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Barriers towards the continued usage of massive open online courses: A case study in India

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ABSTRACT

The COVID-19 pandemic has escalated the digitization of learning processes with the help of massive open online courses (MOOCs). However, many candidates drop out of MOOCs. Hence, this study aims to identify factors inducing resistance towards the continued usage of MOOCs. The aim is met with a case study in a prominent business school in India following a multimethod approach that involves a qualitative inquiry and an empirical survey. The factors identified following a grounded theory approach from the qualitative inquiry are classified into four groups that represent usage, value, tradition, and image barriers. The empirical survey validated the findings from the qualitative inquiry by confirming that all four barriers are significantly associated with resistance towards the continued usage of MOOCs. The present case study may deliver value to educators offering online courses and managers of MOOCs.

1. Introduction

The COVID-19 pandemic has escalated enrollments in massive open online courses (MOOCs) in recent times (Glantz & Gamrat, 2020). MOOCs are collections of self-guided online learning resources (Janelli & Lipnevich, 2021; Wei, Saab, & Admiraal, 2020). Well-known MOOCs include Udemy for average learners, Skillshare for creatives, and Coursera for academics, among others (Delfino, 2020). Coursera has 30 million users, the largest user base among MOOCs (Shah, 2018). The user base of Coursera increased by almost 50 percent between the end of 2019 and mid-2020 (ICEF, 2020). As the number of individuals enrolling in MOOCs is increasing, it is important for MOOCs that the enrolled individuals continue learning from the courses available to them (Ma & Lee, 2020).

Prior studies have identified multiple reasons that individuals abandon MOOCs as their learning modality (Dai, Teo, & Rappa, 2020; Reparaz, Aznárez-Sanado, & Mendoza, 2020; Wei et al., 2020; Hsu, 2021). The low terminal completion rates of MOOCs indicate that there is a lack of self-regulation and self-motivation compared with what is expected from the students (Dai et al., 2020; Wei et al., 2020; Moore & Wang, 2020). As students advance in the course curriculum, the level of efficiency further deteriorates (Hsu, 2021). Additionally, these MOOCs neither ensure the effectiveness of learning components nor provide any kind of institutional support for motivating the enrollers or contribute to the development of social relationships (Clow, 2013; Willging & Johnson, 2009; Hsu, 2021). Therefore, it is important to investigate the barriers to MOOCs’ continued usage to understand potential factors that trigger students to drop out of MOOCs (Khanra, Budankayala, & Doddi, 2020).

There is a gap in the literature regarding the exploration of barriers to MOOCs’ continued usage during the COVID-19 pandemic.

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Hence, our research question (RQ) is as follows: what are the barriers to the continued usage of MOOCs? The present study intends to address the RQ by conducting a case study in a prominent business school in India. A total of 39 postgraduate students who participated in this qualitative research declared that they discontinued pursuing at least one course on Coursera. Data from the qualitative inquiry were analyzed following a grounded theory approach. Consequently, the authors of the present study (referred to as ‘we’ hereafter) developed a conceptual model based on the findings from the qualitative inquiry. We designed an empirical survey to test the conceptual model. We prepared an online questionnaire for the empirical survey with inputs from the summarized findings yielded by the qualitative inquiry. Responses from a total of 221 students in a business school were collected through an online questionnaire were analyzed using partial least squares – structural equation modeling (PLS-SEM).

The results from our empirical data analysis validate that the usage barrier, value barrier, tradition barrier, and image barrier are significantly associated with resistance to use of MOOCs. Our case study offers important implications regarding the enhancement of virtual environments into higher education, which may bring a positive change in the learning experience (Janelli & Lipnevich, 2021).

This study is possibly a valued contribution to the existing literature, especially when conventional classroom training is discontinued due to the COVID-19 pandemic and students are opting to attend MOOCs (Glantz & Gamrat, 2020). The present study may inspire future researchers to explore users’ attitudes towards MOOCs in the post-COVID-19 era.

We structured the remaining sections in this paper as follows. The second section presents a review of the recent literature on the adoption of MOOCs. The third section presents the methodology followed for the qualitative enquiry and empirical survey. The fourth section reveals the results from empirical data analysis. The fifth section discusses findings from our case study in relation to prior studies. The sixth section highlights the theoretical and practical implications of our study. The limitations of the research are acknowledged along with the suggested future scope in this area in section seven, preceding the conclusion in section eight.

2. Literature review

The corporate world is dynamically incorporating advanced practices (Khanra, Dhir, Parida, & Kohtamäki, 2021), such as applications of big data analytics (Khanra, Dhir, Islam, & Mäntymäki, 2020) and blockchain (Tandon, Dhir, Islam, & Mäntymäki, 2020). In this regard, the COVID-19 pandemic has offered abundant opportunities for both students and working professionals to upgrade their competencies, when MOOCs act as a timely boon for the increasing number of novice learners to continue their education (Ma & Lee, 2020). MOOCs collaborate with various renowned institutions to offer a variety of courses online to any aspirants (Guerrero, Heaton, & Urbano, 2020; Guest, Wainwright, Herbert, & Smith, 2021). Hence, MOOCs empower learners by connecting them with widely acclaimed experts in various fields across the globe (Kawamorita, Salamzadeh, Demiryurek, & Ghajarzadeh, 2020; Cao et al., 2021).

2.1. Benefits offered by MOOCs

MOOCs have transformed the learning culture not only by empowering educators to expand their reach, but also by offering flexibility to students to learn at their leisure compared to traditional classroom settings (Arpaci, Al-Emran, & Al-Sharafi, 2020; Ma & Lee, 2020; Reparaz et al., 2020; Deng & Benckendorff, 2021). It is believed that learners tend to gain democracy of education because MOOCs enable them to access multiple resources available from anywhere and at any time (Arpaci et al., 2020; Ma & Lee, 2020; Hsu, 2021) and to share resources as per their convenience (Arpaci et al., 2020; Hsu, 2021; Cao et al., 2021). Dai et al. (2020) pointed out habit as the most influential variable for developing the intention to use or adopt MOOCs, which is claimed to be developed over a period of time after continuous usage.

2.2. Challenges faced by MOOCs

There is evidence that the continued usage of MOOCs is inaccessible because of a lack of instructions to access, as learners are unaware of MOOC knowledge sharing platforms (Arpaci et al., 2020; Ma & Lee, 2020; Zhang, Gao, & Zhang, 2021) or due to a lack of publicity or information about MOOCs (Ma & Lee, 2020). Dai et al. (2020) argued that continuous learning in MOOCs is a complicated multistep behavior. Therefore, the habit of learning in MOOCs would be difficult to develop, which consequently leads to learners’ dropout from MOOCs (Dai et al., 2020). Further extending their argument, it is mentioned that the low quality of pedagogy is one of the reasons for learners’ resistance to adopting MOOCs. Ma and Lee (2020) pointed out that a lack of technological infrastructure, inadequate skills, and problems in language derived from being nonnative English speakers are the reasons why learners resist adopting MOOCs in less developed countries.

2.3. Attitude towards MOOCs

Course design is crucial for course developers because it is evident that perceived usefulness has a very strong impact on the intention to adopt MOOCs, and it becomes easier for learners to complement online learning with their offline course content (Dai et al., 2020; Ma & Lee, 2020; Cao et al., 2021). The current generation has been found to be very perceptive to the continued usage of MOOCs, as learners are willing to upgrade themselves through different resources available to enhance their skills according to market requirements and improve their careers/salaries (Guerrero et al., 2020; Guest et al., 2021) and grow professionally (Reparaz et al., 2020) according to their time convenience. Learners from different countries and cultures demonstrate different intentions to use MOOCs as learning platforms (Arpaci et al., 2020; Ma & Lee, 2020; Moore & Wang, 2020). Ma and Lee (2020) suggested that the traditions and cultural environment of certain countries are too different from the learning environment in MOOCs to continue using
MOOCs. Reparaz et al. (2020) also found that learners with different objectives and commitments from different domains have different intentions to adopt MOOCs. Qi and Liu (2021) identified five indicators to evaluate MOOCs from analyzing students’ reviews. These indicators are instructors, course content, course assessment, MOOC platforms, and hot courses (Qi & Liu, 2021). This set of indicators aptly summarizes the behavioral attitude of students who intended to use MOOCs.

3. Methodology

The intellectual interest of our study is to identify key barriers to the continued usage of MOOCs. To achieve this aim, we studied the case of a business school in India. This institute was selected because of three reasons:

- First, the students in the institute represent the ethnic diversity in India.
- Second, the institute acquired licenses from Coursera to allow the students to upgrade their skills at zero cost.
- Third, the researchers had easy access to the students in the institute for conducting the data collection drive.

Our case study followed a multimethod approach as recommended by McMillan and Hwang (2002) in the absence of an instrument to measure barriers to the continued usage of MOOCs. The multimethod approach includes a review of the literature on intellectual interest, gaining insights from a qualitative inquiry, and validating insights from qualitative inquiry by administering an empirical survey, as presented in Fig. 1.

![Fig. 1. Sequential steps followed in the present case study.](image-url)
3.1. Qualitative inquiry

A qualitative inquiry is suitable to provide valuable insights, even from a small sample (Khanra & Joseph, 2019a). The data from our qualitative inquiry are analyzed following a grounded theory approach (Glaser & Strauss, 1967). The grounded theory approach involves three sequential phases for producing substantial insights about a social phenomenon (Glaser & Strauss, 1967; Yin, 2015), as follows:

- **Phase 1: Compiling data:** arranging qualitative data in a consistent format (Yin, 2015)
- **Phase 2: Disassembling data:** making analytic memos (Saldaña, 2013) and coding data (Hahn, 2008)
- **Phase 3: Reassembling data:** looking for patterns in coded data (Hahn, 2008; Saldaña, 2013) and summarizing the patterns (Yin, 2015).

3.1.1. Compiling data

We circulated an online open-ended questionnaire using Google forms to all 112 postgraduate students in the second year at the institute. Only those students who confirmed that they dropped out of at least one course on Coursera could answer the following questions:

- **Question 1:** Why did you join the course(s)? What were your expectations?
- **Question 2:** What do you not like about the course(s)? Explain with examples.
- **Question 3:** What changes do you recommend so that fewer people drop out from the course? Explain with examples.
- **Question 4:** Do you talk about these courses among your friends? What do you say to them? What do they tell you?
- **Question 5:** Would you like to pursue other courses on the same platform? Why so/why not?

The respondents were guaranteed anonymity for their responses, and they were assured that only members conducting this study would have access to their records. Prospects were invited to voluntarily participate in the study without granting any incentives in return. A total of 39 respondents confirmed that they dropped out of at least one course on Coursera. These 39 students constitute the sample of this qualitative inquiry. We received qualitative responses for the five open-ended questions from each of the respondents.

3.1.2. Disassembling data

We reviewed the compiled data obtained from 39 respondents with due attention to detailed information about possible factors that trigger them to drop out of Coursera courses. We prepared memos following careful interpretation for all the factors. These factors are coded, as presented in Table 1.

| Respondent | Code 1                  | Code 2                                 | Code 3                                | Code 4 |
|------------|-------------------------|----------------------------------------|---------------------------------------|--------|
| R1         | Not insightful          | Poor demonstration of course overview  | No relatable content                  | –      |
| R2         | Cannot concentrate      | Cannot understand                      | –                                     | –      |
| R3         | Inexperienced in attending online sessions | Tutor lacks subjective knowledge | –                                     | –      |
| R4         | Slow paced learning modules | Need creativity from instructors     | Tutor lacks domain expertise          | –      |
| R5         | No affirmative response | Haphazard course organization         | –                                     | –      |
| R6         | Slow explanation        | No rewards except certificates         | –                                     | –      |
| R7         | One-way interaction     | Need practical examples                | –                                     | –      |
| R8         | Unfamiliar with online sessions | – | –                                     | –      |
| R9         | Inadequate explanation on concepts | – | –                                     | –      |
| R10        | Less interaction between instructor and learner | Mock exercises required | –                                     | –      |
| R11        | Assessment procedures not updated | No perks except certificate | –                                     | –      |
| R12        | Less number of projects | –                                     | –                                     | –      |
| R13        | Lengthy session         | Unwanted quizzes                      | Less examples                         | –      |
| R14        | Not adaptable           | Poor teaching style                   | Inefficient communication             | –      |
| R15        | No constant motivation  | Lack of enthusiasm                    | –                                     | –      |
| R16        | Need real examples      | Monotony                               | –                                     | –      |
| R17        | Prerecorded videos      | No doubt clearing session             | No live interaction                   | –      |
| R18        | Unrecognizable accent of teacher | Poor study material                   | –                                     | –      |
| R19        | No subtitles available  | Unrecognizable accent of professor    | –                                     | –      |
| R20        | No personal interaction | Inflexible session                    | Boring presentations                  | –      |
| R21        | Lengthy questions       | Irrelevant discussions                | Too many assessments                  | Lengthy discussions |
| R22        | Boring lectures         | Course completion deadline            | Few examples                          | –      |
| R23        | Software not provided   | –                                     | –                                     | –      |

(continued on next page)
3.1.3. Reassembling data

We identified patterns in coded data from the analogies among the factors that triggered students to drop out of Coursera courses. Subsequently, it was found that the factors can be broadly classified into four groups, as shown in Table 2. Factors assigned to the same group provide relevant, if not analogous, information about their denotation.

We filtered the summarized information such that the theme of a group may be defined with key pointers (Khanra, Dhir, Islam, & Mäntymäki, 2021). Subsequently, we identified that the factors affecting students’ continued usage of MOOCs may be broadly classified into four groups that represent usage barriers, value barriers, tradition barriers, and image barriers, as summarized in Table 3.

Table 1 (continued)

| Respondent | Code 1                  | Code 2                  | Code 3                  | Code 4                  |
|------------|-------------------------|-------------------------|-------------------------|-------------------------|
| R24        | Less interaction        | Boring lectures         |                         |                         |
| R25        | Lengthy lectures         | Poor visual content     | Immature case studies   | Zero practical exposure |
| R26        | Bad teaching pattern    | Difficult to understand |                         |                         |
| R27        | No scope for doubt clear| No FAQs at session end  |                         |                         |
| R28        | No real time lecture    | Unnecessary information |                         |                         |
| R29        | Difficult to understand interface | - | - | |
| R30        | Need more examples      | Courses don’t help to get jobs | - | - |
| R31        | Many numerical problems | Need multiple choice questions | - | - |
| R32        | Less interaction        | -                        |                         |                         |
| R33        | Need new examples       | Uninterested backgrounds |                         |                         |
| R34        | Non-flexible sessions   | Tutor lacks theoretical foundation | - | - |
| R35        | Monotonous lectures     | Lectures not interesting | Unappealing visual information | No engaging topics |
| R36        | Unfamiliar user interface | -                      |                         |                         |
| R37        | Inefficient explanation | Need new examples       | unreliable information | -                        |
| R38        | Complex topics          | Lengthy lectures        |                         |                         |
| R39        | Tough to follow lectures| Heavy usage of jargons  |                         |                         |

Note: Factors inducing drop out of Coursera courses are coded from qualitative responses.

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Table 2

Reassembling qualitative data.

| Group  | Problems                                                                 |
|--------|--------------------------------------------------------------------------|
| Group 1| Bad teaching pattern (R26), cannot understand (R2), complex topics (R38), difficult to understand (R26), difficult to understand interface (R29), heavy usage of jargons (R39), inexperienced in attending online sessions (R3), no subtitles available (R19), not adaptable (R14), slow explanation (R6), slow paced learning modules (R4), tough to follow lectures (R39), unfamiliar user interface (R36), unfamiliar with online sessions (R8) |
| Group 2| Boring lectures (R22, R24), boring presentations (R20), immature case studies (R25), inadequate explanation on concepts (R9), irrelevant discussion (R21), lengthy discussions (R21), lack of enthusiasm (R15), lectures not interesting (R35), lengthy lectures (R25, R38), lengthy questions (R21), Lengthy session (R13), unnecessary information (R28), many numerical problems (R31), monotonous lectures (R35, R16), need creativity from instructors (R4), need multiple choice questions (R31), no constant motivation (R15), not insightful (R1), poor demonstration of course overview (R1), poor study material (R18), poor teaching style (R14), poor visual content (R25), too many assessments (R21), tutor lacks domain expertise (R4), tutor lacks subjective knowledge (R3), tutor lacks theoretical foundation (R34), unappealing visual information (R35), uninterested backgrounds (R33) unwanted quizzes (R13) |
| Group 3| Non-flexible session (R34), cannot concentrate (R2), course completion deadline (R22), inflexible session (R20), less interaction between instructor and learner (R10, R24, R32), less number of projects (R12), mock exercises required (R10), no affirmative response (R5), no doubt clearing session (R17), no FAQs at session end (R27), no live interaction (R17), no personal interaction (R20), no real time lecture (R28), no scope for doubt clearing (R27), one-way interaction (R7), pre-recorded videos (R17), software not provided (R23) |
| Group 4| Assessment procedures not updated (R11), courses don’t help to get jobs (R30), few examples (R22), haphazard course organization (R5), inefficient communication (R14), inefficient explanation (R37), less examples (R13), need more examples (R30), need new examples (R35, R37), need practical examples (R7), need real examples (R16), no engaging topics (R35), no perks except certificate (R11), no relatable content (R1), no rewards except certificates (R6), unrecognized accent of professor (R18, R19), unreliable information (R37), zero practical exposure (R25) |
3.2. Empirical survey

Establishment of the validation of study findings with a follow-up study ensures the robustness of the findings (Khanra & Joseph, 2019b). Therefore, we developed a research model comprising four independent variables associated with barriers to students’ continued usage of MOOCs (see Fig. 2).

![Proposed research model](image)

**Table 3**

| Theme          | Details                                                                                   |
|----------------|-------------------------------------------------------------------------------------------|
| Usage barriers | • Topics covered in lectures are often complex to understand on online mode               |
|                | • The pedagogy followed in lectures are often tough to follow                             |
|                | • No subtitles are provided for many video lectures                                        |
|                | • Heavy use of jargons often makes lectures complex for many learners                     |
| Value barriers | • Poor quality of the contents is often delivered in lectures                              |
|                | • Lectures often discuss irrelevant and unwanted information                              |
|                | • Lectures often provide lengthy and unnecessary assignments                              |
|                | • Presentations in lectures are boring and lack creativity                                |
| Tradition barriers | • It is difficult to concentrate on the topic discussed online                          |
|                | • No live interaction between the instructor and the students                             |
|                | • Doubt clearing sessions are generally unavailable post lectures                         |
| Image barriers | • Instructors’ accents are often incomprehensible                                          |
|                | • Lectures do not deliver practical knowledge                                             |
|                | • Course materials used in lectures are unreliable or not relatable                       |

Fig. 2. Proposed research model.
3.2.1. Hypotheses

To a large extent, barriers identified from the qualitative inquiry are similar to four out of five barriers (except risk barriers) discussed by innovation resistance theory (IRT) (Ram & Sheth, 1989). IRT speculates that users will shy away from highly advanced innovations if they do not perceive them to be user friendly because of the functional attributes of the innovation and psychological attributes of the user (Khanra, Dhir, Kaur, & Joseph, 2021). Usage barriers refer to difficulties in using MOOC technology (Khanra, Dhir, Kaur, & Joseph, 2021; Ram & Sheth, 1989). Value barriers include the existence of better alternatives for learning than adopting MOOCs (Khanra, Joseph, Dhir, & Kaur, 2020; Ram & Sheth, 1989). Tradition barriers in the study refer to unwillingness to adopt an innovation that has brought changes in students’ everyday learning patterns (Khanra, Dhir, Kaur, & Joseph, 2021; Ram & Sheth, 1989). Image barriers denote students’ hesitation to adapt to innovative online learning practices such as MOOCs because of the uncertainty of the outcome (Khanra, Joseph, et al., 2020; Ram & Sheth, 1989). Therefore, the hypotheses for our empirical survey are as follows:

H1. The usage barrier is associated with students’ resistance to continue using MOOCs.
H2. The value barrier is associated with students’ resistance to continue using MOOCs.
H3. The tradition barrier is associated with students’ resistance to continue using MOOCs.
H4. The image barrier is associated with students’ resistance to continue using MOOCs.

3.2.2. Questionnaire

The data for our empirical survey were collected using a closed-ended questionnaire using Google forms (see Table 4), designed to access 23 measurement items utilizing a five-point Likert scale. The closed-ended questionnaire was crafted with the help of the findings from the qualitative inquiry (see Table 3). Three experts refined the questionnaire independently. The experts were academicians with experience in conducting IRT-based studies and were familiar with MOOCs. Following their suggestions, the questionnaire was updated to improve its sequencing and organization and to express certain statements in more lucid ways.

We accounted for the respondents’ age, gender, and prior experience in dropping out of MOOCs, as these are potentially confounding variables in our study context. Therefore, the questionnaire included three questions capturing the respondents’ demographic profile (see Table 5).

3.2.3. Sample

We circulated the closed-ended questionnaire online in the month of November 2020 among all students enrolled in a prominent business school located in the southern part of India. The questionnaire was in English, as the same language is the medium for all programs at the business school. Since our empirical survey was dedicated to understanding the potential barriers associated with students’ resistance to continue using MOOCs, all students were welcomed to participate in the survey, irrespective of whether they dropped out of MOOCs. We followed confidentiality procedures for all participants, who took part in our study voluntarily. A total of 233 students completed the questionnaire, of which we discarded 12 responses that failed the consistency check. Hence, we utilized a sample of 221 responses for further data analysis (see Table 5).

Table 4
Questionnaire to measure resistance towards continue using MOOCs

The COVID-19 pandemic is escalating the enrolments on Massive Open Online Courses (MOOCs). We, a team of academic researchers, are studying the behavior of students undertaking MOOC to meet their learning needs. Please read the following statements carefully and share your perspective. Your responses will not be shared with anyone except the team members. Please report the extent you agree with the following statements by selecting an appropriate number between 1 and 5, where ‘1’ = strongly disagree, ‘2’ = slightly disagree, ‘3’ = neither agree nor disagree, ‘4’ = slightly agree, ‘5’ = strongly agree.
| Statement                                                                 | 1 | 2 | 3 | 4 | 5 |
|--------------------------------------------------------------------------|---|---|---|---|---|
| I often feel that topics covered in online lectures are complex and hence difficult to understand |   |   |   |   |   |
| Sometimes I find that the teaching pedagogy used in online lectures is tough to follow |   |   |   |   |   |
| We are not provided with any subtitles for many video lectures in online mode |   |   |   |   |   |
| I find lectures complex when the instructors use plenty of jargons during online sessions |   |   |   |   |   |
| I expect my use of MOOC to further increase in the future (-)            |   |   |   |   |   |
| I expect my use of MOOC to further decrease in the future                |   |   |   |   |   |
| I often feel that the content quality delivered in online lectures is poor |   |   |   |   |   |
| I often feel that irrelevant and unwanted information is discussed in online lectures |   |   |   |   |   |
| I often feel that lengthy and unnecessary assignments are provided in online lectures |   |   |   |   |   |
| I feel that the presentations used in online lectures are boring and lack creativity |   |   |   |   |   |
| I shall try to use MOOC’s whenever possible (-)                          |   |   |   |   |   |
| I shall try not to use MOOC’s whenever possible                          |   |   |   |   |   |
| I find it difficult to concentrate on the topic discussed online          |   |   |   |   |   |
| I often struggle to grasp concepts in online sessions due to the lack of live interaction with my instructors |   |   |   |   |   |
| I fail to clear my doubts post online sessions, unlike live classroom sessions |   |   |   |   |   |
| I intend to continue using MOOC’s in the future (-)                      |   |   |   |   |   |
| I intend to discontinue using MOOC’s in the future                       |   |   |   |   |   |
| I often fail to follow online sessions because the instructors’ accents are incomprehensible |   |   |   |   |   |
| I feel that lectures do not deliver practical knowledge in online sessions |   |   |   |   |   |
| I often feel that the course materials used in online lectures are unreliable or not relatable |   |   |   |   |   |

We would like to know a little more about you

Age:  

Gender: Male  Female

Did you drop out from any course available from MOOCs:  Yes  No

*Note: Scale items with negative signs (-) are included in the questionnaire for checking the consistency in responses. These scale items are not included in data analysis.*
4. Results and analysis

We deployed the two-step PLS-SEM approach to study the structural relationship of the variables (Khanra & Joseph, 2019b). Here, we used SPSS 23 and AMOS 23 to test the structural model and the hypothesis (Khanra, Joseph, et al., 2020) after evaluating the measurement validity and the model fit indices (Khanra, Dhir, Kaur, & Joseph, 2021).

4.1. Validity and reliability

We were able to justify the internal and external consistency of constructs through our findings from the confirmatory factor analysis. Each scale item’s internal consistency was tested by calculating the values for composite reliability (Nunnally, 1978). The constructs of the study possess sufficiently good convergent validity and have fulfilled the minimum threshold, as the factor loadings for all measurement items are above 0.50, the average variance extracted is above 0.50, and the composite reliability for these measures is above 0.70 (Byrne, 2010; Hair, Black, Babin, & Anderson, 2010) (see Table 6). Analysis of test results established sufficient discriminant validity, as the correlation coefficient among constructs was lower than the respective square roots of average variance extracted (Fornell & Larcker, 1981). The average variance extracted exceeded the average share variance and the maximum share variance in the case of all variables (see Table 6). Ultimately, we plugged the remaining factors into a single-factor model. As it was a poor fit, we could conclude that our dataset was not significantly affected by common method variance (MacKenzie & Podsakoff, 2012).

4.2. Measurement model

With a chi-square ($\chi^2$) value of 197.5 for 94 degrees of freedom ($df$), the value of the normed $\chi^2/df$ ratio was 2.1. This ratio indicates that the data fit our model, as $\chi^2/df < 3$ are considered to be the ideal values (Hair et al., 2010). The high values of the goodness-of-fit index (GFI = 0.89) and the adjusted goodness-of-fit index (AGFI = 0.85) in the presence of the low root mean square residual (RMR = 0.06) confirmed that the data fit our measurement model well (Browne & Cudeck, 1992; Hair et al., 2010). The root mean square error of approximation (RMSEA = 0.07) was close to the value of the perfect fit for this model (Byrne, 2010; Hair et al., 2010). Additionally, our model scored well in the Bentler-Bonett normed fit index (NFI = 0.85), Bollen’s incremental fit index (IFI = 0.93), the Tucker-Lewis index (TLI = 0.92), and Bentler’s comparative fit index (CFI = 0.93) (Browne & Cudeck, 1992; Hair et al., 2010).

4.3. Structural model

The structural model provided a satisfactory model fit ($\chi^2/df = 2.0$, GFI = 0.90, AGFI = 0.87, RMR = 0.07, and RMSEA = 0.07) (Browne & Cudeck, 1992; Hair et al., 2010). Hypothesis testing results are available from Fig. 3 and Table 7. We confirmed that usage

| Table 5 | Demographic characteristics of the study sample (N = 221). |
|--------------------------|---------------------------------|
| Demographic measures     | Category | Percentage (Numbers) |
| Age (in years)           | 16–19    | 4 (09)                |
|                          | 20–23    | 60 (132)              |
|                          | 24–27    | 29 (64)               |
|                          | 28–31    | 3 (6)                 |
|                          | 32–35    | 4 (10)                |
| Gender                   | Female   | 46.6 (103)            |
|                          | Male     | 53.4 (118)            |
| MOOC Dropout             | Yes      | 29 (64)               |
|                          | No       | 71 (157)              |

| Table 6 | Discriminant validity and reliability. |
|--------------------------|---------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Mean | SD  | CR  | AVE | MSV | ASV | UB  | VB  | TB  | IB  | RTM |
|--------------------------|---------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| UB | 3.57 | 0.90 | 0.77 | 0.54 | 0.47 | 0.42 | 0.73 | 0.89 | 0.63 | 0.78 |
| VB | 3.14 | 0.99 | 0.75 | 0.80 | 0.51 | 0.41 | 0.22 | 0.06 | 0.08 | 0.14 |
| TB | 3.67 | 0.96 | 0.71 | 0.49 | 0.46 | 0.4   | 0.2  | 0.2  | 0.6  | 0.78 |
| IB | 3.2  | 0.95 | 0.66 | 0.61 | 0.51 | 0.44 | 0.18 | 0.26 | 0.21 | 0.58 |
| RTM | 2.96 | 0.95 | 0.76 | 0.43 | 0.39 | 0.32 | 0.15 | 0.06 | 0.08 | 0.14 |

Note: SD = Standard deviation; CR = Composite reliability; AVE = Average Variance Extracted; MSV = Maximum Shared Squared Variance; ASV = Average Shared Squared Variance; Diagonal cells report squared roots of AVE.
barriers ($\beta = 0.12^*$), value barriers ($\beta = 0.27^{**}$), tradition barriers ($\beta = -0.41^*$), and image barriers ($\beta = 0.2^*$) were significantly associated with students’ resistance to using MOOCs.

5. Discussion

Although the COVID-19 pandemic necessitated enrollment in MOOCs, a considerable number of candidates dropped out of these courses. The present case study reports that a total of 39 of 112 s-year postgraduate students from a prominent business school in India anonymously confirmed in our qualitative inquiry that they had dropped out of at least one course on Coursera. Qualitative inquiry has identified four barriers that prevent the continued usage of MOOCs: usage barriers, value barriers, tradition barriers, and image barriers. Some of the findings from the qualitative inquiry are in line with those of prior studies. For instance, problems related to course communication (Arpaci et al., 2020; Zhang et al., 2021), technological constraints (Aragon & Johnson, 2004), and ambiguity of basic concepts (Skryabin, 2017; Deng et al., 2021) may be considered usage barriers. Students reportedly faced challenges from value barriers such as loss of interest in boring lectures (Aydin & Yazici, 2020; Deng et al., 2021) and a weak course curriculum (Moghadam, Zaefarian, & Salamzadeh, 2012; Deng et al., 2021; Zhang et al., 2021) and tradition barriers such as learning preference (Aragon & Johnson, 2004).

The findings from the qualitative inquiry offer new insights to the extant literature by amplifying and extending prior research. For example, respondents in the qualitative inquiry did not complain about the expertise of the faculty (Moghadam et al., 2012), inflexibility in course completion (Moghadam et al., 2012; Hsu, 2021), or other academic engagements (Aydin & Yazici, 2020; Deng et al., 2021). Such contradictions may be attributed to changes caused by the COVID-19 pandemic in learning environments. Furthermore, our study contributes to the literature by recognizing the importance of image barriers to the continued usage of MOOCs. In the context of MOOCs, image barrier may emerge from incomprehensible accents of instructors, lack of practical learning in lectures, and unreliable or not relatable course materials. An empirical survey validated findings from the qualitative inquiry. H1, H2, H3, and H4 in the empirical survey examined the associations of usage barriers, value barriers, tradition barriers, and image barriers,

\[ R^2 = 25.6\% \]

Note: * $p < 0.05$, ** $p < 0.01$

Fig. 3. Barriers towards the continued usage of MOOCs.

### Table 7
Hypotheses results.

| Hypotheses | $\beta$   | p    | Support |
|------------|-----------|------|---------|
| H1: UB $\rightarrow$ RTM | 0.118    | 0.048 | Yes     |
| H2: VB $\rightarrow$ RTM | 0.274    | 0.003 | Yes     |
| H3: TB $\rightarrow$ RTM | -0.410   | 0.039 | Yes     |
| H4: IB $\rightarrow$ RTM | 0.199    | 0.028 | Yes     |

bars ($\beta = 0.12^*$), value barriers ($\beta = 0.27^{**}$), tradition barriers ($\beta = -0.41^*$), and image barriers ($\beta = 0.2^*$) were significantly associated with students’ resistance to using MOOCs.
respectively, with students’ resistance to continue using MOOCs. The data from the empirical survey have supported all four hypotheses (H1, H2, H3, and H4). Thus, findings from the empirical survey substantiates the findings reported in previous studies on MOOCs (Albelbisi, Al-Adwan, & Habibi, 2021; Janelli & Lipnevich, 2021; Wei et al., 2020). Table 7 reveals that usage barriers, value barriers, and tradition barriers are positively associated with students’ resistance to continue using MOOCs. Hence, an increase in the strength of any of these three barriers will also increase the level of students’ resistance to continue using MOOCs. Our findings complement the contention raised by Qi and Liu (2021) from multiple aspects. For example, three indicators to evaluate MOOCs – namely, instructors, course content, and hot courses – are connected to the usage barrier in the present study. Similarly, the value barrier in this study connects to four indicators to evaluate MOOCs, such as, instructors, course content, course assessment, and hot courses.

The empirical survey presents an interesting finding about the association between the tradition barrier and resistance to continue using MOOCs (refer to Table 7). The negative value of the beta coefficient suggests that the respondents in our sample are more comfortable concentrating on lectures, grasping the concept taught, and clearing doubts about the online mode than about the traditional mode. This finding is a positive sign for educational technology (EdTech) companies worldwide. However, significant associations of usage barriers, value barriers and image barriers with resistance to continue using MOOCs may be a concern for EdTech companies.

6. Implications

This study may offer valuable implications to academicians, educators, library professionals, knowledge resource managers, and policymakers in the education sector about the use of MOOCs. Managers of MOOCs may also take note of the findings reported in this study to improve business in the post-COVID-19 era.

6.1. Theoretical implications

This research is a significant contribution to the literature, as it is one of the pioneers to recognize the potential factors that persuade students to discontinue participation in MOOCs. Findings from the qualitative inquiry connect well to the IRT (Ram & Sheth, 1989) in the context of MOOCs. For example, if subtitles are not incorporated in MOOCs, learners face a usage barrier (Hsu, 2021). There are value barriers when the content quality in MOOCs is substandard and MOOCs provide wasteful information (Deng et al., 2021; Zhang et al., 2021). As the scope of interaction between the pupil and the instructor is eliminated altogether (Hsu, 2021), learners face tradition barriers. If pupils are unable to process the accent of foreign instructors, they face image barriers, and most MOOCs emphasize theoretical knowledge instead of practical or application-based learning (Deng et al., 2021; Guest et al., 2021). Hence, this study contributes significantly to the existing literature directed by the IRT.

The results from the empirical survey confirm the guidance of IRT in understanding students’ resistance to continue using MOOCs. Four out of five barriers (except risk barriers) are in line with the IRT (Ram & Sheth, 1989). Risk barriers were not recognized in data from qualitative inquiry and hence were not examined in the empirical survey. In general, the literature on the diffusion of innovation is dominated by studies examining the initial acceptance of technological innovations. This case study may be a valuable addition to the literature on the diffusion of innovation for studying the usage continuance of a technological innovation. Superior innovations may have to address barriers creating resistance towards its usage continuance to stay relevant to society.

6.2. Practical implications

The observations of this study enable learners to self-evaluate whether MOOCs are suitable for their skills before enrolling in the course (Guest et al., 2021). Educators, on the other hand, can use the findings of this case study to enhance their creativity while presenting the module (Cao et al., 2021; Deng et al., 2021). It will also enable librarians and knowledge resource managers to identify MOOCs with lower levels of barriers and create a repository accordingly. With the growing reputation of MOOCs in conventional education institutions, education policy makers can streamline the effectiveness of MOOCs by lowering the barriers identified in this study.

Managers of MOOCs may take note about four barriers driving students’ resistance to continue using MOOCs, as identified in this case study.

The empirical survey revealed notable results. Usage barriers, value barriers and image barriers are found to be positively associated with students’ resistance to continuing using MOOCs, which reflects that students face multiple difficulties while taking an online course rather than in an offline mode. Hence, EdTech companies may develop courses using more creative and engaging content, including subtitles, reducing jargon, and removing irrelevant content to ensure usage continuance of MOOCs (Cao et al., 2021; Deng et al., 2021). Tradition barriers for our study have shown a negative association with resistance to use MOOCs. This brings particular attention to EdTech companies, as students are more comfortable concentrating on lectures, grasping the concept taught, and clearing doubts about the online mode (Hsu, 2021) than the traditional mode. This finding is a positive sign for EdTech companies worldwide. Interestingly, the negative association between tradition barriers and students’ resistance to continuing using MOOCs in the empirical survey reflects a counterintuitive relationship signifying a tremendous scope for EdTech companies to flourish worldwide.
7. Limitations and future scopes

It is pertinent to understand why people drop out of MOOCs, particularly when the COVID-19 pandemic has accelerated digitization of the learning processes. Therefore, this study may guide future research on MOOCs, pedagogy in management studies, and knowledge management, among other domains.

7.1. Limitations

We acknowledge that our findings are constrained due to the intrinsic limitations of the research. Primarily, this study was conducted based on data collected from only one institution in India. Current researchers may imitate our study in diverse contexts to generalize the findings of this research. Moreover, our findings are based on the responses from participants enrolled in management studies. We recognize that barriers creating resistance to continue using MOOCs may vary in the case of different demographic groups. Third, respondents to our qualitative inquiry had free access to the MOOCs they dropped out of. Intention to drop out from a MOOC may decrease when students pay for a course. Fourth, the empirical survey collected cross-sectional data from students. EdTech companies can create a holistic strategy following a longitudinal study design for collecting empirical data from respondents with a diversified background.

7.2. Future scopes

We propose three areas to enhance the findings of this case study research in the future, as subsequently discussed. First, adoption of online services may be impacted by digital divide (Khanra & Joseph, 2019b), and lack of access to technology (Ma & Lee, 2020). Future researchers may study the role of such technological barriers on continued usage of MOOCs. Second, future research can be focused on how online courses help to retain students, who otherwise find it difficult to complete their courses through higher educational institutions. This will help showcase the efficiency of MOOCs in removing some hurdles that are usually observed in traditional learning environments. Third, the scope of our empirical survey may be extended to cross-cultural studies to develop more user-friendly content. Fourth, a multiparty perspective may help future researchers to better understand the value creation for both students and teachers and how to synchronize the interests of all parties. Fifth, COVID-19 may have an impact on the mental health of students, and this can demotivate them from staying on track with learning, in general. Future researchers may identify ways to restore attachment from students with learning processes, particularly at universities where courses have gone online, and students feel that they are detached from the learning experience.

8. Conclusion

As the user base for MOOCs is growing, it is crucial to ensure usage continuance with MOOCs. In this context, the aim of the study was to identify barriers to the continued usage of MOOCs. We met the aim with a case study that followed a multimethod approach involving a qualitative inquiry and an empirical survey. We found grounded theory to be a suitable systematic process to qualitatively synthesize relevant information. The findings from the qualitative inquiry suggest that usage barriers, value barriers, tradition barriers, and image barriers are associated with resistance towards the continued usage of MOOCs. An empirical survey validated findings from the qualitative inquiry following PLS-SEM. The present study on barriers to the usage of MOOCs may aid these platforms in tapping into the market with better effectiveness in the post-COVID-19 era.

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