MEASURING STUDENTS' ATTITUDE TOWARDS E-LEARNING. A CASE STUDY

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Abstract: As Internet facilitates communication no matter the distances, providing clear transmission of all type of information needed in the learning process, including testing and evaluation systems, e-learning becomes a more suitable environment for many students. The efficiency of starting such a program based on e-tools is under the influence of factors such as: students' attitudes, the utility they perceive in using these tools, the attitude towards adoption of technology and, of course, the technological background they have.
Although, there are many advantages, students have different opinions and attitudes towards this modern process of learning. This study was designed to examine students' attitudes towards e-learning and to enlighten the differences that appear due to socio-demographic profile, but also due to the specialty they chose for their college studies.

Keywords: e-learning, attitude measurement, scale development

I. LITERATURE REVIEW

The evolution of IT & C has been felt strongly in the educational area, causing substantial changes to the local education system. It consists of adopting modern teaching techniques and technology in higher education, but, of creating educational programs tailored to the consumer, the student. Given that the Internet facilitates communication remotely, ensuring transmission of all types of information needed for learning, including systems for testing and evaluation of knowledge gained, is becoming more prominent the concern to integrate e-learning as common learning environment of students.

E-learning can be defined from different perspectives. There are specialists who consider that e-learning means any teaching process which integrates any form of technology, but there are others who claim that e-learning represents a teaching solution for distance education, facilitated by the massive penetration of Internet as a form of communication. Nichols (2003) defines the concept as ,, the use of various technological tools that are either Web-based, Web-distributed or Web-capable for the purposes of education." As noted, in the centre of Nichols' perspective, lies as a main component of the phenomenon of e-learning, Internet and web technologies, which allow the transfer of information at any time in any location, to as many people as needed. The American Society for Education and Development defines e-learning as "any form of information transmitted, facilitated or provided by electronic technologies in order explicitly to support the process of learning." A different approach in terms of participation in the process of e-learning is found in Jackson (quoted in Partridge, 2005) who talks about two secondary concepts: technologically distributed e-learning and e-learning facilitated by technology. The first situation arises in the case of distance education, while the second describes the process of traditional education using various technical means.

From the student point of view, e-learning is a form of education which implies involvement, motivation and efficiency in communication. The lack of human interaction strongly influences his performance in education. The student must communicate frequently with his colleagues and teachers so as to be able to accomplish all assignments, he has to find internal resources as stimulus to overpass the difficulties of a socially isolated environment. The impact of e-learning development and its

introduction as an educational system can be assessed in the light of students' characteristics. Thus, we speak primarily of a separation of „serious" students from the "passive" ones. The first category are those who will use online resources to develop its knowledge, taking advantage of the benefits of e-learning, while the "passives" will take advantage of the benefits of new educational establishment to obtain diplomas that might help them get a better job. The successful e-learner must have, according to a study conducted at Bloomsburg University of Pennsylvania, qualities such as self-motivation, patience, self-discipline, easiness in using software, good technical skills abilities regarding time management, communication, organizing. Of these the largest share was registered by self-motivation - 39% and communications skills - 23%. Other studies have found records that experience in computer use is another success factor in adopting e-learning.

These factors have a direct impact on students' attitude towards e-learning. Thus, the attitude can be positive, if the new form education fits the students' needs and characteristics, or negative, if the student cannot adapt to the new system, because he does not have the set of characteristics required.

Students' attitude towards e-learning is influenced by its perceived advantages and disadvantages. The schedule flexibility is, without no doubt, an important advantage, the student having the opportunity to learn no matter his location, no matter the time as long as he has an Internet connection. Reducing costs is another benefit together with time saving, in case of students who are commuting. E-learning is a solution for students hired during their studies, allowing them to adapt their learning schedule to their job program. So, the student has the possibility to choose how he organizes his activities. This way he is encouraged to take full responsibility for his future, being the only one responsible for assessing the knowledge and the abilities required for professional development.

Still, there are disadvantages which are connected to technical aspects of the e-learning system, meaning the availability of certain technologies not only for learning institutions, but also for students. Moreover, an important disadvantage concerns students' abilities to use it efficiently the technology. The basic abilities needed by a student entering an e-learning program refer to use of writing software, internet browsing, and email communication. If these are missing, learning efficiency through e-learning diminishes, the student having to face a stressful feeling, which can turn into frustration and insecurity. These emotions influencing the student's attitude toward e-learning usually appear due to the lack of human interaction with colleagues and especially with teachers who can induce a certain discipline of working for students establishing rules, dead-lines, evaluation systems throughout the whole period of learning. That is why students with low motivation, not being constraint by the presence of a teacher, by a strict program as in the traditional system, cannot adapt to e-learning.

1.1. Measuring attitude

Measuring attitudes has an important role in analyzing consumer behaviour because it is known the fact that there is a strong connection between attitude and behaviour. The two concepts are not similar; specialists have discovered that attitude indicates in a certain degree the possibility of adopting certain behaviour. Talking about e-learning, a favourable attitude of students shows a greater probability that they will accept the new learning system.

There are two models which measure attitude, one developed by Rosenberg and the other by Fishbein. The Rosenberg model is built on two variables: the perceived utility of the object and the value of importance, which refers to the extent to which is important for the consumer to obtain the advantages expected from using the object. Adapting the Rosenberg model to the case of students' attitude towards e-learning, we can acquire a full indicator of a probable behaviour using the utility perceived by the consumer – in this situation the student using an e-learning system – and the importance given by the consumer to this utility.

The Fishbein model offers a different perspective, proposing an analysis of attitudes through the consumer's beliefs and evaluations. The consumer's beliefs refer to the probability accepted that the object has certain features, whereas evaluations stand for the extent to which these features are important or not. The perceived utility from the Rosenberg model corresponds to the consumer belief in the Fishbein model.

Once the attitude measured, the connection with the behaviour can be identified using the Theory of reasoned action (Ajzen and Fishbein, 1980): behaviour intention depends on the attitude towards behavior and on subjective norms. The attitude towards behaviour is a result of consumer's beliefs and evaluations. The subjective norms represent "the person's perception about the opinions of close social environment regarding the option of adopting or not a certain behaviour" (Ajzen and Fishbein, 1975). An extension for this theory was proposed by Icek Azjen in 1985 and is known as The Theory of Planned Behavior. Azjen's contribution consists of adding to the formula of TRA another concept – the perceived behavioural control which refers to "an individual's perceived ease or difficulty of performing the particular behaviour. It is assumed that perceived behavioural control is determined by the total set accessible control beliefs – an individual's beliefs about the presence of factors that may facilitate or impede performance of the behaviour" (Ajzen, 1991, p.188).

1.2. Methodological contributions

Measuring attitude towards e-learning has been the established objective of many papers which have approached different methodologies.

Mishra and Panda (2007) developed a scale composed of 12 items with the purpose of measuring attitude towards e-learning. The stages of the scale development were the following: obtaining 29 items regarding attitude towards e-learning based on extensive literature review, choosing the right type of scale measurement – 5 points Likert, validation of items by experts in the field, testing the scale on a sample of 150 persons and, in the end, analyzing results and optimizing the scale by obtaining a significant value for the alpha Cronbach coefficient.

Wangpipatwong (2008), in a case study made at Bangkok University, affirms that the intention of using e-learning in influenced by students attitude towards computer and their perception of e-learning. The proposed model is based on computer attitude scale developed by Lyod and Gressard (1984) and the Technology Acceptance Model (Davis, 1989). The factors tested by Wangpipatwong are, one hand, self-trust regarding the abilities to use the computer, enjoyment of use, the perceived utility and, on the other hand, e-learning ease of use, its perceived utility and the enjoyment felt when using the new education system.

Another study made in Thailand by Watcharawalee Lertlum and Borworn Papasratorn (2005) applies a methodology based only on the Technology Acceptance Model (TAM). In Egypt, Wahab (2008) applied a questionnaire with 24 items which measured the attitude towards e-learning, the intention of adopting e-learning, the availability of resources, the ease of use and the utility – on a Likert scale.

The presence of TAM in measuring attitude towards e-learning is very high. In developing the model, Davis used the Theory of Reasoned Action and created two new concepts: the perceived utility and the perceived ease of use, both referring to computer use. The perceived utility is defined as "the extent to which a person believes that using a computer will determine an increase in performing a certain activity" (Davis cit. Jung et al.). The perceived ease of use means "the degree in which a person believes that the use of a computer does not involve effort" (idem, ibid.). The dependent variable in the system is the effective use of a computer, which is conditioned by the behavioural intention. TAM can be used in the study of attitude towards e-learning taking into account the fact that e-learning as an educational process is entirely based on IT&C.

II. METHODOLOGY AND RESEARCH DESIGN

The purpose of this paper is to measure students' attitude towards e-learning and to discover the influencing factors so as to have a relevant results for the future initiatives of educational institutions that plan to adopt an e-learning system. Determining students' attitude towards e-learning represents an important stage in predicting the adoption of a certain behaviour.

This research was conducted through a questionnaire developed through exploratory research. After overseeing the literature review and choosing the analysis models, the questionnaire was structured in three parts having as objectives: analyzing of technical abilities, measuring students' attitude towards e-learning and defining social and demographic profile.

As presented in the literature review, the attitude towards e-learning is influenced computer use behaviour, in consequence the questionnaire contained variables which measured experience in computer use, daily period of use, software ease of use (Microsoft Office Pack) – these were variables part of a scale measuring technical abilities.

For the study of attitude we obtained a construct using the 5 points Likert. The stages of construct development were:
- Identifying e-learning attributes, advantages and disadvantages
- Composing phrases including these attributes, positive as well as negative; we generated a number of 18 items.
- Validation of items by specialists
- Pre-testing the construct one a small sample to eliminate inappropriate items
- Applying confidence analysis

After all these steps were passed, we selected the items which had a correlation coefficient of minimum 0.3 for correlation between items and a level of 0.5 for correlation of each item and the global score of the construct. Of these items we chose those who had an alpha Cronbach higher than 0.7. Finally, we obtained a construct of 5 items, 2 negative and 3 positive, with a global alpha Cronbach of 0.749.

TABEL 1 – A SCALE FOR MEASURING STUDENTS' ATTITUDE TOWARDS E-LEARNING

Item	Total agree	Agree	Neutral	Disagree	Total disagree
E-learning offers the possibility to efficiently manage your time.					
Item	**Total agree**	**Agree**	**Neutral**	**Disagree**	**Total disagree**
E-learning is not efficient as teaching method.					
E-learning is a learning environment which needs advanced technical knowledge a pc use.					
E-learning assures schedule flexibility.					
E-learning reduces students' educational costs.					

The last part of the questionnaire aimed to collect socio-demographic data, which, stated by specialists, can have a certain influence over students' attitude towards e-learning. The variables studied were: specialty, year of study, occupational status and commuting status. The respondents were asked to answer the questions thinking that e-learning refers to a complete virtual learning process – teaching, learning and evaluation being made virtual.

The sample used in this research is represented by students of the Business Administration and Economics Faculty Iasi. We used the quota sample technique; variables of sampling were year of study and specialty. A number of 284 were gathered, of which were verified as valid – 226.

III. RESULTS

Data analysis revealed a positive attitude of students towards e-learning; the mean registered a value around 3.5 (measured from 1 to 5). As for the attitude differences depending on socio-demographic profile, we discovered that these appear mainly due to occupational status.

TABLE 2 - MEAN TEST FOR E-LEARNING ATTITUDE DEPENDING ON OCCUPATIONAL STATUS

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1,346	1	1,346	5,100	,025
Within Groups	59,105	224	,264		
Total	60,451	225			

The sig value of 0,025 for a significance level of 0,05 proves the fact that there significant differences regarding attitude of students who are hired in comparison with those who do not have a job. This means that translating the classroom in the virtual environment is easier accepted by hired students, because they are conditioned by a straight schedule. The argument is also offered by the statistical analysis which identified a value of 4.15 out of 5 points for the attribute "time management" and 4.37 for "schedule flexibility".

TABLE 3 – E-LEARNING ATTRIBUTES' SCORES OFFERED BY HIRED STUDENTS

Attribute	Score
Time management	4.15
E-learning teaching efficiency	3.05
Need for advanced technical abilities	2.90
Schedule flexibility	4.37
Reducing costs	3.98

Still, the hired students think that the educational process can be damaged by using virtual tools, as they rate "e-learning teaching efficiency" at a value of 3.05 out of 5. Despite the fact that 60% of students having a job, have PC experience of more than five years and 50% of them are working on computers between 3 and 8 hours, still they consider that there is a need for more specialized technical skills for e-learning. This is an opinion of students who have registered a medium score for technical abilities of 4.42 out of 5.

Technical abilities are influenced by pc experience measured in years, pc daily use measured in hours and ease of use of educational software – mainly the Office package – measured by semantic differential.
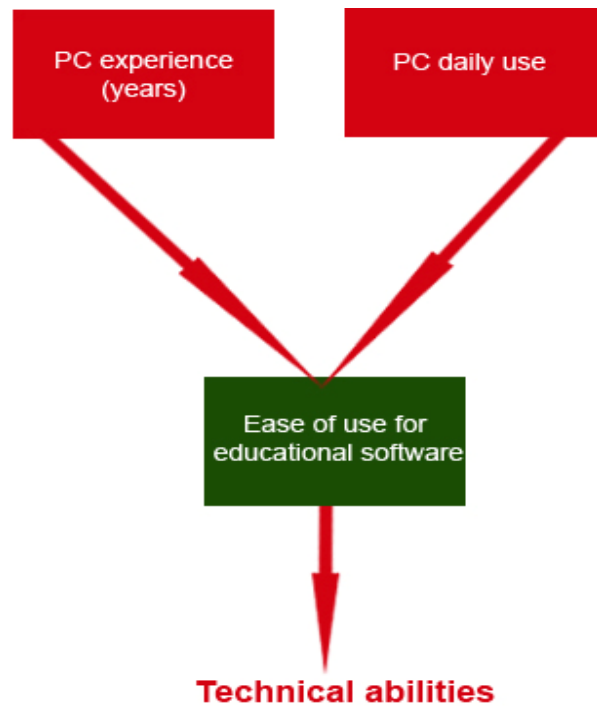
Figure 1. Technical abilities influencing attitude towards e-learning

Commuting should have been, according to literature review, an important factor influencing attitude, but the analysis revealed nothing concluding for this matter. There were not registered attitude differences depending on specialty and year of study.

TABLE 4 – CORRELATION BETWEEN ATTITUDE TOWARDS E-LEARNING AND TECHNICAL ABILITIES

		Attitude towards e-learning	Technical abilities
Attitude towards e-learning	Pearson Correlation	1	,155(*)
	Sig. (2-tailed)		,020
	N	226	226
Technical abilities	Pearson Correlation	,155(*)	1
	Sig. (2-tailed)	,020	
	N	226	226

* *Correlation is significant at the 0.05 level (2-tailed).*

What we discovered was a weak correlation between attitude towards e-learning and technical abilities. Another correlation identified was between attitude towards e-learning and daily time dedicated to computer use, which tells us that students who use more often their pc are more likely to accept e-learning.

TABLE 5 – CORRELATION BETWEEN ATTITUDE TOWARDS E-LEARNING AND TIME DEDICATED TO COMPUTER USE

		Attitude towards e-learning	**Time dedicated to computer use**
Attitude towards e-learning	Pearson Correlation	1	,135(*)
	Sig. (2-tailed)		,043
	N	226	226
Time dedicated to computer use	Pearson Correlation	,135(*)	1
	Sig. (2-tailed)	,043	
	N	226	226

* *Correlation is significant at the 0.05 level (2-tailed).*

IV. CONCLUSIONS

The main purpose of this research was to analyze students' attitude towards e-learning and to determine some factors that have an influence on it. We include in our analysis three aspects: pc experience, attitude towards e-learning and demographic characteristics.

Results revealed that there is a connection between technical abilities and students' attitude towards e-learning. Attitude is also influenced by time dedicated to computer use, indicator of pc experience. There were found attitude differences in the case of hired students compared with the unemployed ones. No influences were registered due to specialty and year of study. We expected to find an influence coming from postgraduate studies, where over 60% of students have a job and attitude towards e-learning should have been according to specialists more favourable. An explanation can be the changes of the educational system and the introduction of Bologna cycle, students considering masters' studies as important as bachelors'.

V. LIMITS AND FUTURE RESEARCH

The main limit of this research is due to the fact that students questioned did not actually use an e-learning system. Attitude measurement was obtained only through students' knowledge about e-learning coming from different information sources such as media, older colleagues. This explains why the mean was very close to 3, showing more a neutral position. Still, the research is important for educational institutions which are planning to include in their teaching programs the e-learning system. Measuring students' attitude is the first step to take before starting such a project.

Future research will use qualitative techniques applied one small samples of students using or having used an e-learning system. The aim will be to identify problems which appear in the use of IT&C for e-learning.

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