

SUMMARY

SUMMARY

Introduction

The era of twenty-first century is known as the century of science and technology. In the age of modernization, learners are deeply involved with various technologies. In the age of modernization, learners are deeply involved with various technologies. MOOCs, which stand for Massive Open Online Courses, are immensely changing how students learn more about it on the internet viz., online (education-blog). Under the mission of digital India, the government has taken several initiatives, and one of the most challenging and focus area is Massive Online Open Courses (MOOCs).

Satisfaction is based on fulfilling one's requirements and anticipation (Shiv & Huber, 2000). It is the judgment of a pleasurable level of consumption that is connected to the total fulfilment of a person's life. It is broadly accepted as a desirable of different experiences of products and services (Hossain, 2018). Student engagement is defined from the perspective of persistence, self-direction, sustained inquiry, playfulness with content, and unprompted transfer of understanding.

Yawson & Yamoah (2020) focused on understanding e-learning satisfaction in higher education from the perspective (Ghazal et al., 2018) of multi-generational cohort perspective and tried to understand the students' satisfaction with the help of the four components of their experiences. The mentors provide course design based on the details of the course outline, objectives of the course communicated, the tentative outcome of the learning shows the learners from the beginning, relevant and recent course content. The next dimension is course delivery which is based on the speaker's energy level and enthusiasm towards the topic, the sessions which are sequenced follow

the course outline, the appropriate presentation of the topics, the coverage of the whole content throughout the session, achieved the outcome of the learning. The third dimension is course interaction based on the electronic forums available for discussion in e-learning platforms, fair and proper respect for student's interaction availability of the coordinators. The fourth and last dimension is the course delivery environment based on internet availability and proper infrastructure maintenance. Kumar & Kumar (2020) focused on the learners, satisfaction from MOOCs through a mediation model. They also showed that the level of learners' satisfaction is based on the content of the course, delivery of the content materials which is based on uploading the contents on time, pace, delivery of the contents by the mentor, assessment of the course, and different aspects of supporting the course. They showed that the content delivery and assessment significantly connected to the overall satisfaction level of MOOCs. On the other hand, course support was also found to be significant with the learners' overall satisfaction. According to the structural model of satisfaction, the relationship between course content and overall satisfaction is mediated by the course assessment and the course support is not mediating the relationship between the course delivery and the overall satisfaction (Kumar & Kumar, 2020).

Baldwin (2017), showed in his study of acceptance and adaptation related to online course design. Researchers showed that the course design directly impacts students' satisfaction. This study is basically highlighting the significance of the clarity and vividness of course design, active participation in the discussion forum, and interaction with the instructor or mentor (Bradford, 2011; Paecher et al., 2010; Swan, 2001). The level of students' satisfaction has increased in online learning when instructors provide the proper feedback, communication is much more responsive, the instructional

resources are relevant and the authentic activities play a very important role in online courses (Blau et al., 2017; Lee et al., 2011). Course design also influences the perception of the students in online courses as well as the satisfaction and the quality of learning. An effective course design originally emphasises interaction and communication amongst the learners and mentors. The online courses take more responsibility and time of designing the course materials rather than the face-to-face mode of learning. The transaction of online courses provides instructors with a proper opportunity to consider alternative instruction and assessment (Shea et al., 2004). This study is based on grounded theory. He had taken four parameters on the basis of students' satisfaction. The first parameter is online course design strategies and some of the aspects come under this parameter. Course design plays a very important role in student satisfaction, and navigation plays a major role in online courses. The mentor always tries to design the courses in the online mode that are very easy to navigate to get learners in front of the content. Navigation helps students to get the sessions very easily. Easy to navigate courses help the students and the instructors and it also helps the students to find information as early as possible and the course runs with more flexibility according to the participants. Chunking or breaking the contents related to the modules helps the students navigate the online courses. It helps students to understand the content materials very easily. The second thing is eye contact which plays a very important role in online learning. The third parameter is interaction with the peers and instructors on the discussion forum, asking different questions, getting proper answers, active participation of each student is very important in online learning. The interaction basically provides a richer experience of learning for students. Online course design and the various teaching strategies help students interact on the particular course. Online education is more deliberate than face-to-face courses. The

participants can understand the value of designing relevant and authentic assignments for online courses that facilitate the interaction between the student and the content (Stickney et al., 2019). Moore (1989) also identified the importance of interaction between student-student, student-content, and student-instructor (Cho & Cho, 2017). The study focused on student reflection on asking questions to one another in a purposeful manner and helping the learner learn collaboratively. It fosters interaction, provides feedback, facilitates learning and the course design organization. They showed that communication in online learning plays a major role in online education, the same result found by Christensen and Osguthorpe (2004). Roblyer & Wiencke (2004) also showed that the successful interaction of online learning provides better results, good experiences, and the course design objectives fulfilled by this. Pate et al. (2009) suggested that instructors should help the learners communicate in a better way and help them respond thoughtfully. Clark (1994) showed that instructional design is essential and provides a better impact on student satisfaction. The fourth parameter is a social order based on the online course environment where they can connect properly with their peers and the instructor. The behaviour pattern is different in online learning with respect to the traditional mode of learning.

Significance of the Study

This study provides significant insight to those learners interested in joining this kind of MOOC and they also understand the (Kumar & Kumar, 2020) several engagement patterns; such as behavioral, social, emotional, and cognitive engagements of the learners. The behavioural engagement will help to understand the student involvement in MOOCs. This will help understand the students' participation in different types of academic activities and efforts to perform academic tasks. The cognitive engagement

will help to understand the integration and utilization of the student's skills, motivation, and strategies in their learning. The social engagement will help to understand the involvement of the students to the instructors and peers as well as their contribution in regular discussion. The emotional engagement will help to understand the level of self-motivation of the students and try to find out their inspiration for that particular course which they have already attended.

This study will help to understand the student satisfaction on the basis of four quadrants of MOOCs. The researcher will find out the perception of the students on the basis of the four quadrants approaches in MOOCs. The course coordinator will also understand how the students have been involved in different disciplines of MOOCs concerning four quadrants. Thus, the study will help to understand the various relations between student satisfaction and students' engagement in MOOCs. The researcher is trying to find out the aspects of those parts that play a significant role in student engagement and satisfaction. If the students do not engage with the courses, they cannot understand whether they are satisfied or not. This study is trying to know the student satisfaction and engagement from the different aspects because The Ministry of Education is planning to provide their courses through the India-based MOOC platform SWAYAM. It is an upcoming project of the Government of India. Moreover, it will help the course coordinator to understand the lacunas how they can engage a large number of students in various online courses in different MOOCs platforms. They can also understand which factor affects the students more related to their satisfaction and engagement in MOOCs (Rajabalee & Santally, 2020).

Research Gap

The perspective of the present study can be understood from the forty-two review of related literature review in the given chapter. After reviewing several research studies, the researcher came to enrich the thoughts and ideas in the related field of the study. That literature showed that in many cases, the user did not use various tools for their information seeking to its full extent. The studies reviewed in this chapter enable the researcher is going to conclude that:

- i) Most studies are based on a single discipline and specific platforms.
- ii) Most of the studies are based on satisfaction and engagement separately or had been examined together, but a lack of studies combines the two variables in MOOCs in the Indian context.
- iii) There is no standard tool-related for measuring student satisfaction.
- iv) Most of the studies focused on the issues related to course design and interaction between instructor, learners and contents.

Therefore, the researcher has decided to undertake the topic for his research on “A Study of Student Satisfaction and Student engagement in Massive Open Online Courses” and hence the investigator has taken this as a research problem for the present study. The researcher applied the descriptive survey method and convenient sampling for selecting the sample. The researcher hoped that the study would prove to be a valuable contribution to the research field in the context of MOOCs.

Statement of the Problem

MOOCs are student-centric because any number of students can study at a single time. MOOCs have become a famous avenue for diverse learners to upgrade their knowledge and skills. However, sometimes we see that the rate of students' course completion is very low upto only 15%. There are various reasons behind it, such as, sometimes they want to explore and try to get experience on the MOOC platform and therefore, do not complete the course. The present research aims to study student satisfaction regarding the four quadrants of MOOCs with respect to their engagement with MOOCs. Hence, the problem of the present study entitled "A study of Students Satisfaction and Student Engagement in Massive Open Online Courses".

Operational Definitions of key terms

The operational definitions of the variables of the study are as follows:

- I. **Student Engagement:** The students' engagement talks about what a student brings in the field of MOOCs in terms of behavioural, cognitive, emotional, and social engagement. It is because engagement plays a very important role in every work. Self-interest must be there; otherwise, it won't be fruitful (Lan & Hew, 2020).

- II. **Behavioral Engagement:** It is a type of engagement where students involve in massive open online courses from the aspect of time-management, note-taking, and making for the assignment as well as projects, and also revise notes when preparing assessment tasks.

- III. **Cognitive Engagement:** In the present study, it refers to up-gradation of knowledge, incorporating data, skill development in the process of learning, and various ranges of memorization to use self-regulated strategies to promote students' understanding.
- IV. **Emotional engagement:** It mostly refers to students' feelings or emotions towards MOOCs. It reflects the student's inspiration to expand their knowledge, interest in various courses, and enjoy watching video lectures.
- V. **Social engagement:** It refers to the interaction among diverse students and with their course coordinator as well.
- VI. **Student satisfaction:** It is based on fulfilling their requirements and expectation in various MOOCs. In the present study, students' satisfaction considers satisfaction with the four-quadrant of MOOCs with respect to their characteristics. These are described as follows:
- VII. **E-tutorial:** It describes satisfaction with e -tutorial in relation to organized content, covers all the learning outcomes, completion of the modules within the prescribed time and the self-assessment based on reflective level questions.
- VIII. **E-content:** The e-content plays a very crucial role in the process of online learning in MOOCs. Satisfaction with e-content is considered in the context of organized content, content related to intended learning outcomes, suitable for all learners, the completion of the modules within time, and the self-assessment based on reflective level questions.

- IX. **Discussion Forum:** A discussion forum is mostly utilised by the course organiser or his team to raise questions and explain them in near real-time. This quadrant has been explored extensively in the context of student satisfaction in MOOC platforms' discussion forums.
- X. **Assessment:** Assessment, the fourth quadrant of MOOCs, is a vital component of online learning and plays a major part in the learning process.
- XI. **Student:** A student who has successfully completed at least one MOOC on any platform is considered as a student.

Objectives of the study

- i) To create a model of student satisfaction in MOOCs.
- ii) To create a model of student engagement in MOOCs.
- iii) To study the student satisfaction and student engagement in MOOCs with respect to their demographic details.
- iv) To study the relationship between student satisfaction and student engagement in MOOCs.

Hypotheses of the Study

The hypotheses formulated based on objectives are as follows:

- i) There is no significant difference between male and female students with respect to their satisfaction in MOOCs.
- ii) There is no significant difference among students of different educational backgrounds with respect to their satisfaction in MOOCs.

- iii) There is no significant difference between male and female students with respect to their engagement in MOOCs.
- iv) There is no significant difference among students of different educational backgrounds with respect to their engagement in MOOCs.
- v) There is no significant relationship between student satisfaction and student engagement in MOOCs.

Methods Adopted of the Study

The Descriptive survey method is chosen in the present study as it is the best method to answer three types of questions addressed in the present study- descriptive questions, relationship questions, and predictive questions. The data was gathered through an online survey as it is considered best by the researcher for the need of the study.

Population of the Study

The population may be defined as the group of individuals belonging to the same species. For the present study, the population is the learner of MOOCs from all over India who have successfully completed at least one course in any MOOC on various MOOC platforms were included in the population of the study.

Sample of the Study

The present research, the researcher has used the convenient sampling method which comes under the non-probability sampling method. The researcher uses this sampling to collect data of the students in MOOCs because the sample is taken from a group of people whose data is accessible in consideration of the research limitations. The

researcher has taken those students from all over India who have already completed one or more than one MOOC.

First, the researcher contacted 7 course coordinators whose MOOCs are offered on different online platforms. The 4 MOOC course coordinators responded and agreed to participate in the study. The researcher shared the questionnaire with the course coordinators for further sharing with the participants in MOOCs.

The researcher received data from 415 MOOC participants from different platforms of MOOCs out of which only 240 participants who completed at least one MOOC are selected. Out of 240 participants, 132 males and 108 females from different age groups and different educational backgrounds constitute the final sample.

Tools for Data Collection

The researcher developed a self-constructed questionnaire to collect the required information from the study of sample. The tool of student satisfaction, a study variable, has been developed based on available literature and is designed according to the study's objectives. The researcher prepared a questionnaire entitled “Students Satisfaction in MOOCs” for the present study. The tool contains all four quadrants in MOOCs, such as e-tutorial, e-content, discussion forum, assessment, and overall satisfaction/instructional design as suggested by related literature. The researcher discussed with the specialists of the field and his research supervisor. The detailed process of construction of the questionnaire is discussed below. On the other hand, the researcher will adopt a tool for student engagement, another variable. Deng et al., 2020 developed a tool on student engagement in MOOCs. They developed a scale named

MOOC engagement scale (MES) (Deng et al., 2020) for full academic and research purposes.

Administration

The tools were administered to the students in MOOCs who have completed at least one course in MOOCs. The researcher sent three reminders for seeking cooperation in completing the questionnaire. Finally, it took 50 days to collect data from the respondents, and in the end, the researcher got 240 filled-up questionnaires from respondents.

Variables of the study

The researcher has adopted these two variables- student satisfaction and Students' engagement. The researcher has adopted the following demographical variables for the present study to do the analysis. Such as gender (male and female), and educational background (pursuing UG, UG, pursuing PG, PG, pursuing Ph.D., M.Phil/Ph.D.,professional courses).

Statistical Techniques

In the present study, the researcher used Pearson's coefficient of correlation, mean, standard deviation, student 't'-test, ANOVA, and principal component analysis (PCA) for data interpretation and analysis with the help of SPSS statistical software and Microsoft Excel 2007.

Major Findings

The summary of the findings of the present study are as follows:

- 1) The four factors of student satisfaction show 56.23% of the total variance. The analysis of student satisfaction shows that 21 factors are considered to determine student satisfaction in the present study. Fourteen factors are identified as causing the maximum variation in student satisfaction. The final model shows four factors of student satisfaction- customized course content, feedback, interaction, video content, determine student satisfaction in MOOCs. The final model shows that the four factors are feasible to the study student satisfaction in the present context of study.
- 2) The two factors of student engagement show 61.45% of the total variance. The analysis of student engagement shows that 12 factors are considered to determine student engagement in the present study. Ten factors cause the maximum variation in student engagement. The final model shows that the two factors- academic engagement and socio-emotional engagement, determine student engagement in MOOCs. The final model shows that the four factors are feasible to the study student engagement in the present context of study.
- 3) The results show that both the male and female students do not differ in their respective level of satisfaction in Massive Open Online Courses. The result is supported by several related literature (Ali et. al, 2016; Weerasinghe, 2017; Conole, 2014; Pelletier et al., 2016).
- 4) The results show that students from different educational backgrounds do not differ in their respective level of satisfaction in Massive Open Online Courses

(Al-Azawei & Lundqvist, 2015; Ali et. al, 2016; Weerasinghe, 2017; Fredericksen et al., 2019).

- 5) The results show that both the male and female students do not differ in their respective levels of engagement in Massive Open Online Courses. It reflects that student get equal chances in different MOOCs platforms and can engage themselves properly in different disciplines (Pelletier et al., 2016; Kothiyal et al., 2013).
- 6) The results show that students from different educational backgrounds do not differ in their respective levels of engagement in Massive Open Online Courses (Rummler, 2017; Pathak & Mishra, 2021).
- 7) The results show a high positive correlation between student satisfaction and their engagement in massive open online courses (Kuo et al., 2013). It means that as students' engagement increases, an increase in student satisfaction also occurs (Hew et al., 2020). The high correlation is a significant finding of the study as a strong relationship between student engagement and their satisfaction suggests that the course developer shall take robust steps for engaging the students in online courses to increase their satisfaction with courses.

Discussion of major findings

The discussions of the findings of the present study are as follows:

- 1) The present research presents a model of student satisfaction and has identified four factors in the new model of student satisfaction with MOOCs. These four factors are connected to student satisfaction with various characteristics of four

quadrants of MOOCs such as e-tutorial, e-content, discussion forum, assessment. The four factors contributing to student's satisfaction in MOOCs (Kırmızı, 2014) are as follows: customized course content, feedback, interaction and video content.

- 2) The researcher has developed a model of student engagement and has identified two factors in the new model. On the basis of the literature review, student engagement focuses on the four aspects and these are: behavioural, cognitive, emotional, and social. In the context of the present study, only two factors of student engagement contribute in engaging students in MOOCs and they are as follows: academic engagement and socio-emotional engagement.
- 3) The study attempted to find out student satisfaction and their engagement in MOOCs. According to the findings of the present study, it is found that there is no significant difference among students' satisfaction on the basis of their gender; such as male and female. It basically shows that student satisfaction is equal regarding the massive open online courses. MOOC is a field where students can learn from anywhere, anytime (Pelletier et al., 2016). The result of the study also tries to show that there are no demographic barriers for students whether the students belong to different categories of gender. They all can learn in any MOOC platform both collaboratively and cooperatively. There is no significant difference between males and females on the basis of their completion, participation rate.
- 4) It is found that there is no significant difference in the educational background among students based on their satisfaction. It mostly shows that student

satisfaction based on education is equal for all levels. Students pursuing UG, UG, PG, PG, professional courses, and research levels are satisfied with Massive Open Online Courses taken for different purposes (Fredericksen et al., 2019). It is also showing that student satisfaction on the basis of four quadrants in MOOCs, which are e-tutorial, e-content, discussion forum, and assessment. According to their response, 41% of students agreed that the content of the e-tutorial was organized, it covers all the learning outcomes (Tarigan, 2012), the instructor completed all modules within the time period, the speed validation of the e-tutorial was good. Students were satisfied with the self-assessment with the help of reflective level questions (Marcia Anne, 2020).

- 5) It is found that there is no significant difference between student engagement based on gender. It shows that student engagement is equal regarding the massive open online courses. Student engagement cannot be observed, but it can be defined as a measure of student participation in the learning process. This mostly includes their interaction and cooperation with their peers and teachers. It is a multi-faced concept, such as behavioral, cognitive, emotional, and social. It mainly examined holistically rather than in isolation. Though e-tutorial, e-content, discussion forums, and assessment influence how students think, feel, and act completely (Lan & Hew, 2020). Student engagement is mostly based on their relevance with the course, active and authentic learning, autonomy, and technical competence. High attention, as well as high commitment, also play a very significant role.
- 6) It is found that there is no significant difference in students' educational backgrounds based on their engagement. It mostly shows that the student

engagement based on education is equal for all levels for those pursuing UG, UG, PG, PG, and research level, engaged with Massive Open Online Courses. 44% of the students shows the behavioural engagement based on time management for MOOCs, taking notes from asynchronous courses, revise notes when preparing assessment tasks.

- 7) It is found that there is a high coefficient of correlation between student satisfaction and their engagement in MOOCs. It plays a very important role in education. Student satisfaction and engagement in education are connected to active learning. Students cannot get satisfied without engagement in learning and MOOCs are the platform where students across the globe can join and interact with enormous students through a single platform. For this, they must be highly motivated and get global information as well. On the other hand, students who have high motivation make an effort to be engaged properly in the field of education (Pelletier et al., 2016). Student satisfaction is a significant predictor of learning outcomes. The higher level of student engagement proves leads to higher level of student satisfaction (Gordon et al., 2009) and satisfaction comes when students actively engage in various learning activities in MOOCs.

Educational Implications

- 1) The use of MOOCs is essentially required to make the teaching-learning process more effective. Students can enhance their knowledge with the help of MOOCs from anywhere and anytime.

- 2) Higher education institutions should introduce local chapters for their students with the help of SWAYAM, India's national MOOC portal. There are almost total 3807 local chapters, state-wise and at the national and international level. It will help students who cannot download and read the texts the course coordinator provides. There is basically a total of nine national coordinators in the SWAYAM portal.
- 3) Massive Open Online Courses is basically done by those students who are self-motivated, self-disciplined. So, every institute must have a mentor who will motivate them and guide the students to learn at their own pace and the mentors have to guide their students regarding the credit transfer and placement. It helps students engage in various MOOC courses as per their requirements. Those credit courses help students add that number in their particular semester. The mentor should also guide which universities accept these credit courses for their particular semester. These courses also help the student in the professional field and better carrier prospects.
- 4) Mentors should be aware of their students that NPTEL toppers can get opportunities to complete their internship with the top institute of India, like IIT Madras, Kharagpur, Bombay, Roorkee, Ropar, IISc Bangalore.
- 5) Higher education students should make a peer group and teachers must be facilitator only. A peer can help and motivate each other for engaging in different courses according to their needs. They can also check the evaluation process of each other, verify their progress chart, and compare their progress among themselves.

- 6) Teachers rather than mentors help to understand their students that there is an age boundary for these kinds of courses and they can use that certificate in their required professional field. However, MHRD and UGC have decided that an institution can only allow upto 20% of the total courses being offered in a particular programme in a semester through the online learning courses provided through the SWAYAM platform (Projects CEC MOOCs). This credit transfer is mandatory from SWAYAM and NPTEL portal.
- 7) There are some typical learner engagements in a particular week, and mentors need to know their students. Such as- i) Watch the video lectures maximum 3 or 4 hours per week, ii) Test yourself (students) weekly assignment maximum 2 hours per week, iii) Notes, text, transcripts, references, live interaction maximum 1 hour per week, and iv) Participate in discussion forum at least 1 hour per week. So, it can be seen that maximum 8 hours should spend a student weekly in any MOOC courses.
- 8) Students should provide opportunities to educate themselves on new developments regularly with the help of these massive open online courses.
- 9) Moreover, students must be techno-savvy for adopting those massive open online courses. Otherwise, student satisfaction and their engagement won't be fruitful. The student is satisfied only when they engage in these kinds of courses properly. They can get this online learning essence when they only engage themselves in the technological environment.
- 10) Institutions must provide a technological environment for their students to engage themselves technologically.

Suggestions for Further Research

- 1) Similar study can also be conducted by taking a large sample, at least more than 500 samples and the researcher can check the variety of results accordingly.
- 2) The study can also be conducted based on urban and rural parts of India.
- 3) The study can also be conducted based on enrollment of the students in MOOCs related to first world countries like the UK, USA and the third world country, like India. It would be a comparative study.
- 4) The study can also be conducted based on the achievement level of the students in the professional field who would opt for the massive open online courses.
- 5) The study can also be conducted based on different states and the researcher can check the enrollment status in various MOOCs platforms.
- 6) The study can also be conducted on professional college students only.
- 7) The research can also be carried out on other variables such as motivation, attention, and interest.
- 8) The study can also be conducted to analyze the various challenges faced by the participants.

Delimitations of the Study

The study is delimited in the following way:

- 1) The study is delimited to those students who have completed at least one MOOC course are excluded from the research.

- 2) The study is delimited to only two variables- Student's Satisfaction, Student's Engagement.
- 3) The study is delimited to massive open online course offered in India.

Conclusion

The present study analyzes the current model of student satisfaction and engagement on the basis of proposed model which is basically showing the feasibility of the study. It helps to understand that the developed tool would show the same result on different sample of the same population. This study also analyzes the student level of satisfaction on the basis of four quadrant approaches and student engagement on the basis of behavioural, cognitive, emotional and social engagement (Deng et al., 2020) for their gender and educational background MOOCs. The satisfaction and engagement level of the participants from the MOOC run by SWAYAM, Canvas, FutureLearn, MOOKIT, MOODLE, and OpenLearn. The course content has the most significant impact on the participants satisfaction and engagement level in MOOCs. It proves that students get the equal opportunity based on gender and educational background. The study also found the correlation between student satisfaction and their engagement in MOOCs. Finally, the research finds the factors that influence MOOC student satisfaction and engagement for learner preferences from various educational backgrounds, interactivity with course content, and performance-based on e-tutorial, e-content, discussion, assessment, behavioural and behavioural social engagement. So, the institution should take some responsibilities regarding student enrolment, motivate and encourage them regarding student engagement in higher education in massive open online courses.