Exploring predictors of success in Massive Open Online Courses (MOOC)

Explorando los predictores de éxito en los Cursos en Línea Masivos y Abiertos (MOOC)

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Abstract

Massive Open Online Courses (MOOC) play an important role in educational equity and lifelong learning, offering accessible education that is free from barriers such as time constraints or geographical limitations. Consequently, the number of MOOC enrollments is high, as is the rate at which students withdraw from the course. The typical completion rate is less than 10%, underscoring the necessity of identifying factors that precipitate early withdrawal. This research aims to determine the extent to which social and emotional competencies, perceived stress, expectations, and satisfaction predict MOOC completion. An ex post facto methodological design was employed, in which 416 students completed the Social and Emotional Learning Scal, the Sociodemographic Data Questionnaire, the Expectations Questionnaire, the Perceived Stress Scale, and the Satisfaction Questionnaire. Additionally, data on successful MOOC completion was collected from each participant. Subsequently, five models were constructed using binomial logistic regression analysis. While satisfaction was identified as the most robust predictor of course completion, social and emotional competencies, perceived stress, and expectations also demonstrated significant results. This study represents the only research to date that has explored the predictive ability of these variables, offering a novel perspective on predictors of MOOC success.

Keywords: Massive Open Online Courses, MOOC, social and emotional learning, stress, satisfaction, predictor variables.

Resumen

Los Cursos en Línea Masivos y Abiertos (MOOC) desempeñan un papel importante en la equidad educativa y el aprendizaje permanente, promoviendo un aprendizaje sin barreras de entrada, limitaciones de tiempo, o restricciones geográficas. En consecuencia, el número de matrículas de los MOOC es elevado, así como su índice de abandono. De hecho, la tasa media de finalización con éxito suele ser inferior al 10 %, lo que hace evidente la necesidad de identificar cuáles son los factores que estimulan el abandono temprano. La presente investigación tuvo como objetivo analizar hasta qué punto las competencias sociales y

emocionales, el estrés percibido, las expectativas, y la satisfacción predicen la finalización del MOOC. Se adoptó un diseño metodológico ex post facto en el que 416 estudiantes cumplimentaron la Escala de Aprendizaje Social y Emocional, el Cuestionario de Datos Sociodemográficos, el Cuestionario de Expectativas, la Escala de Estrés Percibido y el Cuestionario de Satisfacción. Asimismo, se recogieron datos sobre la finalización con éxito del MOOC de cada uno de los participantes. Posteriormente, se construyeron cinco modelos mediante el análisis de regresión logística binomial. A pesar de que la satisfacción demostró ser el predictor más robusto de la finalización del curso, las competencias sociales y emocionales, el estrés percibido, y las expectativas también obtuvieron resultados significativos. Este estudio constituye la única investigación hasta la fecha que ha explorado la capacidad predictiva de estas variables, ofreciendo una nueva perspectiva sobre los predictores del éxito en los MOOC.

Palabras clave: Cursos en Línea Masivos y Abiertos, MOOC, aprendizaje social y emocional, estrés, satisfacción, variables predictivas.

INTRODUCTION

When Massive Open Online Courses (MOOC) first came to global attention in 2012, both the press (e.g., Pappano, 2012) and experts (Hone & El Said, 2016; Reich & Ruipérez-Valiente, 2019) anticipated an unprecedented transformation in the field of education. From that point forward, throughout the subsequent decade, MOOC were extensively used globally with the aim of enhancing the quality and accessibility of education (Liu et al., 2022). The impact of the COVID-19 pandemic further intensified this trend (Huang et al., 2023). The suspension of conventional face-to-face education has led to a significant shift toward the use of MOOC as alternative teaching and learning resources in many countries and regions (Huang et al., 2023; Yilmaz et al., 2021).

In 2008, Dave Cormier and Bryan Alexandra coined the term "Massive Open Online Course" (MOOC) to describe an online training action entitled "Connectivism and Connected Knowledge" by Siemens and Downs (Huang et al., 2023). The term "massive" is used to describe the capacity to enroll a significant number of individuals and gather extensive data on their participation and performance. This platform can accommodate up to a thousand participants. In contrast, the terms "open" and "online" pertain to the accessibility of the course, as any individual with an Internet connection can gain access to the training without prior qualifications or assessment. Finally, the term "course" distinguishes MOOC from other educational resources such as YouTube videos, Wikipedia, and open educational resources. Consequently, MOOC are typically regarded as a specific category of open training initiatives that are offered for a limited duration, with a clearly defined commencement and conclusion date, structured in a sequence of activities and resources. The duration of the course may vary, typically spanning a period of one to twelve weeks, in which participants have access to a range of resources (i.e., pre-recorded videos, online articles, and external web pages). Evaluation is conducted through the completion of questionnaires and peer-reviewed assignments (Mulik et al., 2020).

MOOC play a significant role in advancing educational equity and fostering lifelong learning because they offer pathways for individuals to access knowledge without encountering traditional barriers, such as entry fees, time limitations, and geographical restrictions (Huang et al., 2023). These courses are a means of democratizing education and ensuring that the same knowledge is accessible to students regardless of geographical location (Mulik et al., 2020). This is one of the primary reasons why MOOC environments, distinguished by their expansive and open nature, attract a diverse student body comprising individuals with varying learning paces, levels of commitment, and competence (Alonso-Mencía et al., 2019). These training actions integrate the connectivity of social networks, the proprietary knowledge of recognized experts in a given field, and a collection of freely accessible online resources (McAuley et al., 2010). However, they demand the active engagement of the learner, which must be organized according to their learning objectives, knowledge, skills, and interests (McAuley et al., 2010). This requires learners to be autonomous and create their own learning path, which is often done with little or no guidance (Min & Jingyan, 2017).

MOOC exhibit similarities to other conventional training modalities, yet they are typically accessible at no cost and do not require prerequisites beyond Internet connectivity (McAuley et al., 2010). Similarly, MOOC are typically founded on a connectivity pedagogical approach, which facilitates the expansion of learning across diverse domains and disciplines, transcending the limitations of conventional online courses (Alario-Hoyos et al., 2017). In essence, MOOC facilitate the creation of knowledge in the digital realm, enabling diverse populations to learn according to their individual needs, aspirations, and prior experiences (McAuley et al., 2010).

However, one of the most notable characteristics of MOOC is their high enrollment numbers, although they also tend to have relatively low retention or high dropout rates (Huang et al., 2023; Mulik et al., 2020). The mean successful completion rate of these training programs is typically below 10%, with no discernible improvement in recent years (Narayanasamy & Elçi, 2020; Reich & Ruipérez-Valiente, 2019).

It is evident that identifying the factors that contribute to early MOOC dropout has been the primary objective of research in this field (Huang et al., 2023). Some experts have identified the intrinsic characteristics of these courses as significant obstacles to successful completion. As these courses do not require academic training or previous experience, students may face difficulties due to an excessive level of difficulty, ultimately leading to dropout (McAuley et al., 2010). Additionally, temporal and spatial separation can reduce the quality of activities (Liu et al., 2022). These factors, in conjunction with the free nature of the courses, may contribute to a reduction in participant engagement, which could subsequently elevate the early dropout rate of MOOC (McAuley et al., 2010). However, other researchers have identified additional factors with potential causal roles, including course design (Aldowah et al., 2019; Hone & El Said, 2016), feedback students receive (Aldowah et al., 2019; Ogunyemi et al., 2022), the difficulty and duration of the course (Aldowah et al., 2019; Huang et al., 2023; Dalipi et al., 2018), pedagogy (Huang et al., 2023), interaction (Aldowah et al., 2019; Crane & Comley, 2020; Hone & El Said, 2016), and forum discussions (Galikyan et al., 2021; Liu et al., 2022).

In addition to the intrinsic characteristics of MOOC, other variables associated with participants that could determine successful completion of these training actions can be identified, such as (a) cognitive skills (Aldowah et al., 2019; Huang et al., 2023); (b) previous experience (Aldowah et al., 2019); (c) social support (Aldowah et al., 2019); (d) engagement (Aldowah et al., 2019; Fincham et al., 2019; Xu et al., 2020); (e) motivation (Aldowah et al., 2019; Dalipi et al., 2018); (f) family circumstances (Aldowah et al., 2019); (g) work circumstances (Aldowah et al., 2019); (h) social status (Huang et al., 2023); (i) active participation (Ogunyemi et al., 2022); (j) personality (Ogunyemi et al., 2022); and (k) emotional factors (Huang et al., 2023; Liu et al., 2022).

In recent years, Spain has distinguished itself as a country where the development of MOOC has increased at a remarkable pace. Numerous higher education institutions and platforms have placed significant emphasis on designing and implementing these innovative learning experiences and training programs. Among these prominent entities, Miríada X, UNED COMA, UniMOOC, and Unx are noteworthy examples (Chaves-Montero et al., 2020; Sarabia, 2016). Spanish research on this topic is noteworthy for both its quantity and quality. According to a systematic review by Zhu et al. (2020), Spain is the fourth country in the world with the highest number of publications on these training actions, trailing only the United States, China, and the United Kingdom. In this regard, it is necessary to first mention the study by Alonso-Mencía et al. (2021), which identified gender, computer experience, self-regulated learning skills, and motivation as variables that could predict successful completion of MOOC. Nevertheless, other research has examined additional factors that may influence MOOC completion success, including student interaction with the instructor (Jiménez Álvarez et al., 2018), course design (Castaño-Muñoz et al., 2018), perceived usefulness of the training action (Castrillo & Sedano, 2021), digital competence (Castaño-Muñoz et al., 2018), and employment status (Castaño-Muñoz et al., 2018).

In light of the objectives of the extant studies aimed at discerning the predictive variables of successful completion of MOOC (e.g., Huang et al., 2023), the majority of which have concentrated on the inherent characteristics of these courses (Zhu et al., 2020), as well as the methodological constraints associated with them, it is evident that further research is required to ascertain the variables that can predict successful completion of MOOC. Consequently, the study expanded the existing knowledge regarding factors that predict successful MOOC completion. To this end, this research aimed to analyze the extent to which social and emotional competencies, perceived stress, expectations, satisfaction, and certain sociodemographic and academic variables (i.e., age, gender, educational level, employment status, and area of study or work) predict successful completion of MOOC.

METHODS

Sample

This research involved 416 students enrolled in a MOOC developed at the University of Granada (Spain) with an age range of 18–70 years (M = 31.92; SD = 13.38). Of the total number of participants, 28.92% (n = 120) were male and 71.08% (n = 295) were female, representing 12 nationalities. Additionally, the participants had diverse levels of education (i.e., post-secondary non-tertiary education, middle and upper vocational education and training, bachelor's, master's, and Doctoral levels), areas of study or work (i.e., education; arts and humanities; information and communication technologies; health and welfare; social sciences, journalism and information; natural sciences, mathematics and statistics; engineering, industry, and construction; business, administration, and law; agriculture, forestry, fishing, and veterinary; and services), and employment status (i.e., student, looking for a job, unemployed, working part-time and full-time, and retired) (Table 1).

Table 1
Descriptive Data of Study Variables

Variables	Frequencies	Percentages
Sex		
Male	120	28.90
Female	295	71.10
Nationality		
Spanish	382	92.00
Ecuadorian	9	2.20
Chilean	6	1.40
Colombian	5	1.20
Argentinian	2	0.50
Panamanian	4	1.10
Mexican	2	0.50
French	1	0.20
Guatemalan	1	0.20
Italian	1	0.20
Tunisian	1	0.20
Ukrainian	1	0.20
Levels of education		
Post-secondary non-tertiary education	110	26.50
Middle vocational education and training	2	0.50
Upper vocational education and training	7	1.70
Bachelor's level	134	32.30
Master's level	40	9.60
Doctoral level	122	29.40
Employment status		
Student	208	50.10
Unemployed	4	1.00
Part-time work	2	0.50
Full-time job	26	6.30
Retired	174	41.90
Looking for a job	1	0.20
Study and work area		
Education	260	62.70
Arts and humanities	35	8.40
Information and communication technologies	21	5.10
Health and wellness	28	6.70
Social sciences, journalism, and information	15	3.60
Natural sciences, mathematics, and statistics	14	3.40
Engineering, industry, and construction	20	4.80
Business, administration, and law	15	3.60
Agriculture, forestry, fishing, and veterinary medicine	3	0.70

Services	4	1.00

The sample selection was based on a non-probabilistic technique, specifically by convenience (Kalton, 2020). To this end, the 2,144 individuals who had enrolled in the MOOC were requested to participate in the study on a voluntary basis. Of these, 1,292 completed the MOOC successfully, representing a successful completion rate of 60.30%. This resulted in a response rate of 19.40% for this research.

Instruments

The Social and Emotional Learning Scale is a Likert-type scale consisting of 30 items of zero to four points (1 = Never or rarely; 2 = Occasionally; 3 = Often; and 4 = Almost always or always), grouped into five areas of social-emotional competence (Fernández, Moreno et al., 2022): self-awareness, social awareness, self-control, relationship skills, and responsible decision making. This scale was used because it is one of the few instruments available to assess the different areas of competence of the social and emotional learning model in the Spanish population, as well as to present adequate reliability and validity (Fernández, Moreno et al., 2022). In this sense, the results of the scale validation confirmed the first-order correlated five-factor model, yielding satisfactory goodness-of-fit indices and statistics: Satorra-Bentler Chi-square (S-Bχ2) (395; n = 1385) = 1087.29; p > 0.05; S-Bχ2/degrees of freedom = 2.75; Comparative Fit Index (CFI) = 0.97; Goodness of Fit Index (GFI) = 0.98; Standardized Root Mean Squared Residual (SRMR) = 0.05; Root Mean Square Error of Approximation (RMSEA) = 0.04 (90% Confidence Interval = 0.03-0.04) (Fernández, Moreno et al., 2022). Similarly, the results pertaining to the external evidence of the validity of the instrument demonstrated a consistent pattern of positive relationships between the various domains of socioemotional competence, including between them and the variables of life satisfaction and academic performance (Fernández, Moreno et al., 2022). Regarding the reliability of the scale, the results revealed a Cronbach's alpha (α) of between 0.70 and 0.84, and a McDonald omega (ω) of between 0.71 and 0.84, with composite reliability and variance extracted indices above 0.77 and 0.67, respectively, in the different areas of socioemotional competence (Fernandez, Moreno et al., 2022). In this study, it yielded an α of between 0.72 and 0.79, and a ω of between 0.72 and 0.80 in the different areas of socioemotional competence.

The Spanish version of the Perceived Stress Scale is a Likert-type scale composed of 13 items of zero to four-point estimation (i.e., 0 = Never; 1 = Almost never; 2 = Occasionally; 3 = Often; and 4 = Very often), and its average allows the calculation of the total score for each participant (Trujillo & González-Cabrera, 2007). This instrument was selected because it is one of the most frequently used for measuring perceived stress, in addition to exhibiting satisfactory psychometric properties (Trujillo & González-Cabrera, 2007). Exploratory factor analysis yielded evidence of the unidimensional internal structure of the scale, presenting an α of 0.79 (Trujillo & González-Cabrera, 2007), although subsequent studies have confirmed its internal structure with quite adequate goodness-of-fit indices and statistics (e.g., Fernández, Flores & Arco, 2022): S-Bχ2 (65, n = 403) = 260.56; p < 0.001; S-Bχ2/degrees of freedom = 4.01; CFI = 0.94; GFI = 0.90; RMSEA = 0.09 (90% Confidence Interval = 0.08 - 0.10). In fact, this study yielded an α of 0.69 and a ω of 0.71.

The Sociodemographic Data Questionnaire is an ad hoc self-report questionnaire composed of six items with different response alternatives, aimed at collecting relevant sociodemographic information (i.e., age, sex, nationality, educational level, employment status, and area of study or work) from MOOC participants. In particular, the items pertaining to age and nationality were designed to elicit open-ended responses, whereas the remaining items offered a range of options for gender (i.e., male, female), levels of education (i.e., post-secondary non-tertiary education, middle and upper vocational education and training, bachelor's, master's and Doctoral levels), areas of study or work (i.e., education; arts and humanities; information and communication technologies; health and welfare; social sciences, journalism and information; natural sciences, mathematics and statistics; engineering, industry and construction; business, administration and law;

agriculture, forestry, fishing and veterinary; and services), and employment status (i.e., I am studying, I am looking for a job, I am unemployed, I am working part-time, I am working full-time, I am retired).

The Expectations Questionnaire is an ad hoc Likert-type scale composed of three one- to five-point items (i.e., 1 = Strongly Disagree; 2 = Slightly Disagree; 3 = Neither Agree nor Disagree; 4 = Slightly Agree; and 5 = Strongly Agree) aimed at ascertaining participants' initial expectations of the MOOC. The scale was comprised of three items: (1) "I believe that this MOOC will contribute to considerably improving my knowledge of the subject matter"; (2) "I believe that this MOOC will have a positive impact on my professional development or employability profile"; and (3) "I expect to take this MOOC 100%, completing it successfully".

The Satisfaction Questionnaire is an ad hoc Likert-type scale composed of three items of estimation of one to five points (i.e., 1 = Strongly Disagree; 2 = Slightly Disagree; 3 = Neither Agree nor Disagree; 4 = Slightly Agree; and 5 = Strongly Agree) aimed at ascertaining the participants' satisfaction with the development of the MOOC. The scale was comprised of three items: (1) "once completed, I can confirm that this MOOC has contributed to considerably improve my knowledge of the subject matter"; (2) "once completed, I can confirm that this MOOC has had a positive impact on my professional development or employability profile"; and (3) "once completed, I can confirm that this MOOC is 100% recommendable".

Successful MOOC completion was coded as a dichotomous variable with the values 1 = Yes and 2 = No. This assessment was conducted after confirming that the participants completed and passed the mandatory MOOC activities.

Design and procedure

The methodological design was ex post facto (Ato et al., 2013). The research was conducted in accordance with the Declaration of Helsinki (World Medical Association, 2013) and was previously approved by the Ethics Committee of the University of Granada (3496/CEIH/2023).

Regarding the procedure, voluntary participation was requested from those who had enrolled in the MOOC. A total of 652 individuals completed the Social and Emotional Learning Scale (Fernández, Moreno et al., 2022), the Sociodemographic Data Questionnaire, and the Expectations Questionnaire before the initiation of the MOOC. Subsequently, once the period for taking the MOOC was over, the 652 participants were again asked to participate voluntarily, of whom 416 completed the Perceived Stress Scale (Trujillo & González-Cabrera, 2007) and the Satisfaction Questionnaire. Furthermore, successful completion of the MOOC was determined for each participant after confirming that they had completed and passed each of the four modules in which the MOOC was composed.

Data analysis

First, the minimum sample size (n = 135) was determined. The following factors were considered in the calculation: number of predictors (14), significance level (0.05), expected effect size (0.15), and desired level of statistical power (0.8) (Soper, 2024).

Second, a descriptive analysis of the data was conducted, and the internal consistency of the Social and Emotional Learning Scale (Fernández, Moreno et al., 2022) and the Spanish version of the Perceived Stress Scale (Trujillo & Gonzalez-Cabrera, 2007) was calculated through α and ω.

Third, to achieve the research objective, binomial logistic regression was performed, resulting in the construction of five models designed to examine the relationships between predictor variables and the successful completion of MOOC. Each model assesses the percentage of variance in successful MOOC completion (i.e., the dependent variable) that can be predicted by independent variables, as indicated by the R-squared index (located at the bottom of each column). Model 1 incorporates demographic (i.e., gender and

age) and academic or occupational variables (i.e., educational level, employment status, and area of study or work); model 2 includes social and emotional competencies (i.e., self-awareness, social awareness, self-control, relationship skills, and responsible decision-making); model 3 integrates perceived stress; model 4 adds expectations about the course; and model 5 incorporates satisfaction with the course. Thus, the final model includes all study variables that predict successful MOOC completion.

The statistical analysis was performed using the JAMOVI statistical program version 2.3 (The jamovi project, 2022).

RESULTS

Table 2 presents the descriptive results of the variables analyzed.

Table 2

Means and Standard Deviations of Study Variables

Variables	Completion	N	*M*	*SD*
Self-awareness	No	60	3.28	0.35
	Yes	355	3.19	0.42
Social awareness	No	60	3.04	0.39
	Yes	355	3.15	0.32
Self-control	No	60	3.32	0.32
	Yes	355	3.26	0.39
Relationship skills	No	60	3.21	0.34
	Yes	355	3.13	0.27
Responsible decision making	No	60	3.19	0.73
	Yes	355	3.21	0.43
Stress	No	60	3.74	0.45
	Yes	355	3.81	0.38
Expectations	No	60	4.48	0.97
	Yes	355	4.65	0.82
Satisfaction	No	60	2.66	1.09
	Yes	355	4.60	0.44

Note: M = Mean; SD = Standard Deviation

Table 3 presents the results of the binomial logistic regression analysis for each model constructed in this study. The Wald chi-square test was statistically significant for all models, indicating that, in general, the model fits the data.

Model 1 presents the effects of the control variables, highlighting only the participants' areas of study and work. On the other hand, among the social and emotional competencies, social awareness was statistically significant in Models 2, 3, and 4. Likewise, in Models 3 and 4, relationship skills also obtained significant values. Furthermore, in Model 4, when the variables of stress and expectations were included, all social and emotional competencies proved to be predictors of successful MOOC completion. It is noteworthy that in Model 5, when the satisfaction variable was included, only self-awareness remained a significant predictor of social and emotional competencies. A similar pattern emerges regarding the stress and expectations variables. While these were identified as significant in Models 3 and 4, they were no longer found to be significant in Model 5.

Therefore, Model 5 is the best fit, as shown in Table 3, and it can predict a greater amount of variance in successful MOOC completion, as indicated by the R2 represented by Cox and Snell's R2 and Nagelkerke's R2. Accordingly, this Model demonstrates that self-awareness and satisfaction are predictive variables of successful MOOC completion.

Table 3
Regression Analysis Results for Predict MOOC Completion

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	-1.39* (0.68)	-2.49 (2.79)	-1,64 (2.88)	-1.52 (3.21)	18.62 (11.54)
Age	-0.03 (.02)	-0.02 (0.02)	-0.01 (0.02)	-0.02 (0.02)	0.10 (0.06)
Sex					
Woman	-0.63 (0.41)	-0.57 (0.43)	-0.53 (0.44)	-0.71 (0.47)	0.70 (1.28)
Levels of education					
Middle vocational education and training	-0.02	20.44 (2797.44)	21.79 (4612.20)	22.79 (4612.20)	29.30 (7604.23)
Upper vocational education and training	1.41 (1.02)	1.03 (1.03)	1.21 (1.03)	1.05 (1.06)	-0.35 (2.25)
Bachelor's level	0.38 (0.49)	0.09 (0.52)	0.25 (0.53)	0.06 (0.55)	0.15 (2.07)
Master's level	1.00 (0.79)	0.70 (0.82)	0.98 (0.83)	1.25 (0.90)	-0.53 (3.27)
Doctoral level	-0.04 (0.83)	-0.78 (0.87)	-0.70 (0.88)	-0.53 (0.96)	-2.47 (3.29)
Employment status					
Looking for a job	-14.67 (1748.28)	-14.59 (1648.15)	-15.65 (2682.39)	-16.09 (2588.76)	-14.13 (4743.87)
Unemployed	-14.68 (2797.44)	-14.17 (2797.44)	-15.21 (4612.20)	-14.47 (4612.20)	-12.98 (7604.24)
Part-time work	0.43 (0.66)	0.18 (0.67)	0.15 (0.68)	-0.09 (0.70)	1.03 (1.63)
Full-time job	0.83 (0.73)	0.91 (0.74)	0.80 (0.71)	0.74 (0.79)	0.36 (2.42)
Retired	-17.91 (3956.18)	-18.83 (3956.18)	-20.60 (6522.64)	-21.57 (6522.64)	-21.44 (10754.01)
Study and work area					
Arts and humanities	-0.32 (0.79)	0.20 (0.82)	0.47 (0.83)	0.92 (0.89)	-0.96 (3.97)
Information and communication technologies	-0.13 (0.85)	0.12 (0.88)	0.25 (0.88)	0-.758 (0.96)	-9.77 (69.29)
Health and wellness	1.24** (0.49)	1.73*** (0.53)	1.73** (0.54)	1.48** (0.57)	-0.27 (1.43)
Social sciences, journalism, and information	-15.42 (992.18)	-15.30 (946.90)	-16.28 (1525.89)	-16.28 (1484.72)	-16.53 (2334.69)
Natural sciences, mathematics, and statistics	2.84*** (0.64)	3.07*** (0.69)	3.07*** (0.70)	3.91*** (0.77)	1.42 (2.43)
Engineering, industry, and construction	0.75 (0.62)	1.32* (0.66)	1.57* (0.68)	1.51 (0.71)	0.93 (1.73)

Business, administration, and law	0.92 (0.70)	0.83 (0.74)	0.52 (0.75)	0.38 (0.79)	1.12 (1.87)
Agriculture, forestry, fishing and veterinary medicine	-15.20 (1905.94)	-15.11 (1765.68)	-16.26 (2865.50)	-17.23 (2782.04)	-12.03 (5519.35)
services	1.93 (1.14)	1.12 (1.42)	0.78 (1.37)	0.58 (1.61)	-8.07 (53.13)
Self-awareness		0.53 (0.47)	0.42 (0.48)	1.02*** (0.53)	3.35*** (1.48)
Social awareness		-1.78*** (0.59)	-1.78** (0.58)	45.97*** (10.85)	42.97 (25.16)
Self-control		0.68 (0.55)	1.09 (0.59)	48.76*** (10.93)	45.11 (25.23)
Relationship skills		0.76 (0.57)	1.25* (0.63)	48.43*** (10.82)	42.95 (25.52)
Decision making		0.03 (0.37)	-0.01 (0.36)	47.88*** (10.91)	46.16 (25.19)
Stress			-0.92* (0.41)	-335.79*** (76.37)	-317.38 (177.32)
Expectations				143.68*** (32.75)	135.85 (76.03)
Satisfaction					-5.43*** (0.92)
Wald chi square	57.16***	70.48***	75.14***	96.94***	284.50***
AIC	330	326	324	304	118
Cox and Snell's R^2	0.13	0.16	0.17	0.21	0.50
Nagelkerke's R^2	0.23	0.28	0.29	0.37	0.88

Note: The following levels were taken as references: female (sex); post-secondary non-tertiary education (level of education); studying (employment status); education (area of study or work). Standard errors appearing in parentheses, *p < 0.05, **p < 0.01, ***p < 0.001

DISCUSSION AND CONCLUSIONS

The objective of the present study was to examine the extent to which social and emotional competencies, perceived stress, expectations, satisfaction, and sociodemographic and academic variables (e.g., age, gender, educational level, employment status, and area of study or work) predict successful completion of a MOOC.

Regarding sociodemographic and academic variables, the only variable found to have a relationship with the successful completion of a MOOC was the area of study or work. Therefore, it can be argued that those engaged in professions or pursuing academic disciplines aligned with the domains of health and wellness, mathematics and statistics, and engineering, industry, and construction were more likely to successfully complete the MOOC than those engaged in educational professions. However, these results should be interpreted with caution because the number of participants from the education field was considerably higher than those from other fields of study or work.

On the other hand, social and emotional competencies stood out as significant predictors of successful MOOC completion, with self-awareness playing a key role. The results suggest that participants who demonstrate greater abilities to recognize and regulate their emotions, empathize with and understand others, establish healthy relationships, and make decisions in accordance with their context and situation are more likely to successfully complete the MOOC. This could be attributed to the importance of MOOC discussion forums' participation and interaction for engaging with the course itself (Aldowah et al., 2019; Crane & Comley, 2020; Hone & El Said, 2016). According to Liu et al. (2022), learning engagement in MOOC discussion forums is a multidimensional construct comprising three main components: emotional, cognitive, and behavioral engagement. In this context, social and emotional competencies are directly related to emotional engagement, which refers to participants' emotional responses to academic content and the environment (Xu et al., 2020). If participants possess self-awareness, make decisions in alignment with their goals and circumstances, and are able to regulate their thoughts and emotions regarding learning activities, they will establish successful interactions that will give meaning to their learning process. This will increase students' motivation to engage in learning and increase the likelihood of successful completion (Liu et al., 2022).

Additionally, perceived stress was identified as a significant factor in two of the models, suggesting that it may serve as a predictor of successful MOOC completion. Perceived stress results from the interaction between an individual's available resources and the demands of the environment in which they find themselves (Trujillo & González-Cabrera, 2007). When individuals assess that the demands of the environment exceed their available resources, they perceive the environment as a threat to their well-being (Trujillo & González-Cabrera, 2007). Consequently, factors pertaining to the course itself (e.g., feedback, difficulty, time, etc.) in conjunction with students' coping abilities may elevate perceived stress, ultimately precipitating course dropout (Aldowah et al., 2019).

The statistical significance of expectations of the MOOC, as observed in Model 4, indicates that participants who initially perceive the MOOC as an opportunity to enhance their learning and employability and anticipate obtaining benefits from the course are more likely to complete it successfully. However, this relationship was not maintained in Model 5 because of several factors related to course design and delivery (Aldowah et al., 2019). For example, a lack of an engaging design, adequate difficulty, and an appropriate time structure may result in participants losing interest and dropping out. Furthermore, even if a participant has high expectations, their personal context, such as family situation or social support, may influence their decision to prematurely drop out of the MOOC (Aldowah et al., 2019).

Finally, satisfaction with the MOOC was identified as the strongest predictor of successful course completion. Indeed, participants who expressed satisfaction with the knowledge they gained from the course and expressed willingness to recommend the course to others were more likely to successfully complete the MOOC. This correlation is expected because motivation and positive affectivity toward the course increase the likelihood of successful completion. Nevertheless, this observation extends beyond this point, as it suggests that the reasons behind early MOOC dropouts may be closely related to the quality of the course itself, as indicated by other studies (e.g., Albelbisi et al., 2021). It can be reasonably deduced that MOOCs that present valuable content in an engaging manner will have a higher completion rate.

It is important to consider the limitations of this educational research when interpreting the results. First, it should be noted that the study was conducted in a single context, which limits the generalizability of the results. The technique used to select the sample (i.e., non-probability by convenience) and the low response rate (<20%) may have limited the representativeness of the sample and the direct extrapolation of the results to broader contexts. Furthermore, the instruments used were self-reported measures, which may have introduced bias in the measurement of the variables under investigation. The methodological design of the study also precludes establishing causal relationships between the constructs investigated. Furthermore,

additional variables, such as the socioeconomic characteristics of the participants and course design or content, were not considered in this study and could influence the results.

However, despite the limitations of this study, its results have strong implications for MOOC designers. First, the significance of social and emotional competencies highlights the necessity for the implementation of educational interventions with the objective of enhancing these competencies among students who exhibit deficiencies in them. As proposed by Kovanović et al. (2016), students who demonstrate high levels of activity should be encouraged to participate more actively in discussions, for instance, through interventions related to course content, to promote the participation of their peers. An initial activity could be organized at the beginning of the course to enhance student engagement and involvement (Crane & Comley, 2020). This approach may encourage students to engage more actively throughout the course because the fear or anxiety associated with evaluation can be mitigated (Crane & Comley, 2020). The identification of socially engaged students could also be undertaken to assist the teaching team in providing greater support to students who present with greater difficulties (Kovanović et al., 2016). In light of the social engagement required to participate in MOOC, social and emotional learning activities could be designed to encourage voluntary participation in order to address the diverse learning needs of each student (Crane & Comley, 2020).

Furthermore, communication between teachers and students can help mitigate students' emotional and psychological distress. Consequently, instructors may use video resources to encourage and motivate students (Li & Moore, 2018). Another method that has demonstrated efficacy is the use of email (Huett et al., 2008; Li & Moore, 2018). The aforementioned means of communication enable instructors to disseminate pertinent information regarding course content, issue reminders concerning assignment deadlines, and even implement rewards for students (Li & Moore, 2018). Consequently, the utilization of this instrument enables instructors to capture and maintain the attention of their students while offering them assistance and guidance throughout the course of study (Li & Moore, 2018).

In addition, when designing MOOCs, priority should be given to relevance, clarity, and content clarity (Li & Moore, 2018). Given the diversity of learners' motivations and goals, multiple types of tasks are recommended, allowing learners to select the most relevant task based on their individual goals, interests, and backgrounds (Li & Moore, 2018). In accordance with the aforementioned, learners' proficiency levels are also diverse. Consequently, it is imperative to provide many options for task completion and assessment, tailored to varying proficiency levels (Li & Moore, 2018).

It is also important to highlight the implications for future research. On the one hand, it would be advisable to expand the study settings, employ alternative sampling techniques (e.g., random sampling), and use a range of instruments to mitigate potential bias. Furthermore, it would be beneficial to gather additional data regarding the characteristics of the MOOC in question as well as other variables that could impact the successful completion of MOOCs. In light of the fact that one of the key areas of interest in this research is the role of social and emotional skills in MOOCs, it would be beneficial to design, implement, and evaluate MOOCs that foster and sustain these skills to gain a deeper understanding of how to develop MOOC platforms that are more appealing to students who may lack social and emotional skills (Crane & Comley, 2020).

The results are of great value, as they represent the only research to date that has explored the predictive capacity of variables such as social and emotional competencies, perceived stress, expectations, and satisfaction, as well as certain socio-demographic and academic variables (i.e., age, gender, educational level, employment status, and area of study or work) on successful completion of MOOCs. This research presents a novel perspective on the factors that influence successful MOOC completion. In light of the aforementioned findings, this study identified the following factors as particularly relevant to participants' successful completion of MOOCs: (a) their level of socioemotional competence; (b) their stress levels; (c) their expectations about the course; (d) their satisfaction with the course; (e) the perceived quality of the course

design; and (f) their value placed on the course. The findings of this study may inform the design and planning of future research on factors that predict successful MOOC completion.

A more profound comprehension of the variables predictive of successful MOOC completion would enable instructors and designers of MOOC to make more precise adjustments to learning activities, which could, in turn, enhance student performance and elevate the quality of education, thus increasing the probability of success. In this regard, the analysis of these variables can facilitate the creation of targeted strategies for different groups of students and optimize content and methodology to adapt the course to students with varying characteristics. Therefore, identifying predictors of successful MOOC completion can assist educators and administrators in providing a personalized and effective educational experience. In conclusion, this research establishes a basis for enhancing MOOC design, implementation, and evaluation.

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