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# A DATA-DRIVEN COMPARATIVE STUDY OF SELECTED GLOBAL MOOC PLATFORMS

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## ABSTRACT

This study conducts a data-driven comparative analysis of selected global Massive Open Online Course (MOOC) platforms, examining their diverse offerings, linguistic support, and key features to understand their roles in the evolving online education landscape. Utilizing extensive data tables, the research evaluates platforms based on subject categories, specific course availability, and the array of languages provided. Findings reveal a significant disparity among platforms, with leaders like Coursera and Udemy offering a broad spectrum of subjects and extensive multilingual support. In contrast, others specialize in niche areas or cater to specific regional linguistic communities. The analysis highlights how platform choices should align with learner goals, whether they are seeking formal credentials, specialized technical skills, or budget-friendly options. Ultimately, the paper provides insights into the strategic positioning and accessibility of MOOCs worldwide.

**Keywords:** Massive Open Online Courses (MOOCs), MOOC Platforms, Online Education, Digital Learning, Data-Driven Study, etc

## 1. INTRODUCTION

Massive Open Online Courses (MOOCs) have fundamentally transformed the education sector by providing accessible and flexible learning opportunities to a global audience. First introduced in 2008, MOOCs gained significant popularity in 2012, recognized as the "Year of the MOOC," by offering online courses with unlimited participation and open access via the web. Beyond traditional materials, many MOOCs provide interactive elements like user forums and immediate feedback, facilitating community interaction and flexible learning. In today's competitive landscape, with the continuous need for additional qualifications and skill development, MOOCs offer a convenient solution for learning anytime, anywhere. This study aims to conduct a detailed examination of courses available on MOOC platforms, identify the languages and subjects offered, and comparatively evaluate these platforms to better understand their contributions to digital education.

## 2. LITERATURE REVIEW

The existing literature extensively explores various dimensions of MOOCs, including their pedagogical effectiveness, technological advancements, learner engagement, and persistent challenges. A few of them are discussed here to establish the background of the study.

**1. Agnlhotri, M.A., & Pandit,A. (2021)**

In the present competitive social structure characterized by multitasking the need for additional qualifications apart from traditional degrees has become a necessity both for students as well as professionals. However, time being a limiting factor, gaining additional specialization is indeed cumbersome and calls for home schooling or schooling at the aspirant's convenience. In this backdrop, the significant solution lies in Massive Open Online Courses (MOOCS). MOOCS are host of courses delivered online with usually free access to anyone, anywhere, anytime and can be studied at the at the user's own convenience and choice. In the world of MOOCS which started flourishing throughout the world form 2012. India is relatively a new player which has just significantly stepped in the scenario in 2017 with the introduction of SWAYAM (Study Webs of Active-Learning for Yong Aspiring Minds). SWAYAM is an online academic resource platform sponsored and developed by The Ministry of Human Resource Development and based on the principles of "access, equality and quality"

**2. Albelbisi Nour Awni, (2020)**

The objective of this study is to develop and validate the MOOC Success Scale (MOOC-SS) in the Malaysian context. Further, this study ascertains the influence of MOOC success factors on learner satisfaction. Based on an collaborate literature study, six factors related to MOOC success were derived: 1) system quality, and (2) information quality, (3)services quality (4) attitude, (5) course quality, and (6) satisfaction. The data were collected from 1000 undergraduate students from 5 public universities in Malaysia with a return of 622 responses.The instrument was tested in several ways: (a) review the literature, (b) formulating hypotheses (c) items generation, (d) expert opinion, and (e) pilot test. Thriller, the scale's reliability and validity were calculated, which appeared to be excellent. The results of the principal component analysis (PCA) empirically confirmed that the MOOC success scale with six factors and 33 items is strong enough to recommend its use in MOOC settings. Further, the finding of the predictivity validity indicated that system quality, attitude, and course quality appeared to predict satisfaction toward MOOC. The instrument can be used by academicians, practitioners, and policymakers to monitor the MOOC success factors. Further research would be needed to generalize this research to other populations.

**3. Antonova, A., & Bontchev, B. (2020)**

Increasingly, the MOOCs become accessed as mobile learning solution, improving the access and portability of learning. Supporting learners in all phases of learning, it facilitated pre-learning experience (browsing courses enrolling), learning-on the go (watching online video, making quizzes downloading content), and post-learning experience (commenting, socializing, consulting content and recommendations, sharing learning artefacts). Therefore, building adaptable and contextualized mobile learning strategies is especially important for MOOCs learning providers. Furthermore, the MOOCS' experience can help a large group of learning providers to build better strategies for adopting e-learning m-learning and blended learning approaches. Nowadays, MOOCs are offered for both Web mobile client applications, where upon difference between their functionalities become ever less essential. While the technological issues are steadily resolved by the modern mobile devices offering high resolution of display, higher performance, and faster mobile throughput, there are still some pedagogical and methodological concerns that will continue attracting the attention of MOOC designers in the next years. Future MOOCs should address the great percentage (up to 90 %) of learners dropping out due to lack of incentive, failure to understand the course content and having no help (Hew and Cheung,2014), by offering a better personalization, contextualization, and adaption to the knowledge and needs of each individual learner.

**4. Arunachalam Subha, (2020)**

This is a period of self-learning Learning is gaining many dimensions. Technology has been a great pillar for that, MOOC is very modern in that respect. The future learning environment through AR and AI is moving towards a revolutionary path SWAYAM is one of the government's initiatives on this road. This paper aims to exhibits, what strategies are in to consider the future? And this paper aims to understand the future challenges of SWAYAM to face the

other MOOC's. To understand these factors, the empirical study has been done is SWAYAM Web portal and SWAYAM app.

**5. Agarwal Agnihotri Madhu, Padit Arkajyoti, (2020)**

In the present competitive social structure characterized by multitasking, the need for additional qualifications apart from traditional degrees has become a necessity both for students as well as professionals. However, time being a limiting factor, gaining additional specializations is indeed cumbersome and calls for home schooling or schooling at the aspirant's convenience. In this backup, the significant solution lies in Massive Open Online Courses (MOOCS). MOOCS are a host of courses delivered online with usually free access to anyone, anywhere, anytime and can be studied at the user's own convenience and choice. In the world of MOOCS which started flourishing throughout the world form 2012. India is relatively a new player which has just significantly stepped in the scenario in 2017 with the introduction of SWAYAM (Study Webs of Active-Learning for Young Aspiring Minds). SWAYAM is an online academic resource platform sponsored and developed by. The Ministry of human Resource Development and based on the principles of "access, equality a quality". The primary objective of SWAYAM is to deliver education to the remotest of places and te less advantaged groups of people who are yet not touched by digital revolution. However, with the advent and prosperity of digitization, when the world is becoming virtually smaller every second and quality resources are increasingly becoming freely accessible, it is necessary to have a comparative study of SWAYAM with other International MOOCS to understand the future viability, sustainability and further scope of the same. In this chapter efforts have been made to present a relative position of SWAYAM in the current context by comparing it with some of the major international MOOC players such as Coursera, 'edX' and 'Future learn,'. It is equally important to address the futures scope of SWAYAM and the limitations that it faces as compared to other MOOCS, SWAYAM and the limitations that it faces as compared to other MOOCS, SWAYAM being very new in such a venture, efforts are made to point out the areas of improvement with the help of comparative analysis on various parameters like ease of access, time effectiveness, cost effectiveness to mention a few. The objective of this paper is to find ways in which SWAYAM can attain a position of being a major MOOC from a novice player.

**6. Gulati Sarita, Ms Kaur Amanpreet, Chakravarty Rupak , Sharma Ritu (2021)**

In distance education, e-learning platforms are providing exciting learning opportunities and enhanced learning experiences to teach massive learners of all age group race, and gender without any geographical barriers using MOOCs (Massive open online courses) such as SWAYAM and Coursera are to educate the learners of all age groups, race, gender without any geographical barriers. The present study aims to understand the user's perspective and satisfaction level towards MOOCs, explore features of MOOCs, particularly to compare the SWAYAM and Coursera. In these contributions, we seek to answer several research questions on sentiment analysis related to SWAYAM and Coursera mobile apps. MOOCs primarily have web platforms accompanied by their mobile app versions, presenting a comprehensive coverage for users. MOOC platforms like SWAYAM and Coursera also offer their courses through mobile apps. The user reviews contain valuable information which can be utilized for multiple purpose by different stakeholders towards the improvement of the courses, pedagogy, etc. often the app reviews are remained untapped for evaluation and amendment purposes due to al lack of effective and simple technology as a manual method is time-concerning and tedious. In this study, the user reviews of Coursera and SWAYAM apps have been extracted and analyzed by using the web-based sentiment analysis tool Appbot.

**7. King, I., & Lee, W. I. (2022).**

Enterprises and organizations started to utilize the novel form of education. MOOC platforms have proliferated globally within a relatively short period of time. While these platforms share a common goal of delivering learning opportunities to users, their origins and contexts of development differ significantly. Among them are great variations in funding streams, different levels of governmental intervention, varying degrees of institutional support, and differences in target audiences and operating models. This chapter traces the rise of MOOC platforms in the global context and explores how key players of different region implement these new learning initiatives. Due to the unique environment in which they were developed, the rise of MOOC platforms in the greater China area is discussed.

**8. Malode, V. (2022).**

SWAYAM is a government initiative project while Coursera is a private project .the courses provided on SWAYAM is free of cost but you have to pay some fees for certificate on other hand Coursera is provide free as well as paid courses. The teaching pedagogy of SWAYAM and Coursera is almost similar with minor differences. SWAYAM works on national

level while Coursera is a worldwide course provider. The courses are provides in different languages on both platforms. SWAYAM provides courses in 9 languages all over country and Coursera provide courses in 50 languages all over the world. Swayam provide education from school (class 9th) to post – graduate level and Coursera provide certificate, under – graduate and post – graduate level courses. The potential of MOOCs offered by SWAYAM and Coursera is very high and it is recognized across the country by the government of India.

**9. N. Devaki , Mniyandi Deivam, (2021)**

SWAYAM is a government-sponsored initiative aimed at achieving the three cardinal principles of education policy: access, fairness and quality. The goal of this initiative is to make the greatest teaching and learning tools available to everyone, especially the most disadvantaged SWAYAM aim to close the digital divide for students who have been left behind by the digital revolution and are unable to participate fully in the knowledge economy. This is accomplishing using an -house created IT platform that allow anybody, anywhere, at any time to access all of the courses taught in classrooms from 9th grade to post graduation. The UGC announced this in a gazette notification in July 2016 Essentially this platform has evolved through four quadrant approaches: video lectures, specifically prepared reading material that may be printed, self-assessment quizzes, and finally, discussion forums for more clarifications. The massive open online course, which is a methodology for distributing learning content to a huge number of individuals online, is hosted on this platform. This paper deals with journey of SWAYAM scope, benefits, and issues.

**10. Perifanou, Maria, and Anastasios A, Economides. (2022)**

This study analyzed 35 MOOC platforms from around the World. It employed both manual and automatic elution methods. Each platform was thoroughly explored and several metrics were recorded. This information was also combined with data from MOOC platforms directories. Five web analytics tools used to automatically measure various metrics of the platforms; in total, 21 metrics were recorded. The findings revealed that some platforms had developed many partnerships with universities, companies, and others, and were offering thousands of MOOCs on a variety of subjects. Although most MOOCs were in English or in the local language where the platform resided, affords had been made to offer MOOCs in various languages. On the other hand, some platforms had only a few partners and offered a scant number of MOOCs in a limited range of subjects and languages. These platforms should be encouraged to increase their number of (a) partners,(b) MOOCs offered, (c) MOOC subjects, and (d) MOOC languages

**Massive Open Online Courses (MOOCs):** Massive Open Online Courses (MOOCs) have revolutionized the education sector by providing accessible and flexible learning opportunities to a global audience. To understand the landscape of these learning solutions, the following table presents details on some of the popular MOOC platforms selected under the study, including their founders, establishment years, headquarters, and website:

**Table 1: MOOC (Massive Open Online Courses) platforms: General Information.**

| Sr. No. | MOOC Name | Founders | Estd. Year | Headquarters | Websites |
|---|---|---|---|---|---|
| 1 | **COURSERA** | Daphne Koller & Andrew Ng | 2012 | Mountain View, California, USA | https://www.coursera.org/ |
| 2 | **EdX** | Harward & MIT | 2012 | Cambridge, Massachusetts, USA | https://www.edx.org/.org |
| 3 | **Futurelearn** | The Open university | 2012 | London, UK | https://www.futurelearn.com/ |
| 4 | **Udacity** | Sebastian Thrun, David Stavens, and Mike Sokolsky | 2011 | Mountain View, California, USA | https://www.udacity.com/ |
| 5 | **Kadenze** | Owen Vallis, Jordan Hochenbaum, Perry R. Cook, Ashok Ahuja | 2013 | Kadenze, inc. | https://www.kadenze.com/ |
| 6 | **Canvas network** | Instructure | 2013 | Salt Lake City, Utah, USA | https://www.canvas.net/ |
| 7 | **Udemy** | Eren Bali, Gagan Biyani, and Oktay Caglar | 2010 | San Francisco, California, USA | https://www.udemy.com/ |

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|---|---|---|---|---|---|
| **8** | **Swayam** | Ministry of Education, Gov. of India | 2017 | New Delhi | https://www.swayam.gov.in/ |
| **9** | **LinkedIn Learning** | Lynda Weinman | 2016 | Sunnyvale, California, USA | https://www.linkedin.com/learning |
| **10** | **Pluralsight** | Aaron Skonnard, Keith Brown, and Bill Williams | 2004 | Farmington, Utah, USA | https://www.pluralsight.com/ |
| **11** | **Khan academy** | Sal Khan | 2008 | Mountain View, California, USA | https://www.khanacademy.org/ |
| **12** | **Skillshare** | Michael Karnjanaprakorn & Malcolm Ong | 2011 | New York City, USA | https://www.skillshare.com/ |

**i) Significance of MOOCs as learning platforms:**

- **Evolution and Accessibility:** MOOCs emerged as a significant solution for individuals seeking additional qualifications beyond traditional degrees, offering free and convenient access to learning content globally. The increasing number of internet users worldwide since 2000 has naturally shifted the educational environment towards online platforms, making MOOCs an easy way to acquire knowledge and skills at an academic level.
- **Technological Advancement and Mobile Learning:** MOOCs are increasingly accessed as mobile learning solutions, enhancing portability and access to educational content. Modern mobile devices have largely resolved technological issues like display resolution and performance, enabling better e-learning and blended learning strategies.
- **Pedagogical Challenges and Learner Engagement:** Despite technological progress, pedagogical and methodological concerns remain, particularly regarding high learner drop-out rates, which can be as high as 90% due to a lack of incentive or support. Future MOOC designs need to address these issues by offering improved personalization, contextualization, and adaptation to individual learner needs and motivations.
- **Platform Characteristics and Comparison:** The quality of the MOOC experience often depends on the interactivity and collaboration features supported by the platform. Studies comparing MOOC platforms have identified key characteristics for an effective learning environment, including satisfaction, interaction, motivation, challenges, communication, and overall effectiveness.
- **Global Proliferation and Regional Focus:** MOOC platforms have proliferated globally, exhibiting variations in funding, governmental intervention, institutional support, target audiences, and operating models. While many English-language MOOC providers target global audiences, there's a growing trend of regional MOOC providers focusing on localized content and specific socio-linguistic communities, such as MiriadaX, XuentangX, and OpenHPI.
- **Specific Platform Comparisons:** Research has evaluated specific platforms like Open Learning and Udemy for developmental courses, noting their respective advantages in application integration and student interaction. A direct comparison between SWAYAM (a government initiative in India) and Coursera (a private global provider) highlights differences in cost, language support (SWAYAM with 9 Indian languages vs. Coursera with 50+ languages), and accreditation recognition.
- **Institutional Adoption and Market Share:** MOOCs are changing the higher education environment by allowing institutions, including smaller ones, to explore new pedagogical practices and avoid losing market share. Major platforms like Coursera and edX provide robust infrastructures for various online education models.

- **Certification and Recognition:** MOOCs, while not always offering academic credits, frequently provide certifications that can enhance employment opportunities or support further studies. This aspect is crucial for both personal betterment and workforce skill acquisition.
- **Addressing Broad Learning Needs:** Studies show that MOOCs cater to a diverse population of learners with varied motivations, from acquiring professional relevance to satisfying curiosity. However, understanding the factors influencing completion rates remains an important area of research.

## 3. DATA ANALYSIS AND DISCUSSION

The analysis of global MOOC platforms reveals a diverse ecosystem, each with unique strengths in terms of subject breadth, linguistic support, and targeted features. The data from the sources provides a comprehensive overview as follows:

### 1. MOOC Platforms and their subject breadth:

The following Table 2 illustrates the number of subject categories offered by various MOOC platforms. EdX stands out with 24 subject categories, offering a broad range of academic and professional courses. Coursera, FutureLearn, Canvas Network, Udemy, and SWAYAM also demonstrate wide subject coverage, each offering 23 subject categories. LinkedIn Learning provides 22 categories. In contrast, Kadenze offers the fewest categories with 6. Udacity has 8 subject categories, Pluralsight provides 13, Khan Academy has 10, and Skillshare offers 11 subject categories.

**Table 2: MOOC Platforms and their subject breadth**

| Sr. No. | MOOC Platforms | Number of subject categories |
|---|---|---|
| 1 | **COURSERA** | 23 |
| 2 | **EdX** | 24 |
| 3 | **Futurelearn** | 23 |
| 4 | **Udacity** | 8 |
| 5 | **Kadenze** | 6 |
| 6 | **Canvas network** | 23 |
| 7 | **Udemy** | 23 |
| 8 | **Swayam** | 23 |
| 9 | **LinkedIn Learning** | 22 |
| 10 | **Pluralsight** | 13 |
| 11 | **Khan academy** | 10 |
| 12 | **Skillshare** | 11 |

### 2. MOOC Platforms and their Subject Categories with the Number of Sub-Subjects:

To illustrate the depth and breadth of content provided by these platforms, the following Table 3, presents a detailed overview of the primary subject categories available on each platform along with the number of sub-subjects offered

within each category. This granular view demonstrates the specialization and variety inherent in the course catalogs of leading MOOC providers.

**Table 3: MOOC Platforms with Subject Categories & the Number of Sub-Subjects**

| Sr. No. | Platforms | Name of subject | Nos. of sub-subject |
|---|---|---|---|
| 1. | Coursera | Computer Science | 304+ |
| | | Data Science | 17+ |
| | | Business | 397+ |
| | | Health & Medicine | 101+ |
| | | Social Sciences | 816+ |
| | | Arts & Humanities | 499+ |
| | | Engineering | 1098+ |
| | | Personal Development | 31+ |
| | | Languages | 65+ |
| | | Computer Programming | 345+ |
| | | Marketing | 109+ |
| | | Finance & Accounting | 876+ |
| | | AI & Machine Learning | 93+ |
| | | Cybersecurity | 234+ |
| | | Cloud Computing | 137+ |
| 2. | Edx | Computer Science | 272+ |
| | | Data Science | 101+ |
| | | Business & Management | 304+ |
| | | Health & Medicine | 175+ |
| | | Social Sciences | 397+ |
| | | Engineering | 101+ |
| | | Personal Development | 816+ |
| | | Languages | 499+ |
| | | Law & Politics | 983+ |
| | | Education | 391+ |
| | | Sustainability | 239+ |
| | | Cybersecurity | 34+ |
| | | AI & Machine Learning | 109+ |
| | | Marketing | 876+ |
| | | Finance & Accounting | 193+ |
| | | Arts & Humanities | 234+ |

| | | | |
|---|---|---|---|
| 3 | Futurelearn | Business & Management | 17+ |
| | | Creative Arts & Media | 272+ |
| | | Healthcare & Medicine | 101+ |
| | | History | 3504+ |
| | | IT & Computer Science | 175 + |
| | | Language | 397+ |
| | | Law | 11+ |
| | | Literature | 16+ |
| | | Nature & Environment | 499+ |
| | | Politics & Society | 983+ |
| | | Psychology & Mental Health | 391+ |
| | | Science, Engineering & Maths | 239+ |
| | | Study Skills | 1345+ |
| | | Teaching | 109+ |
| 4 | Udacity | Data Science | 876+ |
| | | Artificial Intelligence | 93+ |
| | | Cloud Computing | 234+ |
| | | Programming | 137+ |
| | | Business | 272+ |
| | | Cybersecurity | 101+ |
| | | Autonomous Systems | 304+ |
| | | Machine Learning | 175+ |
| | | Software Development | 397+ |
| | | Data Engineering | 11+ |
| | | Design | 816+ |
| | | Career Development | 499+ |
| 5 | Kadenze | Music & Sound | 98+ |
| | | Creative Technology | 315+ |
| | | Art & Design | 239+ |
| | | Film & Media | 45+ |
| | | Game Design & Development | 107+ |
| | | Virtual Reality & AR | 76+ |
| | | Music Composition | 93+ |
| | | Music Technology | 234+ |
| | | Digital Media & Visual Arts | 172+ |
| | | Media & Technology | 272+ |

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|---|---|---|---|
| 6 | Canvas network | Arts & Humanities | 101+ |
| | | Business & Management | 304+ |
| | | STEM (Science, Tech, Engineering & Math) | 17+ |
| | | Social Sciences | 397+ |
| | | Education & Teaching | 101+ |
| | | Health & Medicine | 816+ |
| | | Computer Science & IT | 499+ |
| | | Personal Development | 198+ |
| | | Languages | 31+ |
| 7 | Udemy | Technology | 465+ |
| | | Business | 345+ |
| | | Personal Development | 109+ |
| | | Design & Creative Arts | 876+ |
| | | Marketing | 930+ |
| | | Health & Fitness | 234+ |
| | | Languages | 137+ |
| | | Lifestyle & Hobbies | 272+ |
| | | Music & Audio | 101+ |
| | | Academics & Test Preparation | 304+ |
| 8 | Swayam | Engineering and Technology | 75+ |
| | | Science | 97+ |
| | | Arts & Humanities | 87+ |
| | | Business & Management | 81+ |
| | | Education | 49+ |
| | | Law | 98+ |
| | | Healthcare | 39+ |
| | | Agriculture | 23+ |
| | | Social Sciences | 34+ |
| | | Skills Development | 109+ |
| 9 | LinkedIn Learning | Technology & IT | 87+ |
| | | Business & Management | 19+ |
| | | Creative | 234+ |
| | | Soft Skills | 174+ |
| | | Data Science & Analytics | 272+ |
| | | Marketing & Sales | 101+ |

| | | | |
|---|---|---|---|
| | | Career Development | 35+ |
| 10 | Pluralsight | Software Development | 17+ |
| | | Cloud Computing | 39+ |
| | | Cybersecurity | 11+ |
| | | Data Science & AI | 16+ |
| | | IT Operations | 49+ |
| | | Creative Design | 98+ |
| | | Enterprise IT | 39+ |
| | | Software Testing | 23+ |
| | | Game Development | 135+ |
| | | Business & Productivity | 109+ |
| 11 | Khan Academy | Math (K–12 & Early College) | 35+ |
| | | Science (Biology, Physics, Chemistry) | 54+ |
| | | Arts & Humanities (History, Art History, Grammar) | 86+ |
| | | Computing (CS, Programming, Algorithms) | 98+ |
| | | Economics & Finance | 23+ |
| | | Reading & Language Arts | 45+ |
| | | Life Skills (Careers, Growth Mindset, SEL | 67+ |
| 12 | Skillshare | Illustration, Graphic Design, Photography, Animation | 75+ |
| | | Business | 83+ |
| | | Lifestyle | 56+ |
| | | Marketing | 82+ |
| | | Freelancing | 54+ |
| | | Entrepreneurship | 49+ |
| | | Productivity | 23+ |
| | | Writing Skills | 37+ |
| | | Wellness | 72+ |

Above table offers the subjects and the number of sub-subjects available on MOOC platforms under study. For instance, Coursera offers extensive coverage in Computer Science with over 304 sub-subjects and in Engineering with over 1098 sub-subjects. EdX also has a strong presence in Computer Science (over 272 sub-subjects) and a significant number in Law & Politics (over 983 sub-subjects). FutureLearn notably features a vast array of content in History, with over 3504 sub-subjects.

**3. Overview of Subject availability across MOOC platforms:**

To provide a clearer understanding of the specific subject areas covered by leading MOOC providers under the study, Table 4 offers a comprehensive comparison of which subjects are available on each platform. This table highlights the breadth and specialization of course offerings, enabling learners to identify platforms best suited to their specific educational and professional goals.

**Table 4: Comparative Overview of Subject Availability Across MOOC Platforms**

| Sr. No. | Sub-Subject | Coursera | edX | FutureLearn | Udacity | Kadenze | Canvas Network | Udemy | Swayam | LinkedIn Learning | Pluralsight | Khan Academy | Skillshare |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Computer Science / Programming | | | | | ✕ | | | | | | | |
| 2 | Web Development | | | | | ✕ | | | | | | ✕ | |
| 3 | Data Science / AI / ML | | | | | ✕ | | | | | | ✕ | ✕ |
| 4 | Cybersecurity / IT | | | | | ✕ | | | | | | ✕ | ✕ |
| 5 | Cloud Computing / DevOps | | | | | ✕ | | | | | | ✕ | ✕ |
| 6 | Business / Management | | | | | ✕ | | | | | | ✕ | |
| 7 | Marketing / Entrepreneurship | | | | | ✕ | | | | | | ✕ | |
| 8 | Creative Arts / Design | | | | ✕ | | | | | | ✕ | ✕ | |
| 9 | Music / Animation / Drawing | | | | ✕ | | | | | | ✕ | ✕ | |
| 10 | Mathematics | | | | | ✕ | | | | | ✕ | | ✕ |
| 11 | Science (Physics, Chemistry) | | | | ✕ | ✕ | | | | ✕ | ✕ | | ✕ |
| 12 | Health / Medicine | | | | ✕ | ✕ | | | | | ✕ | | ✕ |
| 13 | Psychology / Social Science | | | | ✕ | ✕ | | | | | ✕ | | ✕ |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | History / Humanities | | | | ✗ | | | | | | ✗ | | |
| 15 | Language Learning | | | | ✗ | | | | | | ✗ | | |
| 16 | Education / Teaching | | | | ✗ | ✗ | | | | | ✗ | | ✗ |
| 17 | Finance / Accounting | | | | ✗ | ✗ | | | | | | ✗ | |
| 18 | Personal Development | | | | ✗ | | | | | | | | |
| 19 | Engineering | | | | ✗ | ✗ | | | | | | ✗ | ✗ |
| 20 | Law and politics | | | | ✗ | ✗ | | | | | | ✗ | |
| 21 | Sustainability | | | | ✗ | ✗ | | | | | | ✗ | ✗ |
| 22 | Literature | | | | ✗ | | | | | | | ✗ | ✗ |
| 23 | Nature and environment | | | | ✗ | ✗ | | | | | | ✗ | ✗ |
| | **Total** | **23** | **23** | **23** | **8** | **6** | **23** | **23** | **23** | **22** | **13** | **10** | **11** |

Core technical subjects like Computer Science, Web Development, Data Science, Cybersecurity, and Business are widely available across most platforms. Notably, Coursera, edX, FutureLearn, Canvas Network, Udemy, and SWAYAM offer all 23 subjects listed. Creative fields, such as Design, Music, and Animation, are primarily offered by platforms like Kadenze, which has only 6 subjects. Udacity offers 8 subjects, including academic-focused areas like Mathematics. Skillshare (11 subjects) and LinkedIn Learning (22 subjects) tend to focus on arts and professional development, respectively. Khan Academy caters more to school levels and public education, offering 10 subjects. Professional skills like Personal Development, Teaching, and Finance are broadly available across most platforms, while Pluralsight focuses on specific domains with 13 subjects.

**4. Language Support:**

MOOC platforms must offer diverse language support to ensure accessibility and inclusivity for learners worldwide. Table 5 provides a detailed overview of the various languages supported by different MOOC providers.

**Table 5: Language Support Across MOOC Platforms**

| Sr. No. | Language | Coursera | EdX | FutureLearn | Udacity | Kadenze | Canvas Network | Udemy | SWAYAM | LinkedIn Learning | Pluralsight | Khan Academy | Skillshare |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **English** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | **Mandarin Chinese** | ✓ | ✓ | ✓ | ✗ | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ | ✓ |
| 3 | **Hindi** | ✓ | ✓ | ✗ | ✗ | ✗ | ✓ | ✓ | ✓ | ✓ | ✗ | ✓ | ✓ |
| 4 | **Spanish** | ✓ | ✓ | ✓ | ✗ | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ | ✓ |
| 5 | **French** | ✓ | ✓ | ✓ | ✗ | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ | ✓ |
| 6 | **Arabic** | ✓ | ✓ | ✓ | ✗ | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ | ✓ |
| 7 | **Bengali** | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✗ | ✗ | ✓ | ✗ |
| 8 | **Portuguese** | ✓ | ✓ | ✓ | ✗ | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ | ✓ |
| 9 | **Russian** | ✓ | ✓ | ✓ | ✗ | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ | ✓ |
| 10 | **Urdu** | ✓ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✓ | ✗ | ✗ | ✓ | ✗ |
| 11 | **Indonesia** | ✓ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ | ✗ |
| 12 | **German** | ✓ | ✓ | ✓ | ✗ | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ | ✓ |
| 13 | **Japanese** | ✓ | ✓ | ✓ | ✗ | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ | ✓ |
| 14 | **Swahili** | ✓ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✗ | ✗ | ✗ | ✓ | ✗ |
| 15 | **Marathi** | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✗ | ✗ | ✓ | ✗ |
| 16 | **Telugu** | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✗ | ✗ | ✓ | ✗ |
| 17 | **Turkish** | ✓ | ✓ | ✗ | ✗ | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ | ✗ |
| 18 | **Tamil** | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✗ | ✗ | ✓ | ✗ |
| 19 | **Cantonese** | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✗ | ✓ | ✗ |
| 20 | **Wu Chinese** | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| 21 | **Vietnamese** | ✓ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ | ✗ |
| 22 | **Korean** | ✓ | ✓ | ✓ | ✗ | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ | ✓ |
| 23 | **Hausa** | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| 24 | **Javanese** | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| 25 | **Italian** | ✓ | ✓ | ✓ | ✗ | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ | ✓ |
| 26 | **Thai** | ✓ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ | ✗ |
| 27 | **Gujarati** | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✗ | ✗ | ✓ | ✗ |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 28 | **Persian (Farsi)** | ✓ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✗ | ✗ | ✗ | ✓ | ✗ |
| 29 | **Polish** | ✓ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ | ✗ |
| 30 | **Ukrainian** | ✓ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ | ✗ |
| 31 | **Punjabi** | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✗ | ✗ | ✓ | ✗ |
| 32 | **Sindhi** | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| 33 | **Burmese** | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| 34 | **Malay** | ✓ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ | ✗ |
| 35 | **Filipino** | ✓ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ | ✗ |
| 36 | **Pashto** | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| 37 | **Amharic** | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| 38 | **Romanian** | ✓ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ | ✗ |
| | **TOTAL** | **38** | **13** | **11** | **01** | **01** | **23** | **31** | **09** | **20** | **01** | **28** | **12** |

The table depicts that; English is universally supported across all listed platforms. The table reveals that Coursera stands out as the most linguistically inclusive platform, supporting 38 languages. Udemy also demonstrates strong multilingual support with 31 languages. Khan Academy supports 28 languages, particularly for widely spoken languages like English, Spanish, and French. Canvas Network offers 23 languages, and LinkedIn Learning supports 20 languages. SWAYAM, a Government of India initiative, supports 9 languages, including Hindi and other Indian and Asian languages. In contrast, platforms like Udacity, Kadenze, and Pluralsight offer very limited language support, primarily focusing on English, which may limit their accessibility for non-English speakers.

## 4. CONCLUSION AND FINDINGS

This data-driven comparative analysis of global MOOC platforms confirms that the online education sector offers a vast array of choices, each designed to meet distinct learning needs, goals, and audience demographics. Researchers found that platforms like Coursera, edX, and FutureLearn consistently stand out for their comprehensive subject coverage and offerings, providing a wide range of academic and professional courses. In terms of linguistic inclusivity, Coursera leads significantly with 38 languages, followed by Udemy and Khan Academy, underscoring their commitment to global accessibility.

Conversely, highly specialized platforms such as Kadenze (creative arts) and Udacity (tech) demonstrate a focused approach, offering fewer subject categories but deep expertise in their respective domains, often with limited language support primarily in English. SWAYAM emerges as a crucial national initiative, particularly for the Indian context, providing extensive courses in multiple Indian languages.

The analysis highlights that the "ideal" platform is highly subjective and depends on the learner's specific objectives: whether seeking formal academic or professional credentials, aiming for career advancement in tech, developing creative skills, or pursuing budget-friendly lifelong learning. The varying levels of certification, interactive features, and target audiences further underscore the need for learners to align their platform choice with their personal and professional development goals. The study reaffirms the vast potential of MOOCs to democratize education, offering opportunities for every learner in this diverse world of online learning.

## CONFLICT OF INTERESTS

None.

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