

## STUDENTS' PERCEPTIONS OF IT SUPPORTED LEARNING

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**Abstract:** The objective of this study was to examine the university students' perceptions and intentions towards IT supported learning. Eighty-eight undergraduate students from the engineering and management departments of a young private university in Bosnia and Herzegovina participated in the survey. In responding to the questionnaire, the participants gave their opinions about IT medium richness, self-efficacy, usefulness, ease of use, social norms and intentions to use IT in their day-to-day learning. The results revealed significant differences in perceptions and intentions between junior and senior students. Juniors had significantly higher regard for IT medium richness and felt higher social norms pressure, but expressed lesser intentions to use IT tools due to their poorer self-efficacy beliefs. The findings suggest the need for more and earlier students' IT exposure and practice in order to gain better skills and form more favourable usage intentions sooner.

### 1. Introduction

The world is experiencing enormous transformation: technological, economic, social, cultural and political. It is increasingly becoming global, virtual and knowledge intensive. To succeed in such a world, organisations need to have better educated workforce. Thus, it is important to prepare next generations of graduates to live and work in the new "knowledge age". In response to the growing demand for educated workforce, universities are replacing or complementing traditional methods of teaching and learning with information technology (IT) supported approaches.

The use of IT tools in tertiary education in developed countries is very high. IT tools are employed to help students' learning process and to increase the quality of offered education. The use of IT tools may also boost students' learning interests (Handzic and Chumkovski 2004, Handzic and Hoor, 2005). Lecturers can also benefit from IT. By using sophisticated IT tools, they can better and more easily express themselves and add more meaning to what they want to say (Shum et al. 2010).

In developing countries such as Bosnia and Herzegovina (BiH), the use of IT in teaching and learning at universities is relatively low (Habul and Obralic 2009). It is therefore of utmost importance to understand factors that influence the adoption of IT supported learning in the context of this country's higher education. The purpose of this paper is to address the issue from the students' perspective. The main objective of In particular, the study aims to examine

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which factors can explain and predict students' IT usage behaviour in undergraduate study programs at a new private university.

The paper is organized as follows. After this introductory section, the review of relevant literature on technology adoption theories is presented. Then, the research methodology employed in the current investigation is described. After that, the results of quantitative and qualitative analyses are summarized. Finally, the key findings and their theoretical and practical contributions are assessed and the main conclusions are drawn.

## **2. Literature Review**

IT supported learning can be considered as a technological innovation in education. Therefore, Roger's Innovation Diffusion Theory (IDT) is quite relevant for studying its adoption. This theory identifies a series of innovation characteristics (eg. relative advantage, compatibility, complexity, trialability and observability), organizational characteristics (eg. formalization, centralisation, openness, interconnectedness, slack and size) and adopter characteristics (eg. familiarity and motivation) that are related to innovation adoption (Rogers 2003). Another popular IT adoption theory is Davis' Technology Acceptance Model (TAM). This model assumes that an individual's perceptions of IT usefulness and ease of use are two key beliefs that influence the person's intended or actual IT use (Davis 1989). Yet another popular approach used to investigate factors that influence IT adoption is Theory of Reasoned Action (TRA) by Ajzen and Fishbein (1980). According to TRA, social norms held by groups to which an individual belongs put additional pressure on the person to conform and thus influence his/her intention regarding the use of IT.

Comparative analysis of three most popular adoption theories with several others found in the literature reveals a number of similarities between constructs. This is particularly visible in the case of Media Richness Theory (MRT) by Daft and Lengel (1986). For example, medium capacity employed by MRT is similar to perceived relative advantage or usefulness. In addition, self-efficacy beliefs defined by Compeau and Higgins (1995) are similar to perceived ease of use. Finally, system quality construct from the DeLone and McLean IS Success Model (DeLone and McLean 1992, DeLone and McLean 2003) is comparable with the innovation characteristics and its perceived usefulness.

From the review of the major adoption and related theories, it is evident that they are complementary and if integrated could provide even stronger model than if each theory is used on its own. So, the constructs from all the above theories are used for research to explore the factors that influence IT tools usage in teaching and learning in undergraduate study programs.

## **3. Research Method**

A survey study was conducted to explore the adoption of IT tools in a university setting and from the students' point of view. The survey was chosen as a preferred research method due to timeliness, low cost and convenience factors.

The survey questions were set to find out how participants perceive IT tools medium richness, usefulness, self-efficacy, ease of use, social norms and their intentions to use IT to support their study. All questionnaire items used to measure these constructs were adapted from prior studies and had proven validity and reliability. The questionnaire consisted of a mixture of closed and open-ended questions. Sixteen closed questions were used to find out the extent of agreement on various statements and to ease the analysis and synthesis of the results. The

responses were captured on seven-point Likert scales with end points 1 — strongly disagree and 7 — strongly agree. Open-ended questions were used to acquire basic demographic information and additional textual comments on any IT aspects of interest. The survey was designed to allow anonymity so that the subjects could freely express their thoughts and feelings.

Subjects for this study were undergraduate students from two different departments: engineering and management. A total of eighty-eight students participated in the current study. Survey forms were distributed to the participants during regular classes by one of the authors. It took between 15 and 20 minutes to answer all survey questions. Then, the participants' responses were collected, encoded, entered into the computer file and analyzed using Microsoft Excel spreadsheet program. The results of the analyses performed are presented in the following section.

#### 4. Results

##### *Rating Scores*

Mean respondent scores for six variables (media richness, self-efficacy, usefulness, ease of use, social norm, intention to use) were calculated by field of study (engineering, management) and year of study (first, second, third). Then, t-tests were performed to examine any potential differences between different subject groups. Summary results are presented in Table 1.

Table 1. Results of analyses for six variables by field and year of study

<b>Subject groups</b>	<b>Media richness</b>	<b>Self efficacy</b>	<b>Usefulness</b>	<b>Ease of use</b>	<b>Social norm</b>	<b>Intention to use</b>
<b>1.Engineering</b>	5.41	5.39	5.55	5.15	5.74	5.38
<b>2.Management</b>	5.63	5.80	5.99	5.05	5.93	5.76
difference (t-test)	Ns P=0.404	Ns P=0.125	Ns P=0.152	Ns P=0.690	Ns P=0.471	Ns P=0.257
<b>1.First year</b>	5.76	5.61	5.94	5.14	6.17	5.55
<b>2.Second year</b>	5.30	5.19	5.67	5.04	5.50	5.18
<b>3.Third year</b>	5.41	5.77	5.36	5.25	5.85	5.76
difference (t-test)						
1st-2nd	Sig 0.052	NS 0.154	NS 0.362	NS 0.722	Sig 0.017	NS 0.336
2nd-3rd	NS 0.708	Sig 0.038	NS 0.361	NS 0.423	NS 0.722	Sig 0.086
<b>Total</b>	5.46	5.48	5.65	5.13	5.79	5.46

The results from Table 1 indicate significant differences in perceptions and behaviours between junior and senior students, but no differences due to their field of study. Both engineering and management students held similarly positive beliefs about IT and formed similarly favourable intentions to use it.

With respect to year of study, junior students had significantly higher opinions about the richness of IT as a learning medium than their senior colleagues. There were significant differences in mean scores for richness between first year subjects and their second and third year counterparts (5.76 vs. 5.30&5.41, sig). Surprisingly, differences for perceived usefulness of IT were not significant, although they were in the expected direction (5.94 vs. 5.67&5.36, ns). Juniors also felt greater pressure from social norms to use IT than seniors. Mean scores for social norms among first year subjects were significantly higher than those among second and third year ones (6.17 vs. 5.50&5.85, sig).

In contrast, juniors held much poorer self-efficacy beliefs compared to seniors. Both first and second year subjects had significantly lower mean scores for self-efficacy (5.61&5.19 vs. 5.77, sig) than their third year counterparts. They also had lower mean scores for ease of use, although not significantly (5.14&5.04 vs. 5.25,ns).

Consistent with their positive beliefs, all subjects, irrespective of their year of study, expressed favourable intentions towards IT. However, junior students reported significantly lesser intentions to use IT tools to support their learning compared to senior students due to their poorer self-efficacy. Both first and second year subjects had significantly lower mean scores for intention to use than their third year colleagues (5.55&5.18 vs. 5.76,sig).

### ***Textual Comments***

To investigate deeper the potential reasons behind students' rating scores, content analysis of textual comments was done. Only five comments were obtained. All comments were from engineering students. Three were from first, one from second and one from third year students. The list of comments is given in Table 2.

Table 2. List of comments obtained

1	“possessing these skills will help me in learning, searching and improving in my field. Also it is important for jobs in which we will be engaged tomorrow.”
2	“i think that using IT during the class is useful, cause it makes our understanding better.”
3	“that is great thing to use it in our university.”
4	“in this age doing sth without IT tools is impossible. For new university just like (name hidden) online libraries e-books, internet is primary.”
5	“it makes my life easy”

The content analysis revealed that all comments made by subjects were favourable. This is consistent with their favourable rating scores. The first two comments explained IT usefulness in terms of helping to better learn, search, improve and understand the subject matter. The next two comments acknowledge the fact that the use of IT in universities has become the norm. The last comment recognises the role of IT in making the overall students' life easier (for example by supporting administrative and social activities).

Interestingly, subjects in this study made no comments regarding their own IT skills. However, in our earlier similar investigation (Handzic et al. 2011) students commented on the need to explain IT to them in a better and more understandable manner. They also wished to be exposed to more sophisticated learning media and to gain more practice. Insufficient exposure and practical experience with advanced IT tools appears to be the main reason for lower self-efficacy beliefs resulting in lesser usage intentions among junior students.

## **5. Discussion**

### ***Main Findings***

Consistent with previous research on IT adoption, favourable perceptions of IT tools and of their users were found to lead to favourable intentions to use IT. However, it appears that insufficient experience with IT (and thus inadequate knowledge and skills) of junior students was the main reason behind their poorer IT self-efficacy beliefs and lesser subsequent intentions to use IT, when compared to their senior colleagues.

### ***Implications***

The main findings of this study have significant implications for both research and practice. With respect to research, the study provided useful insights into IT adoption process in higher education. Specifically, the findings confirmed our theoretical propositions and showed the influence of perceived IT richness and thus usefulness and perceived IT self-efficacy and thus ease of use on students' intentions to use IT in their learning. In addition, the findings revealed that the perceived IT richness and social norms were sufficient for initial adoption. However, the lack of self-efficacy beliefs due to inadequate exposure and practice was the major barrier to full IT adoption in learning.

For higher education practice, the findings may help university teachers to devise better strategies to promote greater application of more sophisticated IT tools, produce better plans to service different members of teaching and learning community; apply IT applications and training that better meet students' and teachers' needs; and ensure that they get necessary IT knowledge and skills.

### ***Limitations and Future Research***

The findings of this study need to be interpreted with some caution due to several limitations. First, the sample of participating students is relatively small and may not be representative of general student population. Second, all constructs in the study were measured subjectively from the students' point of view. Lecturers may have different views. Third, all subjects were from the same newly established private institution. Consequently, there may be differences between private and public, new and long-established institutions. Therefore, in future research, attention should be given to collect more representative data, include different types of users, and delineate the concerns of public and private universities, IT adopters and non-adopters.

## **6. Conclusions**

This study examined undergraduate students' perceptions and behaviours towards IT supported learning at a newly established university. The findings showed that the adoption of IT (in terms of intention to use IT) in this context was contingent upon critical factors such as perceptions of IT medium richness, self-efficacy and social norms. The findings showed that perceived richness and social norms played an important role in students' initial decisions to adopt, while the lack of self-efficacy was a major barrier to full adoption. These findings make important contributions to research and practice by providing empirical evidence of critical IT adoption factors, and suggesting how they can be used to improve students' learning in practice. Finally, these findings provide a basis for further research that would address current limitations and extend research to other adoption issues in varying tasks, contexts and participants.

## **References**

- Ajzen, I., and M. Fishbein (1980) *Understanding attitudes and predicting social behaviour* (p. 278). Englewood Cliffs, NJ: Prentice-Hall.
- Compeau, D.R. and C.A. Higgins (1995) "Computer self-efficacy: development of a measure and initial test", *MIS Quarterly*, (19)2, pp.189–211.
- Daft, R.L and R.H. Lengel (1986) "Organizational Information Requirements, Media Richness and Structural Design", *Management Science*, (32)5, pp.554–571.
- Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, **13**(3), 319-340.
- DeLone WH and McLean ER (1992) Information systems success: The quest for the dependant variable. *Information Systems Research* 3(1), 60-95.
- DeLone WH and McLean ER (2003) The delone and mclean model of information systems success: A ten-year update. *Journal of Management Information Systems* 19(4), 9-30.
- Habul A. and Obralic M. (2009), Development of IT in Education in Bosnia and Herzegovina, example: Faculty of Economics, University of Sarajevo
- Handzic M. and Hoor H.J. (2005), "Corporate E-learning: An Empirical Evaluation", *Journal of Information and Knowledge Management*, Vol. 4, No. 4, pp. 229-235
- Handzic, M and A Chumkovski (2004). e-Learning portal evaluation. In *Proceedings of the European Conference on Knowledge Management (ECKM 2004)*, pp. 425–432. Paris, 30 September–1 October.
- Handzic, M., Obralic, M. and Cickusic, E. (2011). The Use of IT Tools in Everyday Classes Where Foreign Language is Taught. In *Proceedings of the 1st International Conference on Foreign Language Teaching and Applied Linguistics (FLTAL 2011)*, pp. 546–551. Sarajevo, 5-7 May.
- Rogers, E. M. (2003). *Diffusion of Innovations*. 5th Edition. The Free Press, New York.
- Shum PS, Land L, Dick G. and Jamieson R. (2010), 40P. Online Lecturing: Students' want it, but what about the lecturers?