# The Influence of Self-regulation, Self-efficacy and Motivation as Predictors of Barriers to Satisfaction in MOOCs

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**Abstract.** This study focuses on identifying the barriers to satisfaction of MOOC participants, and the predictors of these barriers. Five hundred and forty-two English as a Second Language MOOC participants responded to pre- and post-questionnaires. Using exploratory factor analysis three kinds of barriers were identified, namely: 'Lack of interestingness/relevance', 'Lack of time/bad planning' and 'Lack of knowledge/technical problem'. The effects of the participant's age, gender and level of self-efficacy, motivation, self-regulation learning skills and the intention to complete the course were analyzed as predictors of those barriers. Theoretical and practical implications regarding online learner satisfaction are discussed.

**Keywords:** MOOCs · Self-efficacy · Self-regulated learning · Motivation · Barriers

## 1 Introduction

Participants may enroll in massive open online courses (MOOCs) for a variety of reasons [1–3], and may have a variety of expected learning outcomes. Learning outcomes in MOOCs, as a non-formal format of education, should be evaluated through learner-centered measures such as learner satisfaction [4, 5]. Learner satisfaction reflects students' perception of their learning experience [1, 6, 7] and is defined as the


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student's overall positive assessment of his or her learning experience [8]. The unstructured, self-paced nature of the MOOC learning environment creates unique types of barriers in the learning process, and these barriers, in turn, can affect the level of satisfaction of the students [9]. In the current study, we define barriers to satisfaction as issues that harm participant satisfaction. This research focuses on those barriers to satisfaction and the antecedes to these barriers. Recent studies identify several variables associated with MOOC participant learning, course outcomes, and barriers to learning. These variables include: age [10], pre-course intentions [3, 5, 11, 12], self-regulated learning [4, 13], levels of motivation and commitment to learning [1, 14] and the level of self-efficacy of the learner [15]. This study focuses on the associations between these variables and barriers to satisfaction in MOOCs. It focuses on two research questions: 1. What types of barriers to satisfaction do MOOC participants experience while studying in a MOOC? 2. How do age, gender, learner intentions, level of self-efficacy, level of motivation and level of self-regulation affect the different barriers to satisfaction that MOOC participants experience?

## 2 Method

### 2.1 Participants

Five hundred and forty-two ESL (English as a Second Language) MOOC participants participated in this study. The participants responded to a pre- and a post-questionnaire. Data were collected between July 2016 and February 2018. The course was free of charge, had no prerequisites, and no official start and end dates. The mean age of the sample was 32.4 years (St.d. 11.70; age range: 18–81 years; 71% females, 29% males).

### 2.2 Instruments and Procedure

**Dependent Variable.** *Barriers* – In the post-questionnaire MOOC participants were asked to rate 12 barriers to satisfaction that they have faced during the course. The list of barriers was adapted from Henderikx *et al*. [16, 17] and the items were rated on a 7-point Likert scale ranging from 1 ('not at all') to 7 ('fully'). An exploratory factor analysis with Varimax rotation was used in order to answer the first research question. The exploratory factor analysis (EFA) revealed three factors that accounted for 65.73% of the overall variance. The factors that were identified are: (1) "Lack of interestingness/relevance", (2) "Lack of time/bad planning", (3) "Lack of knowledge/technical problem". Factor scores were calculated for each of the factors.

**Independent Variables.** An online pre-course questionnaire was administered at the beginning of the course. The questionnaire consisted of: *Demographics* (Participants reported gender and age), *Intentions to complete the course activities* (single item), *Self-efficacy for learning and performance* and *motivation* (MSLQ) [18] and *Online self-regulated learning skills (OLSQ)* [19].

## 3 Results

For the second research question, three prediction models for the three indices of barriers to satisfaction were created, using stepwise linear regression models. Statistically significant findings are reported. Factor 1, "Lack of interestingness/relevance" was negatively predicted by the SRL indices *self-evaluation* and *study strategy*, and positively by the SRL index *help-seeking*. Factor 2, "Lack of time/bad planning" was negatively predicted by the two SRL indices *goal setting*, and *study strategy* and the *age* of the respondent, and positively by the SRL index *time management*. Factor 3, "Lack of knowledge/technical problem" was predicted significantly negatively by the level of the participant's *self-efficacy* and positively by the level of his or her *extrinsic motivation* toward the participation and by the SRL index *time management*. Interestingly the pre-course *behavioral intentions* of the participants, *gender*, and the SRL index *environmental setting* did not predict any type of barriers.

## 4 Discussion

The goal of this study was to identify barriers to learner satisfaction in MOOCs, and the predictors of those barriers. Three kinds of barriers to satisfaction were identified. Results suggest that the antecedes of the barriers vary. The three predictors of the **first factor** that dealt with barriers regarding interest and relevance of the course materials were indices of self-regulation. The predictors help-seeking, self-evaluation and study strategy suggested that we can lower the impact of this barrier by improving the learning skills of the participants. In order to help learners to overcome the **second factor** that deals with barriers regarding lack of time or bad planning, they should be encouraged to set educational goals or sub-goals at the beginning of the MOOC and to improve their study strategy. Yet, it is important to note that learners who try to manage their time too strictly might also face the lack of time or bad planning barriers. The findings also show that younger participants are more likely to experience the second barrier. This finding is complementary to the findings of Henderikx *et al*. [10], who argue that specific barriers predominantly appear at specific life phases. Course designers and instructors should pay more attention to younger learners, who are more likely to face this type of barrier. **The third factor**, "lack of knowledge or a technical problem", was negatively associated with the SRL dimension of time management, the level of self-efficacy and the level of the external motivation of the participant. Participants who scored low on self-efficacy and had a high level of *external* motivation were more likely to face those barriers. Apparently, participants with low self efficacy and high external motivation were likely to label the difficulties they experienced as technical and/or a result of lack of knowledge. Interestingly, although studies found that the pre-course intention to complete the course predicts the fulfilling of the course obligations and the earning of a certificate [20], in our study it did not predict subjective barriers to satisfaction. Furthermore, the gender of the participant did not play a role in determining the barriers to satisfaction. The gender results are in line with the findings

of Rabin *et al.* [4] that showed no differences between females and males regarding learner satisfaction while studying in a MOOC. Future research will explore how participants' intentions and gender affected their actual learning behavior and their learning outcomes.

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