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## **E-Commerce Evolution in Hungary: An Investigation of Critical Success Factors<sup>1</sup>**

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### **Abstract**

In this paper we highlight how the use of internet has changed from 2004 to 2009 among Hungarian companies, how their expectations about the role of e-commerce as a competitive advantage has evolved and whether perceived benefits of e-commerce show a shift from 2004 to 2009. We investigate the role of environmental factors and market orientation as two relevant types of critical success factors proposed by the management literature and measure their impacts on Internet usage, expectations about e-commerce and perceived benefits of e-commerce. Our findings suggest that market orientation has a positive effect on Internet usage and perceived benefits of e-commerce. Internet usage and expectations are dependent on the vulnerability of the company to its macroeconomic environment. The positive outcomes of joining the EU seem to influence whether a company is able to exploit e-commerce benefits.

### **Keywords**

**E-commerce, Critical Success Factors, Market Orientation, Environmental Factors**

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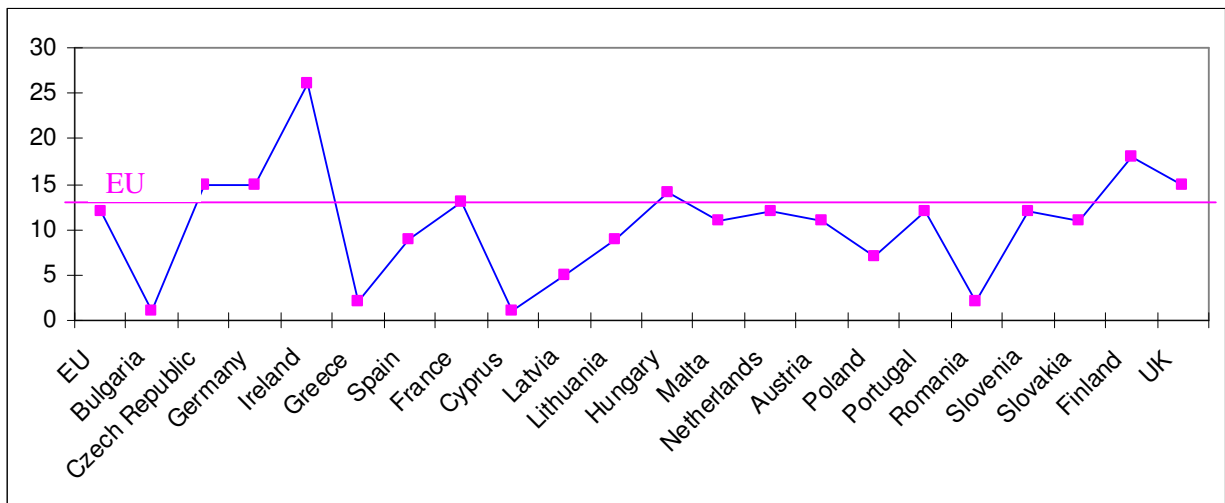
## 1. Introduction

The Internet has changed the ways how companies compete on the marketplace. Though companies recognise the strategic importance of E-business applications, considerable differences exist between industries and countries in the use of internet and e-commerce.

According to a research carried out by the Hungarian Central Statistical Office ([www.ksh.hu](http://www.ksh.hu)), Hungarian companies lag behind other European countries in several indicators:

1. Availability of computer in Hungarian companies is 6% less than the EU average (96%), and little better than that of Romania, where the availability of computers in companies has decreased the past few years.
2. Internet penetration rate in corporations is lower than the EU average (which is 93%). In Hungary 86% of companies with more than 10 employees use the Internet. Hungary is the last in the rank among countries joining the EU in 2004.
3. The biggest lag can be observed with regard to websites. In Hungary the proportion of companies having a website is 48% (in 2008), which is 16% less than the EU average, though considerably larger than that of Romania (27%) and Bulgaria (33%).
- 4 E-commerce is a strategic issue in the EU development objectives given its positive economic impacts. E-commerce represents 19-25 % in total turnover of developed countries .The EU average is 12% (Figure 1.). In Hungary, though its contribution to total turnover is still low (14%) it is very close (slightly higher) than the EU average.

*Figure 1 E-Commerce turnover, 2008 (% of total turnover)*



Source: Eurostat

These figures highlight the importance of E-commerce research in Hungary and other transition economies. In the following section we discuss the theoretical foundations of our research.

## **2. Theoretical background**

The rapid growth of e-commerce has brought an increasing interest of practitioners and researchers in understanding the evolution of e-commerce in various markets. In our understanding e-commerce is more than the use of electronic systems in the exchange of goods and services but also includes all activities which support this process. As such, in this research e-commerce and e-business are used interchangeably. We recognize however that e-business is often regarded as an overarching concept in other publications (a discussion of these concepts is presented in Cullen and Taylor, 2009).

Academic papers try to explain the e-commerce evolution from many different aspects. Chua et al. (2005) rely on stakeholder theory to structure e-commerce literature, suggesting that research themes should be adapted to the different stakeholders' perspectives such as customers, investors, regulators. Other studies look at the small business applications (Feindt et al., 2002), or the role of normative and cognitive institutions (Kshetri, 2010).

Another important stream of research focuses on the identification and analysis of critical success factors in e-commerce (Cullen and Taylor, 2009, Dezdar and Sulaiman, 2009, Angeles and Nath, 2007, Olsen and Boyer, 2003). The idea of critical success factors was introduced by Rockart (1979) in a paper that discussed the definition of chief executives' information needs. Rockart proposed four areas to identify critical factors: the industry in which the firm operates, the company itself (competitive strategy), environmental factors (economy and politics), time-dependent organisational areas (business units).

The notion of critical success factors refers to „the indispensable business, technology and human factors that help to achieve the desired level of organizational goals” (Turban et al., 2000, p.310). The understanding of these factors might highlight the areas to be developed or analysed in order to achieve competitive advantage. The CFSs concept has been applied in many situations including, quality management, organisational studies (Badri et al, 1995, Antony et al., 2002, Saraph et al., 1989, Power et al., 2001, Shah et al., 2006).

## **3. Research questions and methods**

The research presented in this paper makes part of a large research project investigating the competitiveness of Hungarian companies. The survey took place in 2009 with the use of face to face interviews; the sample size consists of 313 companies. Respondents are marketing or sales managers or if not such positions exist in a given company, the CEO answered the questions.

This research represents the fourth wave of competitiveness studies in Hungary. Similar research projects were undertaken in 1996, 1999 and 2004 which will allow us to present some longitudinal results as well. In the 2009 research, responding companies represent mostly manufacturing (42.4%), followed by services (23%) and trade (19.1%). Medium and larger size companies are overrepresented compared to their occurrence in the Hungarian economy. Two thirds of the responding companies are in domestic ownership.

In this paper we highlight how the use of internet has changed from 2004 to 2009 among Hungarian companies, how their expectations about the role of e-commerce as a competitive advantage has been modified and whether perceived benefits of e-commerce show a shift from 2004 to 2009.

Second, we investigate the role of environmental factors and market orientation as two of the critical success factors proposed by Rockart (1979) and measure their impacts on Internet usage, expectations about e-commerce and perceived benefits of e-commerce. More information on the operationalization of dependent and independent variables can be found in the Appendix.

Market orientation refers to the organizational culture that most effectively and efficiently creates the necessary behaviors for the creation of superior value for buyers (Narver and Slater, 1990, p.21). Since Internet as a powerful technology for e-commerce represents value for buyers and a competitive edge for companies, we expect that

**H1:** Market orientation will be positively related to the use of internet, expectations about e-commerce and perceived benefits of e-commerce.

Constructs capturing the impacts of the marketing environment are not widely available in the marketing literature. Environmental dynamism is discussed by Achrol and Stern (1988), Dwyer and Welsh (1985) focused on environmental forces (demand, competition, regulation, technology) on channel structure. In this research we focus on the impacts of the macro-economic environment. The measurement includes 10 items such as interest rates, exchange rates, stability of monetary policy, minimal wages, etc), and asks respondents to evaluate how favorable or unfavorable these are for the firm's success. High score on the macroeconomic environment impact means that the macroeconomic situation is favorable for the company. In such a situation the firm is not under pressure to shift its strategic focus, thus the motivation to rely on Internet will be rather limited.

**H2** Perceived positive impacts of the macroeconomic environment will be negatively related to the use of internet, expectations about e-commerce and perceived benefits of e-commerce

For many Hungarian companies, Hungary's joining the EU has made a difference in the ability to exploit opportunities resulting from EU membership. Those who were able to have access to new EU funding and/or create new business relationships with EU companies might have a better knowledge of e-commerce benefits, and might have obtained a positive experience with Internet and e-commerce applications.

**H3:** The perceived positive consequences of EU membership will be positively related to the use of internet, expectations about e-commerce and perceived benefits of e-commerce.

#### **4. Results**

Hungarian companies use the Internet for a variety of purposes (Table 1). The most frequently mentioned purpose is presenting company and product related information. Applications that allow interactions among different stakeholders (such as contact with customers, investors, employees, etc) are less common, however there is positive shift in the proportion of companies using interactive web based solutions with stakeholders from 2004 to 2009. On line payment, retailing and purchasing have made a remarkable increase the past 5-6 years, reaching 15-25% usage rate.

*Table 1 Use of Internet in 2004 and 2009 among Hungarian companies*

	2004	2009
Presenting company information	80.5%	84.3%
Presenting product information	71.1%	80.7%
Contact with customers	56.0%	76.3%
Contact with investors	23.1%	33.7%
Contact with employees	19.5%	31.0%
Job offers	16.6%	37.9%
Internal network	41.9%	44.7%
On-line retailing	5.1%	15.9%
Submitting on line orders	13.4%	35.7%
Receiving on line orders	17.7%	31.7%
On line payment to suppliers	6.5%	24.3%
On line purchasing	3.2%	24.3%
On line banking services	33.2%	46.0%
Requesting information	19.1%	31.0%
Collecting information	58.8%	54.5%
On-line training	7.9%	10.3%
Video conference	6.1%	8.8%
Other	2.9%	2.0%

N=255, in 2009. , 277 in 2004, expressed as percentage of companies using an application.

The strategic role of e-commerce seems to be recognised by Hungarian companies (Table 2). The responding companies consider e-commerce as a source of competitive advantage and have positive expectations about future trends especially concerning the role of online communications. A positive shift can be found in attitudes when comparing 2004 and 2009 research results. The perceived benefits of e-commerce are rather related to market expansion and increasing customer satisfaction in both time periods, however similarly to previous findings, perceptions change in a positive way.

*Table 2 Expectations of Hungarian companies about e-commerce in 2004 and 2009*

	2004	2009
Our competitors adopt e-business solutions	2.90	3.45
If we don't use e-business solutions we lag behind the competition	3.00	3.61
We should be considered as a company using innovative solutions	3.79	3.84
The role of on line communication will increase at my company	3.08	4.00

N=255, in 2009. , 277 in 2004, 1= strongly disagree, 5= strongly agree

*Table 3 Perceived benefits of e-commerce, in 2004 and 2009*

	2004	2009
E-commerce contributed to targeting new markets	2.24	3.44
E-commerce decreased our purchasing costs	2.02	3.15
With e-commerce a new type of relationship has been established with our suppliers and customers	2.35	3.12
With e-commerce purchasing has become more structured	2.13	3.27
E-commerce helps in meeting customer needs better	2.50	3.46

N=255, in 2009. , 277 in 2004, 1= strongly disagree, 5= strongly agree

Regression analyses were performed to test hypotheses H1-H3. Standardized beta coefficients are presented in Table 4.

*Table 4 Regression results (standardized beta)*

Independent variables	Dependent variables		
	WEB	EXPECT	BENEFIT
MARKOR	.0255*	0.236*	0.177*
MACRO	-0.180*	-0.149*	-0.145
EU	-0.038	0.095	0.257*
Adjusted R-square	0.074	0.065	0.093

\* Significant at  $p < 0.05$

H1 is supported by our results: market orientation has a positive impact on the extent of internet usage, expectations about e-commerce, and the perceptions of benefits of e-commerce. H2 is partially supported by the data. The inverse relationships is confirmed, however we obtained significant beta coefficients only for internet usage and expectation. H3 is partially supported : EU impact seems to influence only the perceptions of benefits but not the two other constructs.

## 5. Conclusions

Our research results give empirical support for the growing importance of e-commerce in transition economies. Managers seem to have rather positive expectations concerning the future of e-commerce and its role in creating a competitive advantage. The growth of e-commerce has favourable implications both at macro and micro levels, and EU policy makers as well as governments should find ways to encourage the spread of e-commerce and reduce the large differences that exist between EU countries.

In order to obtain a better understanding of the factors influencing e-commerce, we used the critical success factors framework to investigate the impacts of market orientation and external environment. Our results suggest that market oriented firms excel in e-commerce as well, they use a larger number of web based applications, have a more positive attitude to e-commerce, and are more likely to perceive benefits of e-commerce. The impact of the external environment shows a more complex picture. Internet usage and expectations are dependent on the vulnerability of the company to its macroeconomic environment. It seems that e-commerce may be a defending strategic option for companies that are negatively affected by macroeconomic changes. However once e-commerce is used, the macroeconomic environment does not play a significant role. The positive outcomes of joining the EU seem to influence whether a company is able to exploit e-commerce benefits. One explanation of this fact may be related to gaining experience from the relationship with more developed EU partners.

Our research has limitations as well. One important limitation concerns the independent variables. Due to data collection constraints, not all relevant critical success factors could be included in the survey. In future research, efforts should be directed to relate the findings to company performance data, and to analyse differences by industries as well.

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## Appendix

### Operationalization of dependent and independent variables

Variables	Items	Cronbach alpha
Market orientation MARKOR	15 items, source: Narver and Slater, 1990	0.906
Impact of macro-environment MACRO	10 items, how macroeconomic indicators (such as corporate tax levels, budget deficit, inflation, etc.) influence the success of the company. Higher scores indicate a positive impact of the macro-environment.	0.919
Impact of EU EU	11 items how EU membership influences the market position of the company on various dimensions such as economic and business relationships, access to EU funds, impact on prices, etc.. Higher scores indicate a better position.	0,880
Extent of Internet usage WEB	Number of applications	-
E commerce expectations EXPECT	4 items (see Table 2)	0.849
Perceived benefits of e-commerce BENEFIT	5 items (see Table 3)	0.926