

# Factors that Influence e-Business Application in Tertiary Education

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**Abstract:** e-Business has dramatically influenced progress in all the dimensions of modern life in the context of globalisation. Education is one of these dimensions. Moreover, e-Business and tertiary education are interdependent. However, success in application of e-Business technologies in tertiary education can be changed by its factors. Aim of the present paper is to analyze factors that influence e-Business application in tertiary education. The meaning of the key concepts of *e-business technologies* and *factors* is studied. Moreover, the study demonstrates how the key concepts are related to the idea of *tertiary education* and shows a potential model for development, indicating how the steps of the process are related following a logical chain: *e-business technologies* → the role of e-business application in tertiary education → *factors* → empirical study within a multicultural environment. The results of the present research show that the external factors and, particularly, factors forming communication influence e-business application in tertiary education. Directions of further research are proposed.

## 1 INTRODUCTION

E-Business advances the development of innovative products, processes and services in the economy: just-in-time service delivery, inventory visibility and up-to-the-minute distribution-tracking capabilities.

Success of e-Business depends on e-Business proper integration into the processes and environments of tertiary education. However, application of e-Business technologies in tertiary education can be changed by its factors.

Aim of the present paper is to analyze factors that influence e-Business application in tertiary education.

The remaining part of this paper is organized as follows: The introductory state-of-the-art section demonstrates the authors' position on the topic of the research. Section 3 introduces e-business technologies as well as the role of e-Business application in tertiary education. Factors are defined in Section 4. The associated results of an empirical study will be presented in Section 5. Finally, some concluding remarks are provided in Section 6 followed by a short outlook on interesting topics for further work.

## 2 STATE-OF-THE-ART

The methodological approach of the present research is determined as the development of the system of external and internal perspectives. Whereas the external perspective accentuates social interaction of development, the internal perspective focuses on cognitive activity (Surikova, 2007). Development of the system of external and internal perspectives proceeds from the external perspective through the phase of unity of external and internal perspectives (the system of interacting phenomena) to the internal perspective as depicted in Figure 1.

Development of the system of external and internal perspectives is formed by the System-Constructivist Theory. The application of this approach to learning introduced by Reich (Reich, 2005) emphasizes that human being's point of view depends on the subjective aspect (Maslo, 2007): everyone has his/her own system of external and internal perspectives that is a complex open system (Ahrens and Zaščerinska, 2010), and experience plays the central role in the knowledge construction process (Maslo, 2007).

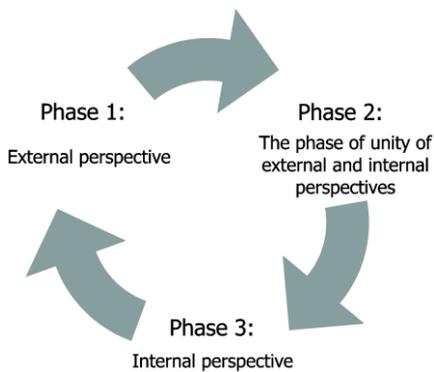


Figure 1: Phases of development of the system of external and internal perspectives.

### 3 E-BUSINESS TECHNOLOGIES

Typical e-business applications include corporate blogs, wikis, feeds and podcasts (Vossen, 2009) as shown in Figure 2.

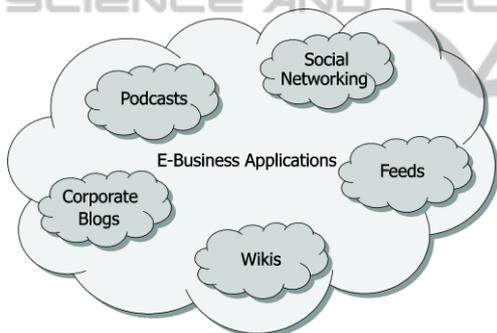


Figure 2: Elements of e-business applications.

Blogs are a common way to stay in touch with customers, to inform about new products and to receive immediate feedback; they can also be used internally to discuss specific topics among the staff of an enterprise, in particular if people are geographically distributed (Vossen, 2009). In order to stay up-to-date with a company blog, but also with other information an enterprise might publish, there are essentially two approaches: pull and push. The active or pull way is to read the information at my own liberty and pace; in the passive or push approach, the information will be delivered to me automatically.

A podcast is a particular form of a feed consisting of audio or video material (Vossen, 2009). Wikis allow collaborative work on a common set of documents by many authors, and have been discovered as a new way of performing knowledge management in a learning organization (Vossen,

2009).

A social network can also act as a means of connecting employees of distinct expertise across departments and company branches and help them to build profiles in an easy way, and it can do so in a much cheaper and more flexible way than traditional knowledge management systems (Vossen, 2009).

Development of students' competences requires e-business application in tertiary education to be promoted. However, e-business application in tertiary education is formed by factors.

### 4 FACTORS THAT INFLUENCE E-BUSINESS APPLICATION

Factor is a reason of the research subject change (Lasmanis, 1997). Factors are differentiated into external and internal. External factors in pedagogy are surroundings and resources. Internal factors in pedagogy are aims of the student's activity, motivation, interest, skills and experience.

External factors in pedagogy include factors that form communication and educator's purposeful activity, and internal factors comprise learning factors (Ahrens et al., 2011) as shown in Table 1.

Table 1: Factors that influence e-business application in tertiary studies.

Factors that influence e-business application in tertiary studies		
External Perspective		Internal Perspective
factors forming communication: - aural medium - socio-cultural factors - non-verbal communication system	educator's purposeful activity	learning factors: - age of students - affective factors - motivation - learning experience

Factors that influence communication involve aural medium, socio-cultural factors and non-verbal communication system (Shumin, 1997).

Educator's teaching activity demands on careful preparation of material, clarification of the task before undertaking it, planning the activity, negotiating a balance between task needs and individual or group needs, planning varied types of activities, competition as a stimulus, scoring the activity results to help the learners to be aware of their progress and ensuring sensitivity to any emotional or cultural blockages which might interfere with the learners' confidence to use the

knowledge in relation to the particular topic, situation or functional purpose (Kramiņa, 2000).

Finally, learning factors include the age of students, affective factors, namely, emotions, self-esteem, empathy, anxiety, attitude, motivation, and learning experience (Shumin, 1997).

## 5 EMPIRICAL RESULTS

The research questions are as follows: which of three groups of factors (factors forming communication, educator's purposeful activity and learning factors) and how influence e-business application in tertiary education? Hence, the research is aimed at analyzing factors that influence e-business application in tertiary education.

Interpretative research paradigm has been determined.

The qualitatively oriented research used in the present empirical study allows the construction of only few cases (Mayring, 2007). Moreover, the cases themselves are not of interest, only the conclusions and transfers that are drawn from this material (Mayring, 2007).

Selecting the cases for the case study comprises use of information-oriented sampling, as opposed to random sampling (Flyvbjerg, 2006). This is because an average case is often not the richest in information. In addition, it is often more important to clarify the deeper causes behind a given problem and its consequences than to describe the symptoms of the problem and how frequently they occur (Flyvbjerg, 2006).

The present empirical study was conducted during the implementation of the Digital Social Media module within the Seventh Baltic Summer School *Technical Informatics and Information Technology* in Riga Technical University, Riga, Latvia, August 12-27, 2011. The sample involved 25 respondents.

All 25 respondents have got Bachelor or Master Degree in different fields of computer sciences and working experience in different fields. The respondents are from different countries, namely, Latvia, Lithuania, Estonia, Russia, Great Britain, China, India, Nigeria, Romania and Mexico. Hence, the sample is multicultural. Whereas cultural similarity aids mutual understanding between people (Robbins, 2007), the students' different cultural and educational backgrounds contribute to successful learning.

The Baltic Summer School contains a special module on Digital Social Media. The main aim of

the Digital Social Media module is to actively involve the student engineers in e-business application by providing innovative opportunities and organizing student engineers' cognitive activity. The content of the Digital Social Media module examines the advantages and problems of this technology, namely, architecture and management, protocol design and programming, which makes new social communication forms possible. The Digital Social Media module does not reveal the concept of e-business technologies. However, the Digital Social Media module comprises e-business technologies, namely, online networks.

The qualitative evaluation research comprised the analysis of the students' self-evaluation. The structured interviews included three questions: 1. What is your attitude to the Digital Social Media module? 2. What have you learned within the module? 3. How can you apply this knowledge in your professional field? The aim of the interviews was to reveal the students' evaluation of the implementation of the Digital Social Media module.

The students' expressions from the structured interviews were systematized according to eight constructs: four constructs of external factors and four constructs of internal factors, namely, factors that form communication include aural medium, socio-cultural factors and non-verbal communication system, educator's purposeful activity and learning factors comprise age of students, affective factors, motivation and learning experience.

The data were processed applying AQUAD 6.0 software. The determined codes were systematized into meta-codes corresponding to a dimension of the factor, namely, external and internal factor. It was discovered that not all meta-codes and codes could be traced in the students' structured interviews, for example, time for the Digital Social Media module limited. Moreover, the students' expressions in the structured interviews could not be systematized according to the following codes: socio-cultural factors and motivation.

Most of the students' expressions are categorized as to the meta-code *Factors forming communication*, namely, aural medium, whereas the students participated in the whole Digital Social Media module.

Frequencies were determined to reveal the factors the students had mentioned most frequently. The survey showed that the students had paid their attention to the external factors most frequently as demonstrated in Table 2.

For example, a student emphasized the positive evaluation of communication in the Digital Social

Media module, thereby developing the system of external and internal perspectives: “The Digital Social Media module was interesting, with many discussions between the participants. We had a good experience. I think communication is one of the most important and dynamic activities in the Digital Social Media module. It is very useful to develop this skill”. As a result the student enriched his communication skills: “I had some improvements of my communication skills”.

Table 2: Factors of students' frequent positive evaluation.

Factor	Factor Domain	Number	Percentage
Factors forming communication	Aural medium	15	60%
	Socio-cultural factors	20	80%
	Non-verbal communication system	18	72%
Educator's purposeful activity	Educator's purposeful activity	14	56%
Learning factors	Age of students	3	12%
	Affective factors	5	20%
	Motivation	7	28%
	Learning experience	10	40%

Structuring content analysis (Mayring, 2004) of the data reveals that the external factors and, particularly, factors forming communication positively influenced e-business application within the Digital Social Media module.

## 6 CONCLUSIONS

The results of the present research demonstrate that the external factors and, particularly, factors forming communication influence e-business application in tertiary education. The present research has limitations: the inter-connections between factors and e-business application, and the empirical study conducted by involving the students of one tertiary institution.

Further research proposes to search for relevant methods for evaluation of factors that influence e-business application. Empirical studies on factors that influence e-business application in other tertiary institutions and a comparative research of different countries are proposed.

## REFERENCES

Ahrens, A., Zašcerinska, J. (2010). Social Dimension of Web 2.0 in Student Teacher Professional Development. In *Europe Spring Conference 2010: Teacher of the 21st Century: Quality Education for*

*Quality Teaching*, 7-8 May 2010, pp. 179-186. Riga, Latvia.

Ahrens, A., Zašcerinska, J., Bassus, O. (2011). Collaboration within Social Dimension of Computing: Theoretical Background, Empirical Findings, Practical Developments. In Cruz-Cunha, M. M.; Moreira, F. (Eds), *Handbook of Research on Mobility and Computing: Evolving Technologies and Ubiquitous Impacts*, pp. 760-773. IGI Global.

Flyvbjerg, B. (2006). Five Misunderstandings About Case-Study Research. In *Qualitative Inquiry*, Volume 12, Number 2, pp. 219-245. Sage Publications.

Kramaņa, I. (2000). *Linguo – Didactic Theories Underlying Multi – Purpose Language Acquisition*. Monograph. Riga: University of Latvia, Latvia.

Lasmanis, A. (1997). *System Approach in Acquiring the Computer Use Skills*. Unpublished doctoral dissertation. University of Latvia, Riga, Latvia.

Maslo, E. (2007). Transformative Learning Space for Life-Long Foreign Languages Learning. In *International Nordic-Baltic Region Conference of FIPLV Innovations in Language Teaching and Learning in the Multicultural Context*, pp. 38-46, Rīga: SIA "Izglītības solī".

Mayring, P. (2004). Qualitative Content Analysis. In Flick, U.; von Kardoff, E.; Steinke, I. (Eds), *A Companion to Qualitative Research*, pp. 266-269. SAGE, UK, Glasgow.

Mayring, P. (2007). On Generalization in Qualitatively Oriented Research. In *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 8(3), Art. 26, p. 8.

Reich, K. 2005. *Systemisch-konstruktivistische Pädagogik*. Beltz, Weinheim.

Robbins, D. (2007). Vygotsky's and Leontiev's Non-classical Psychology related to second Language Acquisition. In *International Nordic-Baltic Region Conference of FIPLV Innovations in Language Teaching and Learning in the Multicultural Context*, pp. 47-57, Rīga: SIA "Izglītības solī".

Shumin, K. (1997). Factors to consider. Developing Adult EFL Student's Speaking Abilities. *English Teaching Forum*, pp. 6-15, vol. 35, No. 3.

Surikova, S. (2007). Development of Criteria, Indicators and Level System for Evaluation of Enhancement of Primary School Students' Social Competence. In *Society. Integration. Education. International Scientific Conference Proceedings*, pp. 383-393, Rezekne, Latvia.

Vossen, G. (2009). Web 2.0: a Buzzword, a serious Development, just Fun, or What? In *International Conference on e-Business*, pp. IS33-IS40, Milan, Italy.