, with only 7 live listings across 4 employers at the time of scoring, 2 of which included salary data. The demand sub-score of 17.7 is particularly weak, signalling that direct COPA-titled roles are scarce even if underlying IT skills are in demand across the economy.

Graduates can raise their effective employability band by certifying in Tally Prime, completing a short Microsoft Office Specialist exam, or taking an entry-level RPA (UiPath/Automation Anywhere) course after the NTC, each of these stacks onto the NSQF credential and shifts the market-dynamics profile toward roles with stronger live-hiring signals and higher salary realisation ^{P8}.

Pillar scores map cited evidence to the published CES v2 rubric; the live figure refreshes as cohort outcomes feed Lakshya's engine.

Demand signals are split: IT sector is booming, but direct COPA-titled roles are thin.

India's IT-BPM sector generated USD 297 billion in revenue in FY25 and employs 5.4 million people directly, with BPM (including data processing and back-office operations) accounting for 26% of exports ². The BPO market alone is projected to double from USD 6.1 billion to USD 12.4 billion by 2030 at a 9.3% CAGR ⁷. Within this growth, however, demand is shifting away from manual data entry toward quality assurance, IT support, and process coordination roles, a distinction that matters for COPA graduates.

Government demand provides a meaningful counterweight to private-sector automation. An estimated 50,000+ central and state government vacancies for computer operator and data entry operator roles are advertised annually, spanning railways, banks, public sector undertakings, hospitals, and NIC/CDAC ³. NASSCOM projects a shortage of 2 million skilled IT professionals in India by 2025, but this shortage is concentrated at the mid-to-senior level; entry-level supply from ITIs remains abundant, which compresses entry wages and heightens competition for basic-operator roles ⁸. The India Skills Report 2025 found overall graduate employability at 54.81%, with vocational training graduates often better placed for specific roles than general degree holders but still facing a skills-to-market-fit gap ¹¹.

USD 297B²

India IT-BPM sector revenue FY25 (NASSCOM/IBEF, 2025), with BPM segment (back-office, data processing) at 26% of exports

9.3% CAGR⁷

India BPO market growth to 2030, sector expanding even as per-role labour intensity falls due to AI tools

54.81%¹¹

Overall graduate employability in India (India Skills Report 2025), vocational completers often outperform general graduates for trade-specific roles

04 LIVE HIRING EVIDENCE (2025/26)

What employers are actually posting

Captured from live job boards (Indeed, LinkedIn, Naukri) in the current scrape window: **7** openings across **4** employers, **2** with disclosed pay, **15** recent. These are real postings.

At the time of scoring, the live-hiring aggregate for the COPA trade showed 7 listings across 4 employers, with only 2 listings disclosing salary data and 15 recent postings flagged by recency signal. This is a thin sample that should not be read as the full market, COPA graduates compete for roles posted under titles such as Data Entry Operator, Computer Operator, Office Assistant, and Tally Operator, which are not captured in a COPA-specific search.

Employer (live posting)	Posts	Disclosed pay	What they want
Brisk Olive Business Solutions Pvt Ltd	5	n/a	**Job Description (JD)-COPA Trainer** *(Computer Operator and Programming Assistant Trainer)* The COPA Trainer is responsible for delivering theoretic
Desirous Global Consulting	1	n/a	Industrial Equipment / Machinery Full-Time Job ID: DGC00797 Chennai, Tamil Nadu 0-4 Yrs ₹02 - ₹05 Yearly **Job description** Assembles, installs, and
Genpact	1	n/a	Sr. Analyst - Process Analytics - SCM**Ready to turn bold ideas into real-world impact? ** At Genpact, we don't just adapt to change, we lead it. AI an

Employer names and counts are from live job boards in the current window; counts fluctuate daily and are date-stamped in the engine. This sample is smaller than a mature occupation's; the scraper is being scaled to widen coverage.

THE SIGNAL IN THE DATA

- 4 unique employers in the live sample includes Genpact (a major BPO), indicating that large IT/BPO firms do absorb candidates with COPA-equivalent skills even if they post under different role titles
- The COPA Trainer role posted by Brisk Olive reflects a secondary demand pathway: experienced COPA graduates enter the ITI training ecosystem itself, a more stable and growing demand channel
- Only 2 of 7 listings disclosed salary, making salary-realization inference unreliable from this sample alone

WHY THIS MATTERS

- Searching by occupation rather than credential title (Data Entry Operator, Computer Operator, Office Executive, MIS Executive) reveals substantially more openings, government job portals alone list 500+ active vacancies at any time ³
- Government and PSU roles (ICSIL, AIIMS, Railways, State Departments) provide a relatively stable hiring floor for COPA-level skills with defined pay scales under the 7th Pay Commission ³
- Upskilling to Tally Prime, Microsoft Office Specialist certification, or RPA operator roles opens a clearly deeper and better-paying pool of live listings ^{8 P}

Bottom line: The live-hiring count is an undercount of real opportunity, but the genuine signal is that demand for narrowly titled COPA roles is thin and wage-compressed at entry; the best-performing COPA graduates pivot into adjacent titles within 12-18 months.

What the trade leads to, and what it pays

The COPA NTC credential is a platform, not a destination. Graduates who treat the 1-year course as the start of a skill stack, not its end, unlock substantially better employment and wage outcomes. Three broad pathways emerge from the evidence.

Role this prepares for	Indicative pay in India	Automation resilience
Data Entry Operator / Computer Operator (entry)	INR 1.4-2.4 lakh/year ¹²	Lower, high automation exposure; treat as transitional only
Tally ERP Operator / Accounts Assistant	INR 1.8-3.5 lakh/year ¹²	Moderate, software-specific skill commands premium; exception-handling work persists
IT Support / Help-Desk Technician	INR 2.0-4.0 lakh/year ¹³	Resilient, human-facing troubleshooting; growing SME and government demand
MIS Executive / Data Analyst (junior)	INR 2.5-5.0 lakh/year ¹²	Resilient, requires Excel/SQL upskilling; analysis layer resists automation better than entry
COPA / ITI Trainer	INR 2.4-4.5 lakh/year ³	Resilient, growing ITI network; government-backed demand; NTC + teaching aptitude required

PHASE 1

Foundations (Year 1, during COPA)

Complete the 1,600-hour NSQF Level 3 curriculum covering computer fundamentals, MS Office Suite, basic HTML/CSS, Tally, networking concepts, and cyber-security basics. Appear for the NCVT All-India Trade Test (AITT) to secure the National Trade Certificate ^P.

PHASE 2

Differentiation (Months 1-12 post-NTC)

Layer one or two stackable certifications: Tally Prime (Tally Education), Microsoft Office Specialist (MOS) via Certiport, or an entry-level RPA course (UiPath Academic Alliance, free). Target adjacent roles: Tally Operator, Office Executive, MIS Assistant. Government DEO/Computer Operator exams (SSC CHSL, state PSC, IBPS) provide a stable fallback ³⁸.

PHASE 3

Advancement (Year 2-4 post-NTC)

Move into IT Support, junior data-analyst, or process-coordination roles. Consider lateral entry into a Diploma in Computer Applications (DCA) or pursue NSQF Level 4 courses in ICT or IT (available through Sector Skill Councils) to qualify for technically demanding roles. Alternatively, leverage hands-on ITI experience to qualify as a COPA Trainer, a growing and government-backed demand channel ^{P8}.

Trained for the floor, not just the test

WHAT CANDIDATES ACTUALLY WORK ON

- Microsoft Office Suite (Word, Excel, PowerPoint, Access) to advanced level, pivot tables, VLOOKUP, macros ^P
- Tally Prime ERP for accounts, GST filing, and inventory, most sought-after COPA-adjacent commercial skill ^P
- Basic networking concepts: LAN setup, IP configuration, Wi-Fi troubleshooting, critical for IT-support pivots ^P
- Cyber-security fundamentals: password hygiene, phishing recognition, data backup, growing compliance requirement in BPOs and government offices ^P
- Basic web skills: HTML, CSS, and CMS operation (WordPress), enables entry into digital-content and web-admin roles ^P

WHY THESE RESIST AUTOMATION

- Data quality judgement in ambiguous or multi-language source documents, AI OCR still errors on regional scripts; human verification adds durable value ²
- IT support empathy and communication, helping non-technical colleagues requires human situational judgement that AI assistants cannot fully replicate ⁸
- Process exception handling and escalation, automated systems flag exceptions; humans resolve them; demand for this role grows with automation adoption ⁵
- RPA tool configuration and monitoring, the person who manages the bots becomes more valuable than the person who was replaced by them ⁵
- Client coordination and vendor communication in BPO settings, relationship management and contextual judgment remain human-led ⁷

The positioning in one line: COPA graduates who move from data-entry operators to digital-office technicians and AI-output validators occupy a more durable position in India's automating economy.

07 THE CREDENTIAL & QUALITY LAYER

The National Trade Certificate (NTC) is a recognised, stackable foundation, valuable as a starting point, insufficient as a career ceiling.

Successful completion of the COPA trade under the Craftsman Training Scheme earns the National Trade Certificate (NTC) from the National Council for Vocational Training (NCVT), administered by the Directorate General of Training (DGT) under the Ministry of Skill Development and Entrepreneurship. The NTC is NSQF Level 3, nationally recognised and accepted for government recruitment processes including SSC, railways, and state public service commissions ^P. The credential also qualifies holders for the Apprenticeship Act pathway, allowing further on-the-job training with a designated employer.

For financing and employability assessment, the NTC signals that a graduate has completed a structured, government-verified programme with a defined competency standard. However, the Level 3 rating, equivalent to an initial vocational qualification, means employers in the formal IT sector typically expect additional certifications (Microsoft, Tally, or sector-skill-council certificates) before offering roles above the operator floor. Graduates who stack the NTC with a recognised commercial certification materially improve their salary-realisation prospects ^{8P}.

08 THE INDIA TALENT CONTEXT

Abundant graduates, scarce job-readiness

India's graduate employability challenge is well-documented: the India Skills Report 2025 found that only 54.81% of graduates are employable in roles matching their qualification, despite 6.5 lakh candidates being assessed ¹¹. A NASSCOM report estimates that nearly 50% of Indian graduates lack the practical digital skills demanded by the knowledge economy ⁸. Paradoxically, this creates opportunity for COPA graduates: in a country where basic IT competency is still unevenly distributed, especially in Tier 2/3 cities and rural government offices, an ITI COPA certificate can signal genuine, job-ready digital skills that a general-degree holder may not have.

In India's vast MSME and government sectors, an NTC-certified COPA graduate with hands-on Tally and MS Office skills is often more immediately job-ready than a commerce graduate who has never touched accounting software ^{P11}.

09 STAYING FUTURE-READY

How a candidate stays on the resilient side

LEAN INTO

- RPA tool operation and monitoring (UiPath, Automation Anywhere), the automation wave creates operator-level demand for people who can run and fix the tools ⁵
- Data quality assurance and AI output validation, as OCR and AI-data-extraction scale, human review of edge cases becomes a defined job function ⁵
- Government digital service delivery roles, India's e-governance push (BharatNet, UMANG, DigiLocker) creates sustained demand for citizen-facing IT operators in state and district offices ¹⁰
- Tally Prime and GST compliance assistance, mandatory GST filing and digital accounting in India's 63 million MSME sector sustains demand for accounting-software operators ^{P7}
- IT trainer and facilitator roles within the growing ITI network, MSDE is expanding ITI capacity; experienced COPA graduates can access a stable training-sector pathway ⁶

AVOID BEING DEFINED BY

- Remaining in pure bulk data-entry roles without upskilling, this is the highest-automation-risk position and wage growth is flat or negative ¹⁵
- Treating the 1-year NTC as a final credential without stacking commercial certifications (MOS, Tally Prime, DOEACC/NIELIT) that employers actively seek ⁸
- Ignoring government exam pathways (SSC CHSL, IBPS, state PSC computer-operator posts), these provide stable, pay-scale-protected employment and are open to NTC holders ³
- Limiting job search to COPA-titled roles, most demand is captured under titles like Data Entry Operator, Office Executive, MIS Executive, or Computer Technician, and restricting the search forfeits the majority of the market ³⁸

10 SOURCES & CITATIONS

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