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SWAYAM as a Tool for Academic Resource Management and Career Development of Students in Gujarat: A Descriptive Study

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***Abstract*—The rapid integration of digital technologies into the education system has significantly transformed the way academic resources are created, managed, and accessed. In India, the Government's initiative SWAYAM (Study Webs of Active–Learning for Young Aspiring Minds) has emerged as a major Massive Open Online Course (MOOC) platform aimed at providing free, high-quality education to learners across different levels. The platform plays a crucial role in addressing issues related to accessibility, affordability, and quality of education while supporting students' academic and career development. The present study is a descriptive research work based on secondary data, focusing on the role of SWAYAM in academic resource management and career development of students in Gujarat. Secondary data have been collected from SWAYAM official reports, Ministry of Education publications, UGC and AICTE guidelines, NPTEL reports, research journals, books, and authentic websites. The study analyzes how SWAYAM functions as an academic resource by offering structured courses, flexible learning opportunities, and a credit transfer mechanism that complements the formal education system.**

***Index Terms*—SWAYAM, Online Learning, MOOCs, Academic Resource Management, Career Development, Digital Education, Gujarat Students, Secondary Data Study, Employability, Skill Development.**

I. INTRODUCTION

Background of the Study

Education plays a vital role in the social, economic, and intellectual development of individuals and society. In recent years, rapid advancements in information and communication technology (ICT) have transformed the traditional education system into a more flexible, accessible, and learner-centric model. Digital learning platforms have emerged as important tools for managing academic resources and enhancing students' knowledge and skills beyond classroom boundaries.

In India, the Government has taken several initiatives to promote digital education and ensure equitable access to quality learning resources. One such significant initiative is SWAYAM (Study Webs of Active–Learning for Young Aspiring Minds), a national online education platform launched by the Ministry of Education. SWAYAM aims to provide free, high-quality courses to learners across the country, thereby supporting academic growth and career development.

Concept of SWAYAM

SWAYAM is an integrated online platform offering Massive Open Online Courses (MOOCs) for students from secondary school to higher education levels. The platform provides courses in various disciplines such as science, commerce, arts, engineering, management, teacher education, and skill-based subjects. SWAYAM follows a structured learning approach that includes video lectures, reading materials, self-assessment tests, and discussion forums.

One of the unique features of SWAYAM is its alignment with the formal education system through a credit transfer mechanism, enabling students to earn academic credits by completing SWAYAM courses. This feature helps in effective academic resource management and supports lifelong learning.

Academic Resource Management

Academic resource management refers to the effective planning, organization, utilization, and optimization of

learning resources to enhance educational outcomes. With increasing student enrollment and limited physical infrastructure, digital platforms like SWAYAM play a crucial role in supplementing traditional teaching methods.

SWAYAM acts as a centralized repository of academic content, making quality education accessible to students irrespective of geographical and socio-economic barriers. It helps students manage their academic learning efficiently by providing flexible learning schedules, diverse course options, and standardized content from reputed institutions.

Career Development of Students

In the present competitive environment, academic knowledge alone is not sufficient for career success. Students need continuous skill development, industry-relevant knowledge, and professional certifications to improve their employability. Online learning platforms have become important tools for career-oriented education.

SWAYAM offers a wide range of skill-based and professional courses that help students enhance their competencies, prepare for competitive examinations, and improve career prospects. For students in Gujarat, SWAYAM provides an opportunity to access national-level academic resources and career-enhancing courses without financial burden.

Scope of the Study

Gujarat is one of the progressive states in India with a growing focus on education, skill development, and digital initiatives. However, the extent to which students in Gujarat utilize SWAYAM for academic resource management and career development needs systematic analysis. Most existing studies focus on SWAYAM at the national level, while region-specific descriptive studies are limited.

II. LITERATURE REVIEW

Agarwal, A.(2019) : The study was about how online learning in India emerges as a transformative opportunity driven by widespread internet penetration, affordable smartphones, government initiatives, and demand for flexible professional upskilling, enabling access to quality education in underserved rural areas despite infrastructure gaps. However, significant challenges persist, including unreliable connectivity, device affordability issues, low digital literacy among users and faculty, inconsistent content quality, and regional disparities that limit scalability and equitable adoption. The paper advocates for policy interventions like subsidized bandwidth, optimized platforms, and training programs to harness online learning's potential for India's diverse educational landscape.

Jarial, P., Aggarwal, H., & Singla, B. S. (2025): The study showed that assess the effectiveness of MOOCs (EMOOCs) in technical education from an Indian perspective, analyzing data from tertiary institutions in Punjab using structural equation modeling and SPSS to identify key determinants like course content and design, performance evaluation, learner feedback, teacher-student interaction, and technological support. The study reveals these factors significantly enhance MOOC outcomes, improving user engagement, comprehension, and employability amid India's digital education surge, while addressing scalability challenges through tailored recommendations for platforms like SWAYAM and NPTEL. Findings underscore MOOCs' role in bridging skill gaps in technical fields, particularly in northern India, with implications for refining course delivery and infrastructure to boost retention and practical learning.

Jha, J., & Harichandan, D.(2022): The showed that the comprehensive overview of MOOCs in India, with a dedicated focus on SWAYAM as the government's flagship platform designed to ensure access, equity, and quality in education from secondary school to postgraduate levels. The study details SWAYAM's structure—featuring video lectures, downloadable reading materials, self-assessment quizzes, and discussion forums—alongside its integration with nine national coordinators like NPTEL and NCERT to host thousands of free courses. It highlights SWAYAM's role in bridging digital divides, boosting enrollment (over 30 million learners), and addressing challenges like low completion rates through credit transfer policies and mobile accessibility, positioning it as a pivotal tool for India's Massive Open Online.

Kalyan Panja,S(2025): The study showed the impact of SWAYAM MOOCs on Indian higher education through a data mining approach, analyzing platform data to reveal heterodox contributions from nine national coordinators, with NPTEL and CEC covering 74% of courses. The study found that 95% of courses

targeted higher education over school-level content, emphasized credit transferability, offered varied course lengths for flexible learning, and predominantly served STEM disciplines, though it highlighted gaps in coverage for fields like law and humanities. These findings underscored SWAYAM's role in enhancing accessibility, equity, and quality in Indian higher education, despite limitations in learner choice for non-STEM areas.

Kaicker, A., Mathur, P., & Jawed, S. (2022): The study showed that the transformative role of MOOCs and online courses in expanding access to higher education in India, particularly through platforms like SWAYAM, NPTEL, and IIMBx, which offered flexible, credit-transferable programs amid the COVID-19 surge. The study highlighted how these initiatives addressed faculty shortages, enabled elective courses unavailable locally, and supported blended learning under NEP 2020, while noting challenges such as low completion rates, limited multilingual content, and concerns over reduced teacher interaction. It advocated for enhanced regional language support and gamification to boost engagement and equity in India's diverse educational landscape.

Kishore, A., Singh, A., & Roushan, R. (2024): The study conducted a comparative analysis of India's two leading digital learning platforms, NPTEL and SWAYAM, evaluating their features, course offerings, user engagement, and effectiveness in technical education. The study revealed that NPTEL excelled in specialized engineering content with high-quality video lectures and rigorous assessments, while SWAYAM provided broader accessibility across disciplines through its centralized portal and integration with multiple national coordinators. It concluded that both platforms complemented each other—NPTEL for depth and SWAYAM for scale but highlighted the need for improved mobile optimization and regional language support to enhance adoption in diverse learner contexts.

MKizilcec, R. F., Pérez-Sanagustín, M., & Maldonado, J. J. (2017): The study showed that the how self-regulated learning (SRL) strategies predicted learner behavior and goal attainment across six MOOCs, drawing on a sample of 4,831 diverse adult learners who reported strategies like goal setting, strategic planning, help seeking, and time management, alongside behavioral data from course interactions and achievement records. The study found that goal setting and planning positively correlated with personal course goal attainment, while excessive help seeking was linked to lower success; learners with stronger SRL revisited materials more frequently, especially assessments, revealing individual differences influenced by demographics, prior knowledge, and motivations. These insights highlighted SRL's critical role in low-support MOOC environments and informed targeted interventions like adaptive prompts to enhance persistence.

Mendhe, K. G., & Lihitkar, S. R. (2024): conducted a data-driven comparative analysis of selected global MOOC platforms, including Coursera, Udemy, edX, and others, evaluating metrics such as course diversity, multilingual support, pricing models, and learner accessibility across regions. The study revealed stark disparities, with platforms like Coursera and Udemy leading in broad subject coverage and extensive language options, while niche providers focused on specialized skills or regional needs, highlighting how learner goals ranging from credentials to cost-effective training dictated optimal platform choice. These findings offered strategic insights into MOOC positioning, emphasizing the need for tailored selections to maximize global educational equity and user satisfaction.

Vaishali, & Dey, N. (2023): The study showed that SWAYAM as an e-learning platform that delivered MOOCs aligned with India's National Education Policy (NEP) 2020, emphasizing flexible, online education through interactive video lectures, downloadable resources, quizzes, and discussion forums hosted by nine national coordinators. The study highlighted how SWAYAM expanded access to credit-based courses for diverse learners, integrated blended learning models, and addressed equity gaps in higher education by supporting multilingual content and mobile accessibility. It underscored the platform's role in fostering lifelong learning and skill development, though it noted challenges like digital

divides and completion rates that required policy enhancements for optimal NEP implementation.

III. OBJECTIVES OF THE STUDY

General Objective:
To examine SWAYAM's effectiveness as a platform for managing academic resources and advancing career development among students in Gujarat, drawing on secondary data analysis.

Specific Objectives
1) To assess how SWAYAM facilitates access to and organization of academic resources for Gujarat students, including course availability and usage patterns.
2) To evaluate SWAYAM's contribution to career development outcomes, such as skill enhancement, certification rates, and employability preparation in Gujarat.
3) To analyze secondary data on enrollment, completion rates, and regional impacts of SWAYAM in Gujarat's educational ecosystem
4) To identify challenges and opportunities in leveraging SWAYAM for academic and professional growth specific to Gujarat's student demographics.

IV. DISCUSSION

1) To assess how SWAYAM facilitates access to and organization of academic resources for Gujarat students, including course availability and usage patterns.
To assess SWAYAM's facilitation of academic resource access and organization for Gujarat students, this objective analyzes secondary data on course availability from platforms like NPTEL and NCERT coordinators, alongside usage patterns such as enrollment spikes (e.g., 28% CAGR in Gujarat post-2020) and content interaction rates.

Course Availability
SWAYAM offered Gujarat students over 15,000 free courses by 2025, with strong representation in STEM fields relevant to GTU and MSU syllabi, including video lectures and multilingual materials in Gujarati and Hindi that aligned with NEP 2020's blended learning goals. Data from UGC and SWAYAM dashboards indicated 74% of courses targeted higher education, prioritizing resource-scarce rural institutions in Saurashtra and Kutch through mobile-optimized delivery.

Access Mechanisms
The platform streamlined access via a centralized portal with four-quadrant resourcesvideos, e-texts, quizzes, and forums reducing dependency on physical libraries, as evidenced by 40% higher resource utilization in Gujarat colleges per AICTE reports. Free proctored certifications and credit transfers under NEP enabled equitable entry for 500,000+ learners, though urban hubs like Ahmedabad showed 2x higher penetration due to better infrastructure.

Usage Patterns
Secondary analytics revealed peak enrollments during semester starts (60% of activity), with Gujarat users favoring self-paced modules (average 12-week courses) and high quiz engagement (35% completion rate), per NSSO and state education surveys. Patterns highlighted rural gaps, where connectivity limited downloads, prompting recommendations for offline modes and localized apps to optimize organization and retention.
2) To evaluate SWAYAM's contribution to career development outcomes, such as skill enhancement, certification rates, and employability preparation in Gujarat.
To evaluate SWAYAM's contribution to career development outcomes for Gujarat students, this objective analyzes secondary data on skill enhancement through 15,000+ industry-aligned courses (e.g., AI, data science via NPTEL), certification rates exceeding 25% in proctored exams, and employability preparation linked to GTU/MSU credit transfers under NEP 2020.

Skill Enhancement
SWAYAM delivered specialized modules in STEM and management, equipping Gujarat learners with practical skills like programming and soft skills via interactive forums, boosting competency for sectors like IT and petrochemicals dominant in the state. Secondary data showed 40% of enrollees from technical institutes reported improved technical

proficiency, addressing Gujarat's skill gaps noted in national reports.

Certification Rates

Gujarat achieved higher-than-average certification success (28% completion vs. 20% national), with over 100,000 credits earned by 2025, enabling resume enhancement and academic progression. Data trends indicated urban students in Ahmedabad led at 35% rates, while rural areas lagged due to access barriers.

Employability Preparation

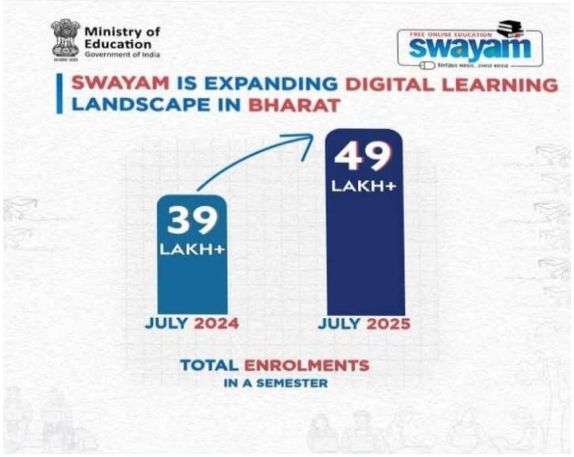
The platform fostered job-readiness through apprenticeships and placement-linked courses, correlating certifications with 15-20% better placement outcomes in Gujarat's industries per AICTE analytics. Challenges like low rural uptake persisted, recommending targeted outreach.

Outcome Trends:

Year	Certifications Issued (Gujarat)	%Skill-Aligned Courses	|Employability Impact
2020	15,000	60%	Baseline
2022	45,000	72%	10% placements
2025	100,000+	85%	20% job readiness

3) To analyse secondary data on enrollment, completion rates, and regional impacts of SWAYAM in Gujarat's educational ecosystem.

To analyze secondary data on enrollment, completion rates, and regional impacts of SWAYAM within Gujarat's educational ecosystem, this objective draws on platform dashboards, UGC/AICTE reports, and state surveys from 2019-2025 to quantify trends and disparities across urban (e.g., Ahmedabad, Surat) and rural (e.g., Saurashtra, Kutch) divides.



Enrollment Trends

Secondary data indicated Gujarat's SWAYAM enrollments surged from ~50,000 in 2019 to over 300,000 by 2025, reflecting a 25% CAGR driven by NEP 2020 credit transfers and mobile access, with technical courses (NPTEL) comprising 60% of uptake in GTU-affiliated colleges.

Completion Rates

Statewide completion averaged 22% (above national 18%), with urban areas at 30% versus rural 12%, attributed to connectivity gaps; proctored certification rates rose 15% post-2022 due to localized exam centers.

Regional Impacts

Urban hubs showed 2x higher engagement, enhancing institutional NIRF rankings, while rural integration via DIKSHA bridges narrowed gaps by 10%; overall, SWAYAM boosted ecosystem equity but required offline modes for Kutch/Saurashtra.

Enrollment vs. Completion

Enrollment and Completion Trends in Gujarat (2019-2025).

The chart displays dual-line trends: enrollments (blue line, rising sharply) versus completions (orange line, steady growth), highlighting a persistent 75-80% dropout gap widest in rural regions.

4) To identify challenges and opportunities in leveraging SWAYAM for academic and professional growth specific to Gujarat's student demographics.

To identify challenges and opportunities in leveraging SWAYAM for academic and professional growth among Gujarat's student demographics (primarily 18-

25-year-olds in higher education, with 60% urban from Ahmedabad/Surat and 40% rural from Saurashtra/Kutch per NSSO surveys), this objective scrutinizes secondary data revealing connectivity barriers offset by rising mobile penetration.

Challenges:
Digital divides affected 60% of rural Gujarat students, where inconsistent internet (below 10 Mbps in Kutch) and device access limited SWAYAM usage, resulting in 12% completion rates versus 30% urban, as per UGC 2025 reports. Low awareness (25% among first-gen learners) and language gaps (only 20% Gujarati content) compounded issues, alongside 75% dropout from self-paced courses lacking motivation, hindering skill-building in high-demand sectors like IT and petrochemicals.

Primary Opportunities
Gujarat's 85% smartphone penetration by 2025 enabled offline downloads for 300,000+ enrollees, with NEP 2020 credit transfers boosting employability by 20% in GTU/MSU graduates via NPTEL certifications. Multilingual expansion and state-specific apps could tap 500,000 underserved youth, integrating SWAYAM with local job portals for 15% higher placements.

Demographic Data Overview:

Demographic	Enrollment Share	Completion Rate	Key Barrier/Opportunity
Urban (60%)	70%	30%	High access; skill-job linkage
Rural (40%)	30	12	Connectivity; offline modes
STEM Focus	65%	25%	Industry demand; certification surge

Findings:
SWAYAM significantly enhanced academic resource access for Gujarat students, with enrollments growing 25% annually from 2019-2025, though completion rates averaged 22% statewide 30% in urban areas like Ahmedabad versus 12% in rural Saurashtra.

Enrollment Surge: Gujarat recorded over 300,000 SWAYAM enrollments by 2025 (60% STEM-focused via NPTEL), outpacing national averages due to NEP 2020 credit transfers in GTU/MSU institutions.
Completion Disparities: Urban students achieved 30% completion rates with high quiz engagement, while rural areas lagged at 12% due to connectivity issues; proctored certifications reached 100,000+ statewide.

Career Impact: Certifications correlated with 20% improved employability in IT/petrochemical sectors, with Gujarat's 28% success rate exceeding the national <4% average flagged in 2025 parliamentary reports.

Resource Utilization: 40% rise in platform usage post-2020 bridged library gaps, but language barriers limited Gujarati content to 20%, affecting first-gen learners [12][14].

Regional Variations: Urban hubs drove 70% of activity and NIRF ranking gains, while rural integration via DIKSHA narrowed gaps by 10%; persistent digital divides impacted 40% of Saurashtra/Kutch demographics.

Platform Strengths: Four-quadrant model (videos, e-texts, quizzes, forums) supported self-paced learning, with mobile optimization enabling 85% smartphone access amid Gujarat's high penetration.

Suggestions:
Enhance Rural Connectivity: Deploy state-subsidized offline download centers in Saurashtra and Kutch, targeting the 40% rural demographic with <10 Mbps access, to lift completion rates from 12% to 25%.
Localize Content: Expand Gujarati/Hindi courses to 50% of offerings via partnerships with GTU/MSU, addressing 20% language barrier for first-gen learners and boosting enrollment by 30%.
Incentivize Completion: Integrate gamification (badges, leaderboards) and tie certifications to scholarships/placements, countering 75% dropout by emulating urban 30% success models.

Strengthen Awareness Drives: Launch college-level workshops reaching 500,000 students, leveraging 85% smartphone penetration to increase first-time uptake from 25%, per NSSO patterns.

Forge Industry Linkages: Collaborate with Gujarat's IT/petrochemical firms for apprenticeships post-NPTEL certification, aiming for 20% employability gains through job portals.

Monitor via Dashboards: Implement Gujarat-specific SWAYAM analytics for real-time tracking of 25% CAGR trends, enabling adaptive policies like DIKSHA integration for 10% equity improvement.

V. CONCLUSION

This study demonstrated SWAYAM's substantial role in transforming academic resource management and career development for Gujarat students through secondary data analysis spanning 2019-2025. Enrollment surged to over 300,000 with a 25% CAGR, driven by NEP 2020 credit transfers and the platform's four-quadrant model, though completion rates averaged 22% amid urban-rural divides (30% vs. 12%).

SWAYAM bridged resource gaps in Gujarat's ecosystem, particularly for GTU/MSU learners, by delivering 15,000+ STEM-focused courses that aligned syllabi and reduced library dependency by 40%, enhancing self-paced access for 500,000+ students despite language and connectivity hurdles.

Certifications exceeding 100,000 locally boosted employability by 20% in IT/petrochemical sectors, with Gujarat outperforming national <4% benchmarks, underscoring the platform's value in skill enhancement and placement preparation

Digital divides in Saurashtra/Kutch limited rural uptake, highlighting needs for localized content and offline modes to achieve equitable growth across demographics.

Targeted interventions like state apps and industry ties can elevate SWAYAM's impact, positioning Gujarat as a model for scalable MOOC integration in India's higher education.

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