

Stochastic Modelling and Computational Sciences

MASSIVE OPEN ONLINE RESOURCES -DRIFT IN EDUCATION SYSTEM: A SYSTEMATIC REVIEW

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ABSTRACT

The subject matter of the article presented includes the extensive literatures review of the researchers in carrying out their research while transforming the traditional educational system to the e-learning platform. So, a comparative analysis of the various MOOCs techniques is presented to carry forward research work. The goal of the study is to bright out the issues and challenges faced by the learners or tutors while opting the chalk duster methodology to blended learning methodology. The task to be solved is to brief the literature study and the research tools/platform/methodology adopted in selecting the algorithm. It also elaborates the methods like feature extraction, machine learning and deep learning techniques to formulate the study. The following results are obtained –the methodologies followed in e-learning provide the learners understanding as per their levels of perception; e-learning has become reliable channel of utilizing the online resources; it is one of the efficient methods to explore the untapped talent of the individuals worldwide over a click. Conclusions: 1) MOOCs platform has explored various feature extraction, predictive tools to make effective use of MOOCs; 2) Various model/framework were identified as knowledge gain and dissemination platform by the users irrespective of the geographical boundaries. 3) the researchers identified gaps in many domains like child psychology, human behavior traits and pedagogical methods which could help the scholars in pursuing their research. 4) MOOCs are evidently prominent method to bring the milestone in traditional educational method towards hybrid teaching-learning methods.

Keywords: MOOCs, MOOCs Popularity, Teaching Learning Methodologies, Research Evaluation Methodologies, Research Issues, Research Challenges.

INTRODUCTION

MOOC (Massive Open Online Course) has become the vital source of knowledge acquisition over the click. It has become an open and online resource to abridge learners with similar interests beyond their national or international boundaries.

However, MOOCs brings the pool of knowledgeable resources amongst the learners (over a web) that need intense effort, time, and dedication of eminent research scholars. The taxonomy of MOOCs is shown in **Fig 1**. To carry out the direction of research the MOOCs processing phases are depicted in **Fig 3**.

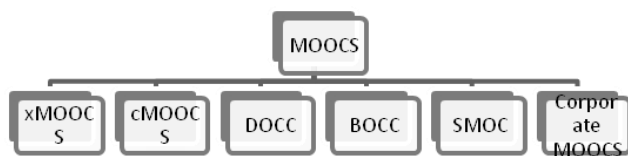


Fig 1 Taxonomy of MOOCs

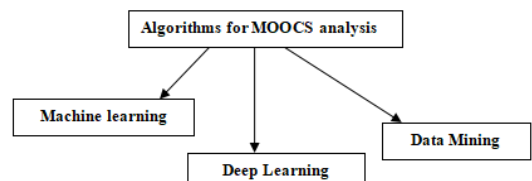


Fig 2. Algorithms for MOOCs Analysis



Fig 3. Phases of MOOCs

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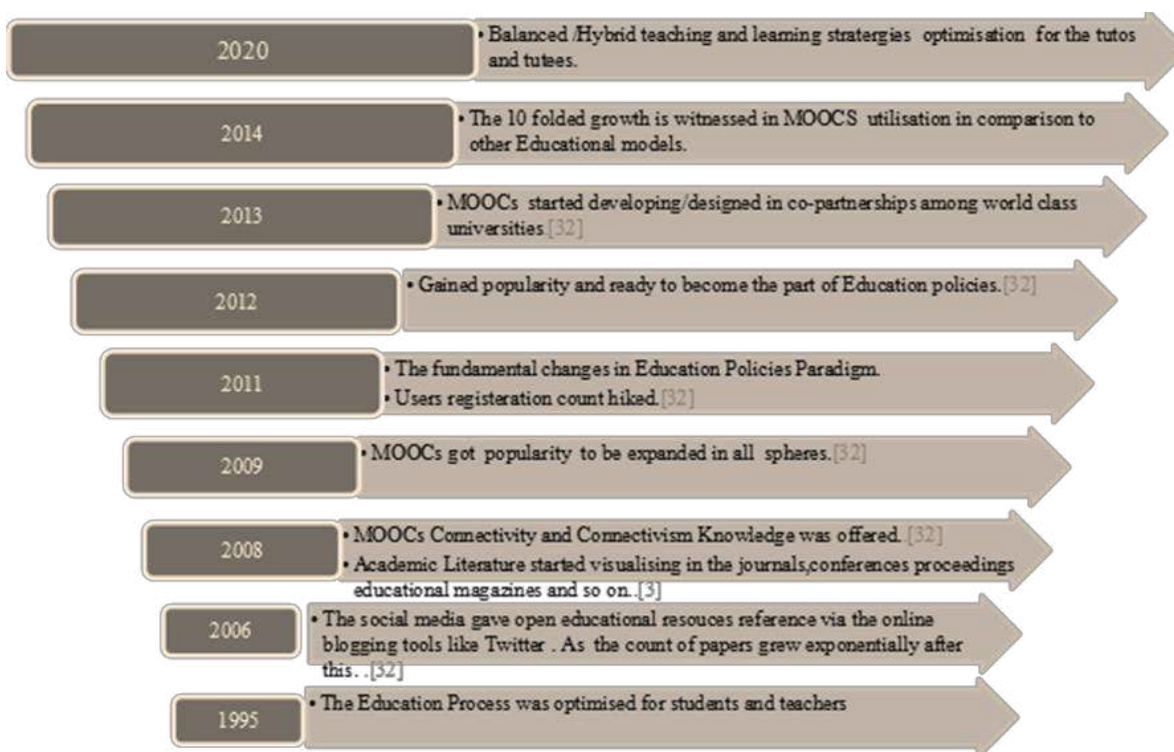


Fig 4. MOOCS Growth Paradigm

A number of authors have described various methodologies and approaches to include MOOCS as predominant source to be included in progressing academic performance, skill set of end users. As [28] illustrated the difference and requirements of the students, the Educational process that is probably be optimized for end users and tutors. Robinson [1] has also pen down the effect of technology upon the basic transition in the education process. However Corwin [40] briefed the viewpoint that how the varied teaching approaches from course content delivery to course assessment methods using various methodologies could be proven beneficial in building sustainable relationship between the tutor and the tutee .The research on MOOCS is still under progression .However, the extensive literature survey to evaluate and integrate the existing research is summarized in **Table 2**, **Table 3 and Table 4**. It illustrates the comparative study of the present study pursued in analysis various MOOCS using various algorithms shown in **Fig. 2** to evaluate and discover the research challenges based on available research. The growth paradigm of MOOCs is shown in **Fig 4**.

MOTIVATION OF RESEARCH

This paper mainly focuses on good quality journals, the proceedings of many conferences and reports of various research centers and institutes. The necessity of a methodical literature survey has been recognized after considering progressive research in MOOCS limitations and strengths into account. Therefore, based on broad and methodical search in existing literature, the available research is summarized and research challenges for future research are also presented.

RESEARCH METHOD SELECTION

The most important aspect is to identify which factors and methods/techniques have been taken into an account in the literature and which have not been used. Thus, the motive of the review is to identify the area where further research is necessary and to express the comparative review of the existing literature. The research is presented with its objective, goal, dataset, methodology /tool utilized to carry the research in **Table 2, 3, 4**. However, the extensive research-based questions are briefed as follows.

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Research-based Questions

1. What are the various learning Objectives of the study?
2. How vibrant and user friendly pedagogical methodologies are utilized by the tutor?
3. How effectively the necessities/requirements of the learners and knowledge providers are abridged by MOOCS (from creation to assessment evaluation)?
4. How to design an efficient model/framework for knowledge dissemination?
5. How to master the skill sets (like course certification/problem-solving capabilities) over specific knowledge domain by mapping the levels (Beginner/Intermediate/Advanced) of understanding of end-users?
6. How to cluster the course content modules to engage the learners by embedding gamification tools, 3D animations, etc.?
7. How significantly do the psychological/social and operational factors affect the learning?
8. What are the various importing/exporting limitations faced by the tutor and tutee while uploading/downloading information over the Network regarding the data file format, size, compression formats ,etc.?
9. How discussion forums design should be developed such that MOOCs behave like an open-ended interactive platform for users?

RESEARCH CRITERIA OPTED

Initially, search criteria involve the definition of “MOOCs”, “Issues in MOOCs”, “Challenges in MOOCs”, “Drop-rate in MOOCs”, “MOOCs role in Education System”. The survey focused on various causes of MOOCS. Therefore, the term MOOCs tutor, tutee, learner, end user is used often into the extensive literature work. The extensive search included papers from different journals, articles and conferences. This search criterion gives a broad perspective of the survey. An attempt has been made to identify the research papers and articles by searching manually with the different keywords.

SOURCES OF INFORMATION

Apart from the sources of information which have discussed above, MOOCS literature which is relevant to the review paper is included. **Table 1** describes the various sources of information and the additional sources being referenced to carry out the comprehensive literature review of the work.

Table 1: The following sources are searched for the present Literature survey

Sources	Additional Resources
ScienceDirect(www.sciencedirect.com)	Books
Springer(www.springerlink.com)	Technical Reports
IEEEExplore(www.ieeexplore.ieee.org)	Online sources /material like Kindle
Elsevier(www.elseveir.com)	Workshops/
GoogleScholar(www.scholar.google.co.in)	Short Term Courses

Table 2 Comparative Study based upon Machine Learning Algorithms

Reference	Dataset	Methodology	Platform/Tool/Approach	Goal	Description
Jian-Wei Tzeng et al.[51]	22 MOOCS platform	Emphirical dataset	LINE chatbot software	Tp study the impact of online chatbot for teaching progression.	LINE provide personalised exercise recommendation for learners. b)Students learning behaviour

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					was encouraged.
H.A.Ali[18]]	OULAD (Open University Learning Analytics Dataset) UK, Academic year 2013-14 data of 32,593(UG/PG) students is taken.	Behavior characteristics analysis using MLmodel.	KNN, Logistic Regression, Random forest, Ada Boost, SVM	To predict the drop rate of the learners in MOOCs. To analyze the best results using the comparison classification model of K-Nearest Neighbor, SVM, Ada Boost, Random Forest and Logistic Regression using ML.	Pros: Random Forest model gave the more precise and accurate results among all models.
Gard V et al[33]	Recorded lectures, MOOCs webinars, Zoom sessions, were used.	ML models	SPSS	To evaluate the use of online tools in training and evaluation of learners. To discover the gap between the Govt, industrial and educational sector.	Pros: e-learning platform utilization were hiked. However the course drop down rate decreased. Secondly, BYJU's have faced an exponential growth of 200 percent in their free online coaching till half of this decade i.e 2025. Thirdly, the e-learning has transformed the traditional education model. Likewise the user demand has risen from US \$18.66billion(2019) to US\$ 350 billion (2025) .Finally, the 40-60% less time to learn then traditional environment as the learners can learn at their speed.
Yasheen H[17]	Mixed research methodology Qualitative/Quantitative Method	ML models	SPSS software	To study the impact of the online learning on student performance	Pros: Absenteeism and dropout has increased for Jordan and UK Universities. Secondly,

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				by comparing the effect in various universities.	Students and faculties both commented that online learning has affected their work life balance.
F.Jose Edmond Meku et al.,[10]	3617 students-African University	RNN model (Demographic data and Time Series data) GRU (Gated Recurrent Unit) RNNs., LSTM(Long short term memory)RNNs., L2 Regularization, Activity-based models	MOODLE	To predict the causes for high dropout rates in MOOCS	Pros: Predictive model seems more efficient in predicting the drop-rate ratio to enhance the course completion and success. Cons: The imbalanced nature of the dataset in MOOCs used for first experimentation seems challenging
Kashyap. A. et.al.,[29]	Harvardx	RF,SVM,DT,BAYE S	Weka	To predict the factors responsible for drop-rate in course completion.	Pros: Factors were detected responsible for the drop rates Cons: Behavioural characteristics need to be explored more.
Cobos.R.et al. [7]	Log track of seven MOOCS.	ML models.	edx-MAS+	To propose an analytic tool to speculate the drop rate and certificate acquisition.	Pros: Bayesian model proves best among all models. Cons: The ML model's prediction to find out the certificate acquisition is higher than predicting the dropout rate for all algorithms.
H.Tao[22]	IBM, Harvard and MIT courses provided edX data of 2012-13	Machine Learning Association Rule Mining, Collaborative filtering,DT, GA	Spark,MySQL,Hadoop	To develop an Efficient MOOCS recommender system	Pros: it helped to make an intelligent Education Recommender System.
Upendra D[46]	High School Grades	ML Algorithm	Apriori /Association Rules	To predict the career goals of the learners as per their skills.	Pros: Grades predicted academic performance and cognitive abilities. Cons: Massive course lists proved difficult to map the skill set with the career goals of students.
FU Dan et al[15]	Undergraduate framework	ML Algorithm	Collaborative filtering, Content-based extraction	To propose a UG framework for	Pros: Collaborative filtering seems to

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				mapping courses to individual characteristics .	be more beneficial in retrieving unstructured data. Cons: More ML algorithms could be incorporated to analyze the performance
Li.Xiu et al[31]	Matriculation data	ML Algorithm	Logistic Classifier, Predictive Gradient Descent Classification Algorithm	To predict the placement scope of students.	Pros: It proved beneficial in predicting the placement rate of students. Cons: More features could be added to evaluate the performance index of learners.
Sa'don N et al[41]	Seven Databases (Google Scholar, IEEEExplore, Scopus, Elsevier, Science Direct, Citeseerx, SpringerLink, Wiley Interscience)	ML Algorithm	ML Algorithms	To predict the changing patterns in research in MOOCS	Pros: Online courses provided eminent role in mapping research patterns in University Education.

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Table 3 Comparative Analysis based upon Deep Learning Algorithms

Reference	Dataset	Methodology	Platform/Tool	Goal	Description
H.Guo et al [19]	1426 UG students of Wuhan University of Science and Technology	KNN, LVQ, SVM	R	To analyze the learners characteristics in MOOCs and predicting the learners behavior using various ML models-KNN, LVQ, and SVM.	SVM gave the highest prediction accuracy among the three models. LVQ algorithm is recommended to predict student's grade.
Sakshi Amrutkara et al[50]	Online platform- Youtube,Netflix	Hybrid methodology	Collaborative filtering, Deep NN Technology	To enhance learning of users as per their skills,interest and knowledge.	Hybrid approach provide more accurate and diverse recommendations.
J.E.M.Fotso et al[27]	3,617 students. MOODLE	RNN dataset is generated by using L2 regularization training technique on RNNs architectures. Then,Three model architectures performance is compared-Simple RNN's, GRU RNN's, LSTM	Activity based models	Firstly,To predict the learners characteristics like geographical, social, behavior using deep learning model. Secondly,To analyze the best deep learning model for improving the completion and success rate of MOOCS.	Simple RNN's predicts the best model for analyzing learner's behavior. Cons: The method for measuring the learners quality need to be designed.Secondly, the model can be tested by increasing the hidden layers to assess the real time prediction.
H.Huimei et al.[21]	Generic dataset	Deep Learning Algorithms	MATLAB 2016R	To improve the classification of feature-based dataset accuracy.	Pros: It was helpful to increase the efficacy of the generic datasets.
Huang.N.Fu[26]	Log track of videos	Deep Learning Algorithms	Data Neural Network	To identify the low score achievers as per their weaknesses	Pros:The model was helpful to evaluate the different courses irrespective of distinct features.
Sharma.A.et al[42]	Learners personal history and video watching habits	Deep Learning	Regression and Back Propagation.	To propose model of learners as per their prior performance record.	Pros: It proved beneficial for tutors to analyse the difficultly level of content to be delivered to the learners. Cons: Its performance could be enhanced by adding more learners features

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Table 4 Comparison based upon DATA MINING/FEATURE EXTRACTION

Reference	Dataset	Methodology	Platform/Tool	Goal	Description
Meet RK, Kala D[28]	102 peer reviewed journals and conferences are referred from academic databases	Scopus, Web of Sciences, EBSCO, Google Scholar, Emerald, Elsevier, Taylor & Francis.	SPSS	To conduct the systematic survey on MOOCs from 2013-2020	Pros: The most empirical research was upon the institutions of the developed nations like USA and the developing countries India and China. Secondly, Majority of study was learner focused. Thirdly, 70% of the articles were quantitative in nature, 16% qualitative in nature, 14% mixed method.
Kris Stutchbury, Margaret Ebubedike et al.[49]	9000 Saharan African learners Emphirical dataset	Questionnaires, Pre/Post course surveys and interviews	Emphirical Analysisi tool	To study the potential of MOOCs in professional development.	a)Improved technical skills of learners and tutors. b)Enhanced professional development
Joshi .A et al[48]	Analytical/ descriptive data	Data from the reports, news articles, blogs, interviews, videos, magazines, social media, journals.	SPSS	To identify the methodology used by government to impart education in tertiary level educational institutes.	Cons: Most rural areas do not have internet or technical facilities. Secondly, Financial support to teachers like interest free loans to buy digital devices like desktops, laptops etc. were lagging
D.Gamage et al [9]	Databases of IEEE Xplore, ACM Digital Library, ERIC, Springer Digital Library.	Algorithms peer reviews, methods for awarding grades and evaluating student performance	SPSS	To analyze the trends based on the frequencies of publications, year of publications and venue. To emphasize upon the need of peer assessment methods in MOOCs.	Cons: The peer assessment pay less focus on other topics such as submitting assignments, finding reviewers, designing interfaces, improving students performances ,and providing scores with adequate feedback.
Kumar Parul et al[30]	A Sampling of private/public	Empirical data, Data screening	IBM SPSS	To predict the factors	Pros: Course Assessment,

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	MOOC portals like SWAYAM, Coursera, Edx, Udemy, Futurelearn.	and factor analysis		hampering the learners using MOOCs and finally evaluate their satisfaction levels w.r.t MOOCs utilization.	Contents and delivery found to significantly affecting the overall satisfaction of the tutee whereas drop-out ratio of the learner is affected by the lack of experience of the tutor on digital methods, Time schedule of the course and course mode (Lengthy, difficult content). Cons: Course satisfaction seems to have an insignificant relationship between course delivery and the overall satisfaction of the user.
A. Jose et al [2]	OpenEDx platform	Statistical Empirical data	Online links and digital resources	To transform MOOCs to OERs to enhance their reusability. To avail MOOCs under open license by Creative Commons(CC) to encourage MOOCs use and adaptation among users.	Pros: PPTs and pdfs seemed to be the most reliable Unmoocing process. Cons: Discussion forums seems to be the least approach as users adhere to traditional methods
B. Maxwell et al [4]	US research University Computer Science courses students	Online website activity data	CANVAS, ZOOM,PIAZZA SLACK, GRADESCOPE	To analyze the impact of online studies upon UG and PG students during COVID-19	Pros: Flipped classrooms and mastery based learning has enhanced the course success rate. Cons: Students interaction, online learning tools seems not much reliable and responsive.
Molina O.M.A et al. [34]	1783 students	Powerpoint, MS Word, Excel, LMS, and Theoretical	TukeyHSD Post Hoc Test	To analyze and predict the student's assessment	Pros: Parametric results analysis found great differences between

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		exams		results from MOOCs.	theoretical exams and face-to-face exams using PowerPoint and excel components. Cons: Powerpoint, Word ,and Excel has the same responses as students who undertook a similar amount of exercises
F.Jose Edmond Meku et al.[10]	3617 students-African University	RNN model (Demographic data and Time Series data) GRU (Gated Recurrent Unit) RNNs., LSTM(Long short term memory)RNNs., L2 Regularization , Activity-based models	MOODLE	To predict the causes for high dropout rates in MOOCS	Pros: Predictive model seems more efficient in predicting the drop-rate ratio to enhance the course completion and success. Cons: The imbalanced nature of the dataset in MOOCs used for first experimentation seems challenging
R.Tobiaas et al[39]	3029 students -own dataset	Data gathering	Data Analysis tool	To introduce the personalized learning objectives (PLO) tools in MOOCs courses in order to explore the intentions and motivations of the learners	Pros: Self support regulated learning and goal oriented learning does not seem to have any impact upon the general course satisfaction. Cons : No significant difference is seen in course satisfaction of learners and selected learning objective from post survey.
A Haumin et al[33]	SWAYAM, NPTEL, IITBx, IIMBx, agMOOC	Online web resources data	SimilarWebPro tool	To analyze the need of MOOCS in Indian Education Sytem	Pros: Indians contribute 10 percent in accessing online courses Cons: Learning outcomes were not accessed.
Hanif[23]	UG Students(Bengluru)	APOS	MAPPLE	To recognise the learners outcome in mathematical calculus.	Pros: It has enhanced the solving capabilities of the students. Cons: No emphasis

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					for the effective participation of learners
Mayra.A et al[35]	2006-2018 worldwide reputed journals /conferences	Data Mining-Feature Selection	Statistical and AI techniques	To predict the cause of university learners drop out rate	Pros: DT classifier has shown best accuracy in feature extraction among all ML algorithms. Cons: It could have been implemented to detect the root cause of drop rates in Regional /Native Universities
Siti.N.et.al[43]	UG students (TVET Institute, Malaysia)	Statistical data Test sheets	Gamification	To alleviate the critical thinking of the participants	Pros: It increased the learner's involvement in various subjects. Cons: it can be used to enhance the conceptual understanding of students
Favario Leonardo[13]	Database as per the videosformat , size of videos.	Lighter videos uploading	Video editing tools(Reordering, editing)	To propose an integrated e-learning tool to make advanced MOOC.	Pros: It seems beneficial for lighter videos. Cons: It applies to small group datasets and can be elaborated for massive data.
Tulsi PK[45]	Instructional design model for Technical Education	MOOC Creation	SWAYAM	To design the Innovative pedagogy for tutors.	Pros: Beneficial to explore the potential of learners
Andone Diana et.al.[1]	Recording of lectures	OER , Empirical Data	Evaluation tools	To develop MOOC to enhance career set development	Pros: OER seems to be over the edge rather than the chalk-board methods Cons: Evaluation methods need to be enhanced for student learning and quality of courses
Frederiks et.al.[14]	Instructional design model for learning by creating MOOC	Online video lectures creation (MOOCs creation)	Frame Capturing	To design the Innovative pedagogy for learners.	Pros: Students started using online platforms as self-learning platforms according to their pace of learning. Cons: Informal

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					styles were used to present the video lecture content.
B.Priyanka et.al.[5]	Five Universities /Institutes scheduled courses/self-paced courses.	Data Mining	Feature Extraction	To analyze the trend of student enrolment in different courses.	Pros: It was helpful to determine that enrolment is independent of the courses imparted. Rather it is significantly high in self-paced courses.
T.Karun[44]	Harvard dataset of the year 2013	Data Mining	User Activity Model	To provide enhanced pedagogical support to benefit the learners.	Pros: The proposed framework supported many tutors to indulge masses of the tutees in their courses.
Urrutia M et al[47]	Two Universities	Data Mining	Template Analysis Method	To analyze the impact of MOOCs upon Tertiary Education Institutions	Pros: The positive response was recorded Cons: The universities have to face the financial burden to opt MOOCs
H.Hibab[20]	Open Educational Resources	Data Mining	OER Query processing.	To develop Recommender System	Pros: The reliability of the recommender system is dependent upon the OER quality and metadata.
Furukawa.M[16]	Own dataset	Data Mining	Videos, Quizzes, Discussion board	To provide adaptive and free teaching content in online classes.	Pros: It was helpful to narrow the gap between the learning and appropriate teaching course resources.
Hiremath.R[25]	UGC (Non-Technological PG programme), NPTEL (Technological UG&PG programme), CBSE, NCERT, NIOS(Grades 9-12).	Data Mining	Edx based platform	To enhance the quality education among learners residing in rural areas in India at minimal cost.	Pros: These courses will leverage the accessibility of contents to the remote areas Cons: Success of SWAYAM depends on course quality and student for enrollment in the courses offered.
Nagasampige M, et al[36]	A Sampling of UG and PG students (Humanities, Science, Engg.,	Interviews and Empirical data	Features Extraction	To provide unlimited users participation in	Pros: MOOCS are highly popular in PG courses than UG courses students

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	Management) of Karnataka(India) Tier-1 and Tier-2 cities -			online courses. by boosting their interest in higher education.	Cons: Engg. ,Science and management t students seems to have high awareness in comparison to humanities
Othman H [37]	Online Web Dataset	Web Data Mining	web video mining, metadata approach (Median-Info, Info-extractor)	To propose data mining methodology in MOOC videos using metadata for discovering knowledge.	Cons: Meta data-based web video mining seems more traditionalprocessing of data due to the insufficient availability of metadata on online videos.
F.Sara et al[12]	Astronomy students ,Curtin University, Australia	Empirical data	Assessment tool	To analyze the effectiveness of blended teaching methods.	Pros: Mixed content delivery grabbed the attention of learners. Cons: It increased the course fee .
Huamin Qu et.al.[45]	Coursera, Edx courses	Data Mining	MATLAB Viz, MOOC	To analyze the MOOCs system trends for the learners and tutors to benefit them by presenting visual analytics of MOOCs utilization.	Pros: In the start-up of the sessions the student's activities and performances have a significant impact upon the final outcome of the results. Cons: The brief information was lost while making the analytical results of the users.
Baturay M.H[6]	Coursera data	Data Mining	Evaluation Techniques	To briefly analyze the MOOCs characteristics.	Pros: Certificate acquisition attracts a lot of learners towards open resources Cons: The existing model of evaluation need to be improved as they lack rigorous models like ML/Deep algorithms

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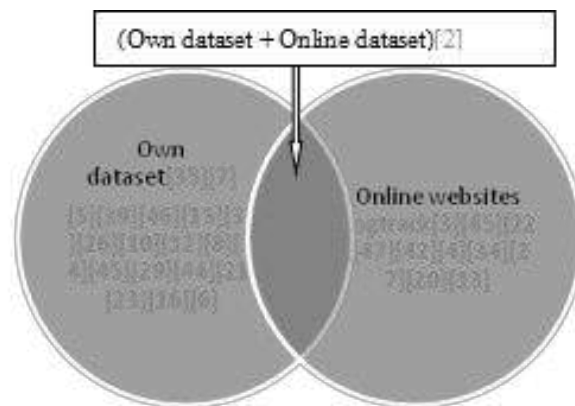


Fig 5 Dataset Referral in Comparative Study

BENEFITS AND CHALLENGES

During COVID -19 pandemic, MOOCS has become the only channel to disseminate knowledge for the keen learners. Although, there are many benefits, challenges and issues that has been encountered by the researchers while pursuing their research, which need to be discussed in the paper .

a) The probable benefits of enrollment in the MOOCS

There are myriad benefits of utilizing MOOCs as the platform to the knowledge providers likewise Public/Private Educational Institutes/Organizations and the information seekers i.e. end users/learners too (discussed in **Fig 6**). The orientation phase for MOOC creation or designing was helpful in its preparatory phase [14]. It has boosted the quality standards of education [12] by exposing the learners under the expert's guidance [45] over a click. Besides, the Open Education Resources(OERs) flexibility has been adopted with all types of Course Recommender Systems[20]which provide young aspirants brighter job recruitment or placement opportunities[14].OER's were proven preferred teaching mode over traditional methods[1].

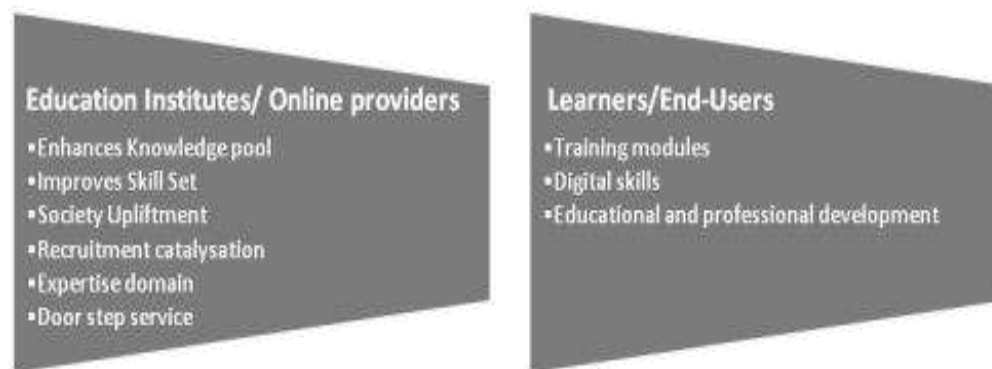


Fig 6 Benefits of MOOCs

b) The factors affecting the users for non-enrollment/discontinuity in MOOCS

The leading factor affecting MOOCs is the hesitation of the learners to opt for open discussions over forums rather than browsing existing comments [14]. Nevertheless, the incapability of the varied pedagogical tools to limit one-to-one tutor-tutee attention.[14] gives set back in MOOCs trend also. Apart from this, the multiple factors affecting the non- enrollment or discontinuity of users for course certification are depicted in **Fig 7** which is thereby briefed in **Fig 8**.

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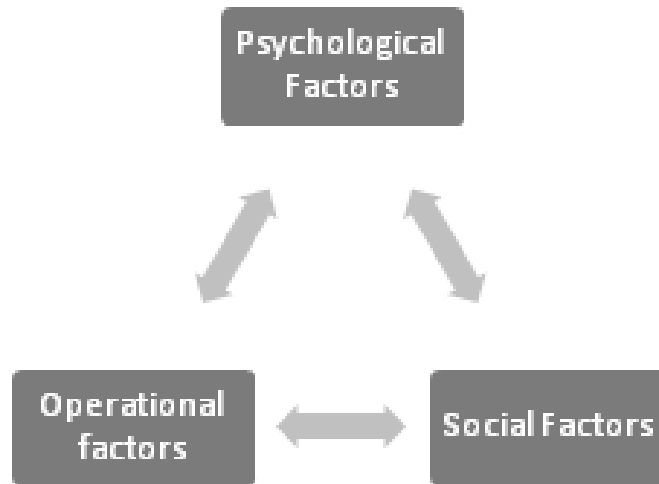


Fig 7 Factors effecting non-enrolment/ discontinuity in MOOCs



Fig 8 Detailed factors affecting MOOCS

c) The challenges faced in MOOCS

While undertaking the research, the scholars enquired that the drop rate in MOOCs is significantly dependent upon tutor-tutee characteristics. As enrollment is dependent upon the number of courses running in the specific domain.[3]. Secondly, the behavioral characteristics of the learners are also under investigation to predict the hindrance in MOOCs adaptability [29]. The various challenges are illustrated in **Fig 9**.

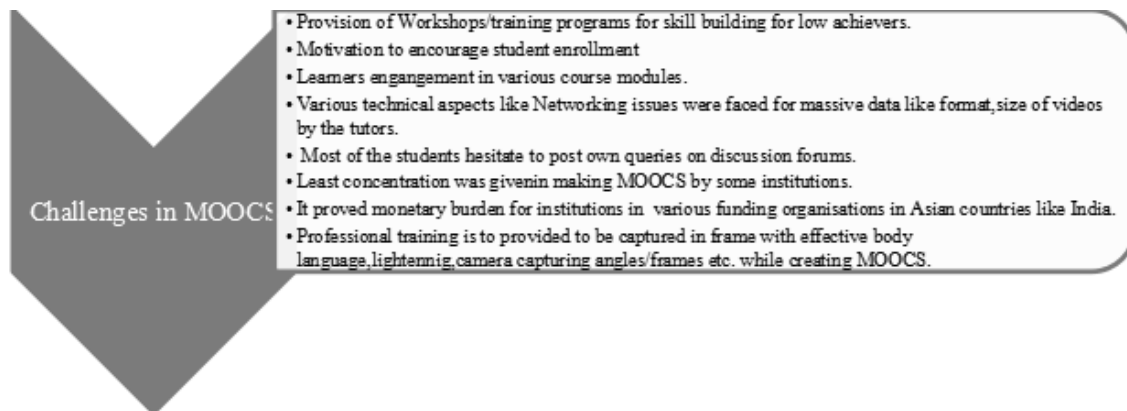


Fig 9 Challenges in MOOCS

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DISCUSSIONS AND FUTURE DIRECTIONS

Table 2,3& 4 concludes the strengths and limitations of MOOCs after the analysis of the qualitative and quantitative data of study. [5] Concluded in his research studies that the MOOCs must be teacher centric. However the MOOCs choice based feature in education system drifts the pre-existing teacher centric system towards the learner centric system as the interests, behavior and style of living. The diversified cultural regions like India need best utilization of the MOOCs platform as inertia to deviate the young brains towards Higher Education Courses due to their narrow vision, knowledge and awareness about the medium. MOOCs platform has undergone remarkable up gradations for the users. It do not provide only door-step services to learners but has also classified the course content, as per their level of understanding into three categories beginners, intermediate or advanced. Multifarious approaches are indulged to increase the learner's interests by running courses using various data mining, analysis, and predictive tools. MOOCs have been identified as the initiative towards gaining knowledge from experts irrespective of the physical/geographical boundaries. It has also been proven as the prominent method to reach the roots of society and explore the untapped talent of society from every sphere of the world.

CONCLUSION

MOOCs platform has revolutionized the learning styles by using various feature extraction, analysis, and predictive tools. The data extraction process has been done carefully. A manual search for including the related study of the MOOCs is tried. However, the efficiency of every author in commencing the comprehensive literature review is noted at each stage. The approaches followed by the researchers have enhanced the chances for the research aspirants to implement innovative ideas, methods to bridge the gap in the existing literature and its future directions. Experts have brought their insight over varied methodologies, prototype models, or frameworks to present various approaches to pursue the research in multiple domains such as Child psychology, Human behavior, and Pedagogical methods, Learning Styles in the education system. The literature survey has been elaborated to undertake the model or hybrid prototype for implementing various algorithms as per their objectives to meet the aim of the study. MOOCs have been proven as an evident method to bring the milestone in the traditional educational method towards the button-click method.

Funding The study was performed without financial support.

Availability of data and material: Not Applicable.

Declarations Conflict of interest:The authors declare that they have no conflict of interest in relation to this research, whether financial, personal, author ship or otherwise, that could affect the research and its results presented in this paper.

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