



The Role of College Study Competencies and Motivations in Determining the Acceptance of Distance Education

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Abstract

This study aimed to investigate whether students' Distance Education (DE) acceptance is influenced by the same factors affecting the acceptance of new digital technology. Furthermore, we also study competencies and motivations as factors affecting DE's acceptance. The study was cross-sectional, and linear regressions tested the hypotheses. 165 Italian college students ($F=87.3\%$; average age 23) compiled an online survey. The main results are that considering the future intention to use DE as an indicator of its acceptance, the perceived usefulness, subjective norm, and perceived ease of use influence the future use of DE. Moreover, intrinsic motivation and emotional control during the exams directly and negatively determine the intention of using DE in the future. The perceived usefulness and ease of use, together with the subjective norms, totally mediated, in different ways, the effect of teachers' relationships, time management, learning assessment, extrinsic motivation, and study dedication in explaining the future intention of using DE.

Keywords Study competencies · Study motivations · Distance education · Distance education acceptance · College students

1 Introduction

Distance Education (DE) is a phenomenon that has been introduced previously in higher education. Already in the late nineties, Holmberg (1989) defined DE as a concept that encompasses learning-teaching activities in cognitive, psychomotor, and affective domains with the support of an organization. DE's main feature is non-contiguous communication carried out anywhere and anytime, particularly attractive to adults with professional and

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social commitments. According to Gunawardena and McIsaac (2004), the most inclusive and currently workable definition of DE comes from Garrison and Shale (1990). In their formulation, they consider as essential criteria for DE the reference to an adequate theory able to shape the elements of non-contiguous communication, the two-way interaction supported by DE, and the use of technology.

2 Theoretical Framework

We acknowledge that DE is a broad term that includes Distance Learning (DL), open learning, networked learning, flexible learning, distributed learning, and learning in connected space (Gunawardena & Mc Isaac, 2004). All these labels have in common that students can work on their own time, in a place of their choice (home, work, or learning center), without face-to-face contact with a teacher that is replaced by the massive use of technology - which is a crucial element of this method (Bates, 2021). When introducing a methodological innovation in an educational context, like any innovation, different degrees of acceptance can be generated by new users. Technology acceptance is the users' favorable decision to adopt it and intended for its use in the present and next future (Ifenthaler & Schweinbenz, 2013, 2016; Cacciamani et al., 2018).

The factors influencing the acceptance of new digital technology have already been studied in the literature by several theoretical models, including the Technology Acceptance Model (TAM; Davis, 1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT; Venkatesh et al., 2003). TAM postulates that the actual use of technology is closely connected to the intention to use it, which is determined by the attitude toward its usage. This attitude is influenced, in turn, by the perception of technology's usefulness and its ease of use (Davis, 1989). According to UTAUT, the acceptance of technological innovation can be explained by a set of key factors. Among these, performance expectation, effort expectation, and social influence are suggested as predictors of behavioral intention to use technology while facilitating conditions (e.g., the technical infrastructure provided by an institution) directly influence the actual use of technological innovation. In contrast to TAM, the variance explained by the UTAUT model is up to 70% (Venkatesh, Morris, Davis et al., 2003).

This paper defines the "acceptance of DE" as an extension of technology acceptance. We consider it a favorable decision for users to accept this teaching method based on digital technologies and online interactions. Following Ifenthaler and Schweinbenz (2013), even in the case of the future use of DE, it is possible to consider both the acceptance of its current and future use. Even if DE's use has been imposed, its acceptance is not automatically granted. Despite the extensive use of DE during the pandemic, studies clarifying whether digital technology acceptance factors may also influence DE's acceptance are rare (Camilleri & Camilleri, 2021). The few studies retrieved focused on Distance Learning (DL), generally considered a structured learning experience that can be done away from an academic institution, at home, or in the workplace (Gunawardena & McIsaac, 2004). In these studies, DL substantially overlaps DE.

For instance, Rizun and Strzelecki (2020) used the adapted General Extended Technology Acceptance Model for E-Learning (GETAMEL) to investigate the influence of different factors on undergraduate and graduate students' acceptance to shift toward DL education in

Poland. GETAMEL is an extended TAM version developed by Abdullah and Ward (2016) through a quantitative meta-analysis of 107 papers to identify TAM's most commonly used external factors. GETAMEL foresees that the best predictor of students' perceived ease of use of e-learning systems is self-efficacy, followed by enjoyment, experience, computer anxiety, and subjective norm. The best predictor of students' perceived usefulness of e-learning systems is enjoyment, followed by subjective norm, self-efficacy, and experience. Using GETAMEL, the study of Rizun and Strzelecki (2020) showed that the best predictor of students' DL acceptance is enjoyment, followed by self-efficacy, influencing perceived usefulness and perceived ease of use. These latter two dimensions predict, in turn, students' attitudes toward DL and the intention to use it in the future. Syahrudin et al. (2021) conducted a study to investigate the perspectives of sports science students on factors affecting DL in Indonesian higher education institutions. The study proposed an extended Technology Acceptance Model (TAM) by adding to the TAM dimensions (perceived ease of use, perceived usefulness, attitude, intention to use, and actual use) three exogenous variables: (a) experience: amount and type of technical abilities for DL acquired through time, (b) enjoyment: to what degree the DL experience is seen as pleasurable, regardless learning results, (c) self-efficacy: the confidence to complete a task using technology for DL during pandemic. It was found that enjoyment and self-efficacy predict perceived ease of use and perceived usefulness, while experience predicts only perceived ease of use. In addition, perceived ease of use significantly predicted perceived usefulness and attitude, while perceived usefulness influenced attitude and intention to use. Finally, attitude predicted intention to use, and the relationship between intention to use and actual use was the strongest.

As shown by the studies just mentioned, it is possible to apply models used to study the acceptance of digital technologies (such as TAM or UTAUT) to examine the factors influencing the future use of DE. In the case of DE, it seems helpful to integrate, into such models, a few variables able to control factors that, according to these models, may predict its acceptance, such as study competencies and motivations.

Hong and Jung (2011) have identified some competencies displayed by students who successfully participate in DL courses, partially shared by students participating in standard training contexts. According to these authors, the competencies are organized into five clusters: study vision, cognitive and metacognitive skills, interaction abilities, identity as a learner, and management skills. The first cluster shows that successful distance learners demonstrate a clear "study vision": they have the competency to set clear goals for their studies, and motivate themselves, drawing on all forms of support from professors, experts, families, and colleagues at work. The second cluster, encompassing "cognitive and metacognitive skills," includes the meta-cognitive skills to plan and regulate learning and adjust the study strategies when necessary. The cognitive skills of this cluster are focused on previewing and reviewing learning material until fully understanding and transferring skills. The third cluster, labeled "interaction abilities," concerns the competency to seek opportunities for collaborative learning with peers and instructors, establish networks, and participate in student online and offline learning communities. The cluster "identity as a learner" indicates that students enjoy learning in their own right and are intrinsically motivated to work hard at their studies; they also believe in their ability to complete their studies expecting good outcomes from their hard work. The fifth cluster, "management skills," focuses on the competency to effectively manage time and resources. Students can concentrate on the

study at set times and locations to manage, schedule, and meet all the course requirements and deadlines.

Richardson et al. (2012), through a systematic review and meta-analysis of 13 years of research into antecedents of university students' grade point average (GPA), identified and classified some factors defined as non-intellective constructs. When looking into students' competencies and motivations, five domains can be singled out: (a) personality traits, (b) motivational factors, (c) self-regulatory learning strategies, (d) students' approaches to learning, and (e) psychosocial contextual influences. Boerchi, Magnano, and Lodi (2021) suggested also considering abilities related to the area of Self-Concept (self-esteem, self-efficacy, self-regulation, management of emotions, intrinsic and extrinsic motivation), the area of study organization (time management and study effort), and the area of the relationships (with parents, professors, and colleagues). All these combinations of knowledge, skills, and attitudes are usually named "study competencies": they are a self-regulative function concerning the study activity. Some examples include the knowledge related to the organization of the university courses; the ability to organize the study; the estimation of the level of knowledge acquired by studying a specific topic or by managing emotions; and the attitudes towards other persons, like parents, colleagues, and professors, and themselves, like self-efficacy perception and self-esteem. The same authors (Magnano, Lodi, & Boerchi, 2020) investigated the role of study competencies in predicting academic satisfaction, revealing that each of the abilities considered affects at least one of five areas of satisfaction mediating the function of academic performance. Some of these competencies have also been studied concerning the acceptance of DE. For instance, in the previously mentioned studies (Rizun & Strzelecki, 2020; Syahrudin et al., 2021), self-efficacy predicts perceived ease of use and usefulness in accepting DE in a higher education context. Based on these findings, study competencies, and study motivations can be recognized as relevant in supporting academic performance - regardless of the didactic method.

The analysis of the literature, therefore, shows that it is possible to apply models used to study the acceptance of new digital technology and examine the factors influencing the acceptance of DE. Still, until now, studies on this topic are rare. In addition, even when study competencies and motivation are recognized as influencing academic satisfaction and performance in higher education, these aspects - except self-efficacy - have yet to be studied concerning their influence on the acceptance of the DE.

After the tremendous experience of DE during the pandemic, this didactic method could have further broad use in the educational offering of the university context. A new and original inquiry problem arises from this scenario: understanding the factors influencing DE acceptance is essential not only concerning the adoption of new technology but also students' study competencies and motivation to ensure a positive academic experience. Learning through online teaching may differ substantially from learning from a face-to-face lecture. For instance, the risk of distractions may be higher, and teachers may propose original communication styles. Understanding students' study competencies and motivation is crucial to face these novelties.

The purpose of the present study is then to address this problem of inquiry through the following research hypotheses:

1. The acceptance of DE is influenced by the same factors that affect the acceptance of new digital technology (perceived usefulness, perceived ease of use, subjective norm, facilitating conditions, attitude toward DE);
2. Study competencies and motivations influence the acceptance of DE with the mediation of the same factors influencing the acceptance of new digital technology.

3 Method

The study was cross-sectional with the correlational method and based on the administration online of a survey.

3.1 Participants

Participated in the study, in 2020–2021, 165 college students attending Bachelor or Master of Science in Psychology (50,9%) and Bachelor or Master of Science in Pedagogy (49,1%) in northern Italy. 60% attended a Bachelor course, and the following 40% percent a Master course. Because of the composition of the classes, mainly attended by female students, the sample was not balanced by gender, with females more represented (87.3%). Age ranged from 18 to 59 (Mean=23,05; S.D. = 4,658).

Convenience sampling was used to collect answers, starting from the students of the researchers. The study did not aim to produce results that could be extended to the entire population of college students but only to those that use IT for everyday study activities and not for future professional use. It was therefore decided to limit the study to students attending courses in psychology and pedagogy because they can be considered representative of students in the humanities. The numerosity of the sample is confirmed to be congruent with the study's aims. The sample size is not optimal, but still adequate considering the 95% Confidence Level, 0.5 Standard Deviation, and 8% Margin of error. Since our goal was to find out the independent variables that explain DE acceptance and how much each of them weighs, the sample size was tested concerning the probability of obtaining an R^2 indicating an effect size, calculated with Cohen's f^2 , which was at least medium (0.15) (Cohen, 1988). Considering a desired statistical power level of 0.8, 12 as the larger number of predictors (C-Comp's sub-scales) and a probability level of 0.05, the minimum required sample size is 127. The results confirmed that the sample size was adequate: the Cohen's f^2 effect size of the tested linear regressions ranged from 1.94 to 2.17, showing to be very large.

On the first page of the survey, it was stated that the data collected would be anonymous and aggregated so that, in any way, it could not be traced back to personal data. The information collected in this way can be used exclusively for scientific publications. Participants were also invited to consult a detailed Informed Consent. Finally, it was stated that the choice to continue with the compilation was considered an authorization to use the data for research purposes. The aims of our research did not require collecting any sensitive data from the participants. Therefore, no ethics commission was contacted. The topic we dealt with should not be considered as having a particular impact on the emotional experience of the respondents. Despite having the possibility of dropping the research at any time with no justification and the researchers' contacts being reported, none of the participants felt they needed such support.

3.2 Procedure

Because of the Covid restrictions, from September 2021 to March 2021, students had to attend classes and take exams exclusively online. In April and May 2021, they could participate in college courses online or in person. More than two-thirds preferred to attend their classes from their homes still. Emails were sent to students from December 2020 to March 2021, proposing they participate in the study by compiling an anonymous online survey. The survey was introduced with a brief explanation of the research and instruction about the compilation, and students were also informed that the research results would be shared with them during a lesson before the end of the course.

3.3 Measures

The following scales were selected from the previous literature and the research team's experience in distance learning acceptance and study skills as they were considered the most reliable and complete for our research objectives.

3.3.1 Distance Education Acceptance

The acceptance of DE and the factors influencing it have been measured through the *Student's Acceptance of Distance Education Questionnaire* (SADEQ - QDAD-SU in Italian), a tool with good psychometric properties (fit indexes: CFI=0.95; RMSEA=0.068; SRMR=0.047; overall scale Alpha=0.96; subscales' Alpha ranging between 0.95 and 0.84) (Cacciamani et al., 2020; Ligorio et al., 2020). SADEQ includes five subscales translated and adapted by the TAMPST questionnaire (Teo, 2010): (a) *perceived usefulness* (PU; four items) indicating how much DE is perceived as helpful in learning; (b) *perceived ease of use* (PEU; three items) capturing perceptions of how easy DE is to use; (c) *subjective norm* (SN; two items) referring to how much a user perceives that significant others (for instance, a colleague) believe that DE should be used; (d) *facilitating conditions* (FC; three items) indicating the degree to which it is perceived the presence of technical infrastructures support the use of DE; (e) *attitude towards DE* (ATDE; four items) concerning the degree to which the use of DE elicits a positive affective reaction. This subscale measures the factors influencing the acceptance of DE. A sixth subscale of the SADEQ, inspired by the questionnaire by Lee et al. (2017), is the *intention for future use of DE* (IFU; four items) regarding the degree to which a student would continue to use DE in future, and it represents a specific indicator of the acceptance of DE.

Respondents were required to indicate their degree of agreement on a seven-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). The Cronbach's α of the factors ranged from 0.77 to 0.93 in the present study (see Table 1 for psychometrics).

3.3.2 Study Competencies and Motivations

Study competencies and motivations have been measured with the C-Comp Scale (College Competencies Scales; Boerchi, Magnano, & Lodi, 2021), part of the College Questionnaire also comprising the C-Sat Scale (Lodi, Boerchi, Magnano, & Patrizi, 2017), a scale aimed to assess academic satisfaction. The C-Comp Scale contains 48 items that measure 12 dimen-

sions aggregated in the following three areas below, described with relative fit indexes and Omega as reliability index.

Area of Study (CFI=0.94; RMSEA=0.078; $\chi^2/df=2.84$):

- Intrinsic motivation ($\Omega=0.80$) - Interest in the university course of study topics.
- Extrinsic motivation ($\Omega=0.83$) - Ability of self-motivating even on those occasions when, for multiple reasons, the desire to study might be lacking.
- Time management ($\Omega=0.85$) - Ability to plan schedule and dedicate the necessary study space.
- Study dedication ($\Omega=0.90$) - Tendency to study with commitment and perseverance.

Area of Self-Concept (CFI=0.94; RMSEA=0.075; $\chi^2/df=2.72$):

- Learning assessment ($\Omega=0.80$) - Ability to self-evaluate one's level of learning and, therefore, how ready one is to take an exam.
- General self-esteem ($\Omega=0.82$) - General confidence in one's abilities and potential.
- Study self-efficacy ($\Omega=0.87$) - Subjective perception of competence in studying.
- Reaction to failures ($\Omega=0.89$) - Ability not to get unmotivated when facing difficulties related to studying and to overcome the problems encountered.
- Emotional control ($\Omega=0.82$) - Ability to efficiently manage the emotional factor when coping with a university exam.

Area of Relationships (CFI=0.97; RMSEA=0.058; $\chi^2/df=2.02$):

- Family relationships ($\Omega=0.88$) - Tendency to share experiences and emotions related to the university experience with the belonging family.
- Fellow students' relationships ($\Omega=0.88$) - Tendency to share difficulties with colleagues and ask for help.
- Teachers' relationships ($\Omega=0.74$) - Tendency to build a good relationship with professors and ask for their help to improve learning.

Respondents were required to indicate their degree of agreement on a five-point Likert scale, ranging from 1 (not at all) to 5 (entirely). The Cronbach's α of the factors ranged from 0.77 to 0.90 in the present study (see Table 1 for psychometrics).

3.4 Data Analysis

All the statistical analyses were conducted with SPSS 26. The role of study competencies and motivations on the future use of DE has been tested by twelve linear regressions, one for each C-Comp subscale. The mediation role of the factors affecting new digital technology acceptance has been tested using the macro PROCESS (Hayes & Scharkow, 2013). Five of them will not be discussed in this paper as not statistically significant; these factors are family relationships, fellow students' relationships, reaction to failures, general self-esteem, and study self-efficacy. The seven models remaining will be discussed in the next section, aggregated by the type of effect.

Table 1 Psychometrics and reliability of the scales

	Mean	S.D.	Skewness	Kurtosis	Cronbach's α
IFU - Intention for future use of DE	18.58	6.411	-0.465	-0.625	0.87
PU - Perceived usefulness	15.84	6.429	-0.107	-0.774	0.93
PEU - Perceived ease of use	15.49	3.608	-0.971	1.206	0.77
SN - Subjective norm	7.39	2.864	-0.203	0.026	0.86
FC - Facilitating conditions	10.92	4.464	-0.103	-0.901	0.82
ATDE - Attitude toward DE	12.75	6.137	0.339	-0.712	0.90
Family relationships	13.66	3.860	-0.391	-0.333	0.87
Fellow students relationships	13.75	3.628	-0.372	-0.483	0.85
Teachers relationships	12.96	2.971	0.017	-0.004	0.82
Intrinsic motivation	13.24	2.772	-0.026	-0.070	0.82
Extrinsic motivation	11.48	3.526	0.309	-0.220	0.85
Reaction to failures	10.87	3.295	0.432	0.308	0.84
Learning assessment	12.72	2.561	0.337	-0.086	0.79
Time management	13.02	3.274	0.120	0.002	0.84
General self-esteem	13.10	2.563	0.333	-0.014	0.77
Study self-efficacy	14.48	2.668	0.097	-0.228	0.88
Study dedication	14.01	3.202	-0.212	-0.023	0.90
Emotional control	9.69	3.310	0.621	0.179	0.81

Table 2 Role of Factors affecting Technology Acceptance in accepting DE

	Standardized β	t	Sign.
(Constant)		1.798	0.074
Perceived usefulness	0.597	6.908	0.000
Perceived ease of use	0.116	2.139	0.034
Subjective norm	0.186	3.168	0.002
Facilitating conditions	-0.012	-0.228	0.820
Attitude toward DE	0.046	0.538	0.591

4 Results

This section will report the results in correspondence with each research question.

Hypothesis 1 The acceptance of DE is influenced by the same factors that affect the acceptance of new digital technology.

The linear regression has partially confirmed the role of factors affecting technology acceptance in determining the future use of DE. The model was significant ($F(5)=64,562$; $p<.000$) and consistent (Adapted $R^2=0.66$). The future use of DE is explained mainly by the perceived usefulness and the subjective norm, followed by the perceived ease of use (Table 2).

Hypothesis 2 Study competencies and motivations influence the acceptance of DE through the mediation of the same factors influencing the acceptance of new digital technology.

4.1 Direct Effects, also Partially Mediated by Perceived ease of use

Two models directly predicted the future intention of using DE, which was slightly mediated by the perceived ease of use. For both, the direct effect was negative.

Intrinsic motivation had a direct and negative effect ($\beta = -0.23$; $p=.032$) and was also slightly mediated by the perceived ease of use ($\beta = -0.06$, $SE=0.0398$, $95\% CI = [0.00,0.15]$). The model was significant ($F(6)=55,83$, $p<.000$) in explaining 67.9% of the future intention of using DE.

Emotional control had a direct and negative effect ($\beta = -0.25$, $p=.006$) and was also slightly mediated by the perceived ease of use ($\beta = -0.04$, $SE=0.0285$, $95\% CI = [0.00,0.11]$). The model was significant ($F(6)=57,36$, $p<.000$) in explaining 68,5% of the future intention of using DE.

4.1.1 a) Effect Totally Mediated by the Perceived Usefulness

Two models reported an indirect effect of perceived usefulness in predicting the future intention of using DE.

Teacher relationships had an indirect effect through the perceived usefulness ($\beta=0.26$, $SE=0.1175$, $95\% CI = [0.05,0.51]$). The model was significant ($F(6)=53,48$, $p<.000$) in explaining 67.0% of the future intention of using DE.

Time management had an indirect effect through the perceived usefulness ($\beta=0.25$, $SE=0.1049$, $95\% CI = [0.05,0.46]$). The model was significant ($F(6)=53,80$, $p<.000$) in explaining 67.1% of the future intention of using DE.

4.1.2 b) Effect Totally Mediated by both the Perceived Usefulness and the Perceived ease of use

One model reported an indirect effect of perceived usefulness and perceived ease of use in predicting the future intention to use DE.

Learning assessment had an indirect effect through the perceived usefulness ($\beta=0.29$, $SE=0.1250$, $95\% CI = [0.04,0.53]$) and the perceived ease of use ($\beta=0.07$, $SE=0.0437$, $95\% CI = [0.00,0.17]$). The model was significant ($F(6)=53,69$, $p<.000$) in explaining 67.1% of the future intention of using DE.

4.1.3 c) Effect Totally Mediated by both the Perceived Usefulness and Subjective norm

Two models reported an indirect effect of perceived usefulness and subjective norm in predicting the future intention of using DE.

Extrinsic motivation had an indirect effect through the perceived usefulness ($\beta=0.33$, $SE=0.1012$, $95\% CI = [0.15,0.56]$) and the subjective norm ($\beta=0.08$, $SE=0.0413$, $95\% CI = [0.02,0.18]$). The model was significant ($F(6)=53,56$, $p<.000$) in explaining 67.0% of the future intention of using DE.

Study dedication had an indirect effect through the perceived usefulness ($\beta=0.34$, $SE=0.1019$, $95\% CI = [0.15,0.55]$) and the subjective norm ($\beta=0.08$, $SE=0.0417$, $95\% CI = [0.01,0.18]$). The model was significant ($F(6)=53,53$, $p<.000$) in explaining 67.0% of the future intention of using DE.

5 Discussion

The present study aimed to address two hypotheses: whether the acceptance of DE is influenced by the same factors affecting a new digital technology acceptance (H1); whether study competencies and motivations influence the acceptance of DE through the mediation of the same factors influencing the acceptance of new digital technology (H 2). For H1, results showed that the future use of DE, an indicator of DE acceptance, was explained mainly by the perceived usefulness, followed by the subjective norm and the perceived ease of use. This result is in part consistent with other studies (e.g. Al-Dokhny et al., 2021), where perceived usefulness and perceived ease of use positively and significantly affect the students' intentions to use DE platforms.

Schepers and Wetzels (2007), indeed, in their meta-analysis, highlighted evidence for a stronger dependence on utility rather than on low complexity when adopting new technologies. More recently, Camilleri and Camilleri (2021), in a study focused on higher education, showed that perceived usefulness with perceived interactivity with online technologies had a positive effect on the students' attitudes toward using remote learning technologies. Our results show a similar trend but applied to a new method of learning supported by technologies. Introducing DE during the pandemic could be associated with a tremendous pragmatic value since the ease of use is more in the background than the acceptance of other technology analyzed in further research. Indeed, those who have experienced the usefulness of DE are available to use it also in the future beyond the pandemic, but probably, only if needed, if its value is clearly perceived.

Concerning the subjective norm influence that we found relevant for the future use of DE, Venkatesh and Davis (2000) - in an updated version of the Technology Acceptance Model (TAM 2) - hypothesized that it also influences the intention to use technology. As suggested by Schepers and Wetzels (2007), people often choose to act when one or more essential referents say they should. However, they do not like or believe in it as a compliance effect that occurs in mandatory and voluntary situations. In the present study, under the pressure of the emergency determined by the pandemic, the university community could carry out a solid social influence action on the importance of using DE, which may have also influenced students' decision to keep using it in the future.

Regarding the attitude toward DE, as reported by Photopoulos et al. (2021) in their literature review, some findings indicate that students' attitudes towards the adoption of an educational technology impact the intention to use it (e.g., Garcia Botero et al., 2018), while others report that such a relation does not exist in acceptance of E-learning as a method of teaching (e.g., Masrom, 2007). More recent studies (e.g., Rizun and Strzelecki, 2020; Syahrudin et al., 2021) indicate that attitude can play a role in influencing the intention to use distance DE. In the present study, having experienced DE in a consistent condition of emergency and isolation may have given greater importance in accepting DE to more pragmatic criteria, such as perceived usefulness and perceived ease of use, combined with social influence. In this emergency, the attitude that concerns the affective dimension may have been considered less relevant by the students.

Also, the facilitating conditions seem to play a minor role in influencing future intention to use DE. A possible interpretation of this result could be related to students' age. Indeed, most of them in our study belong to the so-called "digital natives" (Prensky, 2012) generation; therefore, they are pretty familiar with digital technologies and platforms for

videoconferencing. This condition may have made students perceive the university support organization accessing DE as irrelevant. A similar study conducted by Cacciamani and his colleague (Cacciamani et al., 2022) with university teachers can represent a non-direct confirmation of this explanation, where facilitating conditions take on a relevant value, particularly for teachers who have received training on DE.

About H2, we found that intrinsic motivation and emotional control affected future intention to use DE directly and negatively, while slightly and negatively mediated by DE's perceived ease of use. Furthermore, perceived usefulness totally mediated the effect of teacher relationships and time management. Moreover, both perceived usefulness and ease of use mediated the learning assessment's effect. Finally, both perceived usefulness and subjective norm totally mediated the effect of extrinsic motivation and study dedication.

It is possible that the more intrinsically motivated students found in the DE a limited space for interaction to express their interests or questions on the topics presented during the lecture. The study of Photopoulos et al. (2021) partially confirms this interpretation, where students preferred face-to-face lectures over emergency remote teaching because they could express their ideas and ask questions more easily and communicate with the teacher more effectively. Intrinsically motivated students also perceive the DE as less easy to use, further reducing the future intention of its use. Students attending humanistic courses - such as the participants in our study - are probably more used to learning with books and, therefore, they may less appreciate the learning opportunities that DE may offer. Concerning the negative effect of emotional control on the intention of using DE in the future, students have probably faced new emotions and did not know how to manage them. Especially, remote exam modality could be connected to a series of emotions for which their usual emotional control strategies, used in presence, may have proved ineffective. Regarding the mediated effect of ease of use on emotional control, on one side, technology can be perceived as helpful to simplify some tasks; on the other side, it can be perceived as stressful, mainly at its first use. It can explain why students with limited emotional control can feel less at ease facing DE just because it is a new way of learning.

Although many study competencies, assessed by the C-Comp Scale, have already been shown to affect the intention to use technology in the future, the association between study competencies, motivation, and the future use of DE represents the main originality of the research presented here and a relevant theoretical improvement. No literature explicitly explains the relationships between these dimensions; therefore, we consider this study to contribute to the expansion of the original theoretical model about acceptance in general. By also adding study competencies and how students perceive them, motivation, and future intention, the model is more comprehensive with a stronger accent on the individual rather than the contextual and organizational affordance.

The opportunity for our results to contribute to the expansion of the theoretical model is also confirmed by other studies. For instance, Neroni and colleagues (2019) highlighted that time management and complex cognitive strategies (elaboration and metacognitive self-regulation) are positive predictors of academic performance for DE university students. More specifically, a good relationship with the teachers influences the perceived usefulness, and it supports the intention to use DE, probably because the teacher can trigger the perception of usefulness or because students perceive teachers can help their effort to use DE effectively for their learning activities. Indeed, teacher training and teaching flexibility are relevant to the DE's acceptance (Ligorio et al., 2020). Also, the time management competence, influ-

encing perceived usefulness, can indicate that students with this competence would better integrate DE within their study activity agenda.

Based on our results, we can outline some practical implications. We saw that students' competence to self-evaluate their level of learning may influence both the perceived usefulness and ease of use of DE. It is due to their self-regulating approach to learning, which can lead to a better understanding of how DE works and how to use it effectively. Therefore, it will be important to make students aware of their self-regulating learning approach even before the delivery of DE. A specific scale - purposely built or standardized - could be administered to students beforehand to ascertain this skill. Finally, students with higher self-motivation, study commitment, and perseverance, when using DE according to the self-regulative approach implied by these competencies, can better understand the DE usefulness and accept the social influence (the subjective norm dimension) oriented to promote the use of DE. This point can be easily turned into a practical indication, especially if combined with the previous point. In essence, once assessed the level of self-regulation; those with a higher level could be required to help and support those with a lower level. It could be useful also in terms of community building, collaborative work, and having valued the skills connected to self-regulation.

Starting from our results, a few teacher guidelines and student suggestions could be elaborated. Teachers should stress the utility of the teaching method used - in our case, DE - by highlighting how such a method can help students' performance. Furthermore, teachers may inquire about students' predispositions concerning innovation and technology since those predispositions could affect the future use of DE. Finally, teachers should be aware of the emotional and relational dimensions. New emotions enter the scene, and teachers should help students express and control them. A specific interaction time should be organized to improve students-teachers' relationships and peer exchange.

Similarly, students should be aware of these aspects. Being part of a class online is clearly different from participating in presence, but what is precisely different may need to be clarified for students. Even if they are used to digital environments, they still need to learn how to manage an online learning experience. For instance, it should be clarified that technical aspects can be solved and that motivation and learning strategies are as relevant as the contextual and instrumental dimensions. Students should be encouraged to exploit the options DE can offer and find a way to use those options to empower their learning strategies. Students are often easily discouraged when facing DE, especially when this is no longer mandatory - as in the post-Covid situation. Even if technology, in general, may be within their practices, it is not so obvious that they can transfer technological skills acquired by performing their routine activities online to learning strategies. Those digital skills may remain confined to their usual technology-based social and entertainment activities. How those skills could be used to support learning strategies in the DE context is still to be clarified, but our results show that awareness of personal attitude is relevant and may play a role in this process. Therefore, we encourage teachers to help them understand that DE implies a novel situation for students, where what they feel and how they react is essential for its success. Students should be ready to face such novelty but simultaneously reflect upon their perception, feelings, and emotions about the tools used and the general context, ... How they adapt their learning strategies to the new situation is also relevant, and students may try to monitor this adaptation process.

It is likely that whether and how to keep using DE after the pandemic will depend on ministerial and political indications. However, students and teachers must still develop a positive attitude toward this educational method. Once familiar with DE tools and techniques, the educational community may include it in a more stable and integrated way.

We acknowledge that this study has some limitations. Our sample is quantitatively limited and unbalanced concerning gender. Furthermore, we included only students from humanistic courses. A more extended and heterogeneous sample will be advisable for future studies to overcome these limitations. A more intense campaign could be organized to recruit students from different national areas and diverse faculties. In-depth interviews could be purposely designed to gain more qualitative information about students' study strategies and motivation to use DE.

Nevertheless, this study represents a good starting point to explore the conditions under which students may accept DE and can adopt it in the future. Our results are relevant not only from the theoretical point of view. They contribute to improve the theory explaining acceptance by adding new dimensions enriching the original theory. In particular, there is an appreciation of self-motivation and, more in general, of self-regulation that previously was not so much in the foreground. Recognizing the role of such factors is important because it allocates the focus of attention to the users' features and the technological and contextual dimensions. By highlighting the connection between study competencies, motivations, and learning methods, the vision of how students accept a novelty concerning their learning strategies is deeper and more multidimensional.

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