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Exploring The Factors Affecting Learners' Acceptance of Swayam Nptel Based on Four Quadrant & Kirkpatrick's Models

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Abstract – Over a period of years there has been a rapid growth in MOOC Courses, and in this context, one has to explore its effectiveness, issues and social impact. The traditional teaching-learning environment will be replaced by the free enrollment and accessibility of MOOC courses. This study explores the factors in the acceptance of learners using MOOCs, more precisely, the study analyzed learners' acceptance of SWAYAM NPTEL MOOCs based on Four Quadrant Model and Kirkpatrick's four level evaluation of learning model. This article also focuses on the social impact of MOOC in the teaching-learning environment. The MOOC providers have given better insight to the course providers on how to manage the platform. However, as a MOOC coordinator or respondent of one institution, one has to conduct further studies to investigate MOOCs implementation in other institutions. The outcome of this study will of course provide some insight to prospective MOOC providing institutions.

Key Words – MOOCs, Kirkpatrick's Evaluation Model; Four Quadrant Model; SWAYAM-NPTEL Local Chapter, National Coordinators of SWAYAM

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1. INTRODUCTION

As MOOC runs on technological media platforms, there is nothing to surprise about its significant attention in social media platforms. As far as higher education institutions and venture capitalists, it is a new business opportunity to be exploited. The massive enrolment ratio will make a dynamic change in the traditional teaching-learning environment. Instructional design principles that are used in traditional methods of teaching are also applicable to online courses. A number of researches have been done exploring the quality enhancement especially with respect to its structure, pedagogy, assessment, etc. However, research regarding the acceptance level of MOOC is yet to be done. Accordingly, an empirical study based on Kirkpatrick's four level evaluation of learning model has been conducted here to investigate the acceptance level of MOOC in higher education institutions. The outcome of this study would be issuing vital and valid information to designers and facilitators of MOOCs. Moreover, as the higher education institutions want to integrate MOOC into their curriculum at present, this research is also important to them. This research can be divided into four parts: first the work of the study, followed by description of the methodology used, then the results and findings based on the objectives, and finally discussion and conclusion.

2. LITERATURE REVIEW

2.1 Development of Massive Open Online Courses (MOOCs)

The word MOOC was coined in 2008 by Dave Cormier, from the University of Prince Edward Island for a course offered by the University of Manitoba, while each MOOC has its own unique structure and style, MOOCs can generally be divided into 2 categories: xMOOCs and cMOOCs. The terms "cMOOC" and "xMOOC" were coined by Stephen Downes, co-creator of the first cMOOC to hit the web. Launched in 2008, the course was called "Connectivism and Connective Knowledge" (CCK08) and eventually had a whopping 2,200 students enrolled in the course. Although the initial MOOCs were based on the Connectivism theory of learning, several top universities – such as Harvard, MIT, and Stanford – have begun to offer MOOCs in a somewhat different format, termed xMOOCs. Instead of being structured as an open online community of learners, xMOOCs are based on a more traditional classroom structure: They are a combination a pre-recorded video lecture with quizzes, tests, or other assessments. xMOOCs are centered around a professor rather than around a community of students. As George Siemens so succinctly put it: "cMOOCs focus on

knowledge creation and generation, whereas xMOOCs focus on knowledge duplication."

Massive – It is massive in the sense that any person who has attained a particular age (in India it is 13 years of age, means a pupil in 7th standard is eligible to join the course) irrespective of his/her educational background can join the course and start learning.

Open – It is open in the sense that courses offered are open to everyone without any geographical boundaries.

Online – The courses are available online and are accessed anywhere and anytime free of cost.

Courses – Different types of courses are offered under MOOCs. The most popular MOOCs providers are edX, coursera, Udacity, Khan Academy, etc. **edX** is an American massive open online course (MOOC) provider created by Harvard and MIT. edX was founded in May 2012 by scientists from MIT and Harvard. Gerry Sussman, Anant Agarwal, Chris Terman, and Piotr Mitros taught the first edX course on circuits and electronics from MIT, drawing 155,000 students from 162 countries. In 2013 they partnered with Stanford and in June 2013 they reached 1 million students. edx.org released as open source, creating Open edX. Another online learning platform is Cousera founded by Stanford University professors Andrew Ng and Daphne Koller. Cousera is the biggest MOOC provider in the world however edX is the most popular one. Khan Academy is a well-known free and not-for-profit online learning platform. It was started by Salman Khan in 2008 offering over 3600 video lectures in various subjects with exercises and assessments. Udacity Inc. is an American for-profit educational organization founded by Sebastian Thrun, David Stavens, and Mike Sokolsky offering massive open online courses. Udacity is an online education provider that mainly focuses on job related online courses. India's SWAYAM is the fourth largest MOOC provider in the world. In order to ensure best quality content is produced and delivered, SWAYAM has nine National Coordinators. They are AICTE for self-paced and international courses. NPTEL for engineering, UGC for non-technical post-graduation education, CEC for undergraduate education, NCERT & NIOS for school education, IGNOU for out of the school students, IIMB for management studies and NITTTR for Teacher Training programme. In addition to Indian and foreign higher educational institutions and universities, all of these 9 national coordinators also offer programs / courses through SWAYAM. One of the peculiar features that distinguish SWAYAM from other MOOC providers around the world is that if a candidate wants a SWAYAM certificate he/she should register for the final proctored exam by paying a fee of Rs. 1000. For instance, in a 12 week German Level 1 Course offered by NPTEL, there will be 12 internal Assignments or Quizzes and an External Proctored (MCQ based) examination at the end. In some ARPIT courses for faculties, it will be 30% internal and 70% external and aggregate pass percentage would be 50%. National Programme on Technology Enhanced Learning (*NPTEL*) is a project of Ministry of Human Resource Development, Government of India initiated by seven Indian Institutes of Technology (Bombay, Delhi, Kanpur, Kharagpur, Madras, Guwahati and Roorkee) along with the Indian Institute of Science, Bangalore in 2003, to provide quality education to anyone interested in learning from the IITs. The main goal was to create web and video courses in all major branches of engineering and physical sciences at the undergraduate and postgraduate levels and management courses at the postgraduate level. NPTEL has NPTEL SWAYAM Local Chapters in higher education institutions in India and abroad.

2.1.1 MOOC offered by Coordinators of SWAYAM in India

NPTEL is the first online platform to implement MOOC in India. It was launched in the year 2013 and offers courses since 2014. When the MHRD of Government of India formed the Study Webs of Active Learning for Young Aspiring Minds (SWAYAM) in 9th July 2017, NPTEL along with AICTE, UGC, NCERT, NIOS, IGNOU, IIMB, NITTTR and CEC became its coordinators, and all these nine national level coordinators offer courses through SWAYAM online platform.

The nine National Coordinators of SWAYAM and their respective roles are summarized in the following table:

Table 1: Nine National Coordinators of SWAYAM

S. No.	National Coordinators (Abbreviation)	National Coordinators (Abbreviation Expanded)	Area of Operation
1	AICTE	All India Council for Technical Education	Self-paced and international courses
2	NPTEL	National Programme on Technology Enhanced Learning	Engineering
3	UGC	University Grants Commission	Non-technical post-graduation education
4	CEC	Consortium for Educational Communication	Undergraduate Education
5	NCERT	National Council of Educational Research	School Education

		and Training	
6	NIOS	National Institute of Open Schooling	School Education
7	IGNOU	Indira Gandhi National Open University	Out-of-school Students
8	IIMB	Indian Institute of Management, Bangalore	Management Studies
9	NITTTR	National Institute of Technical Teachers Training and Research	Teacher Training Programme

SWAYAM is designed to achieve the three cardinal principles of Education Policy viz., access, equity and quality. The objective of this effort is to take the best teaching learning resources to all, including the most disadvantaged. SWAYAM seeks to bridge the digital divide for students who have hitherto remained untouched by the digital revolution and have not been able to join the mainstream of the knowledge economy. Courses delivered through SWAYAM are available free of cost to the learners, however learners wanting a SWAYAM certificate should register for the final proctored exams that come at a fee and attend in-person at designated centres on specified dates. Eligibility for the certificate will be announced on the course page and learners will get certificates only if this criterion is matched. Universities/colleges approving credit transfer for these courses can use the marks/certificate obtained in these courses for the same.

The courses hosted on SWAYAM are in 4 quadrants approach as mentioned in Table 1

Table 2: Four Quadrants of SWAYAM (Developed by NPTEL)

Quadrant – I: video lecture Video Lectures (using audio-video multimedia animation)	**Quadrant – II: Specially Prepared Reading Material that can be Downloaded/Printed** e-Text: Specially prepared reading materials (PDF, Text, e-Books illustrations, PPT presentations, related links, research papers, articles) that can be downloaded.
Quadrant – III: Self-assessment tests through tests and quizzes - Self-assessment Tests: It contains problems and solutions that is in the form of Multiple Choice Questions, Fill in the blanks, Matching Questions, Short Questions, Long Questions, Quizzes, Assignments and solutions, Frequently Asked Questions (FAQs) and providing clarifications on misconception of any topic.	**Quadrant – IV: An online discussion forum for clearing the doubts. Steps have been taken to enrich the learning experience by using audio-video and multi-media and state of the art pedagogy / technology.** Discussion forum: Arranged for raising doubts and clarifying them by the Course Coordinator or his/her team.

The aforesaid 4 quadrant approach followed by SWAYAM NPTEL can also be followed by other MOOC providers and this system can be evaluated by Kirkpatrick Model of Evaluation.

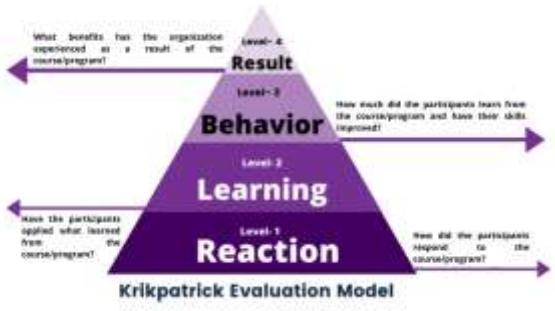
2.2 Kirkpatrick Model of Evaluation

The model was developed by Dr. Donald L. Kirkpatrick in 1954 is often used to assess training/program effectiveness which entails using the four levels of evaluation. Each 4 levels have a set of questionnaires which gives measurable facts and evidence that forms the “chain of evidence” for the effectiveness of a program or training conducted [4]. The Kirkpatrick Model of Evaluation is presented in the following table:

Table 3: Kirkpatrick Model of Evaluation

Level I: Evaluation – Reaction At this level, the learner's reaction to the program is measured. The questionnaires are designed to get answers on the learner's perception of the program – Did they like the program? Were the materials given relevant to them?, etc.	**Level II: Evaluation – Learning** “Assessing the amount of learning that happened” [4] through advancement in their skills, knowledge gained or attitude on the subject matter being taught.
Level III: Evaluation – Behaviour As with its name ‘Behavior’, this level measures the participant’s behavior that “changed as a result of undergoing the training” [4]. The evaluation level attempts to answer the following questions – How would the learner	**Level IV: Evaluation – Results** The results or the impact of the program is finally measured at level4 which translates to “the bottom line” or the successive reinforcement in business results. In the context of MOOC, the learners opinion

apply the knowledge, skills or attitude which they have learned in their everyday environment?	based on their performance in their respective area of operation can be sought



The NPTEL in India, one of the coordinators of SWAYAM, sends to its candidates weekly feedback form regarding if the expectations with which a candidate joined a particular course is being met. Moreover, at the end of the external proctored exam, the NPTEL requests their candidates to fill in a Feedback Form, eliciting questionnaires on location of the examination centre and a feedback form is also sent to their emails regarding the questions asked in the exam. However, there is no analysis regarding the effectiveness of a program by collecting data from the users of the course after issuing NPTEL certificates to their candidates. The eight other MOOC Coordinators of SWAYAM and other MOOC providers around the world can follow the Feedback system followed by NPTEL. The MOOC providers around the world can also follow the Kirkpatrick Model of Evaluation.

3. RESEARCH METHODOLOGY

The descriptive part of this research sheds light on the factors that affect learner's acceptance of MOOC. Out of 250 respondents, 101 males and 149 females participated in the survey. The respondents were students of NPTEL courses. MOOCs measured in this research are Building Information Modelling (BIM), Basic Pastry Making, and Into the Future of MOOCs. Data was collected through analysis of survey questions.

4. RESULTS AND FINDINGS

Results on the key factors that affect the learners' acceptance in MOOCs is discussed in this section

4.1 Self-directed learning environment

According to the discretion and convenience, learners can do MOOCs. A self-directed learning environment boosts the enthusiasm for learning. MOOCs are not limited by time and geological locations. From the analysis of the result, it is evident that a quiet, comfortable and conducive ICT enabled, flexible and homely learning environment is essential for the learners. Online learning made it easy as long as there was an internet connection. The learners liked the way the NPTEL courses' weekly modules are structured, its feedback form and Assignments presented. 87.5% of slow learners prefer MOOCs. Mobile phone access and 24/7 internet access made learning easy. Students can manage their time as the MOOC platforms are flexible in finishing the activities of MOOCs. As the learners have enough time, they can do research before answering questions. The learners can pause and play the videos according to their choices.. Rolfe [6] agreed that users in MOOCs define their own learning paths and not navigate the content and assessment tasks in a linear manner. Learners choose what content and skills they wish to learn, which makes learning personal [7]. MOOCs enable teachers and students to decide their own schedule as to when and where to communicate online or offline about the teaching contents which is convenient and quick [8]. This kind of self-directed learning is useful especially for those learners who work full time and have family commitment [6]. Table 1 shows the comments from learners in terms of a self-directed learning environment.

Table 4. Comments from learners about NPTL's self-directed learning environment

The overall system of NPTEL is really good. You get assignments from time to time and also the questions are standard. These courses are free. You can learn from videos and solve assignments for free. If you want to take the certification exam then you have to pay □1100/-. If you complete the course successfully, you will get a certificate with **IIT** or **IISc** tag that you can mention in your C.V. The standard of the final exam is also good as it belongs to IITs and IISc. Anyone from anywhere can do these courses. They provide detailed solutions of assignments. **(Sudip Mahanti) , Btech Computer Science Engineering**
It is really a great platform for working professionals. I suggested some of my colleagues to go through Python and Machine learning related courses and enjoy online proctor and non-proctored exams. I completed a Python for Data science course from IIT Madras and achieved a Silver medal. Prior to attending this course I have also completed the IBM course for Data Science professionals. My observation is that the Python for data science course difficulty level is equally comparable to that of IBM course. Thank you Team **(Suhas Shirbavikar)**
NPTEL is one of the best things available on internet today for Engineers. I graduated from NIT Kurukshetra with an overall CGPA of 9.33 in Mechanical Department and cracked GATE Mechanical exam with an AIR of 255, only with the help of this wonderful platform. As I never did any coaching for GATE neither I have followed any coaching notes to crack GATE exam it was very important for me to make notes from some good source. Some of the subjects I

have covered using NPTEL are as follows:

1. Fluid Mechanics by Prof. S.K. Som
2. Fundamentals of Operational Research by Prof. G. Srinivasan
3. Heat and Mass Transfer by Prof. S. P. Sukhatme & Prof. U. N. Gaitonde
4. Thermodynamics by Prof. S. K. Som

Seriously I don't have words to describe how great the above lectures are and how excellent those professors are who have taught those subjects. For the above 4 subjects I have watched almost every lecture from NPTEL. There are other subjects also which I have followed from NPTEL like Strength of Materials, Theory of Machine, Industrial Engineering, CAD/CAM, Power Plant Engineering etc.

NPTEL is a great initiative by the MHRD, IISc & IITs to help students. If NPTEL won't be there to help me during my engineering, I won't be able to get a good CGPA & a good rank in the GATE examination.

I would recommend NPTEL to all the engineering students because they are worth spending time. **(Shivam Singla), B. Tech. Mechanical, National Institute of Technology, Kurukshetra (2017)**

According to **Sagar Gadase**, I am enrolled and completed NPTEL's IoT course with 66%.

I am really amazed by the initiative of IITs and IISc.

- Nowadays, NPTEL provides every detail about course and lecture including ppt, text.
- Less confusion about dates and time.
- Exact execution of course schedule (except Results).
- Highly qualified mentors.
- Simple, conventional teaching methods. (Bt much effective)
- Good support from the teaching assistant.
- Well-designed online assignment.
- Optimal length of online lectures (30–40 min).
- SMS support.
- Well selected exam centres.
- Great arrangements on exam centres.
- Excellent exam- evaluation platform.
- Enough time to solve questions (in exams and assignments also).
- Wide range of courses (270 now available).
- Best quality certificate (in terms of design, photo, signature, logos, paper, lamination).
- Online Certificate tracking.
- On time certificate delivery.

Every certificate worth.

4.2 The user friendly design of course contents

Successful delivery methods and Good reading materials in MOOCs will help the students engage and learn more and be able to apply their knowledge to other subjects. Garza et al. [9] has identified that ease of use is an important factor that affects learners' acceptance of MOOCs. The result shows that learners are satisfied with the simple and clear interface of MOOC. The Open-Learning platform and activity templates of MOOCs make learning fun. In an NPTEL platform, all modules are arranged properly by learning weeks, weekly assignments and feedback forms. The contents are prepared for students to understand the topics step-by-step. All the course contents are well organized with a lot of media to view and read. The presentation layout and structure of MOOCs are important. The learners took some time to understand the overall navigation of MOOCs.

Table 5. Feedback from learners in term of structure of MOOC

"Fundamental, basic and advanced learning through technology enhanced learning platform"
"Unambiguous, concise, flexible and enjoyable learning environment"
"Weekly assignments and feedback forms really motivated me to go ahead with my course"
"I could clear GATE after doing four courses on NPTEL. I didn't attend any coaching classes for the preparation of GATE"
"Learners can be divided into visual and auditory; as far as the visual learners like me, its presentation is fantastic."
"I really enjoyed the overall presentation of MOOC"

4.2.1 Activities and Exercises

At the end of every weekly lesson, the learners have to be provided with some evaluation to test their abilities. Normally, learners will enjoy it as it is a reflection of their learning by watching the video content or the e-content. Some learners may like to get more hands-on activities and exercises to test their understanding about a specific topic. Accordingly, weekly quizzes, assignments, practice tests, etc. issued by the course provider would be much beneficial to students. Motivating and mind blogging activities after each topic help learners a joyful learning experience. They would like to have more assessments such as MCQ, tests, quizzes and peer review with the help of rubrics.

The NPTEL provides a solution (with a hint to original reading material or video content) to weekly assignments immediately after the last date of submission of online assignments. Learners can learn from their mistakes immediately because not all learners will get back to the reading materials and find out the correct answers and the reason why it is wrong. There are complaints from the learners side regarding insufficient practice tests, difficulty in answering questions as the question itself is ambiguous, and vague. In this context, if the learner is a student in NPTEL, then she/he can

raise the matter in the discussion forum provided by NPTEL. Opportunities for formative feedback are often limited to multiple choice test performance [5]. Table 3 shows the comments from the learners in terms of activities and exercises in MOOC.

Table 6. Comments from the learners in term of activities and exercises in MOOC

"Practice tests and quizzes helped me learn more"
"Practices tests were very helpful for the preparation of the proctored exam"
"The study note helped a lot in preparing for the final external proctored exam"
"The study materials, video contents, quizzes and discussion forum were sufficient means to learn and share my opinion and what I have learned from it."
"The assignments of the course were very helpful. It helped me to understand each topic very well."

4.2.2 Videos

Videos are one of the important course contents in MOOCs. Learning MOOCs can be made easy because there are interesting videos that can be watched or listened to according to one's convenience. The lecturers also need to make sure that the videos are of good quality. Pre-recorded video lecturers must be between 3-15 minutes long [7]. It is important to improve the quality of videos and captions [10]. Table 4 shows the feedback from the learners in terms of video in MOOC. The University Grants Commission in India has issued guidelines regarding the structure of the MOOCs with guidelines to be followed by CCs for development of MOOCs. The guidelines are given below:

4.2.2.1 Structure of the MOOCs Course with Guideline to be followed by CCs for development of a MOOCs Course

1. **One Course introductory video (for the entire course):-** 5-7 minute duration (Covers Course objectives, description, structure & brief about course content / curriculum , pre-requisites & learning outcomes of the course, duration of the course , grading scheme, and number of credits offered)

2. **Week Introductory Videos** (for every week):- 1-2 minutes video covers the week-wise description & brief content and activities to be undertaken in the week.

3. **Week-wise Content:** Will include the course content in the form of texts & videos, self-assessment questions, activities, discussion forums & references.

a) E-text: doc (document file) or (PDF)

- Consult/Study the syllabi of several universities before finalising the syllabus of the concerned subject
- Try to Identify Content writers from Universities other than the CC's own university (pan-India approach)
- Textual document should consist of about 3000 words of detailed write-up on the topic of each module.
- The textual description should also be enriched with multimedia supplements (images, hand drawings, maps, graphs etc.) wherever applicable

Textual document should consist of at least 8-10 pages or minimum 3000 words with detailed write-up on the topic of the module. Topics should be built in a systematic and logical manner. A summary at the end will help a learner to quickly review the entire e-text.

Self-check exercises (Problems with answers given to learners that allow them to assess how they are doing on an ongoing basis. Doing them online with self-grading provides immediate feedback) in the body of the text, applications from day to day life, if applicable should be incorporated. Multimedia supplements may include images for which resolution should be about 600 dpi, animations, graphics, video or audio clips, line drawings, hand drawings whichever applicable/possible. For each topic or subtopic, Content Writer should use examples to explain the module, if required.

b) Video / Self-Learning : MP4

- No reading from teleprompter. Speak extempore. Body language should not be stiff.
- The Video must not be like a Spoken Tutorial (audio narration / voice-over of text mentioned in presentation slides).
- A clear description of visuals as well as text is required.
- Course Coordinators are advised to use the Indian faces in animation and videos
- Training demonstration, illustration of examples, case study, documentary, etc should be added wherever applicable.
- The expert/teacher whose video is being recorded should look straight into the camera lens.

- The audio has to be clear and of superior quality. Make sure that there is no distracting background noise.

- Video must include: - Multimedia, Animation, Documentary, Simulation, Graphics and Virtual Lab appropriately.

- University logo/name/animation is not permissible in the MOOCs development; however course coordinators may use the logo of UGC/MHRD and SWAYAM in their videos.

Video recording format: Full HD 1920x1080 pixels.

- Video aspect ratio: 16:9 (widescreen).

- Module Delivery: 1080i following MPEG-4 AVC Compression.

- Audio Channel 1 to have Mixed Audio Track.

- Font size: Heading: 24-30; Subheading: 22-26; Body: 20-24;

- Full screen Video Frame, space of the Video should be utilized

- The Video duration for the entire course to be about 20 hours for 4 credit courses. The duration of full one module Video should be 25-30 Minutes (or more), which shall be broken into videos of about 8-10minutes to engage the students attention throughout the course.

- The Video must not be like a Spoken Tutorial (audio narration / voice-over of text mentioned in presentation slides). A clear description of visuals as well as text is required. Training demonstration, illustration of examples, case study, documentary, etc. should be added wherever applicable.

- Video tutorial which will explain the concept of a module, should be initiated by the teacher with appearances (generally less than 25% of the total time, not more than 6 minutes) in-between the section/subsections of the topic and the entire topic should be in video timeline full of graphics, animations, PPT and not merely the content. Content delivery through Video is an essential component of each module that needs to be incorporated to explain the topic. It must include: - Multimedia, Animation, Documentary, Simulation, Graphics and Virtual Lab appropriately.

- The expert/teacher whose video is recorded should look straight into the lens and talk to the camera and should tell extempore, teleprompter reading is not allowed. The audio has to be clear and of superior quality. Make sure that there is no distracting background noise. The equipment used should be semi-professional one

Presentation: PPT (PowerPoint Presentation program):

- Avoid long blocks of text preferably using bulleted points, use appropriate fonts (e.g. Arial, veranda, Helvetica or Myriad pro etc), use larger font size (not less than 20) for clear visibility. Add graphics and images as much as possible appropriately. Kindly note that the presentation would be part of a video, however PI has to submit a presentation for each module.

c) **Self-Assessment:** The Content Writer should provide minimum 10-15 questions for each module in one or more of the following formats.

i) Multiple Choice Questions with Answer ii) True & False Statements iii) Fill in the Blanks iv) Match the Columns.

Assessment Plan:- Grading Scheme: Allocation of marks (in percentage) to Assignments, quizzes, and Final Examination.

d) **Learn More:**

The learning quadrant is about the supporting material of respective modules in different forms. Wikipedia link , Development of Course, Open content on Internet, Cases Studies, Anecdotal information, Historical development of the subject, Articles may be given for Self-Assessment.

4. Week sum-up videos :- 1-2 minutes summing up video covers the content taught in the week.

GUIDELINES TO AVOID PLAGIARISM:

- *CC to obtain copyright clearance from Content writers for any readings, images, and video clips used as core and supplementary reading in case of licensed material if used.*

- *Direct references to specific materials should be avoided in video content or other course material till clearance has been obtained.*

- *CC to ensure that content is NOT plagiarized.*

- *UGC/INFLIBNET has provided universities with URKUND software to check plagiarism.*

- *Online freely available software –plagiarism-detect.com*
- *It shall be ensured that the proper credit and reference is given by the author about the source used in video or in e-text.*

Table 7. Feedback from learners in term of video in MOOC

"As I have said, the videos are good, definitely worth recommending!"
"There are a few very interesting videos which are definitely helpful and beneficial too."
"The videos help a lot in my learning as I can relate what I learn in an image form."
"With all the videos provided, I can imagine and understand more about that topic."
"The interactive flash about finance was very good, it was very appealing and did help me learn."

4.3 Participation and interaction

We can see from the result that the majority of the learners were supportive of the discussion forum provided by NPTEL. Learners are of the view that a MOOC is a good platform to voice out and share their opinions. All the learners got the chance to answer the questions which may not be possible in a classroom situation of learning. Ji [8] expressed that students do not communicate and reflect on traditional learning. MOOCs have improved group collaboration in an online learning environment and thus enhanced collaborations with diverse learner groups [6]. Ji [8] pointed out that learning is more interesting when the interaction level is increased. One of the learners expressed that: "I enjoyed reading the feedback from the other participants. Hence, instructors should pay more attention to interaction design [11].

4.4 Guidance from NPTEL-SWAYAM Local Chapter

As most of the learners are not technology savvy, the NPTEL has started NPTEL SWAYAM Local Chapter and the SWAYAM Point of Contact (SPOC) of the local chapter will assist the students to navigate through this SWAYAM NPTEL MOOC Platform. Digital literacy skills are one of the attributes for the success of traditional e-learning [5]. Beginners need a lot of support and motivation to build their confidence and skills in using MOOCs [12]. All these gaps can be filled by the SPOC of the Local Chapter.

4.5 Internet speed

Technological innovations have given rise to MOOCs [6]. In India, the students in rural areas face internet bandwidth related problems. The low internet speed will distract and annoy the learners. There are situations in which students are not able to submit their assignments on time because of the low internet speed. Nowadays, in India, most student learners don't have a laptop. To enjoy online learning fully, a good quality laptop is essential. The mobile phones of our students are also not in good quality, and of course this can be an obstacle that a student faces in this context.

In conclusion, majority of the learners think that MOOCs are very convenient and they have learned a lot from the courses

5. CONCLUSION

This study has expounded the current state of MOOCs in higher educational institutions (HEI). The respondents of this study group were students of a HEI who have completed their MOOC via SWAYAM NPTEL MOOC Platform of Ministry of Human Resource Development, Government of India. Findings emanating from this study point to the fact that generally MOOCs have impacted strongly in HEI. The findings have shown that factors that affect the learners' acceptance of MOOCs are self-directed learning environment, user-friendly design of course contents, interactivity, guidance provided and fast internet speed. Learners can choose what content they wish to learn, which makes their learning personalized. As there are no comparisons of the performance of students with a control group, perhaps future studies should consider looking at this to reflect more meaningful information to HEI. Factors such as participation rates and the time required to use MOOC also need to be taken into consideration in order to explore the acceptance of MOOC across Higher Education Institutions.

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