The prod of on-site course inflexibility

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Abstract: The aim of this research was to study the effect of flexibility on e-learning use within the framework of the technology acceptance model (TAM). Concern with flexibility arises from university programmes increasingly blending distance education and on-site learning, made possible by internet-age computer technologies. The use of these technologies is bound to their enabling to break away from time and space constraints. In this context, our results confirm that student choices to use these technologies for their learning are strongly influenced directly and indirectly by the perceived lack of flexibility of on-site course design. The results also indicate that the absence of flexibility of on-site courses has not only more impact on the use of these technologies but also on all other variables in the TAM.

Keywords: technology acceptance model; TAM; flexible learning; distance learning; choice; online learning; e-learning.

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1 Introduction

Online learning has considerably modified course delivery in many parts of the world. In higher education this development brought with it a strong increase in the number of online courses starting from the year 2000 (Wirt et al., 2004). This provision enabled targeting distance learners who had been the users of more traditional distance learning technologies such as postal services.

Site-based courses had to adapt too to the eruption of technologies. Just one example out of many is the fact that it has become frequent for on-site students to use e-mail to send queries to their instructors. E-mail is used for asynchronous communication at a distance. Gunawardena and McIsaac (2004) state that "in fact, the explosion of information technologies has brought learners together by erasing the boundaries of time and place for both site based and distance learners" (p.356).

In present days' context, frontiers between distance learning and site-based learning have become blurred. If for Keegan (1996) distance learning is characterised by the separation between the learner and the teacher, spatial, temporal and social implications of this separation are modified by the use of information and communication technologies (ICT).

The research we present here is based on the above-mentioned frontier-blurring to question the choices students make in respect to online learning. More specifically, we studied student choices in a programme where courses were made available as online based, as site-based, or as a combination of both. As we will demonstrate further along, though technologies enable being freed to some extent from time and space limits, this freedom remains subjected to constraints. We will begin by examining how online learning inherits these constraints from distance learning. We will then use the concept of flexibility, which is key to our research, to shed light on what causes students to attempt bypassing limits imposed by an instructional design. We will then introduce the technology acceptance model (TAM) (Davis et al., 1989) and the way it has been applied to online learning, after which we will specify the hypotheses for our research and present our study.

2 Flexibility in online learning

Defining online learning is difficult, even more so as many different terms are in use. As Ally (2004) puts it: "Terms that are commonly used include e-learning, internet learning, distributed learning, networked learning, tele-learning, virtual learning, computer-assisted learning, web-based learning, and distance learning. All of these terms imply that the learner is at a distance from the tutor or instructor, that the learner uses some form of technology (usually a computer) to access the learning materials, that the learner uses technology to interact with the tutor or instructor and other learners, and that some form of support is provided to learners" (p.4). In this article, as suggested by Ally (2004), online learning will cover the use of technologies at a distance. In effect, online learning presents some common characteristics with distance learning. These characteristics make it possible in some cases for on-site students to partake in some courses at a distance.

Online learning, in comparison to distance learning using postal services, enables students and instructors to interact in a way that considerably changes instructional possibilities (Moore and Anderson, 2004; Moore, 1997). Physical separation between the

learner and the instructor, which defines distance learning, does not appear to be the only variable to be taken into account when characterising online instructional designs. It therefore appears that redefining distance learning is required in order to account for interactions that technologies make possible.

For Moore (1997), "distance education is not simply a geographic separation of learners and teachers, but, more importantly, is a pedagogical concept" (p.22). Sequencing of contents, the way online services are set and the structuring of contents and services, plus evaluation methods, all affect flexibility. Moore (1997) defines flexibility as "the extent to which an education program can accommodate or be responsive to each learner's individual needs" (p.22). Likewise, other authors consider flexibility as related to the choices available to the learner. For Brande (1994), "[f]lexible learning is enabling learners to learn when they want (frequency, timing, duration), how they want (modes of learning), and what they want (that is learners can define what constitutes learning to them)" (p.2). For Hill (2006), "[f]lexible delivery focuses on options regarding access for learners: the what, where, and when learning occurs" (p.188). Jézégou (2009) qualifies the level of openness of an instructional design by considering how much choice learners have within the structure. Online learning can thus be a more or less open learning environment depending on its structural characteristics. An online programme that requires learners to follow a specific sequence of contents is an example of a structure that does not offer choice to the learner regarding content learning order.

We consider that the structure of an educational setup also determines choices a learner can make between the two major instructional modalities that are expressed as on-site versus online learning. Learners who also have jobs, who live far from campus, or those who are stuck with two courses that they are interested in but that are scheduled at the same time, will be sensitive to flexibility that enables them to choose between on-site or online modalities for the same course.

3 Academic studies programme and the question the research addresses

Our research addresses the choices learners make when they have an option between face-to-face and online delivery of courses. The setting used for this study is not neutral, we shall therefore briefly describe it.

The online learning courses were designed to be used asynchronously. This design makes it possible for students, in conformance with flexible learning principles, to study almost anywhere and whenever they wish to. Courses were delivered using a lightweight web-based server application that only requires a web navigator to be accessed. To heighten flexibility, no online course was compulsory in order to complete the programme. The same courses were also delivered face-to-face. In other words, learners could choose to follow only some courses online, all, or none. It is worth mentioning that the programme did not indicate that courses were distant learning courses. They were all labelled as on-site courses.

In accordance with what researchers' studies of flexibility in learning have suggested, our hypothesis was that course delivery choices are determined by the learner depending on the learner's timetable constraints. Students who do not find course scheduling suitable in respect to other activities they take part in, or perhaps other courses, will preferably choose an online version of the course.

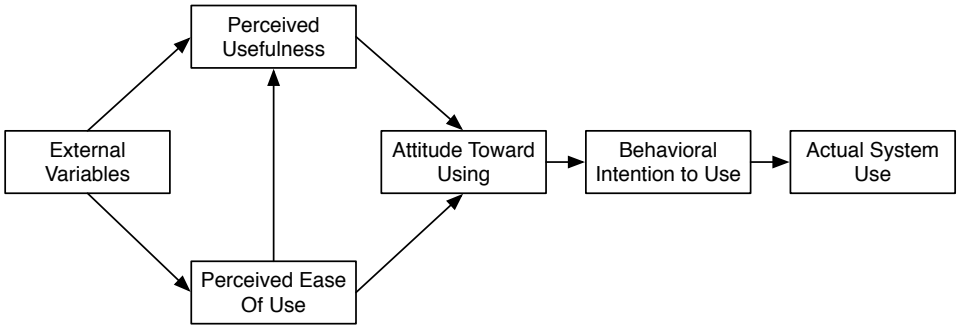
Nevertheless, though flexibility integrated into the course design is important, we consider taking into account acceptance to use technologies essential if one is to try to predict students' choices. The TAM (Davis et al., 1989) enables considering explicative factors of why users accept to use technologies when following their courses. In the case of online learning, these technologies are bundled up in a learning management system (LMS). We consider that the acceptance to use the LMS for one's studies has to be taken into account to understand choices that students make.

4 Technology acceptance model

The TAM (Davis et al., 1989) was developed to further understand information technology (IT) use; specifically, to explain why it is chosen or rejected by users. This has been a major preoccupation in businesses where considerable sums are often invested in IT with low technology adoption by end users ensuing.

The model is based on Fishbein and Ajzen's (1975) theory of reasoned action (TRA). TRA holds at its premise that understanding human action can be based on the conscience reasoning of individuals which underpins their actions. The TAM is based on two main constructs: perceived ease of use (PEOU) and perceived usefulness (PU). The model was conceived for general application where IT is used, but has also been applied to the more restrictive field of education. For Davis et al. (1989), "perceived usefulness is defined as the prospective user's subjective probability that using a specific application system will increase his or her job performance within an organizational context. Perceived ease of use refers to the degree to which the prospective user expects the target system to be free of effort" (p.985).

Figure 1 TAM



As can be seen in Figure 1, PEOU and PU are used to predict attitude toward technology, that in turn affects intention to use it and finally actual use. For Davis et al. (1989) PEOU and PU are also sensitive to external variables. It is mainly in respect to these external variables that research in technology use in education has attracted attention.

The model has been successfully applied to various software, such as word processing (Davis et al., 1989), e-mail (Szajna, 1996), online auction software (Chang, 2010), and to many other information systems (Venkatesh et al., 2002).

5 Online learning and the TAM

The TAM has largely been applied to studies of online learning. Some examples are a study of use of digital learning objects (Lau and Woods, 2008), and business simulation games (Tao et al., 2009). One can distinguish between two main tendencies. The first tendency we have come across, though in a smaller number of studies, is one in which the object has been a specific LMS. Some examples are a study of WebCT use (Martins and Kellermanns, 2004; Sanchez-Franco, 2010), blackboard use (Yi and Hwang, 2003; Abdalla, 2007), or Elearnology use (Ayadi and Fourati Kammoun, 2009). Results in all these studies are similar, PEOU and PU affect the intention to use an LMS.

A larger number of studies do not use the TAM to study use of specific software in the context of learning, but rather to study an e-learning system that encompasses several services that are integrated into the design (Lee et al., 2009; Park, 2009; Ong et al., 2004). Other studies refer to online or web learning where contours are even less clearly defined (Chang and Tung, 2008; Jawad, and El Akremi, 2006; Ngai et al., 2007; Pituch and Lee, 2006; Raaij and Schepers, 2008; Selim, 2003; Henderson and Stewart, 2007; Teo, 2009; Drennan et al., 2005; Gao, 2005; Grandon et al., 2005). In most of these studies, higher education was the terrain for investigation, except for a few studies concerned with employees (Jawadi and El Akremi, 2006; Ong et al., 2004).

The problem in the second lot of studies, i.e., when it is not a specific LMS which is the object and where generic terms are used, is less a matter of the variety of online services that may be packed-in (chat rooms, forums, online learning content objects access…) than is the instructional design that structures their use. Consider for a simplistic example the case of online technologies that are used to implement services that are seen as supportive of on-site learning. Another case is when online technologies are used for providing complementary learning material on the studied topic. Or still another example is when a course is delivered solely online. Using the same term to identify course designs as varied as those roughly outlined above, comes down to upholding the technological part in a design as central, whereas both educators and learners do not necessarily consider technology's part this way. Some authors do specify that the terrain for their study was a blended-learning design (Lee et al., 2009; Martins and Kellermanns, 2004; Ayadi and Fourati Kammoun, 2009). Others specify that online technologies were used for distance learning and/or face-to-face interaction (Pituch and Lee, 2006). Nevertheless, a blended-learning design does not necessarily mean that the design is flexible in the sense that users can choose between varying degrees of face-to-face and distance interaction. Most researchers did not provide details as to the design of the learning setup they studied, most probably because they did not think this relevant to the understanding of the variables at issue. In effect, most of these researchers ventured to demonstrate that some external variables linked to personal characteristics such as perceived self-efficacy (Park, 2009; Pituch and Lee, 2006; Ong et al., 2004; Teo, 2009; Yi and Hwang, 2003; Grandon et al., 2005), pleasure using technologies (Lee et al., 2009; Yi and Hwang, 2003; Sanchez-Franco, 2010) or the experience of using them (Jawadi and El Akremi, 2006; Pituch and Lee, 2006; Martins and Kellermanns, 2004), were considered likely to affect PEOU and PU, to explain either the intention, or the actual use, of online courses. In other studies, external variables particular to the course design were thought to likely have a similar effect. These external variables were, in some cases, instructor support (Lee et al., 2009; Martins and Kellermanns, 2004), or the

quality of the technical setup (Chang and Tung, 2008; Ngai et al., 2007; Park, 2009; Pituch and Lee, 2006; Grandon et al., 2005).

In our research, for which we adhere to the TAM, we too studied the effect of an external variable. We have labelled it perceived flexibility (PF). Its studied effect was on choices to use or shun online learning. In contrast to research mentioned earlier, we consider the effect of this external variable not to be independent of the instructional design of the course. Our hypothesis is that choice of online learning is prone to inflexibility of on-site course designs that are perceived as constraining in terms of spacial and temporal access.

6 Research model and hypotheses

We are aware of one other study that explicitly addresses flexibility in online course delivery using the TAM (Drennan et al., 2005). In this study, short-term and long-term effects of flexibility on student satisfaction were examined. Results show that short-term and long-term satisfaction were higher when flexibility was perceived to be higher. As we consider that constraints in terms of scheduling of on-site courses affect students' choices of taking the courses online, we have integrated in our model links between temporal constraints and PEOU, PU, and attitude toward technology, as affecting students' choices in taking online courses.

The hypotheses pertaining to PF in the programme design are that choices are affected by all the TAM variables. They are specified as follows:

H1 The higher the PF of on-site courses is, the lower the PEOU of the LMS will be.

H2 The higher the PF of on-site courses is, the lower the PU of the LMS will be.

H3 The higher the PF of on-site courses is, the lower the positive attitude toward using the LMS will be.

H4 The higher the PF of on-site courses is, the lower the choice of online courses will be.

In respect to PU of the online course, many studies did not look into the PU of the LMS per se; rather they looked into the e-learning setup. In these it was the effectiveness of the learning or measures of learning performance that were used as indicators of effectiveness. Some examples are Chang and Tung (2008), Lee et al. (2009), Ngai et al. (2007), Park (2009), Pituch and Lee (2006), Selim (2003), Gao (2005), Grandon et al. (2005). We chose to question specifically the learner's PU of the LMS that was used for the courses, named Comète. Comète is an LMS that was produced and was used by West Paris Nanterre – La Défense University. Although we were interested in PF of the programme design, we thought this to be more in line with the original application within the TAM. This was also the case in studies by Martins and Kellermanns (2004), Sanchez-Franco (2010), Yi and Hwang (2003), Abdalla (2007), and Ayadi and Fourati Kammoun (2009).

The hypotheses pertaining to PU are:

H5 PU of Comète positively affects attitude toward using the LMS for learning.

H6 PU of Comète positively affects online course choice.

We made a similar choice in respect to PEOU. Here too, we refer to the ease of use of the LMS:

H7 PEOU of Comète positively affects PU.

H8 PEOU of Comète positively affects attitude toward using the LMS for learning.

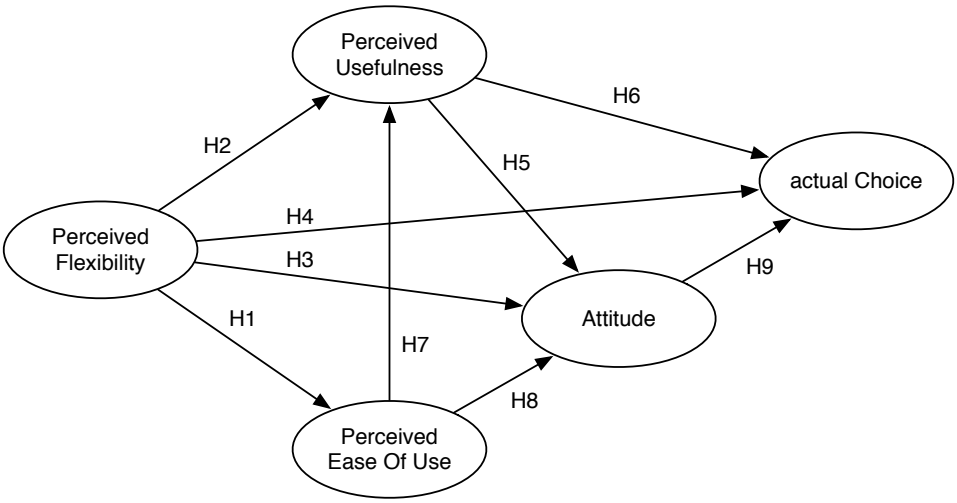
Some studies that questioned learners' attitudes toward using online courses examined effect on behavioural intention (Chang and Tung, 2008; Jawadi and El Akremi, 2006; Park, 2009; Pituch and Lee, 2006; Ong et al., 2004; Sanchez-Franco, 2010; Teo, 2009; Gao, 2005; Grandon et al., 2005). In other studies what was sought was to measure actual usage as predicted by attitude toward using the online technology. Observing actual usage was achieved either by questioning the users (Lau and Woods, 2008; Ngai et al., 2007; Pituch and Lee, 2006; Raaij and Schepers, 2008; Selim, 2003); or less frequently, by extracting data from the system logs (Martins and Kellermanns, 2004; Yi and Hwang, 2003). According to Yi and Hwang (2003), the latter is preferable as the independent variables have a tendency to be overestimated in self-reports, even though extracting information from logs is a complicated operation (Settouti et al., 2009). In our research it is not intentionality that is questioned, but the actual number of online courses chosen.

The hypothesis pertaining to attitude is:

H9 Positive attitude toward using Comète will have a positive affect on the choice of taking courses online.

The research model and hypotheses are schematically represented in Figure 2.

Figure 2 Research model with hypotheses



7 Research method

Courses were presented so that students could choose between taking them on-site or online with no obligation whatsoever attached. The number of online courses taken by a student, divided by the total number of courses the student registered for, provided for a

measure of online course choice. No online courses chosen yields 0, whereas a student choosing all her or his courses online yields 1.

The LMS used for the online courses was Comète. Comète was an in-house product put into service for all West Paris Nanterre – La Défense University faculties from roughly 2003 to 2011. The web-based system offered asynchronous communication only. The three main functions Comète implemented were: online course editing and publishing, file transfer between users, and forums.

8 Questionnaire

Our questionnaire's items are adapted from scales used and validated in previous research:

- *PU:* Jawadi and El Akremi (2006), Ngai et al. (2007), Martins and Kellermanns (2004), and Lau and Woods (2008).
- *PEOU:* Jawadi and El Akremi (2006), Ngai et al. (2007), Martins and Kellermanns (2004), and Lau and Woods (2008).
- *Attitude towards using (A):* Lau and Woods (2008).

Our scale of PF of on-site courses was developed specifically for the research. It was tested the year previous to the research with students in a similar programme in education sciences, and was improved before the research was fully implemented.

Three out of the four constructs that were used in the questionnaire, i.e., PF of on-site courses, perceived LMS usefulness and LMS ease of use, use a seven point Likert-type scale ranging from 'not at all true of myself' to 'perfectly true of myself'. The fourth construct: attitude toward using technologies, uses specifically formulated opposition points for each question.

9 Sample population and data collection

Data were collected among third year undergraduate students in education sciences in a University in Paris, between September and October 2009. Data were collected when students enrolled. In order to enrol, students had to use a web-based application that contained the questionnaire. The first step in the online registration process was a demonstration of the LMS followed by the questionnaire. It was not compulsory for students to respond to the questionnaire though all the students who enrolled in the programme did. One was incomplete and was not used. The number of questionnaires used for data analysis was 228. The mean age of respondents was 25.63 (SD = 6.54). The first part of the questionnaire contained questions to reveal some characteristics of the sample population (see Table 1).

Table 1 Descriptive statistics of population characteristics

Measures	*Items*	*Frequency*	*%*
Gender	Male	25	11.0
	Female	203	89.0
Have you already used e-learning for your studies?	Yes	65	28.5
	No	163	71.5
Since how long have you been using a computer?	Less than one year	2	0.9
	One year	1	0.4
	Two years	5	2.2
	Three years	16	7.0
	Four years	17	7.5
	Five years or more	187	82.0
Your present situation is:	Full-time student	126	55.2
	Employed part-time	41	18.0
	Employed full-time	61	26.8

10 Data analysis

10.1 Validity and reliability

Construct validity and reliability were first tested. For construct validity we used a principal component analysis with varimax rotation (Table 2). This analysis was used to identify through extracted factors all the conceptual dimensions that were assumed when constructing the questionnaire. Items that represent a conceptual dimension need to prove to be higher factor loaders than others. A minimum factor load of .40 is considered sufficient for this (Nunnally, 1978). All the while, in order for the item to be representative of a dimension, the item must not load other factors that are extracted after rotation. The different conceptual dimensions also need to be tested for reliability. For this Cronbach's alpha for each dimension should have a value superior to .70 (Nunnally, 1978).

10.2 Model fit

For all of the following analyses we used AMOS version 17. To validate the postulated structure we used the technique of structural equation modelling (SEM) after checking its validity through confirmatory factor analysis (CFA).

It is first necessary to check that the model fits the data. The χ^2 test assesses this. A non-significant χ^2 value indicates the fit is good. However, the χ^2 index is influenced by the size of the sample. It is expected that when the sample is large, the chi-square value tends to be significant; therefore, other indicators are recommended.

Table 2 Factor analysis (principal component with varimax rotation) and reliability*

	Constructs			
	F1 PU	*F2 flexibility*	*F3 PEOU*	*F4 attitude*
PU1	.80			
PU2	.83			
PU3	.87			
PU4	.73			
PU5	.75			
PF1		.85		
PF2		.91		
PF3		.93		
PF4		.88		
PEOU1			.87	
PEOU2			.79	
PEOU3			.84	
A1				.75
A2				.76
A3				.84
Cronbach's α	.94	.93	.87	.90
Eigenvalue	3.99	3.47	2.63	2.34
% variance	26.59	23.12	17.53	15.62

Note: *See Appendix for variable names.

Verifications of the adjustment between sample size and chi-square value is based on measures suggested by various authors (Kline, 1998; Hoyle and Panter, 1995). There is no consensus among authors, nevertheless many indicators are regularly used. We adopted measures including chi-square degree of freedom ratio (χ^2/df), comparative fit index (CFI), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), non-normed fit index (NNFI, named TLI in AMOS), normalised fit index (NFI), root mean squared error of approximation (RMSEA), and standardised root mean squared residual (SRMR). Authors (Bentler, 1992; Schumacker and Lomax, 1996) usually agree that a value greater than .90 for CFI, GFI, NFI and NNFI tests is sufficient. A RMSEA below .08 (Browne and Cudeck, 1993) is generally accepted, but for Hu and Bentler (1995) a RMSEA less or equal to .06 can be considered as an acceptable value. For Kline (1998) χ^2/df must be less than 3. A sum-up of recommended values and our results are presented in Table 3.

Table 3 shows the values of the retained thresholds for all indicators chosen for measuring the quality of the fit. As one may observe, the χ^2 value and the GFI are slightly lower than the recommended threshold. Recommended values are p greater than .05 for χ^2 and greater than .90 for GFI. Nevertheless, all other goodness-of-fit indicators that we used do conform with recommended values. This enables considering that globally data fit with the model.

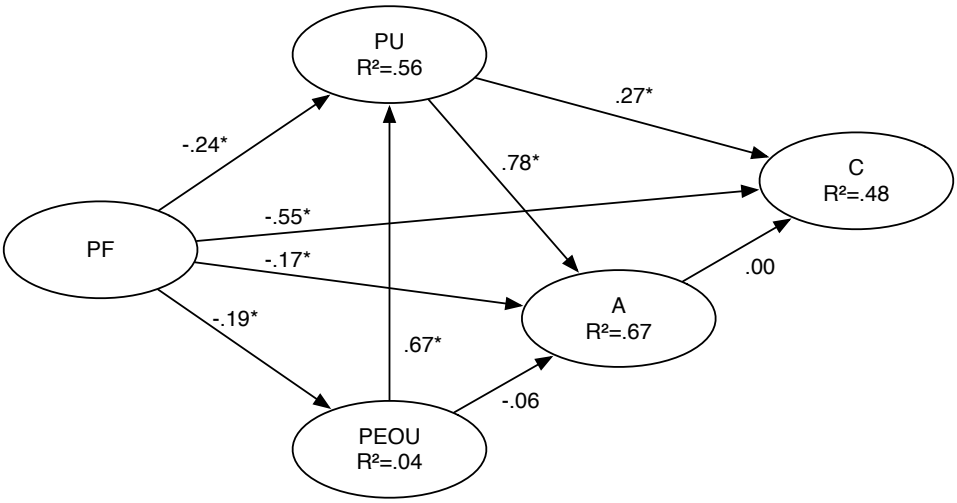
Table 3 Goodness-of-fit measures

Goodness-of-fit measure	*Recommended value*	*Model*
Chi-square (χ^2)	$p > .05$	225.54 ($p < .05$)
Chi-square/degree of freedom (χ^2/df)	< 3.00	2.35
SRMR	< .05	.046
RMSEA	< .08	.077
GFI	> .90	.89
AGFI	> .80	.84
NFI	> .90	.93
NNFI	> .90	.95
CFI	> .90	.96

10.3 Path analysis

The next step was to calculate results for each path and check these results against the hypotheses. PF of the on-site courses reveals to have a statistically significant effect on the variables in the model (see Figure 3). Only two paths do not show any significance.

Figure 3 Path analysis results



PEOU does not significantly affect attitude ($\beta = -.06$, $p > .05$). This does not fit with the TAM hypothesis, though a similar result was reached in another study of online learning (Gao, 2005). Outcome in research that did not measure attitude but rather behavioural intention also revealed an absence of effect of the PEOU (Raaij and Schepers, 2008; Sanchez-Franco, 2010; Selim, 2003). One may note that the effect of PEOU is mainly mediated by PU ($\beta = .67$, $p < .001$).

The other non-significant effect is that of attitude toward using Comète ($\beta = .00$, $p > .05$). This though does not indicate that the effect of the TAM variables is nil as the PU does affect choice of taking courses online ($\beta = .27$, $p < .001$).

On the whole, standardised coefficients of paths show that the PF of the on-site courses is what most affects choosing to take courses online ($\beta = -.55$, $p < .001$). This negative effect may be interpreted as follows: the less on-site courses are suited to students' schedules, the better the chance that they opt for online courses.

11 Discussion and conclusions

Our primary hypothesis, that students' choices for taking online courses depends on the perceived convenience of on-site courses, is confirmed. It appears that, albeit the massive development of technology use in universities since the end of the 1990s (Wirt et al., 2004), on-site courses remain the preferred choice when course modality options are presented to students. It seems that the reference in respect to higher education in the context of the French university where the study was conducted, continues to be courses that are presented as on-site. If on-site courses are considered by students to be sufficiently flexible in respect to scheduling and ease of access, students will be less inclined to choose online courses. Similarly, the less students find on-site courses to be convenient, the more chances there are that they will opt for online courses. Courses that are designed as blended learning courses that impose on-site sessions on a predetermined schedule do not offer any flexibility. This was not the case in our research.

Some reserve as to the scope of our research pertains to the fact that we did not include other variables that could influence choice of taking online courses. Many other variables could be considered, such as: enjoyment the student expects when using IT (Lee et al., 2009; Sanchez-Franco, 2010; Yi and Hwang, 2003), perceived self-efficacy (Park, 2009; Pituch and Lee, 2006; Ong et al., 2004; Teo, 2009; Yi and Hwang, 2003; Grandon et al., 2005), the experience of using IT (Jawadi and El Akremi, 2006; Pituch and Lee, 2006; Martins and Kellermanns, 2004), instructor support (Lee et al., 2009; Martins and Kellermanns, 2004) and the quality of the technical setup (Chang and Tung, 2008; Ngai et al., 2007; Park, 2009; Pituch and Lee, 2006; Grandon et al., 2005).

Our study points to the importance of instructional design regarding the use of ICT. Most accounts of research we came across that use the TAM do not consider the degree of freeing from space and time constraints that technologies can avail, when studying effects on learners. There is no doubt that technologies make it possible to design courses in very diverse ways. It is also true that these more or less complex designs can only be helpful to education if they are actually used. This is where interest lies when studying factors that may intervene in choices that users make regarding technologies.

Another limit in this research is the fact of studying choices to use online courses prior to commencement of learning. Even though there is little reason to suspect that actual use of the LMS ends up being different from the initial choices that students had made, this was not looked into, as students could not revert back to an on-site course once their choice was made. Is making one's choice on the basis of how suitable a course is in terms of scheduling it into one's timetable a good criterion for choosing an online course? An intuitive answer to this question would be that criteria such as types of interest, either for the course topic or one's expected usefulness for future projects, are more appropriate. Regarding these criteria, one of the main problems noted in respect to distance learning has been drop-out before the course end (Carr, 2000; Easterday, 1997; Fenouillet and Kaplan, 2009). This has been one of the reasons for lower academic

success of distance learners which is not related to lower grades attained in the past (Fenouillet and Kaplan, 2009).

Bhattacherjee's (2001) model, which is inspired by the TAM, is of great interest as it explicates factors that contribute to pursuing the use of a technology. Several studies on learning and the use of technologies have shown that taking into account user satisfaction is necessary to better understand why after an initial phase of interest users continue to use the technologies (Sørebø et al., 2009; Larsen et al., 2009; Roca et al., 2006; Roca and Gagné, 2008). With this perspective in mind, future research could inquire into the effect that initial PF perhaps has on the long run.

In another study (Fenouillet and Kaplan, 2009) we have demonstrated that the use of IT has a double positive effect on academic results of distance learners using an LMS. The first positive effect is that the possibility for students to combine online and on-site learning totally eliminates massive drop-out of online learners compared to on-site learners. It has also enabled students, who otherwise would be solely distance learners, to achieve just as well as on-site students. On-site courses combined with online courses have a positive effect when the combination is the result of choices made by learners. This is to be distinguished from blended instructional designs. It is perhaps the flexibility in choosing the right dosage of face-to-face interaction on-site that satisfies varying social interaction needs, student learning styles, and availability. The second positive effect is that when distance learners use online technologies compared to students using postal services, they too achieve better, although not as well as on-site learners.

To sum up, the concept of flexibility holds undoubtable potential as long as those who use it are aware of the type of flexibility that the learner is in search of. Furthermore, using variables related to flexibility in future research will no doubt contribute to advance the understanding of technology use in education.

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Appendix

All items were measured on a seven-point Likert-type scale.

Construct	*Item*	*Measure*
Perceived flexibility of on-site courses	PF1	In face-to-face courses it is in principle easy to find course schedules that are compatible with my other activities.
	PF2	In face-to-face courses it is in principle easy to attend all courses.
	FP3	In face-to-face courses it is in principle easy to find interesting courses that are compatible with one's timetable.
	FP4	In face-to-face courses it is in principle easy to attend some courses.
Perceived usefulness	PU1	It seems easy with Comète to attend my courses using the internet.
	PU2	It seems easy with Comète to learn, using the internet.
	PU3	It seems easy with Comète to understand a course.
	PU4	It seems easy with Comète for me to get organised in order to attend the courses.
	PU5	With Comète I could optimise my learning.
Perceived ease of use	PEOU1	Using Comète seems easy.
	PEOU2	Comète tools (such as the forum) are easy to use.
	PEOU3	I think I shall adapt quickly to using Comète.
Attitude toward using	A1	Using Comète to attend my courses seems to be a bad/good idea.
	A2	I want/don't want to use Comète.
	A3	I think that using Comète will be beneficial/detrimental to attending my courses.