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Antecedents of E-Business Adoption in Corporate Marketing Activities: Perspective of the Organisation and of the Environment

INTRODUCTION

Themes such as on-line advertising or e-business are often highlighted in business journals, signalling important instances of the great magnitude of intensifying business activities within this field. While general business innovation in relation to management, marketing and information technology has been subject to a considerable number of research so far, e-business – which can be considered as an information systems innovation (Swanson 1994) – has not attracted such attention. Our present article – grounded in the innovation literature – aims to bridge the gap between the popularity of the topic in practice and the relatively low attention it has received from academic circles.

Even though the Internet and e-business are global phenomenon, most of the previous studies have been focusing on the US. Therefore, it is important to gain empirical evidence from different economies to see whether previous findings are generalizable. Our study uniquely provides insights to the determinants of e-business adoption processes in a post-communist economy, where the diffusion of this relatively new phenomena is in an early stage - 3.5 percent of Hungarian companies apply Internet in their purchasing activity, 1 percent in sales and 7.8 in advertising (Drótos and Szabó 2002; Berács, Keszey et al. 2003).

Organisational scholars (Burns and Stalker 1966; Peters and Waterman 1982; Kanter 1983; Kovács 1991) argue that culture is as, or even more important antecedent of firm-level innovation, than structural factors (e.g.: complexity, formalisation, centralisation). However, this paper *is amongst firsts* to explore the relationship between organisational culture and innovation of companies regarding their e-business activities.

RESEARCH QUESTION AND CONCEPT DEFINITION

The goal of this study is to identify the major environmental, strategic and organisational factors that determine the level of Internet adoption in corporate sales, purchase and advertising activity. The reason behind focusing on these antecedents are suggested by (Rogers 1983; Tornatzky and Fleischer 1990), who argue that both organisational and environmental factors are important drivers of innovation processes. In Swanson's (1994) typology e-business can be identified as Type III innovation, because it may have *strategic importance*, since it links IS with the core business of the company. The deep strategic embeddedness of e-business made us pay distinct attention to strategic antecedents.

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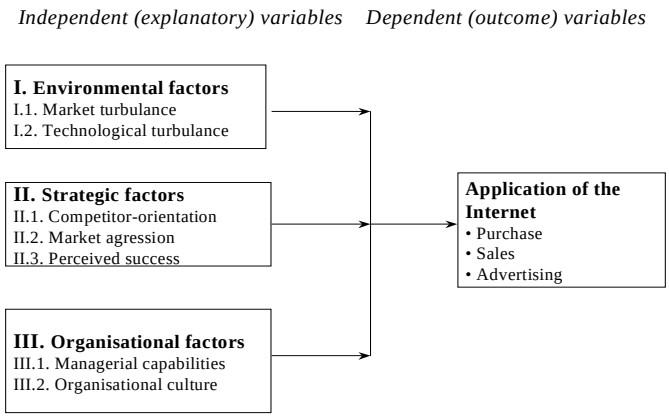

We define e-business adoption as the degree of using the Internet to conduct or support business activities along the value chain (Porter 2001; Zhu and Kraemer 2005) We are particularly interested in the application of the Internet in corporate purchase, sales and advertising, which are major activities from a marketing point of view. Among the *environmental* independent variables we considered the market turbulence (the customers' choices are increasing and competition is intense and rapid) and technological turbulence (rapid technological changes, technology is having a significant impact on business practices). *Strategic* factors considered were competitor orientation (comparison of factors such as employee retention, managerial capabilities, or the possibility to copy competitive advantages with the situation of the competitors in the same relations), market aggression (seek to attack the whole market, main focus to win market share from competitors), and perceived success on the marketplace. *Organisational* aspects contained managerial capabilities (effective HR management, strong financial management and operations management expertise) and characteristics of organisational culture (we relied on the organisational typology of Deshpandé and Webster (1989)).

ANALYSIS AND DISCUSSION

Independent variables	Coefficient of regression	Standardised coefficient of beta	T-value
Value of constant	5.141		59.960
Environmental Factors			
Market turbulence	0.069	0.035	0.813
Technological turbulence	0.651	0.325	7.585***
Strategic Factors			
Competitor orientation	0.462	0.231	5.388***
Market aggression	0.617	0.308	7.192***
Perceived success	0.263	0.131	3.064**
Organisational Factors			
Managerial capabilities	0.133	0.066	1.546
Organisational culture	0.235	0.117	2.736**
Total R square = 0.34		***p<.01; **p<.05	

Factors related to the environment (Indication of the variable in Figure 1.: I.): Market turbulence (I.1.): The literature on the topic often refers to the relationship between demand-side pressures coming from the increasing choice of customers and the adoption of

technological changes. Christensen and Bower (1996) examine the connections between demand-side pressures and organisations' investments in high technologies, fining a positive relationship between the two. According to their results the wider the customers' choices are in a certain market, the more companies in the same market can afford to invest in new and modern technologies. Earlier studies also highlight the great influence of demand-side pressures on management decisions regarding innovation (Cooper and Schendel 1976). Results of research carried out by Wu and Mahajan (2001), focusing on four information-intensive sectors do not entirely support the previous statements. According to Wu and Mahajan (2001) demand-side pressures – also induced by customers' choice – do not show connections with the establishment of technologies (electronic purchase, e-procurement) linked to customers. However, the greater the demand-side pressures, the more intensively inside communication supported by IT-applications is. According to our research market turbulence and demand-side pressure alone do not lead to higher levels in the implementation of e-business components.

Technological turbulence (I. 2.): According to the Bandwagon theory (Leibenstein 1950), the fact that the surrounding companies apply more advanced technologies delivers a far stronger argument for investing in new technology than pure economic and financial rationality. Hence, companies do not merely decide on innovations on the grounds of their potential to innovate and/or the expected rate of return, but rather, their decision depends on the application of the given technology in companies in their environment (Tolbert and G. 1983; Abrahamson and Rosenkopf 1990; Abrahamson and Rosenkopf 1997; Teo, Wei et al. 2003). The results of our survey support these results: technological turbulence of the company's business environment represents the strongest determinant of a company's e-business application. In other words if the appearance of novelties related to technology is more characteristic of the business environment, the company is more likely to apply Internet in its purchase, sales and advertising.

Strategic factors (II.): Competitor Orientation (II.1.): Companies with a strong competitive position and competitor orientation tend to continuously assess their strengths and weaknesses with respect to their competitors (Han, Kim et al. 1998). Strong competitive position and competitor orientation makes it possible for companies to shape the competitive environment (Day and Wensley 1988). Furthermore a strong competitive position also enables firms to decide for innovation even if the market itself is less competitive or the rate of return in innovation is not outstandingly high (Gatignon and Xuereb 1997). Our results underpin the findings of previous research and strengthen the reliability of our hypothesis. The stronger the market position of a company compared to its competitors, the more it relies on e-business solutions.

Market aggression (II.2.): One of the most well known typology of strategies in the field of competitive theories is linked to the name of Porter (1980). A cornerstone of his typology is the question whether a company seeks to attack a whole sector or market or if it selects only a given segment of the market. According to Porter (1980) companies of the latter type follow a "focusing" strategy. Companies who aim to dominate the entire market while the strength of their differentiation comes from something that customers consider a speciality, pursue the strategy of "differentiation", and those who also attack the whole market, but try to become the lowest cost producers are in the opinion of Porter (1980) followers of the so called "overall cost leadership" strategy. It is clear from the typology of Porter (1980) too, that companies with the objective of dominating the whole market and firms who select only a certain segment have different strategic priorities. In the same way we cannot consider companies attacking the whole market as a homogenous group, since they are willing to make sacrifices to a different extent in order to attract customers from their competitors. Our survey also examined the effects of this market aggression on companies'

decisions if they undertake e-business applications. E-business solutions are relevant from a strategic point of view because its elements actually form a segment where a new type of competition is taking place with an increasing pace. We assume that companies who set the domination of the whole market among their strategic objectives are willing to invest more in innovations related to e-business. Although for the time being the volume of this market is quite small, in the future – when its size becomes more considerable – these companies will be able to gain advantages in new markets and attract new customers. Our research also supports this assumption: the more aggressive market strategy a company chooses, the more intensively it uses the Internet in purchase, sales and advertising.

Perceived excellence (II.3.): Jaworski and Kohli (1993) made attempts to understand the contribution of market orientation to the success of business performance by examining questions of market orientation. According to them, although market orientation contributes to a successful business performance, there is no connection between this orientation and the market share of companies. However, they found a positive relationship between a more subjective judgement of the market performance of a company – i.e. perceived excellence – and market orientation.

Wu and Mahajan (2001) came to the conclusion – by examining effects of e-business applications – that electronic business contributes to a company's perceived excellence and performance – measured on subjective scales. In our research we asked the same question inversely: contrary to previous surveys we aimed to find out to what extent perceived excellence of a company contributes to Internet applications in its purchase, sales and advertising. We assumed that the more successful a company is, the greater are its investments in e-business solutions. We based our assumptions on difficulties in the estimation of e-business investments' returns – as a consequence of the novelty of the market – and concluded that this type of investment – besides financial resources – also requires a certain degree of market optimism. Results of our survey finally strengthened the power of our assumption, i.e. the more managers perceive their company as successful, the more they are willing to invest in e-business solutions.

Organisational Factors (III.,)Inside out capabilities (III.1.): Adoption of an e-business solution might result changes affecting for example the balance of power within the organisation. Top management possess the necessary tools and powers to ease these inside conflicts and to promote changes of processes linked to the implementation of e-business (Dess and Origer 1987). We did not find significant relationships between inside out managerial capabilities in the areas of human resources, finance and production and the degree of Internet application in our research, further examinations are needed in this area. However, previous research (Wu and Mahajan 2001; Chatterjee, Grewal et al. 2002) found a strong and significant relationship with the top management advocacy regarding web-based technologies and not with managerial capabilities. According to the results of their research, the support of top managers is one of the most vital factors that influences the decision of a company regarding the implementation of Internet in business transactions. According to the results of the previously "Competing the World" survey, the expertise in information technology was both in 1996 and 1999 the least relevant factor in judging managerial capabilities, indicating the insignificant role of Internet in Hungary at that time (Zoltay-Paprika 2002). This result also provides an explanation to the lack of a significant relationship between managerial capabilities covering the functional areas and Internet application.

Organisational culture (III.2.): Organisational market information processing patterns related to new product outcomes patterns are affected by organisational culture (Moorman 1995). Based on her typology we investigated the relationship between organisational culture and the innovation of companies regarding e-business. According to our results, the features of "adhocracy" culture - Colleagues are willing to take risks, innovator, risk taker leader,

Innovative, priority seeker shared values, growth and new challenges are important for the company – show connections to the degree of e-business application in companies. The more characteristic is “adhocracy” of a company culture, the greater is its willingness to apply Internet in their purchase, sales or advertising.

SAMPLE AND RESEARCH METHODOLOGY

We took our sample from the database of the Hungarian Central Statistical Office (HCSO). Our planned sample – consisting of 3000 companies – represented the company structure published by HCSO as far as the number of employees and the proportions of economic sectors are concerned. Our mail questionnaire was returned by 572 managers (response rate 19 percent). In developing the measurement scales, we adhered to the directions of Curchill (1979) and finalized it in multiple phases. In establishing the instrumentation, we used previously applied scales found in literature – which proved to be reliable mainly in the American business environment – and we also utilized self-developed scales according to the aspects revealed by our series of preliminary qualitative studies with 22 marketing and IT managers at 6 “marketing-intensive” companies. Instrumentation was tested in two stages (in-depth interviews and pilot test with 30 MBA students). In analysing non-response errors, we followed the process put forward by Armstrong and Overton (1977), which did not reveal any significant differences. Regression analysis was used for the hypothesis testing (SPSS 10.0). All the scales used for measuring the concepts show good (Nunnaly 1967) reliability (Cronbach α: 0.61-0.87). Before developing the estimates, the issue of multicollinearity was examined, following the methodology of Mason and Perreault (1991).

CONCLUSIONS, LIMITATIONS, AND FURTHER RESEARCH DIRECTIONS

According to our empirically tested model, it is the technological turbulence of the operating market and the number of competitors investigating in e-business solutions that most influences the application of Internet. This is also true in the eyes of the supporters of the "Bandwagon theory”. The bandwagon effect arises when people's preference for a commodity increases as the number of people buying it increases, this effect seems to be strong at the firm-level e-business adoption decisions as well. According to our results only the increasing consumers’ choice, the vividness of the market, and the ever-changing tendencies will not make the companies enter the implementation of e-business solutions**.** The application of Internet in purchase, sales and advertising is influenced to a great extent by the market aggression of a company, the competitive position, the perceived excellence and organisational culture.

A plethora of research (Berács and Kolos 1996; Hooley, Cox et al. 2000; Berács, Bauer et al. 2002; Hooley, Fahy et al. 2003; Keszey 2005), mainly on the fields of market orientation provided evidence that the measures developed for the US organisational settings are reliable and content valid among the firms in the transition economies of central Europe. Therefore it is not surprising that our results support findings and theories from scholars investigating in countries where the phenomena of e-business in a more mature phase.

The major limitation to our research was that the applied database was not originally constructed for answering questions related to e-business, therefore we were not able to measure some important determinants. The literature refers to elements such as the commitment of top managers towards e-business or the existence of a project champion within the company – which can contribute to a great extent to the adoption decisions of e-business solutions. For the time being there are no widespread, reliable and valid instruments for the measurement of the application and use of e-business (Wu and Mahajan 2001; Zhu and Kraemer 2005). We examined the application of Internet in each of the three areas with one single item which weakens the validity of our results. A further limitation to our study is, that we did not specifically examine the role of Intranet, and did not explicitly differentiate

between Internet and Intranet - however many companies carry out the purchasing function via Intranet.

The role of trust in organisational settings has received increased academic attention (Adler 2001; Dirks and Ferrin 2001; Kiesler 2001; Moorman, Deshpandé et al. 2001). We argue, that consumers' fears and lack of trust represent great obstacles in the more widespread use of e-commerce. It might be interesting to evaluate the role of managerial trust in Internet as a possible influencing factor of electronic commerce and on-line advertising in the business-to-business setting as well. Wierenga and Ophuis (1997) suggest –examining information instruments analysing management activity – that explanatory variables might have different effects on the specific phenomenon in various sectors of the economy. It would also be interesting to test the goodness of fit of the model in sub samples.

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